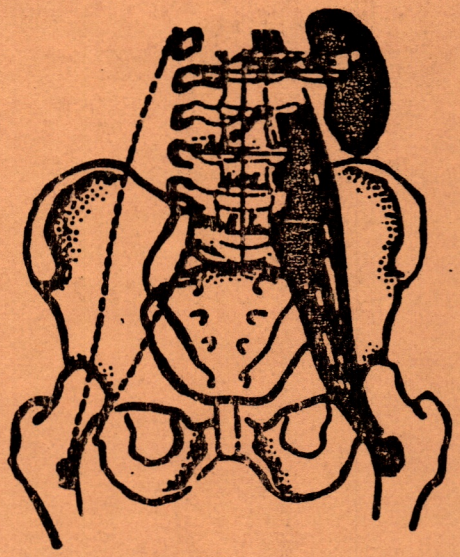
COLLECTED PUBLISHED ARTICLES AND REPRINTS

by

Dr. G. J. Goodheart
Grosse Pointe Woods, Michigan



Revised Edition

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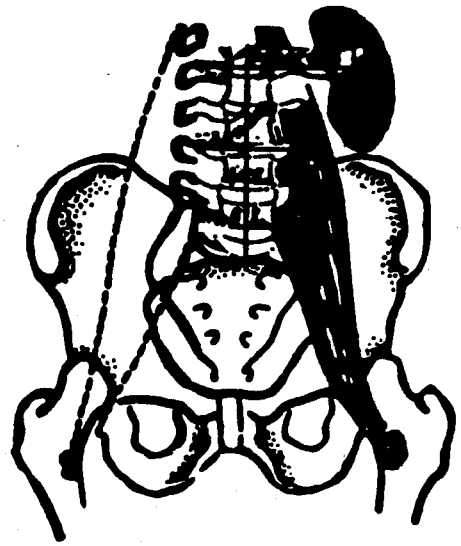
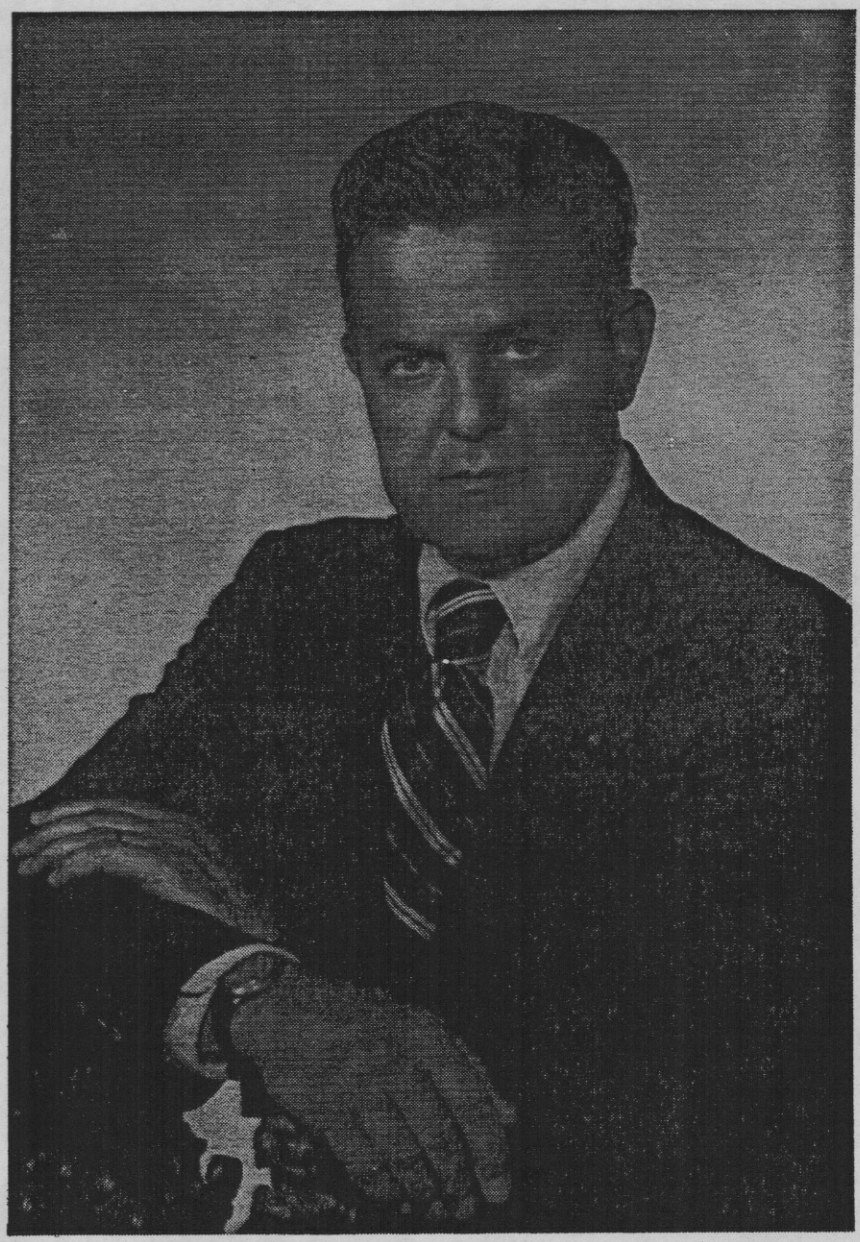


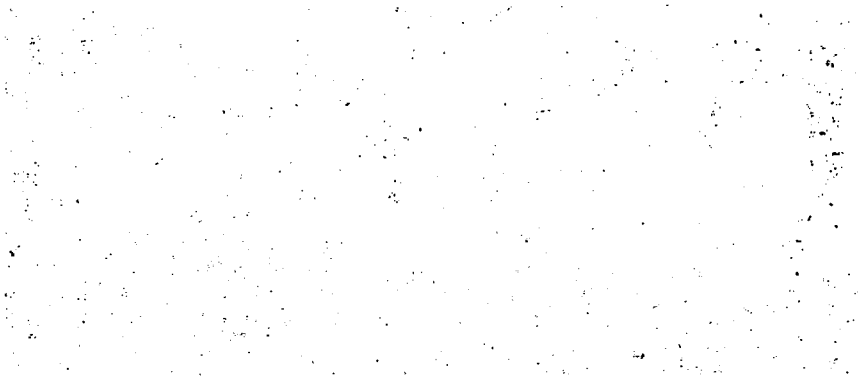
Revised Edition

FOREWORD

This series of articles consists of reprints of selected articles by Dr. George Goodheart, Grosse Pointe Woods, Michigan. You will note that certain names, addresses have been purposely left in the articles for your convenience as a bibliography.



DR. GEORGE J. GOODHEART, JR.



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THE ANEMIAS

By George J. Goodheart, D. C.,
542 Michigan Theatre Bldg, Detroit, Michigan

The formation of red cells is a normal active process and the marrow produces as many red cells per day as are destroyed and this number is very large. If a person stepped aboard an express train some evening and if his red blood cells were placed end to end along the track, by the time he reached his destination the next day they would still be right alongside him or even considerably ahead of him. Thus, you can see that the formation of red cells is a reasonably active process. Anemia results from a wide range of disturbances in this bone marrow activity. Iron, copper, cobalt, trace minerals, specific amino acids, B Complex, B-12 and Vitamin C Complex must be included in the diet absorbed, stored and transported to the bone marrow. Hence, a subnormal intake of any of these materials (nutritional anemia) or disturbed absorption as in chronic diarrhea or colitis or sprue or absence of an "intrinsic factor" such as in pernicious anemia is a primary source of trouble. The function of the marrow itself may be depressed by drugs, chemicals, which are all too common nowadays, or bacteria or viral toxins or uncertain causes (aplasia, hypoplasia) or the marrow may be actually encroached upon by the abnormal cell activity of metastases or myeloma or leukemia. The formation of red cells may be intact but the demand may be unreasonable, as in hemolysis or hemorrhage. Thus, a patient with pallor invites the taking of a careful history to elicit jaundice or anemia in the family, poor diet, gastric resection, rectal bleeding or possibly in the case of a female menorrhagia. A physical examination might reveal the size of the spleen to be enlarged, lymph nodes enlarged, a mild icterus or signs of neoplasm. Office procedure would include the hemoglobin determination and red and white cell count.

This can be done in the accustomed fashion in your office or by a laboratory, but the new method of using a high speed centrifuge hematocrit estimation using the micro-hematocrit technique, such as with the Adams "Readocrit" gives quickly an automatically produced reading of the hematocrit percentage and by this figure a red cell count and by also using the same method a hemoglobin estimation. The blood is received in a heparin coated tube 75 mm. in length and is calibrated to receive 60 mm. and the heparin coating on the inside of the tube prevents hemolysis and also clotting. The end of the tube is pluged with clay. The tube is inserted into the holding device. The switch is turned on. The tube spins at very high speed for 5 minutes, at which time it is turned off automatically and a direct reading is produced by simple observation of the built-in scale of the level of the red cell material in the tube. At the junction of the spun down red cell and plasma is a very thin but discernible opaque layer of white blood cells between the red cell and the white cell opaqua layer is also a layer of platelets. Thus, by simple centrifugal action, one gets a direct hematocrit estimation, an RBC, a WBC, a HB and one can do, if so inclined, a micro cholesterol or a VDRL test for lues on the plasma at the same time. A simple formula allows for the calculation of the white blood cell count and the enclosed chart gives the relationship between the hematocrit, red cell count and hemoglobin in adults and also in children. All from blood obtained from finger. What could be simpler, take less time and yet yield so much information both for diagnosis and for therapy? In addition a high hematocrit has been shown to have a direct relationship to coronary infarcts and accelerated blood clotting time; here also is preventative diagnosis and therapy indication, simply and quickly.

Normal Hematocrits

Men: Range 40% to 54%. Aver. —47%. Women: Range 37% to 47%. Aver.—42%.

Normal Red Cell Counts

Men: Range - 4,600,000 to 6,200,-000. Average - 5,400,000. Women: Range - 4,200,000 to 5,400,000. Average - 4,800,000.

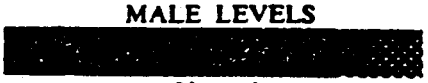
Normal Hemoglobins

Men: Range - 14.0 to 18.0 grams. Aver. - 15.8 grams. Women: Range - 11.5 to 16.0 grame. Aver. 13.9 grams.

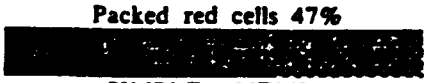
(Charts for children's hematocrit levels and other valuable diagrams available. Send a self-addressed and stamped envelope to the author.)

According to a recognized authority Wintrobe, the hematocrit is the most useful single criterion of the degree of the anemia or of the polycythemia. In routine examinations if the volume (hematocrit number) is normal, nothing further need be done. Many patients that have reaccuring subluxations, weak muscles that respond to applied kinesiology techniques but "fade" or fail to respond to adequately, patients that have recurrent dorsal pain that are difficult to manage are all signs and symptoms of anemia as well as the more familiar weakness, headache and fatigue.

MALE LEVELS



Normal
Packed red cells 47%



SIMPLE ANEMIA
Packed red cells 32%

PERNICIOUS ANEMIA
Packed red cells 12%

CHLOROSIS MICROCYTIC
Packed red cells 24%

POLYCYTHEMIA
Packed red cells 58%

LEUKEMIA CHRONIC
Packed white cells
Packed red cells 28%

TYPICAL PATTERNS

The microcytic anemias require iron, the macrocytic anemias require B12 liver and folic acid and the rest require appropriate management.

With the hematocrit method the following calculations will give the approximate white blood count.

$$\text{Appr. W. B. C.} = \frac{\text{T.L.L.} \times 100}{\text{T.L.B.C.}}$$

T.L.L. = Thickness of leucocyte layer in tenths of a millimeter.

T.L.B.C. = Total length of blood column in millimeters.

For example with a total blood column of 100 m.m there will be about 1000 W.B.C. per 0.1 m.m. of leucocyte layer. This is an excellent screen test for W.B.C. levels since we are

interested not in precise but in general levels. Screening of specimens lends itself well to a busy office practice since it takes so little time, for example the Dextrostix reagent strips give a very reliable blood sugar level both low and high starting at 40 mg. all the way up to 250 mg. in only a minute from the same finger blood you use for the hematocrit, again quick, simple, easy, and accurate. Patients do not mind paying for such lab tests and in fact are greatly impressed and when coupled with manipulative and nutritional therapy form an unbeatable combination.

Both in the decreased and in the increased production of red blood cells, attention to all nutritional factors is important. Many cases of an increased red blood count, polycythemia, respond paradoxically to measures which normally are all valuable in treating an anemia. the spleen and the bone marrow are important in this regard and a normalization will come from attention to these two primary factors. Cytotrophic extracts of spleen and bone marrow seem especially useful in the nutritional management of both decreased and increased red blood cell production. Correction of structural faults in the pelvis and the rib cage many times is capable of altering bone circulation, so attention here is very important as well as the nutritional management. The diagrams are self-explanatory and represent the different types of anemias ordinarily encountered in practice. Hematocrit instruments are available through the general sources of supply used by our profession or could be purchased through your colleges' supply facilities. It is hoped that this exposition of the anemias and their detection will allow a better appreciation of the fabulous protective and adaptive mechanisms of our physiology and lead us to depend more upon natural function and physiology.

APPROXIMATE RELATIONSHIP BETWEEN HEMATOCRIT, RED CELL COUNT AND HEMOGLOBIN IN ADULTS

For red cells of normal size — used for checking purposes only

Hematocrit (%)	*Red Cell Count* (x 1 million)	*Hemoglobin* (in grams per 100 cc)
30	3.4	9.8
31	3.6	10.4
32	3.7	10.7
33	3.8	11.0
34	3.9	11.3
35	4.0	11.6
36	4.1	11.9
37	4.3	12.4
38	4.4	12.8
39	4.5	13.1
40	4.6	13.3
41	4.7	13.6
42	4.8	13.9
43	4.9	14.2
44	5.1	14.8
45	5.2	15.1
46	5.3	15.4
47	5.4	15.7
48	5.5	16.0
49	5.6	16.2
50	5.7	16.5
51	5.9	17.0
52	6.0	17.4
53	6.1	17.7
54	6.2	18.0
55	6.3	18.3
56	6.4	18.6
57	6.6	19.1
58	6.7	19.4
59	6.8	19.7
60	6.9	20.1
61	7.0	20.3

APPROXIMATE RELATIONSHIP BETWEEN HEMATOCRIT, RED CELL COUNT AND HEMOGLOBIN IN CHILDREN

Average Values for Red Cells of Normal Size

AGE	HEMATOCRIT %	RED CELL COUNT (x 1 million)	HEMOGLOBIN (in grams per 100 cc.)
At birth	56.6	5.7	21.5
First day	56.1	5.6	21.2
End 1st wk.	52.7	5.3	19.6
End 2nd wk.	49.6	5.1	18.0
End 3rd wk.	46.6	4.9	16.6
End 4th wk.	44.6	4.7	15.6
End 2nd mo.	38.9	4.5	13.3
End 4th mo.	36.5	4.5	12.4
End 6th mo.	36.2	4.6	12.3
End 8th mo.	35.8	4.6	12.1
End 10th mo.	35.5	4.6	11.9
End 12th mo.	35.2	4.6	11.6
End 2nd yr.	35.5	4.7	11.7
End 4th yr.	37.1	4.7	12.6
End 6th yr.	37.9	4.7	12.7
End 8th yr.	38.9	4.7	12.9
End 10th yr.	39.0	4.8	13.0
End 12th yr.	39.6	4.8	13.4

The above values represent average normal values for both boys and girls. The ranges for a given age are rather wide and there is considerable overlapping from one year to another.

Sunderman and Boerner in their "Normal Values in Clinical Medicine," page 41, give ranges for both boys and girls from four to thirteen years of age. While the sex differences appear to be significant, they are not consistent; i.e., the differences do not change in a regular manner as the age increases.

THE ACID ALKALINE BALANCE AND PATIENT MANAGEMENT

By Dr. George J. Goodheart
542 Michigan Building, Detroit, Michigan 48226

Many individuals have symptoms of either acidosis or alkalosis and since these pH changes relate directly to the nervous system in that acidosis is an overactivity of the sympathetics and alkalosis is an overactivity of the parasympathetic nervous system. Changes in the acid-alkaline balances are very important. A high normal pH throws calcium out of solution, which inevitably becomes associated with an allergy, migrating neuritic and arthritic pains and complaints of a type of insomnia that is often associated with stiffness on rising. This dissipates with activity as the blood lactic acid begins to rise with muscular activity, since lactic acid dilates the capillaries. The human body is an acid consuming, acid producing and ecid eliminating organism. It eliminates acid so that we find the expired air is acid, the skin is acid, the urine is acid as is the vagina. A gastric deficiency of acid is probably the most common condition after 50. Research has shown that at age 50 there is only 15% of the amount of acid present as there is at the age of 25.

Thirty-five percent of all individuals over 65 do not secrete any hydrochloric acid at all. Many individuals who have allergies also have a hypochlorhydria. These patients complain of fullness, nausea, even vomiting, and a confusing symptom of "heartburn".

They also have a palpitation and a complaint of shortwindedness and frequently complain of pruritus ani. These people have much flatulence and a sensation of distention of the stomach immediately after eating. This is sometimes relieved by belching. The pancreas is influenced by the degree of acidity of the stomach in that the pancreatic secretion is increased in quality and quantity through proper acidity of the stomach. DIAGNEX by SQUIBB procurable at your college or from your local pharmacist is a simple test that allows you to quickly tell if the patient is secreting enough acid. It is quick, simple, reliable and inexpensive. It relies on a simple color comparison on a urine sample which the patient brings in after taking the test (resin dye) by mouth. It is a standard method, well accepted.

Dr. Goodheart

In a survey of patients in Southern California by Dr. Harold Hawkins he found that 48% were too alkaline and only 32% were too acid. Now in this survey he did not refer to the stomach but to the blood stream and he found that the saliva closely paralled the blood and this provides an excellent method of measuring the patients progress as therapy continues. So specific stomach acid problems are measured by the DIAGNEX method and routine body measurement can be accomplished by the use of pH HYDRION test papers that can be obtained through your local supply sources.

The average case of acidosis or alkalosis can not be changed by changing the percentage of acid alkaline ash foods alone. The cause frequently lies in a structural fault in the upper cervical or the pelvic area. Correction of subluxations in these areas along with intelligent changes in the diet provides an excellent approach to these problems. The measurement of saliva is a much better index than the urine and is a much more convenient method, for the urine does not accurately reflect the blood reaction, where the saliva does. For example, fats and oils when oxidized and absorbed increase the alkalinity of the body but if there is liver sluggishness or poor choice of fats, the expected alkaline reaction from increasing these foods fails to appear. The saliva will nicely show the success or failure of your efforts, where as the urine reacts in an opposite direction and is influenced by many other factors. (See previous article on Urinary testing methods.)

In general, alkalosis conditions are characterized by a slow pulse, itchy crawling sensations, stiffness of joints and symptoms which occur after rest such as night cramps, night coughs and an abnormally high hematocrit.

In general, acidosis symptoms relate to oxygen uptake patterns such as frequent sighing and breathlessness. They have insomnia associated with breathlessness and complain of a "lump" in the throat, have a cold sweat type of perspiration pattern alternating with a dry skin and a dry hard stool. Basically the pattern is one of dehydration.

A word of explanation on the oxygen pattern of the acidosis complex might be in order here. When Bicarbonates, which are the normal bases that the body uses to prevent acidosis symptoms, become depleted and the carbon dioxide accumulates in the tissues, oxygen cannot be utilized, is not taken up, and is carried off by the venous blood, unutilized. Thus the patient suffers from suffocation, dehydration and hyperirritability symptoms.

In alkalosis, many of the symptoms undoubtedly are due to calcium deposits forming in the increased pH environment. The paradoxical deposition of calcium with the obvious calcium deficiency has been discussed before but the key factor is the fact that calcium precipitates in an excess alkaline environment even though the patient is calcium deficient on a dietary level.

The orange juice or grapefruit habit so common in our urban diet with the usual lack of activity fails to allow the 48% of those tested by Dr. Hawkins for example, the opportunity to oxidize these acids and combining with the usual amount of sodium in the diet forming sodium citrate, an alkaline substance useful interestingly enough, as a means of alkalizing the urine.

The recent popularity of cider vinegar and honey as a universal remedy

as published in "Folk Medicine" was based on good common sense and is an excellent dietary approach to the prevalent alkalosis pattern masquerading as "arthritis, bursitis, neuritis, and sciatica.

The endocrine glands regulate the blood pH more than the diet as you have already imagined and therefore the support of the edocrines is important especially the kidney. In this regard adequate fluids and sufficient vitamin "A" are very important. Natural sources of this material are to be preferred since there are fourteen different forms of vitamin "A" in the whole Vitamin "A" complex.

As mentioned earlier, pancreatic function is influenced by the level of HCL in the stomach. Lack of proper triggering of pancreatic function may lead to improper protein digestion adding to the lack of initial protein digestion creating a state of hypoproteinemia. Inevitably this leads to further problems with digestion and protein levels, since all enzymes digestive or otherwise are protein in nature. The body will try to conserve protein in protein deficiency and the obvious but faulty reasoning of increasing the protein intake will usually be met with failure, since it cannot be digested and leads to accumulation of tissue poisons such as guanidine which precipitates calcium in a dreary round of pain patterns. Again, treat by the intelligent use of methods to raise the HCL content by upper cervical adjusting, attention to dorsal lesions and temporary HCL supplementation. The elimination of normal and abnormal protein waste is by way of the bile. Bile of some exclusive meat eating animals is so toxic that it is used by natives for arrow point poison.

The necessity of maintaining good liver function by the use of good quality fats and oils and the sharp decrease in baked and cereal goods is indicated in the initial stages of treating disturbances of the acid alkaline balance.

The liver and the pancreas are on opposite ends of a metabolic "teeter totter" and the indiscriminate use of vitamin "B" to pick up pancreatic function will depress liver function. It is best to use low concentration of these materials and to balance any Vitamin "B" depression of liver function and fat assimilation by using stimulation of bile production by bile itself temporarily and using liver pumping methods on patient's visit.

There is a definite antagonism between Vitamin A and Vitamin B, so the use of multiple concentrates in difficult cases is advised only after an initial period of careful observation and manipulative care. Liver function is greatly helped by sun exposure and is one of the best methods of improving it. An alkaline stool is generally the indication for the use of bile and HCL stimulation. A high HCL as in peptic ulcers is a definite indication for the improvement of liver function by all means possible.

Phosphorus cannot pass thru the intestinal wall or be eliminated thru the kidney without the use of high quality fats and oils, for all food phosphorus passes into the circulation as phospholipids. The unsaturated unsatisfied chemical valences acting as attachment points. The whole problem of proper endocrine and acid alkaline balance is associated with proper fat intake, liver, and kidney function. The use of proper control of phosphorus metabolism is especially important in alkalosis and strangely enough in gastric hyperacidity, for it is deficient in both of the conditions even tho they apparently contradict. Phosphorus stabilizes and balances the overactive parasympathetics that are too active in gastric hyper acidity. It contributes to lowered blood viscosity and combats the calcium carbonate formation one finds in alkalosis.

Acidosis is often caused by pathology as in diabetes but hypoadrenia is a most common cause as is the excessive perspiration one finds in hot humid weather where there is NaCl lost by way of the skin. Restriction of sodium is also a source of acidosis since the sodium reserves are important in the alkaline reserve. An acid ash diet can cause a gradual shift to acidosis and this can be well shown by the saliva test. Normal blood pH is 7.3 to 7.4, 7.0 being the neutral point. The normal saliva pH range is about 6.5 to 7.0 but for all extents and purposes the saliva parallels the blood and is a good index of change. If the test paper is quite yellow as opposed to a definite green, the patient has an acidosis problem. These people can not hold their breath more than 20 seconds and complain of a dry mouth. They fail to calm down after excitement, respond violently to loud noises, have a dilated pupil and wink infrequently and also seem to stare a lot. They respond to upper cervical and pelvic correction remarkably well and are benefited by increasing the leafy vegetable content of the diet. They respond well to increased sodium such as crude or sea salt, calcium lactate such as in milk or in concentrated form and also respond to an increased urea function by increasing the liver function. Urea is naturally formed by the liver and it serves to open the flood gates of the kidney allowing the kidney to eliminate waste as well as water. The significance of a low specific gravity of the urine shows poor liver function and often is found with acidosis. Urea is formed of the carbon dioxide we breathe out which as you know is acid, and the ammonia from the protein break down of the meat we eat. It can release ammonia when needed and is one of the means by which the body maintains a chemical equilibrium.

Normal blood contains buffering substances that prevent acids or alkalies from changing the pH. The blood is always alkaline in life but it can become less alkaline or more alkaline. Infectious diseases cause a rise in temperature but a drop in pH. Enzymes are regulated by pH changes and enzymes that are constructive in activity, reverse their activity and tear down tissues when the pH drops in an acidosis.

A particularly useful and dramatic method is to compare the appearance of the pH HYDRION test paper after the patient has placed the test paper in his mouth, with the appearance of the test paper of that of the doctor. Granted of course the doctor follows the ancient wisdom of "Physician heal thyself".

There seems to be little correlation between the pH test paper result and that of the Diagnex reagent which measures gastric HCL only. A general impression over a long period of time has shown a low pH test paper result, a yellow color, to accompany a lack of HCL in the stomach but as mentioned there seems to be no direct correlation. Both tests therefore are advised with the saliva test paper best for routine daily use. A low pH, a yellow color shows a need for alkaline minerals and leafy vegetables. A high pH, a blue color, shows the need for the acid minerals and noncitrus acids such as cider vinegar. Calcium and sodium are good examples of alkaline mineral, phosphorus and potassium are good examples of acid minerals. Cider vinegar is a dilute solution of acid potassium and is very useful in alkalosis.

*Dr. Manley's book on arthritis is highly recommended here for it deals very clearly with the acidosis alkalosis problem in arthritis. Potassium seems to be a mineral that can act equally well on either side of the acid alkaline fence. It is sometimes needed in both conditions.

An attempt has been made to show the interaction of the sympathetic and the parasympathetic nervous system, with the endocrine system and the continuing interrelationship of calcium, phosphorus, potassium, and sodium. A few minutes thought on these relationships is just one more way to advance chiropractic, yourself and your practice. Copies of a diet helpful in acid alkaline imbalances are available from the author without charge. Please enclose a stamped self-addressed envelope.

*For copies of Dr. Manley's book, write to: The Endicott Press, P. O. Box 2217, Vancouver, Wash. 98661.

NUTRITIONAL FACTORS IN CHIROPRACTIC PRACTICE

By Dr. George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Many doctors and many patients may suffer from a need for the riboflavin or Niacin factors of the B complex. The excessively worried patient, the moody, apprehensive, suspicious, or even depressed patient, is a candidate for nutritional support from the riboflavin niacin family. A bright red tip on the tongue is a good indicator for riboflavin, niacin help. This condition of an irritated mucous membrane may exist not only in the parts of the digestive tract available to visual inspection but to other parts more difficult to observe. Lack of digestive juices may inflame the entire digestive tract with pronounced irritations of the rectum, which can also irritate the vagina. Frequent crying for no cause is a symptom of thyroid trouble as you know, but it also is involved in the riboflavin niacin pattern which we will refer to as the R.N. syndrome.

The strawberry tongue may also have sort of a purple color as well if the riboflavin of the "R" deficiency is prominent. The cracking of the lips especially at the corners is a well know indicator of the R.N. pattern, however a little known but common pattern is the loss of substance of the upper lip; it becoming smaller and smaller until it almost disappears.

The first tissue to suffer from an R.N. deficiency is the endothelium of the capillary system with a loss of tone and function. The lips are highest in capillary numbers (witness their red color) so it is reasonable that they should show signs first such as wrinkling or cracking. These signs are at their height in highly specialized mucocutaneous structures such as the mouth, rectum and vagina.

The strawberry or purple color to the tongue is the result of capillary dilation and sluggish blood flow, the characteristic lesion of the R.N. pattern.

The loss of capillary tone produces the one prominent symptom that is usually related to the R.N. syndrome, the "blood shot" eye. The "blood shot" eye is the characteristic that allows an understanding of the physiological relationship of thiamin and its partners riboflavin and niacin.

Thiamin is water soluble as are riboflavin and niacin but thiamin is readily soluble in alcohol where riboflavin and niacin to all practical purposes, are not. This chemical difference is the key to their different functions in relation to the enzyme systems of the body. The R.N complexes are fundamentally catalysts or trigger chemicals for oxidative processes. They transfer hydrogen and oxygen to suitable acceptors of these elements in the body. They also act as go betweens in sugar metabolism, and as such intermediaries they are of immense importance to the eyes where levels of oxygen are most critical for proper function. This lack of oxygen transport that can occur in the R.N. pattern produces the photphobia, burning and itching and blepharospasm of the eyes. As you know the cornea can directly absorb oxygen from the atmosphere but the lack of riboflavin and niacin interfere with its utilization just as transportation of warehouse supplies interferes with their untimate use by the consumer.

A peculiar pattern that sometimes occurs in the severe R.N. pattern is why some patients describe how objects come into vision and then disappear. Sometimes, they say, they see only part of printed words. There is often a pallor of the temporal or outer half of the optic disc when examined by an opthalmoscope and this is often seen in the authors experience if it is looked for. This is a valuable sign in this condition. All these signs relate to oxygenation which is an essential part of the enzymatic actions of these substances.

A good general way to think of these factors of the B complex as opposed to the B one factors is to remember that they are concerned with oxygen transfer and fat metabolism while the B one complex is associated with the nervous system.

They were first identified to be different when they were precipitated by

Dr. Goodheart

alcohol from the beri-beri preventing materials of certain foods. This chemical reaction identified them as protein in character and enzymatic in action. The engorgement of the capillaries seen in the tongue as previously mentioned can take place at other areas as well, and this sets up the stagnation at the capillary level which follows the engorgement. This can sometimes be seen easily in the "blood shot" eye and may be noticed in a finer or less discernable way by examining the cornea for circumcorneal vascularization following minor irritations. Normally these blood vessels are not seen and if they appear following chemical or mechanical trauma, they quickly disappear. When they persist it is a sign the diet should be changed to include high levels of these materials so important to the health of our patients

Now as you recall, glucose is not directly oxidized in the body but is subjected to a series of changes until pyruvic acid is formed. Since the nervous system utilizes only carbohydrate for its energy, the proper metabolism of glucose requires the normal amount of B complex that usually accompanies the carbohydrate food in its normal state. The mylin sheath of the nervous system produces acetylcholine with the help of the "B" complex. This chemical helps in the propogation of the nerve impulse and we as chiropractic physicians should be vitally interested in this phase of nutrition since it influences the results we obtain from our basic therapy. The acetylcholine produced by the body at the myoneural junction is necessary at one stage for the nerve stimulus. Once it has been produced it is just as rapidly destroyed by an enzyme which the body, with its innate intelligence, provides for just this purpose. The promotion of the right

amount of cholinesterase that neutralizes the potentially dangerous acetylcholine, is a function of the R.N. complex.

The spastic reactions that occur when there is a failure of sufficient cholinesterase to neutralize the constant production of the necessary but dangerous acetylcholine are well known. High in the incidence of troubles caused are gastritis and ulcer cases. These are the cases that are treated by antichoinergic drugs, when in reality, there is an interference with the nervous system at some point, and usually a deficiency in the production of cholinesterase due to an R.N. deficiency or lack of uptake.

Depending on which organ system is involved you can see the problems that such spasticity can cause and the resulting difficulty in the function of the nervous system. The same gears that make a watch run on time can make it run slow or fast as the case may be. You adjust the watch properly and it performs its function as it was built to do, BUT YOU HAVE TO WIND THE WATCH. The piling-up of acetylcholine is the accumulation of biological dynamite setting off vasospastic explosions in various parts of the body with little apparent provocation, for this particular form of dynamite comes pre-capped and ready to blow if it is not defused regularly.

Without this cholinesterase there is little chance of the accumulation of the vitally necessary nutrient choline, in the tissues. Taking in certain natural fats aids in the production of choline since it can come from a partitioning of lecethin, found in many fats. This splitting up of lecethin is accomplished by lecithinase which as you probably can surmise is found in large quantities in R.N. rich foods. So you see, God does not make mistakes, but we do, in the poor choice or the lack of opportunity of choice of R.N. rich foods.

The accumulating quantities of acetylcholine can produce an arteriosclerosis which defies correction until these factors are taken into consideration. The coronary artery is probably the most active artery in the body and the atherosclerosis so often seen here even in young individuals should be seen as perhaps just one more evidence of this acetylcholine biological dynamite which can be taken out of harms way by an intelligent knowledge and use of proper dietary regimes. The unavailability of the choline interferes with the proper fat metabolisms by the liver which in turn produces digestive disturbances, failure of detoxification of sex hormones, and a bewildering and complexing number of other conditions all brought about by nutritional failure.

Emphasis of one fraction of the B complex over another can produce problems of its own so use of foods high in all is best, or the use of natural sources high in all components in the form of nutritional supplementation is also indicated.

The three "D"s of diarrhea, dermatitis and dementia, are the classic sysptoms of pellagra but there are many subclinical states. The nerve normalizing action of the B one complexes should be supplemented by vasodilating antispasmodic, and hypotonic actions of the R.N. group. Too much B one can aggravate the R.N. state, so use intelligent appraisal of the patient's history and nervous system work-up. Make the proper nutrition be the springboard for the proper response to your adjustments. Treat the whole body, the whole man with your whole effort and watch the response of the patient to this concept.

Further information on foods high in R.N. and associated factors as well as further clinical and treatment suggestions are available from the author without charge. Kindly enclose a self-addressed and stamped envelope. Dr. George I. Goodheart

CHIROPRACTIC ECONOMICS

NOTES

MANAGEMENT OF BRONCHIAL ASTHMA

GEORGE J. GOODHEART, D.C., Detroit

Asthma is not a disease entity. It is rather a combination of symptoms which is a manifestation of a complex system of neuro-endocrine changes which alters the ability of the organism to react to stress. The stress may be allergic, neurologic or psychologic, or a combination of all of them.

All attempts to treat asthma by desensitization to agents to which the individual is "allergic" or the use of antihistaminic agents have been disappointing, offering only temporary relief at best.

Emotional factors can precipitate an attack of asthma. Anxiety will perpetuate it, even exaggerate it, but it is recognized also that the emotional stress is founded, in fact, upon the nervous system; therefore upon the entire body. The so-called fight or flee mechanism is a good example of this type of response. No matter what the type of exciting factor, the response is in a definite pattern resulting in a constriction of the bronchial tree by result of facilitation of spinal segments from which its innervation and blood supply is derived. This response is felt throughout the autonomic nerve system and it isn't always localized to the pulmonary system, although the pulmonary response is most severe and most apparent.

Anatomy of the bronchial tree is well described in any standard text of anatomy. The nerve supply on the lungs and other structures is quite important. Bronchi are supplied parasympathetically by branches of the vagus directly and by the inferior laryngeal nerve. The sympathetic supply is from the thoracic-lumbar trunk. Innervation of the muscles of respiration, phrenic, intercostal, and so forth, are well known and do not need to be mentioned at this time.

The glands most involved apparently are the adrenals and pancreas. But, it is good to keep in mind that all the internal organs and glands are innervated by the parasympathetic and sympathetic system and they are in a finely adjusted balance.

The flow of air into and out of the lungs depends upon changes in the capacity of the thoracic cavity. The lungs and pulmonary passages play a passive role since we live at the bottom of a sea of air. The movements of the thoracic boundary are governed by the respiratory center of the medulla which give rise to impulses passing through the vagus and phrenic nerve. These, in turn, regulate the muscles of respiration which bring about an expansion of the thoracic cage. It is important to recognize that the inspiration contraction occurs not only in the diaphragm and thoracic musculature but also in the abdominal musculature and the muscles forming the pelvic diaphragm. As the lung tissue is expanded influence is passed to the respiratory center via the afferent branches of the vagi which inhibit inspiration and expiration begins. This is the so-called "Hering-Breuer" reflex.

This frequency of repetitive charges and impulses from the respiratory center is under the influence of several factors, — carbon oxide, oxygen tensions, hydrogen ion concentrations and the nature and frequency of the afferent impulses reaching the nerve cells. Chemo receptors of carotid and aortic bodies by the oxygen-reduction of arterial blood to relatively low levels, below 92% oxygen saturation, increase the rate and depth of breathing. Bronchiolar movements are not entirely dependent upon the autonomic nerves but are also under the influence of an intrinsic mechanism.

There is also an importance in the alteration of the potassium concentration in the blood which causes a more forceful contraction of the musculature by altering the action of so-called ATP or adenosine triphosphate in the carbohydrate exchange mechanism which occurs during the release of energies from muscle contraction and by changes of myosin levels of the muscle tissue.

The pathological changes that occur are essentially spasm of the bronchial musculature and edema of the membrane and as the attack continues thick, tenacious mucus fills the tubes, further obstructing the passage of air. In the chronic state, the musculature and mucus glands of the bronchi are hypertrophied and infiltrated by eosinophils. As the condition progresses, persistent emphysema develops with a decreased ability to expel the inspired air. The dome of the diaphragm is depressed and the ribs are maintained in the position of inspiration. Eosinophilia is a noteworthy change in the blood picture and it is interesting to note that with eosinophilia the so-called "Thorn" test is a basis for testing adrenal function and that is the ability of the adrenal glands to respond to stimulation of ACTH. When ACTH is given, the number of eosinophils go down, which indicates the action of the adrenals in this condition.

During an "attack," so-called of asthma, the alveoli are poorly ventilated, which results in a high percentage of CO_2 and a low percentage of oxygen. In the alveolar air with a subsequent low oxygen saturation, and a retention of CO_2, this relative acidosis is met by the excretion of a very acid urine and a rise in the alkali reserve similar to that that you find in kidney disease. Increase in the alkali reserve is evident by the increase in the serum potassium.

Water and electrolyte metabolism are disturbed and there is the increased loss of sodium by way of the kidneys. In every instance, that this office has ever seen the glucose tolerance test has always indicated

in asthmatics that they show evidence of hypoglycemia or relative hyper-insulinism when they are free of asthmatic attacks. Further evaluation revealed that these asthmatic patients have sub-clinical hypo-functioning of the adrenal glands. This can be evidenced by the loss of blood pressure which occurs on standing – instead of the usual rise of 8 millimeters or so, on standing the blood pressure drops or fails to rise; and by a persistent dilation of the pupils to light, when a light is shown on the pupils, and left shining on the pupil for more than approximately 30 seconds. These two tests demonstrate hypo-adrenia.

The so-called facilitation of second and fourth thoracic segments can come from many causes – chronic upper respiratory infection and post-nasal drip or sudden, due to trauma or rib damage or severe pulmonary disease, like in pneumonia. This facilitation or ease of exchange of impulses, "extraordinary ease," "over ease," over activity is a facilitation and the facilitation then proceeds to produce the classic asthmatic attack. The individual comes in contact with the exciting factor, contact with some substance, so-called "allergic" substance or overingestion of carbohydrate or even constipation, and the nervous system immediately is thrown out of balance. The normal reaction to stress, the fight or flee mechanism, occurs, and in order for this to operate the glucose must be mobilized. And, in order to cover this added glucose, the insulin production is increased. Now, normally the adrenal glands inhibit the excess insulin, but since they are already under stress, the added stimulation results in a suppression of their function. So, there is little stimulation of the adrenal-cortex by adrenalin, with the result that the sodium retention factor is lost and sodium is lost through the kidneys, with the subsequent acidosis. Since the available adrenalin in the body is reduced, the parasympathetic nerve system becomes dominant and the dilation of bronchial arteries occurs and congestion of the bronchial vascular bed results in edema, which then diminishes the bronchiolar openings and wheezing with labored respiration begins. Then the accessory muscles of respiration are brought into play and the additional glucose needed for their contraction again increases the production of insulin, and as a result of the loss of gas exchange and the increased sodium loss in the urine, an acidosis develops with an increase in serum potassium, which then alters the adenosine triphosphate in carbohydrate exchange at the muscle fibers, so that the muscle fiber contraction increases and spasm of all the muscles of respiration occurs and this is a vicious cycle which is self-perpetuated. The primary key is a sub-clinical hypo-adrenalism. This is why so many children frequently cease having their problems, as they grow up and their endocrine system changes. Many later develop the attacks when they are under stress, if they live long enough to develop an adrenal disfunction when they go through climateric changes later in life.

The acute episodes of asthma must be controlled. The effect of drugs is quite temporary and an acute bout can best be stopped by manipulative measures which give long-lasting relief. The best thing is to break into the cycle of events perpetuating an attack.

In an acute attack of asthma, lesions will always be found in the second, third and fourth thoracic, most often the fourth. The fourth rib will always be elevated on the right. Quite frequently the third cervical is in rotation to the left. Correction of the fourth dorsal and the fourth rib lesion are essential in the management. The diaphragm should be domed, the clavicle should be released, the pelvic diaphragm should be released by deep pressure through the ischio-rectal fossa, while the patient takes two or three deep inspirations. Rectal dilation at this point is quite important. A lymphatic pump is useful to the point where the patient begins to breathe easier, then stop; otherwise, the attack will become more severe. Deep pressure for a minute or two may be used to inhibit the vagus and the phrenic nerves. The vagus can be reached just posterior to the angle of the mandible, where the nerve crosses the transverse process of the atlas. In the same manner the phrenic nerve can be inhibited as it passes beneath the sterno-clavicular joint.

Between attacks, the thoracic cage, the diaphragm and the pelvic diaphragm should be relaxed as often as necessary, including rectal dilation. Attention to the pancreas and adrenal glands should be given. Traction upward with pressure to each intercostal space is useful in maintaining freedom from asthma. The patient should be placed on a strict low-carbohydrate diet – in other words, a hyper-insulin type diet – and the commonsense removal of exciting factors from his environment should take place. Under no circumstances though, particularly a child, should they be treated as an invalid.

Upper respiratory focus of infection should be treated. The foot of the bed should be placed on blocks to minimize post nasal drainage at night. Some asthmatics are taking some of the cortical steroids and they should be used only as an emergency measure. To use them in any other manner is to whip a tired horse and further depression of the adrenal glands will occur.

Bronchial asthma has been examined from an anatomical, physiological, pathological point of view and attempt has been made to demonstrate that it is the symptom of sub-clinical hypo-adrenalism rather than a disease entity. Particular measures have been described which give great relief. Direct attention to the support of the adrenal gland mechanism is quite important. Several products are available from suppliers to our profession. This, coupled with the correction of the relative hyperinsulism, with a low-carbohydrate diet and proper manipulative measures, should increase your results in asthma and give further evidence of the ability of chiropractic to produce a response in this often acute and quite often chronic problem.

A Study Of..

Arm, Shoulder Pain

By George J. Goodheart, D. C., 542 Michigan Theatre Bldg, Detroit, Michigan

Shoulder pain may arise (1) in the supraspinatus, in infraspinatus and in the subdeltoid bursae (2) in the muscles and tendons about the shoulder (3) in the acromioclavicular joint (4) by reflex from tissues at the base of the neck and upper thorax including the cervical nerve-roots (5) by reflex upwards from the nerve sheaths in the arm and the elbow.

Pain arising in the structures that form and control the shoulder joint may be felt at a distance only. Pains which, in fact, often arise at the shoulder joint may be felt most intensely at the lower deltoid area or in the arm just above the elbow. Occasionally the symptoms are ascribed to the forearm or even the wrists. The pains may entirely omit the shoulder region and often radiate to the hand Identical pains may arise from different lesions. the same lesions may at different times give rise to pain at different sites. No matter what the position of the trouble, if it's severe. the patient often complains of a deep burning ache running down the arm and forearm. The patient has little idea of its source.

To deal with the difficulties with the shoulder joint is, indeed, a difficult task but, on a percentage basis, the most frequently met condition in the average patient is a bursitis of either the subdeltoid or the infraspinatus tendon. Witness the often-found calcification found in the tendon and compare its appearance to that of another found condition, calculi in the renal pelvis or possibly in the bladder. The same conditions occur and develop which allow calcification. In a general way, it has been our observation that calcium will precipitate out of the bloodstream and out of the tissues while in its colloidal state and precipitate into a calcareous deposit only when the reaction of the tissues becomes of a greater alkalinity and can be tolerated by the patient's acid base equilibrium. Frequently the patient will complain of "bursitis" and, just as frequently, we may find the condition to be neuritis or some other common condition, but, in true bursitis we must find a calcareous deposit. Occasionally, the calcium is in a state of precipitation where it is visible and simple X-rays generally do not suffice because frequently the deposit is situated in such a way that it will not become immediately visible if one takes the simple AP view of the shoulder.

It has been our practice when the patient complains of symptoms referable to the shoulder, to perform a fluoroscopic examination of the patient's motion pattern about the shoulder and instruct the patient with the arm hanging loosely at the side to put the arm into extreme supination very slowly and then into extreme pronation very slowly and observe the shoulder joint carefully for any signs of a calcareous deposit. Frequently there will be a calcareous deposit behind the greater tuberosity of the humerus and unless there is some change in the position of the humerus, one is apt to miss the calcareous deposit which lies quite often just beneath the floor of the bursa or possibly at its posterior area.

Frequently we see calcareous deposits in the supraspinatus tendon close to the greater tuberosity and sometimes in the subscapular and infraspinatus tendon. The cause of the deposit is undoubtedly related to blood supply rather than any change in toxemia or infection but primarily we feel changes in the acid-alkaline balance directly relate to the precipitation of the calcium deposit vis-a-vis the most frequently found calcium deposit in the kidney or in the ureter forming when the urine maintains at a highly alkaline level.

Now for the purposes of explanation, it is assumed that reader recognizes that not *all* kidney stones are formed of basically an alkaline urine calcareous deposit. But, in the main, this the pattern and we feel, a similar situation occurs in the shoulder, in the shoulder bursae and treatment designed to acidify the tissues frequently is of great value in reducing, first, the period of disability the patient has and, second, in completely clearing the calcium deposit in the bursa and without any vigorous regime or unnecessary or unusual dietary or physical therapy methods, even though these may be efficacious.

The following technique has been found useful and practical in the management of an acute bursitis. The patient is seen and the diagnosis has been made as to the presence of a calcific bursitis. He is given immobilization by an adhesive strapping on the shoulder in such a way that the arms lifted up to take the strain off the bursa depending on the location of the bursa which can be established by fluoroscopy, or by simple observation. The direction of the pressure pull of the tape is determined by the relief or by the observation of where the bursa is located. Any existing lesions are removed. Frequently associated with this bursitis we find a sacro-iliac condition on the same side causing a great deal of muscle pull.

Frequently there is a subluxation of the acromio-clavicular joint, but because of the extreme pain that these patients complain of, any work about the shoulder is generally deferred until such time as the patient can tolerate manipulation of the shoulder.

He is given directions to take one A & C tablet, one E tablet hourly, with one tablet of acid calcium 4 times daily This acid calcium allows first a diffusion of the calcareous deposit by presenting the tissues with a normally acceptable form of acid calcium.

It is our view that in the light of the so frequently observed calcium deficiency of the modern urban dweller that the paradoxical calcareous deposit in the shoulder in the presence of a calcium deficiency requires explanation. Frequently the patient is calcium deficient on a dietary intake or on a metabolic pattern. This calcium deficiency quite frequently causes a pull of the bony reserves of calcium to maintain the blood calcium phosphorus ratio and although this effort of the body to provide a calcium phosphorus ratio which will be acceptable to the blood does suffice, the bony calcium which is derived from the bone is usually not acceptable by the tissue when it is needed and frequently this calcium is then deposited as a waste product in some hard-working joint or bursa in a vain effort of the body to over-protect some critical area of muscle bone friction. This will explain the position of the deposit in the bursa and it would also explain the frequent presence of olecranon bursitis of other areas which we find quite often.

After the patient has been given the A & C, the E and the acid calcium product with directions to take the A & C and the E one hourly and directions to take the acid calcium until he begins to yawn—if he is taking 3-

a-day, then cut to 2—if he is taking 2-a-day, cut to 1, if yawning supervenes. Yawning generally represents the effort of the body to shift into an acid pattern. This allows dissolving of the calcium deposit and as the calcium deposit reduces or diffuses into the tissue, there is much, much less pain. This generally takes between 24-48 hours. The patient is instructed to expect a relief within 24-48 hours and X-ray evidence invaribly will show a dissolution of the calcium deposit within a week if he maintains this schedule. X-rays before and after are an excellent media to prove your point on the modus operandi of, first, the calcium deposit and, second, the ability of your therapy to relieve it. Use sulkowitch urine test for calcium and watch it change as patient improves.

We must frequently find the second cervical, the third cervical and fifth cervical subluxated to the inferior on the right in these bursitis cases. This seems to occur regardless of the side of the bursitis and adjusting with the patient's tolerance to receive it yields good results. It has been our observation once the adjustment has been accomplished to withhold any further adjusting until such time as it can be definitely proven that there is a disturbance in the position of the previously mentioned segments.

Muscles and Tendons About the Shoulder

The most frequently met condition in pain referred to the shoulder is a slipped bicipital tendon. This slipped bicipital tendon generally is complained of by the patient in his inability to place his hand in his hip pocket. Frequently he has difficulty in raising his arm past the horizontal until he's reached a certain point. Then, the raising of the arm past the horizontal becomes a little more easily accomplished. Slipped bicipital tendon frequently follows trauma. The biceps has two heads—one has its origin from the top of the coracoid process and the other from the upper lip of the glenoid fossa. It's the biceps head which has it's origin on the upper lip of the glenoid fossa which we are concerned with. The head of the biceps slips from the groove over the humerus (from the bicipital groove of the humerus) and immediately causes an automatic shortening of this biceps tendon which then interferes with the accidental reduction back in position. This causes subsequent pain, swelling, and much disability. The therapy is simple. The arm is allowed to hang loosely at the side, elbow is flexed so forearm is at right angles to the floor, a steady lateral (rarely medial) pressure is exerted on the slipped bicipital head and the elbow is pushed straight posterior hugging the patient's thorax until the limit of motion is reached. Continuing the lateral rarely medial pressure on the bicipital tendon, the elbow is then taken away from the chest, brought out forward and returned to its previous position. A slipping back of the tendon into the bicipital groove of the humerus should be observed. When this is accomplished, it may require repetition. Following the reduction of a slipped bicipital tendon, traction taping to hold the slipped bicipital tendon into its position is recommended. Efforts made to elongate the muscle by carrying heavy weights, massage of the insertion at the bicipital tuberosity of the radius is recommended as well as other forms of physio-therapy, but the main element is to reduce the slipped bicipital tendon. This constitutes the most frequently found condition of the muscle and tendons about the shoulder joint

One should not forget the fact that the teres major and the subscapularis as well as the infraspinatus are capable of contracting in a cramped fashion and causing a posterior rotation of the humerus which in turn sets up the compensatory contraction of the pectoralis major causing difficulty in movement of the shoulder. Manipulation heavy, deep, of the belly, the teres, the subscapularus and the infraspinatus are productive of much good results along with secondary manipulation of the belly of the pectoralis major. The coraco-brachialis very seldom enters into the shoulder joint conditions as this is not a very powerful muscle. The latissimus dorsi is frequently involved in shoulder joint conditions and it is wise to always examine the status of the pelvic girdle and the sacro-iliac joint as well as the sacro-lumbar joint and carefully reduce conditions here. The previous article on disc lesions would accord an excellent method of investigating this area Muscle testing for weak muscles is essential in most shoulder cases.

Acromio-Clavicular Joint

Disturbances of the acromio-clavicular joint, which is basically the butt joint between the coracoid process of the scapula and the distal end of the clavicle can be classified as lesions which cause a separation of the acromio-clavicular joint or an approximation of the acromio-clavicular joint. Generally, if the shoulder joint (the acromio-clavicular joint), is separated the patient carries his arm away from his body. Generally if the patient has an approximation of the acromio-clavicular joint, he carries his arm near the body. Manipulation to reduce this is directed to the scapula and, since the scapula floats free on the posterior thorax, a steady pressure designed to either open up or reduce the acromio-clavicular joint is all that is needed many times. Pressure applied on the scapula diagonally inferior on the superspinatus ridge along with simultaneous headword pressure at the lower margin of scapula will generally allow an approximation of the previously separated joint to occur if one holds it long enough—approximately 4 to 5 minutes.

The opposite is true if in the case of an approximation of the acromio-clavicular joint if a medio diagonal pressure is held below the suprespinatus ridge in a medial diagonal pressure exerted below the supraspinatus ridge along with a separating pressure on either the coracoid process or the clavicular border will suffice to cause a normal separation of the acromio-clavicular joint.

Taping to insure either approximation or separation of the joint is seldom necessary, but in difficult cases this is occasionally recommended. Severe tearing of the acromioclavicular joint heals slowly and surgery is frequently recommended in a severe tear.

Reflexes from Tissues About the Base of the Neck, Including the Cervical Nerve-Roots

A. A. O. combination lesions produces much brachial pain and frequently disturbances in cervical two, cervical three and cervical five produce referred pain in the arm and shoulder and can easily be reduced by attention to these particular segments. Reflexes from various viscera produce pain in the brachial plexus and most frequently met are digestive visceral reflexes. The gall bladder, the stomach, are the most frequently indicted and attention to gall bladder and gastic reflexes and gall bladder and gastric function in terms of nutritional support will aid in the reduction of any painful process arising from these areas and having a referral point in the shoulder and arm. Your attention is directed to the usual techniques of treating reflex pain, such as thumb-web areas, foot areas and belly reflexes.

Reflexes Upward from Nerve Sheath in the Arm and in the Elbow

The most commonly met condition which causes referral pain to the shoulder and to the upper arm is a separation of the radial ulnar joint This is generally caused by a fall or some trauma which is experienced when the wrist is held in extreme extension with weight being born upon the extended joint.

The separation of the radio ulnar joint produces what is called the carpal tunnel syndrome and nerve pressure is exerted because of the traction exerted upon the carpal ligaments producing pressure by traction. The reduction of the separation between the radius and the ulnar at the wrist joint is the therapy of choice to reduce the referred pain. Frequently the pain is referred to the elbow or to the biceps area. Reduction and maintenance of the reduction by proper adhesive strapping or the wearing of a leather wrist band is productive of good results.

Changes in the elbow joint are also productive of pain referable to the arm and the shoulder and the elbow generally requires a pronation extension to realign the humerus to the radius and ulna. This is a relatively simple maneuver in which the arm is flexed, carried into moderate pronation and then with pressure exerted upon the acromio process, the arm is brought into full extension and mild pronation. Generally a palpable click is heard with the great reduction.

Occasionally in children, more often than adults, the radius can enter into a pronation or supination pattern. There is generally an occurence of heavy traction with pronation or supination being exerted at the same time with the radius head slipping out at the time supination or pronation is produced. Flexion with the thumb on the head of the radius and then mild extension along with pronation or supination, depending on the pattern involved, frequently causes a reduction of the moderate subluxation of the head of the radius with the subsequent reduction in pain.

As was previously mentioned, this occurs much more often in children than in adults but it does occur and it is frequently a cause of referred pain both to the arm, to the shoulder, and to the wrist.

It is hoped that in this brief survey of conditions in and about the shoulder joint may prove useful and practical. The main points primarily being proper diagnosis, proper therapy, with proper nutrition. Muscle testing and muscle balancing technics are very useful and practical.

In the case of bursitis, the use of A & C. E. and an acid calcium product is essential for the dissolution of the calcareous deposit and the reduction of the muscle and tendon disturbances.

We have frequently found that Vitamin E Complex and manganese B12 combinations are of great value in chronic dislocation as is also the case in acromio-clavicular joint separations and in reflex disturbances in the shoulder joint. Attention to both gall bladder and stomach functions in terms of nutrition, is practical and useful with the use of appropriate A. F. and possibly Betaine products for the liver and gall bladder along with other lipotropics and attention to the hydrochloric acid level either reduction or increasing depending upon results of simple tests for gastric function. Diagne (Squibb).

In neuritis associated with fatigue B complex is indicated, in alkalosis association acid calcium and phosphorus compounds are needed. Shock doses of E complex occasionally are required in syndromes following excessive use of synthetic fats.

NOTES

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Taping to insure either approximation or separation of the joint is seldom necessary, but in difficult cases this is occasionally recommended. Severe tearing of the acromioclavicular joint heals slowly and surgery is frequently recommended in a severe tear.

Reflexes from Tissues About the Base of the Neck, Including the Cervical Nerve-Roots

A. A. O. combination lesions produces much brachial pain and frequently disturbances in cervical two, cervical three and cervical five produce referred pain in the arm and shoulder and can easily be reduced by attention to these particular segments. Reflexes from various viscera produce pain in the brachial plexus and most frequently met are digestive visceral reflexes. The gall bladder, the stomach, are the most frequently indicted and attention to gall bladder and gastic reflexes and gall bladder and gastric function in terms of nutritional support will aid in the reduction of any painful process arising from these areas and having a referral point in the shoulder and arm. Your attention is directed to the usual techniques of treating reflex pain, such as thumb-web areas, foot areas and belly reflexes.

Reflexes Upward from Nerve Sheath in the Arm and in the Elbow

The most commonly met condition which causes referral pain to the shoulder and to the upper arm is a separation of the radial ulnar joint This is generally caused by a fall or some trauma which is experienced when the wrist is held in extreme extension with weight being born upon the extended joint.

The separation of the radio ulnar joint produces what is called the carpal tunnel syndrome and nerve pressure is exerted because of the traction exerted upon the carpal ligament is producing pressure by traction. The reduction of the separation between the radius and the ulnar at the wrist joint is the therapy of choice to reduce the referred pain. Frequently the pain is referred to the elbow or to the biceps area. Reduction and maintenance of the reduction by proper adhesive strapping or the wearing of a leather wrist band is productive of good results.

Changes in the elbow joint are also productive of pain referable to the arm and the shoulder and the elbow generally requires a pronation extension to realign the humerus to the radius and ulna. This is a relatively simple maneuver in which the arm is flexed, carried into moderate pronation and then with pressure exerted upon the acromio process, the arm is brought into full extension and mild pronation. Generally a palpable click is heard with the great reduction.

Occasionally in children, more often than adults, the radius can enter into a pronation or supination pattern. There is generally an occurence of heavy traction with pronation or supination being exerted at the same time with the radius head slipping out at the time supination or pronation is produced. Flexion with the thumb on the head of the radius and then mild extension along with pronation or supination, depending on the pattern involved, frequently causes a reduction of the moderate subluxation of the head of the radius with the subsequent reduction in pain.

As was previously mentioned, this occurs much more often in children than in adults but it does occur and it is frequently a cause of referred pain both to the arm, to the shoulder, and to the wrist.

It is hoped that in this brief survey of conditions in and about the shoulder joint may prove useful and practical. The main points primarily being proper diagnosis, proper therapy, with proper nutrition. Muscle testing and muscle balancing technics are very useful and practical.

In the case of bursitis, the use of A & C. E. and an acid calcium product is essential for the dissolution of the calcareous deposit and the reduction of the muscle and tendon disturbances.

We have frequently found that Vitamin E Complex and manganese B12 combinations are of great value in chronic dislocation as is also the case in acromio-clavicular joint separations and in reflex disturbances in the shoulder joint. Attention to both gall bladder and stomach functions in terms of nutrition, is practical and useful with the use of appropriate A. F. and possibly Betaine products for the liver and gall bladder along with other lipotropics and attention to the hydrochloric acid level either reduction or increasing depending upon results of simple tests for gastric function. Diagne (Squibb).

In neuritis associated with fatigue B complex is indicated, in alkalosis association acid calcium and phosphorus compounds are needed. Shock doses of E complex occasionally are required in syndromes following excessive use of synthetic fats.

NOTES

Applied Kinesiology and Muscle Sound

By George J. Goodheart, D. C.,
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MUSCULAR FIBERS have a physical specialized structure that allows the muscle to contract when nerve stimulation causes an impulse to be transmitted along its membrane. Inside the muscle fiber are billions of minute protein fibers of two different types, myosin and actin. These fibers are very small, less than the diameter of a red blood cell, about one-fifth as long as a red blood cell. The fibers interdigitate with each other so that the actin fibers can slide like pistons between the myosin fibers.

In the relaxed state the actin fibers interdigitate with the myosin fibers only slightly. However, during muscle contraction the actin fibers probe deeply into the spaces between myosin fiber, thus causing muscle shortening. Muscles can shorten to about fifty-two percent of their total length. When the nerve impulse enters the muscle the impulse travels over the fiber and causes an increase in sodium permeability of the membrane which then allows the sodium to diffuse to the inside of the fiber. When the sodium permeability increases during the contraction of the muscle, calcium ions permeability also increases so the inflow of sodium to the inside of the muscle fiber is accompanied by a slight increase in the calcium flow at the same time.

These calcium ions then react with the myosin fiber to form an enzyme called adenosine triphosphate that catalyzes the release of energy from the large quantities of adenosine triphosphate surrounding the muscle fiber. This energy creates momentarily an electrostatic charge between the myosin and actin fiber; the myosin receiving this energy as a positive charge, the actin fibers receiving it as a negative charge. Once the actin fibers and the myosin fibers have pulled together, other effects occur to allow the muscle to relax again. The adenosine triphosphate remains in an active state only as long as the calcium remains inside the muscle fiber.

Surrounding these fibers is another substance called the relaxing substance which binds the calcium ions within a fraction of a second after they enter the interior of the fiber. When this calcium ion loss occurs on the interior muscle fiber, no more energy is released from the A.T.P. and the electrostatic charges between the actin and myosin disappear. This is the basis of muscle contraction.

Examples of the mechanism are numerous. When the heart is greatly overstretched it actually dilates and the result is that the actin fibers are pulled away from the myosin fibers so they can't interdigitate. So under these conditions even though you might develop some electrostatic forces, the distance between these two fibers is too great; thus in cardiac failure and great dilation, it would be expected that the strength of cardiac contraction would be greatly reduced.

For example, one of the reasons why digitalis apparently works in heart failure is it increases the permeability of the cardiac muscle membrane to calcium. Each time the cardiac impulses pass over the muscle membrane the greater than usual amount of calcium diffuses to the inside of the fiber causing an increase in strength and muscle contraction.

The application of the principles of applied kinesiology can be best described ". . . as the use of methods of testing muscles, the application of the information derived from the test and the implementation of this knowledge to the help of the patient."

Muscles move bones; except in rare instances of severe trauma bones do not move muscles

Therefore, when there is evidence of a structural distortion, there is evidence that the muscles have produced this distortion; witness the distortional faults that every chiropractor meets with every day.

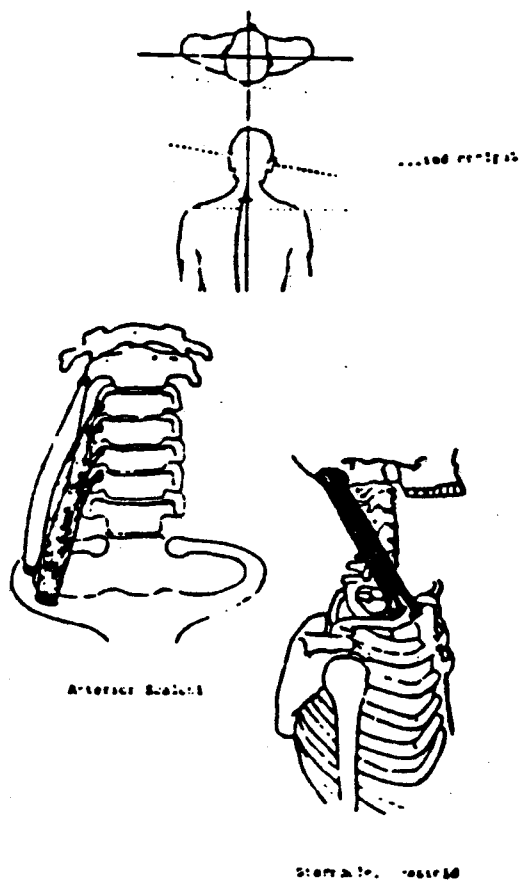
It has been the observation of many men in our profession that muscles contract, but it is also well known that they also relax and when a muscle which should normally have a normal tonus becomes weakened, then its opponent or its antagonist even though normal becomes hypertonic due to its lack of opposition. As a result, the normal muscle produces the distortion. For example, in an occipital tilt it appears as if the strenocleidomastoid, anterior scalene and splenius muscles on the low side of an occipital tilt are contracted. Occasionally this may be the case, but generally speaking just the opposite is true, the muscles on the high side are weak.

This statement cannot be overemphasized—muscles do contract. There are all types of evidence of this fact that muscles contract, but the most frequently found condition in the light of modern muscles testing is a muscular weakness, a lack of normal tone which then allows the normal tonus of a muscle to produce a contraction due to a lack of opposition by its antagonist or contralateral partner. As a result the distortion occurs with a subsequent presence of a variety of subluxations.

Testing of the muscle by standard methods of muscle testing, such as that which Kendall and Kendall outlined in their fine book *Muscle Testing* published by Williams and Wilkins, validates the observation that the usual distortion that one sees is produced by muscle weakness rather than muscle contraction. The muscle contraction occurring only because the normal antagonist is weak, thereby allowing an increase in muscle tone.

These statements can be tested in the strong light of a detailed analysis. Again, in the case of the tilted occiput (Drawing No. 1), testing of the anterior scalene and the strenocleidomastoid, the anterior neck flexors will invariably show a weakness on the high side of the occiput.

Methods of muscle testing of the anterior scalene and strenocleidomastoid are described in Drawing No. 2. Another method of validation of this new approach to the diagnosis and treatment of structural faults is the use of the phonocardiogram or as more familiarly known, the endocardiograph produced by the Endocardiograph Company. For example, a dilated heart muscle makes a relatively large graph when phonographic tracings are made, i.e., a wide excursion of the needle occurs. This same wide excursion of the needle occurs when the sound head is placed upon the belly of the



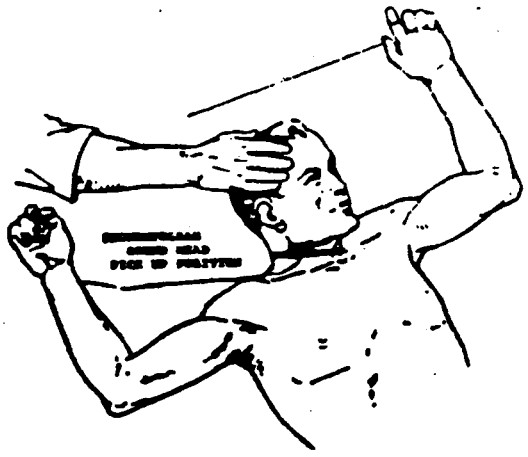
Drawing No. 1

muscle being tested in a standard muscle testing procedure. In contrast to the normal muscle testing graph, the relatively weak muscle shows a greater excursion of the needle when the weak muscle is tested with the same testing method and force.

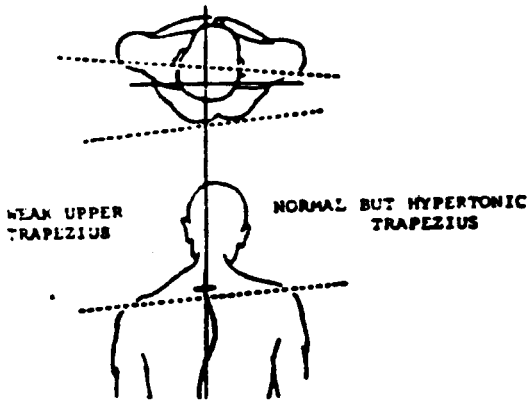
Earlier methods allowed the tape to run and required multiple measurements to determine excursion of the needle variation. Later methods have shown that testing the muscle with the needle allowed to oscillate, but without running of the tape, affords a much better method, since the needle will swing to its widest point when the muscle is tested and therefore only one measurement need be made. Photomyograms of skeletal muscle substantiate the premise that muscles are weak more often than contracted, the contracture occurring due to the initial weakness.

Following treatment of the affected muscle (that is, the weaker muscle with the wide excursion) there is a response in terms of muscle testing which is obvious to the testing physician and there is a corresponding decrease in the needle excursion.

This can be proven clinically by anyone to anyone. The characteristic sign of the weak trapezius,



Drawing No. 2



Drawing No. 3

for example, is an elevated shoulder with a depressed occiput on the same side. (Drawing No. 3). Phonomyograms of the upper trapezius muscle when tested by the standard testing technic of Kendall and Kendall will reveal a wide needle excursion on the weak side and a relatively shorter needle excursion on the normal side. Following activation, for example, of the trapezius there is an immediate response in strength of the previously tested muscle which was weak. This immediate response in strength is accompanied by a change in the amplitude of the needle excursion, reducing in amplitude to parallel that of the normal muscle. Also, there is marked change in the structure, with the shoulder and occipital leveling. Herein is the validation of the chiropractic premise of structure determining function.

Details of the application of the sound head are of necessity related to the muscle being tested. Some muscles are extremely difficult to test and other muscles are relatively easy. The anterior neck flexors, namely, the anterior scalene and the strenocleidomastoid are tested very easily, the sound head being placed on the left or right anterior scalene by using the strap that accompanies it or by using adhesive tape. The instrument is activated by pressing the master switch and the graph section of the instrument is activated but the tape is not run. The muscle is tested in the standard method, both left and right, and there should be an agreement both in the testing result and the phonomyogram.

The neuro-lymphatic and the anterior neck reflexors are located midway between proximal and distal end of the clavicle just inferior to the clavicle. Activation of these reflexors—with a slight rotary pressure applied bilaterally for 20 or 30 seconds to the anterior reflex and a slight rotary pressure bilaterally on either side of the spinous process of the axis—will cause a stimulation of the neuro-lymphatic reflex to the anterior scalene, strenocleidomastoid. This brings corresponding increase in tone of the weak muscle, leveling of the occiput, and change in muscle tone.

Here is proof of the fact that weakness of muscle causes the opponent muscle to contract. The muscle does not contract except in the presence of a weak antagonist or opponent.

Sound graphs of muscle or photomyogram require some technic training but one can readily teach oneself to do this by remembering that the least needle excursion gives the best result. Therefore, adjust the volume control of the unit for approximately one-fourth inch variation on either side of the base line.

Details of muscle testing can be obtained from Kendall and Kendall in their book *Muscle Testing*, as mentioned before. Details of both muscle testing and treating by applied kinesiology technic or the neuro-lymphatic technic can be found in the author's texts *Applied Kinesiology* and *Neuro-lymphatic Reflex*, copies of which are available in all college libraries or from the author.

This material has been presented to over fifteen state associations and to colleges at their request and is to be part of the ACA Physical Fitness Committee's primary function. Muscle testing is a prime requisite to any physical fitness program since only weak muscles should be exercised specifically.

A weak muscle cannot be exercised or made stronger until the neuro-lymphatic reflex or applied kinesiology pattern has been changed. These methods and technics are exclusively the province of the chiropractic profession and should be incorporated and will be incorporated in any physical fitness program.

Note: Further details on testing technic and treatment technics will be made available at the future ACA and local state chiropractic association meetings.

Further details on testing and treatment technics are available on request from the author. Please enclose a stamped, self addressed envelope. We are also for the Physical Fitness Committee's action brochure soon to be released by ACA.

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Asthma and Emphysema

A Digest Magazine Science Original

Many patients have problems related to the respiratory functions of the body. These problems though respiratory in character, such as asthma or emphysema, have their roots and cause in non-respiratory structure and function of the body. Non-respiratory in the usual sense but in a functional relationship the skull sutures and the adrenal glands relate more to asthma and emphysema than does the lung parenchyma itself. There is a respiratory function of the skull, this has been ably documented in the past and recently updated by modern electronic proof of a high degree of sophistication. The occiput moves minutely but definitely, the base moving forward and upward on inspiration, while the sphenoid does just the reverse. The opposite action taking place with both occiput and sphenoid with expiration. This movement though minute can be compared to the movement that exists between two sections of sidewalk. The separation between the two sections allowing a definite movement during contraction and expansion with changes in the environment. Disturbances in the respiratory function of the skull affect respiration since suture jamming and separation affect the movement potential of the skull. This movement is necessary to pump the cerebral spinal fluid, the life blood of the nervous system.

The relative diameter of the capillary exchange network of the lung is most directly influenced by the action of the adrenal glands. Adrenalin, which ordinarily maintains vasomotor tone in all parts of the body produces a paradoxical effect on lung capillary function. The usual vaso-constrictor effect is reversed in the lung capillary network, vaso constriction being replaced by vaso-dilation. So, in a relative hypo-adrenia, a depressed adrenal function produces a vaso-constriction with an interference in the capillary alveolar O_2-CO_2 exchange by the lungs.

Therefore, in any disturbance of respiratory function there is a relative feedback inter-relationship between cerebral spinal fluid flow and adrenal function. Just as two railroad tracks run parallel and independent yet are inter-related by the railroad ties so also do these other two functions run parallel and independent but inter-related. Examination of skull level with special attention to mastoid process level with a deparallelization of the occiput to the orbits, (orbit level) is essential diagnostic information. The widened orbit, the narrow orbit, relate to altered temporal bone rotation position. The work of DeJarnette and Alberts is of great value in understanding the respiratory function of the skull. The author's material previously described in this publication is also advised to understand this relatively new but ancient relationship.

Asthma is not a disease entity. It is rather a combination of symptoms which is a manifestation of a complex system of neuro-endocrine changes which alters the ability of the organism to react to stress. The stress may be allergic, neurologic or psychologic, or a combination of all of them.

All attempts to treat asthma by desensitization to agents to which the individual is "allergic" or the use of antihistaminic agents have been disappointing, offering only temporary relief at best.

Emotional factors can precipitate an attack of asthma. Anxiety will perpetuate it, even exaggerate it, but it is recognized also that the emotional stress is founded, in fact, upon the nervous system; therefore upon the entire body. The so-called fight or flee mechanism is a good example of this type of response. No matter what the type of exciting factor, the response is in a definite pattern resulting in a constriction of the bronchial tree by result of facilitation of spinal segments from which its innervation and blood supply is derived. This response is felt throughout the autonomic nerve system and it isn't always localized to the pulmonary system, although the pulmonary response is most severe and most apparent.

Anatomy of the bronchial tree is well described in any standard text of anatomy. The nerve supply on the lungs and other structures is quite important. Bronchi are supplied parasympathetically by branches of the vagus directly and by the inferior laryngeal nerve. The sympathetic supply is from the thoracic lumbar trunk. Innervation of the muscles of respiration, phrenic, intercostal, and so forth are well known and do not need to be mentioned at this time.

The glands most involved apparently are the adrenals and pancreas. But it is good to keep in mind that all the internal organs and glands are innervated by the parasympathetic and sympathetic system and they are in a finely adjusted balance.

The flow of air into and out of the lungs depends upon changes in the capacity of the thoracic cavity. The lungs and pulmonary passages play a passive role since we live at the bottom of a sea of air. The movements of the thoracic boundary are governed by the respiratory center of the medulla which give rise to impulses passing through the vagus and phrenic nerve. These, in turn, regulate the muscles of respiration which bring about an expansion of the thoracic cage. It is important to recognize that the inspiration contraction occurs not only in the diaphragm and thoracic musculature but also in the abdominal muscu-

lature and the muscles forming the pelvic diaphragm. As the lung tissue is expanded influence is passed to the respiratory center via the afferent branches of the vagi which inhibit inspiration and expiration begins. This is the so-called "Hering-Breuer" reflex.

This frequency of repetitive charges and impulses from the respiratory center is under the influence of several factors—carbon dioxide, oxygen tensions, hydrogen ion concentrations and the nature and frequency of the afferent impulses reaching the nerve cells. Chemo receptors of carotid and aortic bodies by the oxygen-reduction of arterial blood to relatively low levels, below 92% oxygen saturation, increase the rate and depth of breathing. Bronchiolar movements are not entirely dependent upon the autonomic nerves but are also under the influence of an intrinsic mechanism.

There is also an importance in the alteration of the potassium concentration in the blood which causes a more forceful contraction of the musculature by altering the action of so-called ATP or adenosine triphosphate in the carbohydrate exchange mechanism which occurs during the release of energies from muscle contraction and by changes of myosin levels of the muscle tissue.

The pathological changes that occur are essentially ·asm of the bronchial musculature and lema of the membrane and as the attack continues thick, tenacious mucus fills the tubes, further obstructing the passage of air. In the chronic state, the musculature and mucus glands of the bronchi are hypertrophied and infiltrated by eosinophils. As the condition progresses, persistent emphysema develops with a decreased ability to expel the inspired air. The dome of the diaphragm is depressed and the ribs are maintained in the position of inspiration. Eosinophilia is a noteworthy change in the blood picture and it is interesting to note that with eosinophilia the so-called "Thorn" test is a basis for testing adrenal function and that is the ability of the adrenal glands to respond to stimulation of ACTH. When ACTH is given, the number of eosinophils go down, which indicates the action of the adrenals in this condition.

During an "attack," so-called of asthma, the alveoli are poorly ventilated, which results in a high percentage of CO_2 and a low percentage of oxygen. In the alveolar air with a subsequent low oxygen saturation, and a retention of CO_2, this relative acidosis is met by the excretion of a very acid urine and a rise in the alkali reserve similar to that that you find upper respiratory infection and post-nasal drip or sudden, due to trauma or rib damage or severe pulmonary disease, as in pneumonia. This facilitation or ease of exchange of impulses, "extraordinary ease," "over ease," over activity is a facilitation and the facilitation then proceeds to produce the classic asthmatic attack. The individual comes in contact with the exciting factor, contact with some substance, so-called "allergic" substance or overingestion of carbohydrate or even constipation, and the nervous system immediately is thrown out of balance. The normal reaction to stress, the fight or flee mechanism, occurs, and in order for this to operate the glucose must be mobilized. And, in order to cover this added glucose, the insulin production is increased. Now, normally the adrenal glands inhibit the excess insulin, but since they are already under stress, the added stimulation results in a suppression of their function. So, there is little stimulation of the adrenal-cortex by adrenalin, with the result that the sodium retention factor is lost and sodium is lost through the kidneys, with the subsequent acidosis. Since the available adrenalin in the body is reduced, the parasympathetic nerve system becomes dominant and the dilation of bronchial arteries occurs and congestion of the bronchial vascular bed results in edema, which then diminishes the bronchiolar openings and wheezing with labored respiration begins. Then the accessory muscles of respiration are brought into play and has always indicated in asthmatics that they follow the category of hypoglycemia or relative hyper-insulinism. Many of them have symptoms of hyperinsulinism when they are free of asthmatic attacks. Further evaluation revealed that these asthmatic patients have sub-clinical hypofunctioning of the adrenal glands. This can be evidenced by the loss in blood pressure which occurs on standing instead of the usual rise of 8 millimeters or so, on standing the blood presure drops or fails to rise; and by a persistent dilation of the pupils to light, (high K, low Na neuro-chemical disturbance), when a light is shone on the pupils, and left shining on the pupil for more than approximately 30 seconds. These two tests demonstrate hypo-adrenia.

The so-called facilitation of second and fourth thoracic segments can come from many causes—chronic in kidney disease. Increase in the alkali reserve is evident by the increase in the serum potassium.

Water and electrolyte metabolism are disturbed and there is the increased loss of sodium by way of the kidneys. In every instance, that this office has ever seen, the glucose tolerance test the additional glucose needed for their contraction again increases the production of insulin, and as a result of the loss of gas exchange and the increased sodium loss in the urine, an acidosis develops with an increase in serum potassium, which then alters the adenosine triphosphate in carbohydrate exchange at the muscle fibers, so that the muscle fiber contraction increases and spasm of all the muscles of respiration occurs and this is a vicious cycle which is self-perpetuated. The primary key is a sub-clinical hypoadrenalism. This is why so many children frequently cease having their asthma after puberty when their neuro-endocrine system changes. Many later develop the attacks when they are under stress, if they live long enough to develop an adrenal disfunction when they go through climateric changes later in life.

The acute episodes of asthma must be controlled. The effect of drugs is quite temporary and an acute bout can best be stopped by manipulative measures which give long-lasting relief. The best thing is to break into the cycle of events perpetuating an attack.

In an acute attack of asthma, lesions will always be found in the second, third and fourth thoracic, most often the fourth. The fourth rib will always be elevated on the right. Quite frequently the third cervical is in rotation to the left. Correction of the fourth dorsal and the fourth rib lesion are essential in the management. The diaphragm should be domed, the clavical should be released, the pelvic diaphragm should be released by deep pressure through the ischiorectal fossa, while the patient takes two or three deep inspirations, rectal dilation at this point is quite important. A lymphatic pump is useful to the point where the patient begins to breathe easier, then stop; otherwise, the attack will become more severe. Deep pressure for a minute or two may be used to inhibit the vagus and the phrenic nerves. The vagus can be reached just posterior to the angle of the mandible, where the nerve crosses the transverse process of the atlas. In the same manner the phrenic nerve can be inhibited as it passes beneath the sterno-clavicular joint. Naturally, specific atlas and occiput lesions which invariably complicate these lung disorders must be corrected.

Between attacks, the thoracic cage, the diaphragm and the pelvic diaphragm should be relaxed as often as necessary, including rectal dilation. Attention to the pancreas and adrenal glands should be given. Traction upward with pressure to each intercostal space is useful in maintaining freedom from asthma. The patient should be placed on a strict low-

carbohydrate diet – in other words, a hyper-insulin type diet – and the common sense removal of exciting factors from his environment should take place. Under no circumstances though, particularly a child, should they be treated as an invalid.

Upper respiratory focus of infection should be treated. The foot of the bed should be placed on blocks to minimize post nasal drainage at night. Some asthmatics are taking some of the cortical steroids and they should be used only as an emergency measure. To use them in any other manner is to whip a tired horse and further depression of the adrenal glands will occur.

Bronchial asthma has been examined from an anatomical, physiological, pathological point of view and attempt has been made to demonstrate that it is the symptom of sub-clinical hypo-adrenalism rather than a disease entity. Particular measures have been described which give great relief. Direct attention to the support of the adrenal gland mechanism is quite important. Several products are available from suppliers to our profession. This, coupled with the correction of the relative hyperinsulism, with a low-carbohydrate diet and proper manipulative measures, should increase your results in asthma and give further evidence of the ability of chiropractic to produce a response in this often acute and quite often chronic condition.

Man is a whole animal, structurally oriented, physiologically inter-related and neurologically automated. He is a creature of vast complexity but with the innate wisdom of his creator he unerringly heals himself, given an opportunity for innate correction. This correction though simply stated by our earlier philosophy and philosophers in Chiropractic is complex in its application. Just as in the application of the principles of the Ten Commandments in modern life there are complex problems so are there problems in the application of our still true innate guided philosophy. The ability to see through the disguise the body sometimes has to assume requires a knowledge of normal function. This knowledge we have, or we should have, the ability to heal is not automatic but automated, the response is not immediate but mediated. Mediated by your knowledge and your ability to allow the creative life force to flow once again. Treating lung disorders successfully is just one more way to advance yourself and your profession.

NOTES

Dear Doctor:

As you know, the action of the enzyme cholinesterace is a two-way street in that it can activate the acetylcholine in the nerve sheath to an active form, and also as fast as it activates the acetylcholine to an active form can degrade it into acetic acid and choline. The acetylcholine is the chemical bridge that allows the nerve impulse to propagate across the synapse. So, an absence of cholinesterace can cause lack of function as well as function when function is not needed. A characteristic symptom is a sudden jerking of some or many skeletal muscles many times just before or even during sleep. This muscular action is due to the failure of inactivation of residual acetylcholine due to lack of cholinesterace. A patient may complain that they drop objects, such as a glass of water involuntarily at various times. This represents a lack of cholinesterace failing to activate the acetylcholine stored normally in the nerve sheath. The known spastic action of RN deficiencies causing a dilated or bloodshot appearance to the eye seemed paradoxical until one realizes that the spasm of the vasovasorun that nourish the blood vessels can cause the capillary concerned to dilate due to lack of actual blood supply to the blood vessel walls, so here we have angio spasm from RN patterns producing vasodilation. A late and severe effect of RN deficiency is an abnormal second sound of the heart placement. The second sound coming too late and too close to the oncoming next first sound, embarrassing the blood supply to the heart by not allowing enough time for circulation to take place. The normal 1/3 to 2/3 relationship changing to 1/2 to 1/2; this only present in the aggravated state, however.

Foods high in the RN complex are yeast, milk, egg white, kidney, liver, heart and growing leafy vegetables, these first foods being es-

pecially high in riboflavin. Liver, adrenals, kidney, yeast, whole grains, mushrooms and peanuts are high in the niacin factors. Calf brains and sprouted grains seem to help especially in the production of cholinesterase, some authorities state.

The remarkably rapid response that occurs in the application of Applied Kinesiology technics undoubtedly release cholinesterase, since the speed of recovery within 20 seconds of a previously very weak muscle can only be explained biochemically even though the application is mechanical and light in terms of force. Proper nutrition is as essential to proper chiropractic as fuel is to a well-adjusted engine. Both need attention to function as they were designed to do.

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FAT AND ITS UTILIZATION IN CHOLESTEROL CONTROL

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Many individuals are concerned and alarmed about the subject of cholesterol. These individuals may include the doctor as well as his patient. There is a wealth of information in the popular press regarding this situation and most of it is misinformation.

Cholesterol is an important tissue substance and is NOT a substance to be avoided! Cholesterol is a hormone precursor, and rises and falls in the blood stream in proportion to hormone levels more than with dietary factors altho the dietary factor is given all the attention. A 1938 report in the Journal of Biological Chemistry showed that test animals fed cholesterol, produce less in their livers and this has been confirmed many times since. It is therefore obvious that persons who have a high blood cholesterol, acquire it through reasons OTHER THAN too much through food intake. The real reason is the lack of NATURAL CHOLESTEROL mobilizers NATURALLY present in NATURAL FAT.

Cholesterol mobilizers are as natural to fats as the key you buy at the hardware store for the lock on your house. It is only the UNnatural fats that do not contain the keys so to speak and by reducing the amount of traditional fats you are in effect 'locking yourself out of your own house'. It has been shown that linoleic acids present in unsaturated fats will reduce cholesterol but, the ARACHIDONIC acid in beef fat does it almost TWICE as well, so you can see the futility of reducing the fats in the diet.

The most common complaint with an excess of cholesterol is gall bladder congestion and some common sense temporary reduction of the fats is sometimes necessary but the real remedy is vitamin "F" present in fresh oils along with avoidance of most baked goods plus regular manipulative correction of the lymphatic system via the neuro-lymphatic reflexes. Proteins and carbohydrates are absorbed directly into the blood stream but fats are not directly absorbed, since in high concentration fats destroy red blood cells, thus the lymphatics absorb fats from the intestine and meters it into the blood stream in small increments or dribbles that can safely be handled. When the lymphatic channels become partially blocked, in a small percentage but over a wide area the rest of the lymphatic system can become overloaded and the lack of transport both to and from the cells contribute to a high blood fat and also a puzzling anemia. The lymphatics not only function as a sewer system but, like a suds-saver on an automatic washer, absorb the protein fat, minerals and vitamins that are not used by the cells and carries it back to the blood stream. So there is both waste and nutrition inherent in the lymphatic system.

Recently in measuring "tagged" blood protein, "tagged" with radioactive iodine, it was found that half of the blood protein is lost from the blood stream. In 24 hours the prompt "suds-saving" retrieval of this protein by the lymphatic system prevents this constant loss from becoming an over all loss. When the lymphatics are partially blocked this marvelous system does not function and fats build up first in the lymph stream, slowing it down by thickening it and then secondarily by dumping the higher concentration of fat into the blood stream, therefore if the fat is not natural or if there is not sufficient fat mobilizers in the diet, there is an inevitable rise in the fat level.

A simple method of measuring the blood fat is to do a microhemato-crit with an "ADAMS READOCRIT" or a similar instrument and observe the opacity of the serum after the automatic function of the centrifuge. A clear serum indicates a normal cholesterol, a highly opaque serum indicates a high cholesterol. The SCHUCO-LAMARR test set lets you do a cholesterol in less than 5 minutes in your office in 4 easy quick steps that can be done while the patient is dressing. Only 0.1 cc of serum is needed and 2 simple reagents and a simple color comparison. It can be obtained from your usual source or your college or direct from SCHUCO SCIENTIFIC, 250 West 18th St., New York, N.Y.

Another method of estimating the cholesterol level is to do a thyroid function test using the achilles tendon reflex as an indicator. A previous article described these instruments and their function. The thyroid lowers cholesterol but if the vitamin "F" (fat mobilizer, "key for the lock") is absent, the thyroid function produces a toxic secretion which fails to level off the fat in the blood and it therefore accumulates. But here again the problem is simplified by remembering that all natural fats contain vitamin "F". So if the thyroid checks out sluggish, for example: 430 milliseconds as measured with an achillometer by Medco or the Photo-electric Photomotogram, the cholesterol is usually elevated above 250. The reverse is also true when the millisecond time is fast as for example 200 milliseconds. Here the cholesterol level is usually too low.

The fats and oils commonly used in our urban diet are usually heated, and the synthetic fats which have flooded the market in oleo margarine and ice cream are generally made from rancid oils which are carefully purified. Sitosterols and other factors refined from soy bean oils and linseed oils are being promoted as cholesterol reducing factors but this is a short sighted procedure, for the overloaded tissues stay overloaded and the "compensatory increase in cholesterol synthesis will always prevent more than a transitory reduction". The fallacy of restricting the intake of time tested and traditional natural foods like butter and eggs and meat fat when the cause is the intake of synthetic fats, could not be more obvious. For this reason, avoid stale cereals; packaged breakfast foods, and most baked goods. Instead, use fresh natural oils such as soy, olive, sesame, and peanut. This is simple advice to a complex problem but a little knowledge is a dangerous thing and just as in hyperinsulinism with it's low blood sugar, the key is *not* to take sugar. So also in the high blood cholesterol the key is not to follow the obvious but erroneous policy of reducing the fats but to *increase* the intake of the natural fats with their fat mobilizers. Dr. Yudkin at the University of London says in an American Review of October 1964: "Statistics relating fat to ischemic heart disease in different populations may express only an indirect relation-

ship—the causal connection being with sugar."

He also says that there is no relationship between dietary fat and ischemic heart disease. These quotes are from the "Lancet" 1964.

Dr. Yudkin and his associates found invariably that all the high cholesterol patients he examined had a high intake of carhohydrate and not necessarily fats. Since the old doctrine of fats burning in the flame of carbohydrates has been thoroughly disproved, it is obvious that fat deposits in the presence of excess carbohydrate deposit both in blood and tissue. Here also is proof of the need not to restrict the natural fats. In a test feeding of oleo and butter on two groups of adolescents in an orphan asylum, results showed the girls became taller than boys when the girls ate oleo but this did not occur when the girls ate butter. This shows the effect of deprivation of the sex hormone precursors, which is a castration effect of growth stimulation, just as a farmer or rancher or chicken producer castrates his meat animals. Refined fats create many problems the LEAST of which is the cholesterol level and the pseudo science we are constantly met with only proves one fact, that God does not make mistakes—man makes them when he departs too far from the natural order. Nature can not make something out of nothing.

The fact that fat meat and butter fat are low in linoleic acid has promoted many to talk down these materials. But as has been mentioned as far back as 1948 in the Annual Review of Biochemistry, the arachidonic acid is far more active than the standard that they presently measure all fats against, namely linoleic acid, and since arachidonic acid has more double bonds, animal fats and butter help, not hinder cholesterol problems. These patients sometimes say they feel worse after a meal and experience numbness and tingling in a bizarre distribution. They also are repetitious and complain of depression and forgetfulness. These patients have headaches which occur in the morning, but unlike hyperinsulinism's morning headache, these patients get worse following breakfast, with pain in the back of the head. They also frequently complain of dizziness and ringing of the ears, but the hearing tests are usually normal. They often bruise easily without any history of trauma and either yawn often, or have a lowered breath holding time which is below 20 seconds. Both of these last symptoms relate to oxygen metabolism which is disturbed in cholesterol metabolism faults.

Cholesterol contributes structurally to the cell wall and semipermeable membrane construction, and the reason why hypertension is associated with a high cholesterol is that too much pressure is needed to force the natural diffusion of fluids thru the capillary beds, since this is how the cells are able to get their nutrition.

The use of natural "E" and Natural "F" complexes as found in natural fats or in concentrated form from suppliers to our profession, help greatly in rehabilitating these patients but an intelligent diet is paramount to correct and to prevent reoccurrence.

The existence of the neuro-lymphatic reflexes have been proven by Owen, Chapman, DeJarnette and many others. They are located on the anterior of the body between the intercostal cartilages generally close to the sternum. On the posterior they exist between the transverse process and the spinous process. They are organ specific and respond to an incredibly light pressure. Mobilization of these reflexes measurably aid the blocked fat pattern not only in the blood but also in the tissues and coupled with the newly discovered neuro-lymphatic reflex associated with muscle testing and balance, gives a nutritional and manipulative interlocking treatment which allows the chiropractic physician to give service above self in the best tradition of help to your patient. It is one more way of helping people and chiropractic.

Copies of a diet useful in cholesterol problems are available from the author without charge. Please enclose a stamped, self addressed envelope.

NOTES

CHOLESTEROL MOBILIZATION DIET

Allow the appetite to dictate eating times DO NOT EAT, EXCEPT WHEN HUNGRY! Those with poor appetite will find that their appetite will increase when concentrated foods (such as sugar) are restricted.

EAT FOOD IN WHOLE FORMS AS MUCH AS POSSIBLE! Whole foods, as provided by nature (either cooked or raw), provides foods in the least concentrated form. Thus, cracked wheat is not a concentrated food, but wheat flour is a concentrated food. We may apply this principle to a variety of circumstances. For example, whole meat as opposed to ground meat, whole fruit as opposed to fruit juices, whole potatoes (baked or boiled) as opposed to mashed potatoes, etc. French fries strictly forbidden, unless cooked in fresh vegetable oil.

NEVER EAT SWEET FOODS WITH MEALS. Never combine sugars with proteins. Desserts fruits, etc. should only be eaten several hours after eating - between meals.

EAT ANIMAL SOURCE FOODS IN MODERATION.

EAT RAW FOODS WITH EVERY MEAL. The best raw food is salads.

EAT SMALL MEALS, BUT EAT AS OFTEN AS HUNGRY. Many persons overeat at one particular meal and thus overload their digestive processes, whereas the same amount of food eaten in smaller quantities, several times per day, would not impose this burden. When more food is taken into the body than can be efficiently utilized to serve its purposes, this excess of food may be digested (made assimilable) and absorbed into the bloodstream. Here it must be handled in one way or another and this places a stress upon what are known as "THE INTERMEDIATE PROCESSES." In other words, the fat, carbohydrate (sugars and starches) and protein metabolizing systems. It also places a stress upon the GLANDULAR SYSTEM because one of the primary functions of the glands is to regulate the internal environment.

SUGGESTED SCHEDULE

The following is a typical day's schedule. It is ONLY a suggested schedule, since there is considerable variety when applying these principles.

BREAKFAST:	Eggs (1 or 2) fried in natural oils.
	Rice or oatmeal for cereal (small amounts of milk and honey may be added for flavoring purposes).
	Tomatoes (juice or canned).
MIDMORNING:	Apple, orange (eaten whole), celery or cabbage base salad.
LUNCH:	Cole slaw, fish, tomato juice, baked potatoes and vegetables.
MIDAFTERNOON:	Fruit, banana, gelatin dessert
SUPPER:	Broiled steak, veal, roast or other muscle meat food, raw salad, baked potato, vegetables.
MIDEVENING:	Dessert.

FATS AND OILS

The lowest quality of fats and oils are those which have been hydrogenated (oleomargarine, shortenings, commercial mayonnaise, hardened peanut butter, etc.). Just a step above these are animal fats (except fresh butter which is recommended); these although permissible, should be used in moderation. The best of all fats and oils are from vegetable sources, extracted by low-heat methods, such as sesame oil, corn oil and others. Heat is the enemy of all fats and prolonged heating (such as used in French frying in restaurants) is deleterious because the unsaturated fatty acids of even the best oils in the raw state become saturated and rancid. One good rule here is never to re-use heated fats.

ANY QUANTITY OF HYDROGENATED FATS IS TOO MUCH! Animal fats should be in moderation. (Actually, persons who cannot tolerate "fats" are usually partaking of either hydrogenated fats or excess animal fats, vegetable oils seldom are disturbing to these persons). The quantity of fresh vegetable oil, if natural, unrefined, is self limiting and the dictates of the appetite can be used in this respect as few if any person can really "overload" on this high quality food.

Natural vegetable oils contain many beneficial nutritional factors, and are considered a highly essential food product.

A Digest Magazine Science Original.

Cross Pattern Crawling and Muscle Spasm

by

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Many patients suffer from chronic or recurrent health problems that are either caused or related to interference with normal hemispherical dominance. Many doctors are unaware that the brilliant work of Domon and especially of Delacato has special significance to the diagnosis and Chiropractic treatment of many problems that are now difficult to manage and control. The recurring low back syndrome, the continued incidence of one-sided problems of neuritis and bursitis, the recurring sciatic problem, these are all evidences of disturbances in the normal hemispherical dominance of many patients. The resultant postural problem can be identified quite accurately but not totally understood. The resultant pain or functional problem can be treated but with slow and indecisive results that frequently reverse and fail to clear completely.

Man is a biped that has all the evidence of bilaterality but very few of this biped breed are ambidextrous. There is an overwhelming average of right-handed individuals as opposed to left-handed individuals. Evidence of this observation can be found in all civilized areas and this observation of right-handed dominance is easily observed even among the few remaining aborigines. As you know, the hemispheric dominance or a right-handed individual can be identified not only by the right-handedness but also by the dominance of the right ear, right eye and right foot. If you ask an individual to point their finger at a fixed object, 10 or 20 feet away, he will point his finger, usually the right hand, at the object. If he closes one eye, he will find that his finger will either remain sighted to the object or will appear to have apparently moved. If he is right-eyed, even though he used both eyes, he will actually point with his right eye. Naturally, there are exceptions to this and these will be discussed later. If you hand an individual a watch and ask him to listen, he will listen with the dominant ear. He will write with the dominant hand. If you ask children who have had no training other than early grades to attempt to write with their feet, they will write much better with the dominant foot, even though naturally they have never been taught so So there is adequate evidence of the dominance of the average individual and this dominance results in the right-handed individual having a left hemisphere dominance while a left-handed individual has a right hemisphere dominance. Authorities vary but approximately 85% of the population are considered right-handed, the remainder considered left-handed, and a very small fraction being identified as ambidextrous.

Have you not observed that many patients do exactly the opposite of what they are asked to do by the examining doctor? If you ask them to lie face down, they frequently lie supine. If you ask them to lie supine, they will frequently assume a prone position. This apparent lack of understanding of a simple direction has rather deep and far-reaching significance when it is applied to an analysis of exactly why patients fail to comply with simple direction.

Normally, hemispheric dominance is achieved at a certain age and, for example, the child of one year to 18 months operates at a very poor level of neurological organization. This stage soon advances where the child can walk bilaterally in a cross pattern swinging the opposite arm toward the forward leg and vice versa. He develops a stereo type of existence using both eyes, both ears and both hands to allow him to penetrate his active world. But in a few years he must leave this bilateral world and move on to laterality which is unique only to man and he must also learn to read, write and spell once he has achieved the rudiments of a spoken language expression. The step that must be taken by the individual now is to develop a cortical hemispheric dominance. The two hemispheres begin to develop different functions. One becomes a dominant hemisphere and the other takes on a subdominant position. This is dictated genetically on the average right-handed parents have right-handed children, and interestingly enough right-handed parents who have a history of twins in the family are more apt to have left-handed children than if they do not have the twinning pattern. You are referred to the recent text The Diagnosis and Treatment of Speech and Reading Problems by Carl H. Delacato, Ed. D. for further information on the significance of cortical hemispheric dominance in the educational development and growth of children, but this cortical hemispheric dominance takes place in its final stage between the 5th and 8th year.

There are many interesting facts regarding cortical dominance and handedness. For example, it is well known that a large number of stutterers are left-handed, and mirror writing is 15 times more common among left-handed children than among right-handed children. An analysis of the available material shows evidence of a neurological clinical organization and the electroencephalographic tracings of an individual from birth until the age of 8 shows a gradual change from a tangled mass at birth to a normal organization and rhythm at the age of 8, when cortical hemisphere dominance is completely established.

Delacato has been concerned with

the neurological organization and brain injury of children who have difficulty in learning to speak, read, write and spell. He has developed a concept of allowing these children to crawl about in an effort to regress them backwards in neurological and cortical activity and then bring them forward again by having them walk once again. This is a brief and inadequate description of what Delacato has attempted to do. But how does this relate to what a patient exhibits when he cannot follow the simple directions, such as to lie face down or face up, or to raise the right arm or raise the left arm. The obvious fact is that these patients must be "switched" either at the cortical level or at the spinal cord level in single or multiple neurological patterns and they are simply acting in an organized but mixed fashion when they perform as they do.

A patient was referred who suffered from the extreme disabling and demoralizing syndrome of clonic chronic tonic intermittent torticollis. This painful, only occasionally, condition usually has a severe demoralizing effect because of the inability of the patient to maintain a normal head position with the attendant difficulty in vision and even in feeding. Analysis by the standard methods of muscle testing which is the backbone of the principles of Applied Kinesiology revealed the usual patterns of muscle weakness of the anterior flexors and postexterior neck extensors as well as the trapezius in its upper section, this weakness pattern was, as usually found in this condition, on one side. There was the usual compensating hypertonus of the opposite muscle which is so frequently confused as the primary source of a problem such as this. The patient was a young man who had been examined by competent neurological authorities in the military service and the electro-myographic evidence showed that the hypertonic muscles were firing twice to the hypotonic muscles firing only once when examined electro-myographically. Suggested therapy of nerve section or muscle section was refused by this 28-year-old biological scientist and other measures were attempted. The patient made the remark that if he attemped to activate the deltoid group opposite to the side of rotation of the head, there was an immediate but temporary cessation in the severe torsion pattern that this clonic chronic tonic intermittent torticollis syndrome presented.

An attempt was made to balance the structure by treating the muscle weakness with considerable success but the evidence of temporary cessation by activation of an opposite and unrelated muscle group was an interesting but unexplained situation. Another patient was referred because of an inability to continue to perform in long distance collegiate swimming competition without the onset of severe pain and disability in the chest and back muscles. Correction was easy but did not maintain itself and further swimming activity would constantly cause a recurrence of postural thorax patterns and subluxation patterns which would respond but, as mentioned, would recur following long

continued swimming competition or practice. The young patient was faced with either withdrawing from competition since treatment was not always convenient or available or unavoidable travel to maintain regular treatment. Visualization of his swimming pattern showed a definite one-sided pattern in breathing despite the bilateral swimming activity. When questioned as to why the breathing was only unilateral as opposed to the bilateral muscular action of the arms and legs, he remarked that turning the head in the opposite direction changed his stroke, rhythm, speed and endurance.

An attempt was made to correlate these two patients with seemingly different problems and to arrive at a reasonable conclusion from the evidence presented. It was obvious that there was a one-sided pattern involved and an attempt was made to determine if muscle testing would provide a clue. It was evident that there was muscle weakness by standard methods of testing on one side of the upper portion of the body and evidence of hypertonus of certain postural muscles, such as the psoas, sacrospinalis or pyriformis on the opposite side of the body. The psoas, for example, in the young swimmer was weak on the left and hypertonic and contracted on the right. This would disappear with treatment and contrary to the usual pattern of nonrecurrence would recur following a 4000-5000 yard swimming competition.

This exception to the rule of immediate and lasting correction of muscle weakness with its equal and opposite hypertonus was only brought on by the severe strain of competition swimming of long distance activity. There was an associated weakness of the pectoralis major clavicular division on the same side of the psoas weakness and naturally on the opposite side of the psoas hypertonus. Evidence of the psoas hypertonus could be obtained in many ways but a simple method was a forced extended leg turn-in with the patient supine. The hypertonic psoas, since it is an external rotater of the femur resisted the turn-in, the opposite leg did not. As mentioned, the left pectoralis major clavicular was weak. The thought occurred that perhaps the impulse that should have gone to the left pectoralis major clavicular division somehow was switched to the right psoas by a confused hemispheric dominance and literally caused the psoas on the right to be hypertonic since it was receiving two impulses to the opposite psoas receiving only one.

The patient was asked to crawl following the method of Delacato with no observable effect. He was then asked to contralateral crawl and turning his head from left to right as he did so. There was no observable effect. Since the mode of crawling on the floor was cumbersome and unwieldly the patient was placed supine on a treatment table and asked to go through the motions of crawling, bending the arm and leg, but in this instance was asked to turn the head only in one direction, namely away from the side of hypertonus. There was an immediate startling and spectacular recovery in all the muscles tested in terms of muscle weakness and all the muscles that exhibited hypertonus or spasm which could be measured were brought back to normal.

In view of this unusual clinical response, the patient was then asked to

homolateral crawl, namely the right arm and leg moving in unison as opposed to the previous cross pattern with again the admonition of carrying the head away from the side of muscle spasm. This was done approximately 10 times with an immediate reappearance of all muscle weakness previously noted and an immediate reappearance of all muscle spasm. Since the condition could be reversed and cleared at will, a method had been found for clearing the faulty hemispheric control of the muscular system.

The dominant hemispheric control can be likened to the command pilot of a modern aircraft with his usual co-pilot and other flight crew. If there is a period of difficulty with some portion of the aircraft that requires the command pilot's presence, for example, at the rear of the aircraft, he gives control of the aircraft to the co-pilot, who is a competent performer but by airline standards he is paid less than the first pilot because of his relative lack of experience, competent though he may be.

The dominant hemisphere when faced by a problem of infection, injury, accident, trauma, etc., will attempt to deal with the problem as it presents itself. It gives the housekeeping tasks of the body, such as posture, digestion, respiration, elimination, oxidization, to the less dominant hemisphere for temporary control. This control though competent in the main is many times lacking in the fine details needed for modern living and modern environment. There is a breakdown more readily of many body systems which fail to remedy themselves by the innate intelligence of the body literally being preoccupied with something else of greater attention directing potential. Once the command pilot has solved the problem at the rear of the aircraft, he then resumes his command pilot's position and the co-pilot relinquishes control to the more experienced performer.

The same should occur in temporary hemispheric dominance alteration, but many times as is becoming more evident by these newer methods of analysis investigation, there is definite evidence of a failure to switch back this finely organized control of body function and structure. The method of muscle testing will validate the presence of muscle weakness. This observation has been made and demonstrated so many times in so many different areas to so many different organizations all composed of highly critical and competent members. Muscle testing is a fact, muscle weakness is also a fact that can be easily demonstrated by anyone to anyone for anyone, anywhere, any time, any way. This is a scientific criteria of physiological fact.

Such facts should be readily and repeatedly demonstrated in the same way, in the same manner, by anyone trained to perform the function. Muscle testing and presence of muscle weakness causing muscle hypertonus are simply facts. They are to be viewed as part of the pattern of muscle contraction and the response of the weakened muscle to either lymphatic, vascular, cranial, sacral or nutritional technique is quick, effective, immediate and long lasting. Yet the compensatory hypertonus of the opposite muscle when chronic and uncorrected, causes an actual shortening of this muscle which is as mentioned opposite to the weakened muscle, and since the response of the weakened muscle is so quick and effective, it has always been the author's contention that an equally quick and effective method should be available for the relief of shortened hypertonic or muscles in spasm.

These muscles in spasm are most often the result of the opposite muscle being weak, but many times the long continued weakness has produced a pattern of actual muscle shortening. The cross crawl pattern quickly relieves this muscle shortening as measured by any postural standard or method of measurement. It is not a substitute for adequate treatment or adequate and satisfactory standards of muscle testing and muscle treatment. By itself it has the tendency to maintain any mechanical correction that can be achieved by intelligent chiropractic management. It will not correct a subluxated ilium or sacrum. It will not move a lesion temporal bone. It will not alter an anterior thorasic subluxation, but it will maintain this correction when the patient is instructed to perform this exercise for a period of 2 or 3 minutes a day.

The neurological organization of the human body is a triumph of biological computerization which exceeds in its programming of both input and output the most modern equipment available. The cross crawl pattern programs into the hypothalamus the right information and the innate intelligence of the body unerringly programs out the most precise muscle balancing that one can conceive. The dramatic and spectacular shift of muscle balance can be altered at will by changing the cross crawl from its contralateral pattern to a homolateral pattern and then reversed again back to optimum normal by the cross crawl pattern. This should revive our interest, our belief in the innate intelligence of the body.

Everything we have ever learned or believed about chiropractic philosophy is precisely and exactly true. Unfortunately, we have been led down the garden path by many who misjudge the ability of the average D C to see beyond his own limitations and who were unaware that the average man in practice can achieve great things given the opportunity. Innate intelligence, a phrase almost in disuse, is the exact description of the fantastic computerization that the human body possesses. We have been given an IBM machine and we have frequently used it only by accident.

Regard the body with the true respect it deserves because it is the pinnacle of God's creation and represents truly his handiwork and the release of nervous energy by the intelligent application of modern Chiropractic, will afford a source of power and energy to your practice that will exceed your expectations. See the whole body in its relationship to itself. Read the language the body structure tries to say, act on this information and your work will be a credit not only to you and your profession but to your creator.

Additional information on the cross crawl pattern is available from the author without charge. Kindly enclose a self-addressed, stamped envelope.

CHINESE LESSONS FOR MODERN CHIROPRACTIC

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The body has a language all it's own and the distortions we see are the outward manifestations of an intricate mechanism malfunctioning due to it's own system of complicated relays and feed back circuits. This body language is transmitted by the muscles, by the pulse, by palpable changes in the nervous system and when properly interpreted, all signs should correlate and give the indications for treatment as well as diagnosis.

Many patients and many doctors would benefit from the ancient, yet still effective, technics of the acupuncture methods used by Asiatic healers for the last five centuries and just recently translated into English by such men as Felix Mann in his text "Acupuncture, The Ancient Chinese Art Of Healing", published by Random House in New York.

Although the Chinese use silver or gold needles placed into some 500 different pressure points, many other Asiatic healers use finger palpation to find these points and then use finger pressure or manipulation to treat these points of interference with the nervous system that interferes with the transmission of nervous energy.

Sound familiar? – The Chinese operate on the postulate that there are so called meridians that traverse the body in a definite pattern. These meridians, or lines of inter-communication, are based on embryological associations of organs and structure and amazingly enough, can be measured electrically, thermatically, electronically and by simple touch!

Many of the reflex technics available to our profession are based on these lines of inter-communication and inadvertently part of the technic mobilizes or releases the energy potential of the body in an effort to balance the flow of nerve energy. It is just as if there were a series of relays in the body interconnected, but in a precise electronic way, some positive and some negative, and requiring a knowledge of the circuit to properly use the available equipment.

Just as in the recent power failure in New York, a small relay failed to trip in Ontario and there was a shutdown of vast proportions, so also can there be a similar situation in our bodies. This is common knowledge to Chinese experts and to such forward looking men as Dr. Ray Nimmo, who has stood in the foreground in his use of the nervous system's vast potential for response on an extra spinal basis in terms of therapy, yet retaining the basic Chiropractic philosophy.

To quote Dr Mann, "Directly under the skin is a widespread network of nerves (part of the autonomic nervous system) which receive and pass on impulses that come from deeper parts of the body – the organs, brain, bones, muscles, etc. When an impulse arrives from a diseased organ, an alarm is sounded at the nerve endings in the skin. This may be felt as discomfort that becomes painful as the appropriate spot on the skin is pressed. The alarm may also be measured as electrical changes in the skin. The most important strands of this network run along what are called meridians, and it is on these that the majority of acupuncture points lie".

These points, in the author's experience of 25 years, do not coincide with any other nor does the unique concept of stimulating certain points and inhibiting others parallel any other method, although the idea of stimulation and inhibition is by no means a new one to anyone in our profession.

Any Chiropractic physician of any experience has developed his palpation sense to a high degree. These points can be found by pressing the skin until a small tender spot is found, but the method favored in the East is a very light touch as has been taught by DeJarnette in his abdominal reflexes. There are some 500 points frequently used in a definite four point sequence, inhibiting at least two and stimulating at least two. There are some 1000 potential points, but only half of these are used very often.

An interesting feature of the meridians is that in the author's experience, many skin diseases follow the line of the particular meridian. You are referred to the excellent book mentioned earlier "Acupuncture" by Felix Mann., published by Random House, New York for further information on the meridians, their location and their points for treatment, but what is more important than the meridians is the unique method of diagnosis using the character of the pulse as a guide.

The Chinese say there are six different pulses on each wrist, three superficial and three deep, all in the space of three fingers placed in the usual way starting at the radial apophysis. The problem has always been to find the meridian to use, for the pressure points are associated with the particular meridian. The pulse palpation was difficult to use and learn, but persistence in pulse palpation revealed an amazing amount of information never before obtained, and was particularly useful in very young infants as well as difficult adult cases.

The left radial artery, starting at the end of the radius and working upwards for a distance of approximately an inch and a half, has three superficial pulses for three different organs, namely small intestine, gall bladder and urinary bladder. The deep pulses over the same areas are again starting at the wrist and working up heart, liver, kidney. On the right wrist, and again starting at the radial apophysis, the superficial are in order, large intestine, stomach, and what the Chinese call triple warmer, which is a thyroid gland function in my opinion. The deep positions are lung, spleen, and what the Chinese call circulation – sex, which, in my opinion, is sex gland function.

The thought that organ function could be determined by pulse palpation seemed incredible and unrealistic to the author, but experience and time have proven the validity of the Chinese concept. The author's research finding of a correlation between muscle and organ via the neuro-lymphatic reflex also proves the validity of the Chinese concept, since finding a weak or absent pulse at a specific area of the wrist can lead to a specific organ as the Chinese

state, and this in turn can lead to a test of a specific muscle which is drained by the same lymphatic channel as that organ, and since both pulse and muscle tests agree, this is indeed a remarkable correlation and leads to better interpretation of the body's language.

The use of the pulse or the muscle test then leads the physician to the proper meridian with its associated pressure points and the empirical use of a haphazard approach becomes clinically controlled and follows within the chiropractic concept of the supremacy of the nervous system. The clinical results have been outstanding, and can be duplicated by anyone who becomes familiar with these new applications of ancient, but well proven laws.

Colleagues have been instructed in this new application of little known, but observably effective methods, and their results have paralleled the initial findings. Especially in the case of changes in vision are you able to effect changes toward the normal. Most of the time these changes occur while the patient is still in the office using standard Snellen eye charts.

The chiropractic concept of interference with the nervous system should not be limited to only the intervertebral foramina, but should include, in fact, any area and the delimitation only serves to delimit your results if you do not think of the patient as a whole man and not just an atlas or a sacrum or an occiput or a wedged vertebrae, valid though these concepts may be in their own division of the whole man.

In addition to correlation of the pulse and organ function, there is an observable correlation in the DeJarnette sacro-occipital spinal areas, as well as on the trapezius muscle, proving once more that there is a key to the body language that many have tried to find. Some have found one part, some have found another. The establishment of the key organ and the firm appraisal of it's function, whether under or over, also allows a better use of nutritional therapy.

The validity of this new idea allows an evaluation of many instruments and treatment devices. It also helps in deciding whether to maintain a certain adjustment sequence. Although there are other methods to help in this regard, this is a simple practical one, involving no expense and very little time. The pressure differential between the superficial and the deep pulse test would parallel the relative pressure of the diastolic and the systolic pressures. The deep pulse pressures being that pressure which almost occludes the radial artery under consideration, the light pressure being the lightest pressure able to detect pulsation.

The acupuncture or pressure points have been systematically and scientifically observed by many observers. In 1960 two Russians, Novinski and Vorobiev, found that the pressure points, when active, diminished the amplitude of the wave of a calibrated cathode ray oscillograph. Two more Russians showed that the ancient acupuncture points showed regular and systematic differences in electrical potential, thermocople differences, infra red radiation and oxygen absorption.

The points, when stimulated along the standard stomach meridian, showed observable changes in the peristalsis of stomach and duodenenum. So there is no question of the existence or the action or useful qualities of these pressure points, and they are within the reach and grasp of anyone who is interested.

There should be an awakening of interest in chiropractic principles as until recently obscure, ideas as opposed to the compartmentalization of the body as our M. D. friends have done. We should stand alone, if necessary, in this respect, but the patients need, want, desire and will pray and pay for someone who looks at them with a wholistic concept, and this includes the mental and spiritual side as well, for the true physician is a teacher as well as a healer, and knowledge of the whole man is your greatest ally

Why pay someone to read a book for you? Read it yourself and profit yourself, and benefit your patients with not only the adjustment, but all the myriad connections of this wonderful body God has given us. The head bone is not just connected with the neck bone, as the popular song relates, but all parts are connected to all other parts by proven factual nervous system connections that can be reached and treated easily, simply and quickly. Here is information of inestimable value.

Use it to advance yourself, your practice and the profession of Chiropractic. Service above self and devotion to patients' welfare, not only by solicitous concern and T. L. C., but by technically accurate implementation of the chiropractic principle.

Further information and details about pressure point charts are available without charge from the author. Kindly enclose a stamped self addressed envelope.

NOTES

Peripheral Nerve Impingement And The Carpal - Tunnel Syndrome

By Dr. George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Many doctors and many patients suffer from the symptoms of the carpal tunnel syndrome. Weakness to the point of atrophy of the opponens muscle is sometimes seen, but the usual symptom pattern is one of numbness, tingling, pain of the hands and arms along with an especially distressing pattern of dropping relatively light objects involuntarily. There is also a frequent inability to either pronate or supinate the forearm and the patient may state that the pain at night after a day's activity is enough to prevent sleep. In the chronic pattern of the carpal tunnel syndrome there is a definite observable atrophy of the fleshy part of the thumb on the palmar aspect which is, as you know, the opponens muscle. The thinning or weakness of this muscle is the diagnostic feature of this entrapment of the median nerve at the so called carpal tunnel. Impingement of nerves does not necessarily have to take place only at the intervertebral foramina but it can and does take place at many points in the body structure where the nervous system is exposed to the same circumstances as the nerves of the spine. If the principle of nerve interference is true, as we know it to be, it should be demonstrable in many areas. The carpal tunnel is one of these innumerable areas where such a situation can take place.

The median nerve is the most superficial structure to pass through the tunnel underneath the transverse carpal ligament. The transverse ligament starts at the upper crease of the wrist and above the pisiform and runs in a broad band across the wrist to the base of the thenar eminence. A fall, stopped by the palm of the hand with the wrist sharply dorsiflexed, is often the history.

Because the carpal tunnel syndrome is a common pattern in the patients we see, it is reasonable to suspect it in all cases of numbness, pain and tingling of the hands. Reflection of these symptoms upward from the wrist even as high as the shoulder is not uncommon. This condition is not confined to patients only, but also plagues the professional, being common among D.C.s. Since the chiropractic physician's work is manipulative in character, he is especially susceptible.

Some patients even complain of pain from the sphygmomanometer cuff incident to taking the blood pressure. The pain, as has already been described in a previous article entitled, "Arm and Shoulder Pain, (September - October 1964) may radiate into the first three fingers of the hand or the elbow at the anconeus, or as high as the humeral head, or rarely between the shoulder blades. Pressure over the carpal ligament can cause pain to appear at the "trigger areas." Sometimes the pronator teres can cause a similar problem, but the base of the hand is usually numb in a pronator teres entrapment, while in the carpal tunnel syndrome it usually is not.

This condition can be present bilaterally as well as unilaterally and the opponens atrophy in the severe chronic form may not be present, but a slight flattening of the thenar eminence noted. This can usually be detected by the examiner who takes the time to look for this very common condition. A fall on the ice, broken by the outstretched hands, occupations, such as bakers who roll dough, cab operators who try to stop door slams with their hands, waitresses who repeatedly hold hard-to-handle plates of food for long periods, hairdressers and beauticians who must use extreme extension and flexion positions of the wrist, represent some of the cases of this problem which we have seen.

Sometimes the patient will complain that he cannot pronate or supinate the forearm without pain, and his ability to hold a pencil or even a sheet of paper between the thumb and forefinger is sharply decreased. The latter serves as another test when traction on the pencil or piece of paper is produced by the examiner.

The spread of the radio-ulnar joint can sometimes be detected by x-ray of both wrists, using a collimating system to accurately aim the central path of x-rays midway between the two evenly spaced wrists.

Many cases of carpal tunnel syndrome can be discovered if the examiner will ask the patient to press his thumb and little finger together firmly while the doctor attempts to separate the thumb and little finger. A marked weakness is characteristic of the carpal tunnel syndrome and a conclusive diagnosis can be made by asking the patient to encircle the affected wrist with his opposite hand so as to press the radius and ulna together, in other words, exert a temporary pressure from side to side. Retest the weak hand with the patient holding his own wrist, thus using a bridging pressure from radius to ulna. There will be a spectacular improvement in strength. If the patient has had pain or, as is often the case, pain, numbness, and tingling, these will immediately diminish markedly. Now adjust the radial-ulnar joint at the wrist. Have the patient sit on the treatment table; lay his forearm down on the table, resting it on the ulnar surface with the thumb uppermost; with a pisiform contact upon the distal end of the radius drive directly throught to the ulna. After the adjustment, retest the opponens muscle by the thumb-little finger press, while you try to again separate the two. It will be strong, but advise the patient he can readily reinjure the wrist by any sharp flexion or extension. Prove this to him by sharply flexing or extending the affected wrist and retesting. Readjust, retest, then dispense a leather two strap wrist band with directions to wear this supportive strap for a minimum of two weeks. This allows healing to take place in the tissues injured by radio-ulnar separation. The latter produced the pressure on the median nerve by a stretching of the transverse ligament.

Do not use an elastic wrist band. They are relatively inefficient and only prolong recovery. A trap that is very easy to fall into is to regard the minor arthritic changes that take place at C4, C5, and C6, in many adults as causative of the bilateral carpal tunnel problem when it is unrelated and merely accompanies the situation.

Pain sometimes develops at the elbow as a result of the spread at the distal ulno-radial joint and many times the proximal head of the radius is subluxated as well. This naturally requires specific adjustment of the subluxation of the radius. The direction of thrust applied in the carpal tunnel syndrome may be slightly altered from its transverse radio-ulnar direction to include the adjustment of the subluxated radius (which usually moves slightly upward and toward the anconeus, therefore reverse this direction in thrusting).

The pisiform-hamate tunnel is another variety of the carpal tunnel syndrome. This pattern of nerve entrapment affects the palmar branches of the ulnar nerve and is similar to the carpal tunnel situation in many respects, but the fingers involved are the ring finger and the little finger. This condition is nowhere near as common as the previous syndrome. The presenting pattern is an inability to flex the fingers of the ulnar distribution, namely the two outer fingers. Atrophy and weakness of the opponens muscle can also result from this pisiform-hamate tunnel syndrome, but in the author's experience this "pinch weakness" previously described is usually due to the radio-ulnar separation. Weakness, numbness and burning are the usual symptoms in the little finger and the ring finger. Subluxation of the hamate or the pisiform towards the wrist and in the direction of the dorsal aspect of the hand, away from the palmar aspect, is the common finding. This condition is seen in mechanics and may occur when the palm of the hand is sharply extended, as might occur in attempting to further open an already partially opened, but stuck, window. Treatment is based, first upon an accurate diagnosis and, second by sharply adjusting the pisiform or the hamate with the double-thumb thrust. The hand of the patient is placed palm down and grasped by the examiner's double hand contact so that the outer part of the palms of the doctor's hands are in contact with the palm of the patient and, following this, placing a firm double thumb contact on the offending pisiform or hamate, a sharp thrust is delivered with the thumbs away from the wrist and down towards the palm.

This pisiform-hamate tunnel syndrome is a factor in cases of the carpal tunnel syndrome that do not respond to adjustment and leatherstrapping. The thing to remember is that they both can affect the thumb, but the carpal tunnel affects the first three fingers and the pisiform-hamate tunnel syndrome affects the last two fingers. Testing is done similarly. Thumb weakness due to opponens muscle involvement is noted in both, but in the latter case, with the last fingers involved, weakness is apparant in the little finger as well. Temporary strapping with adhesive felt over the subluxated areas after they have been adjusted is good therapy, for it takes about two weeks for the volar carpal ligament to heal. The wrist band should be worn in the carpal tunnel syndrome for at least two weeks also.

An attempt has been made to show that nerves may be impinged, entrapped, and pressed upon in many parts of the body. Man is a whole being. The spine, occiput and sacrum are primary structures that deserve all the attention they get, but just as surely as nerve impingement can take place in the spine, just as surely can it take place at the peripheral portions of the skeleton. Our position, as chiropractic doctors or physicians, is to treat and heal not by a narrow look at the magnificence of God's creation, but a look at the totality of man in all aspects. This is how the patients come to us, as whole beings, in a state of partial disarray. We should treat the interference with the nervous system where it IS, NOT where we think it HAS to be. We are specialists in applied physiology. This is no narrow confined pursuit, but a broad approach to the entirety of the disturbed structure of man, where ever that disturbance may be. Attention to the whole man concept will yield dividends of professional and personal progress. Attention to the carpal tunnel syndrome is just one more way the chiropractic physician can advance his profession as well as himself by putting services above self and using the God given intelligence which is his fortunate heritage.

Further treatment suggestions are available from the author without charge. Dr. George J. Goodheart, 542 Michigan Building, Detroit, Michigan 48226. Kindly enclose a stamped self-addressed envelope.

NOTES

Dear Doctor:

Thank you for your inquiry regarding the carpal tunnel syndrome. Thank you for your patience also in awaiting this reply. The method of testing described in the article bears no repetition but in testing for the most frequent pattern of an ulnar-radial separation use equal pressure on attempting to separate the opposed thumb and little finger; but in the capitate hamate syndrome that often accompanies the first pattern, hold the thumb and pull on the little finger. Weakness discovered this way means the additional problem of correcting the capitate hamate subluxation that accompanies the ulnar-radial separation. The use of the leather wristband lined with 1/4" chiropodist adhesive felt is essential to the recovery of this condition. The patient should wear it at all times except in bed for at least 2 to 3 weeks. Occasionally the wrist is so sore that neither compression nor adjustment is necessary, but attention to the muscle that bridges the radial ulnar joint at the wrist is useful here. Use a hard, heavy pressure as much as can be tolerated by this type of patient on the radial origin and the ulnar insertion of the pronator quod. Testing of pronation and supination is also useful for weakness in pronation testing also requires activation of the neuro-lymphatic reflexes of the liver while weakness on supination testing require activation of the neuro-lymphatic reflexes for the stomach. These reflex connections may be new to you but they are demonstrable and valid. Request the patient to attempt to avoid extreme flexion or extreme extension of the wrist joint during the period of time the ligament is healing. As with all ligaments, it is well supplied with nerves and poorly supplied with blood and the local application of a counterirritant ointment, such as Capsolin or some other good counterirritant is good adjunctive therapy. Reassurance that the pain will diminish along with proper diagnosis and fixation of the joint by the leather strapping available through sporting goods or your local supply is productive of good results in this painful and frequently met with wrist condition. There are all types of varieties but they are all based on impingment of the ulnar or median nerve at the wrist and require treatment as outlined in the original article.

Many thanks for your inquiry - your interest is appreciated. Please support your local Chiropractic professional organization, cooperate with each other in helping each other and our profession to attain the high plane it so richly deserves.

Best wishes for your continued health and success.

Yours sincerely,

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GJG:mh

A Presentation of a New Approach to Correction of Disc Lesions

By George J. Goodheart, Jr., D. C., Detroit, Michigan
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DISC LESIONS are difficult to diagnose, difficult to treat, and apparently difficult to keep from appearing more and more on the scene. A relative increase in disc lesions, which has required surgical intervention, has definitely occurred in our practice in the last fifteen years, and in the opinion of those conservative surgeons who do the surgery, even though they now operate less,[1] they still continue to see relatively more of these cases. Cyriax[2] says that one out of eight disc cases requires operative removal of the displaced or bulged fragment.

The total number of disc cases is steadily rising, many practitioners observe, and it is our conclusion also. Why the relative increase? Why the need for surgery in one out of eight? Our experience with disc lesions has been favorable but arduous, in that a favorable outcome from chiropractic management is sometimes difficult to achieve. Time-worn measures of heat, rest, traction—all have been resorted to, in addition to carefully applied technic including basic, specific, sacroiliac, and lumbar adjustment, upper cervical specific, reflex, eliminative, dehydration and nutritional balancing on precision analysis.

A middle-aged, overweight male was referred to us for consultation and treatment by a D. C. who had done his best to relieve the unilateral sciatic and back pain of this patient. Examination revealed a plumb-line alignment of the buttocks with a definite break to the right at the fourth lumbar segment. Compensatory reverse scoliosis was present above in the dorsal spine, with vertical alignment of the head with the sacrum. Pain was present on standing, disappearing after a few minutes on sitting, absent when prone or supine, exaggerated by coughing or sneezing, exaggerated by jugular compression[3] and leg raising[3] and heel drop on toe walking on affected side.

A carefully laid out manipulative approach based on AP and lateral standing films was begun and the patient was seen daily. Some relief of the myositis was seen but sciatic pain continued unrelieved and grew steadily greater in intensity. Various combinations of therapies were tried with little success until finally surgery was decided upon. A prolapsed disc at the fourth lumbar segment was found on myelographic X-rays, and when surgery was scheduled, we decided one of us would observe the exact details of this case at operative disclosure. Standing directly beside and behind the surgeon gave a vantage view, and the most unusual thing noted was the flaccidity of the posterior spinal ligaments and the ligamentum flavum with the patient in slight flexion in a prone position. This flaccidity remained in our mind an interesting feature of this case which went on to good recovery.

A young male, sixteen years of age, was next seen by us for a recurring sprain of the right ankle; balancing of the pelvis was effective but only reduced the frequency of sprain from several times weekly to two or three times monthly. Recalling the veterinary problem of perosis in chickens, the so-called slipped tendon disease of fowl and the recovery gained by feeding manganese to the affected chickens, we gave trace organic minerals* containing 140 mg. of manganese glycerophosphate six times daily with a phenomenal recovery in the sprained ankle syndrome; no recurrence has presented itself now for over a year. Using this unusual response as a guide, we begin to use manganese glycerophosphate in trace mineral form routinely on all ligamentous cases which showed a lack of ligamentous tone, including discs.

Since the annulous ligament acts as a circular retaining ring for the disc, we postulated the theory that a bulging or extrusion of the disc was due to the laxity of this ligament. A total of twenty-two cases has been seen at this date, all having a typical history of previous back injury, pain in low back, later intractable sciatic pain, which was unrelieved by traction adjustments and even opiates. Cases of sciatic neuritis, fibrositis, reflex sciatic neuralgia, femoral head bursitis, unilateral and bilateral pronation of feet with referred pain, were all excluded from this series in an effort to accumulate data on true disc lesions.

The manipulative approach we use is plumb-line analysis, occipital investigation, sacral contacts, specific adjustments when proved by X-ray and reflex areas and some lifts. This specific specialized technic, to say the least, prevents aggravation of the lesion and, when com-

bined with dehydration, rest, postural traction and hot baths in acute cases, previously gave a fair average of results in disc cases, but, with the addition of manganese therapy and the previously mentioned routine, we have practically doubled our average recovery rate. Only one in twenty-two has required surgery at this date, two are still under therapy, but recovering. The remainder are symptom-free, plumb-line aligned, and reflex free. We push manganese glycerophosphate in acute cases to one hourly with reduction in the level when headache, digestive distress, or aggravation of fungus lesions occur.

Precision manipulation, encouragement, postural therapy, plus manganese, give very good results in our hands and by informal interrogation of other practitioners who were told of this therapy, we feel they also have benefited from its use. The addition of manganese is not a cure-all, the patients still require the most precise adjustment and management; but they do avoid surgery; they do stay adjusted better and longer; they do achieve pain relief, and they do refer patients. The trace mineral compound we used did contain B-12 as a source of cobalt, but on feeding a high manganese diet and excluding the B-12, we got comparable results, although with an office practice such testing is not at laboratory level. We have also used placebo therapy to attempt to exclude the suggestive element, and here too the patient showed a failure to respond or relapsed, thus proving the point, although again there is a limit to this type of testing in a busy office.

Many of these disc patients have attempted self-imposed weight reduction regimes or show poor state of nutrition which shows the possible etiology. Recently McCormick[4] has treated 3 cases with natural C complex with good results. So use care, precision adjustment, postural reduction, rest (one week should do it) and use trace mineral compounds containing high manganese components and watch your results increase from progressive chiropractic.

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LOW BLOOD SUGAR AND HYPERINSULINISM

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Many individuals have symptoms of low blood sugar. Many times both the patient and his doctor do not realize that sometimes these symptoms of low blood sugar are caused by a condition of hyperinsulinism which literally is an overactivity of the islands of Langerhans. The patient who complains of fatigue and who has a normal blood count and otherwise normal findings frequently will show a low blood sugar. The patient who has chronic allergy as manifested by sinusitis, eczema, asthma, is almost invariably found to have a low blood sugar as part and parcel of the problem. The patient who arises with a backache or who feels light-headed in mid-afternoon or who suffers an overwhelming sense of fatigue about three o'clock in the afternoon or who has lapses of mental acuity at definite intervals during the day, often is running a low blood sugar. Insomnia unrelated to emotional tensions and disturbances in the calcium and Vitamin B levels is often caused by a low blood sugar secondary to a hyperinsulinism. These patients who get tired and have slight headaches or sensations of light-headedness and who become moody, stubborn or irritable quite often comment that their stomach or intestines becomes unusually noisy at this particular time, they are hungry and want something sweet to serve as a pick-up. And so they will usually partake of the following: a cup of coffee, tea, chocolate, pie or pastry, cookies, candy bar, ice cream, soft drinks or the like. These sweet foods and beverages cause a rapid rise in the blood sugar level and temporarily relieve their symptoms to be followed by a repetition the next day. The low blood sugar is abnormal and should be prevented. However slight it is abnormal and is caused by eating sugar and starch at meals. Cigarette smoking can also serve as a temporary lifter of the level of the blood sugar by stimulating the adrenal-sympathetic system the rise occurring at the expense of liver glycogen. The pick-up which follows eating something sweet is accompanied by an elevation in the blood sugar level for about 30 or 60 minutes and is soon followed by another fall in the blood sugar in a perpetual vicious cycle. People who smoke a great deal, drink much coffee and who have poor appetites have chronic malnutrition because they deplete the liver glycogen stores and fail to replenish the stores with proper food. Many people are irritable in the morning before breakfast because of low blood sugar. Many people are so irritable or depressed that they or anyone else need not attempt to say anything until they have had a cup of coffee, then they become more agreeable. The blood sugar reaches its lower level in the morning before breakfast. Less sugar and starch at dinner the night before prevents low blood sugar in the morning. Mothers know that an irritable, cranky and crying infant is usually a hungry infant. The same is true of adults to a less degree and it is of great advantage for the doctor to know that the blood sugar level is fundamentally related to the behavior of all members of the human race. Errors in judgement are often due to making a decision when the blood sugar level is down. Brain function improves by improving the glucose-oxygen consumption. Dr. S. B. Wortis found that weight for weight the nervous tissue of the young in any species consumes and needs more oxygen than that of the adult. Generally speaking, nervous tissues consume oxygen in proportion as they utilize glucose, therefore in the presence of a low blood sugar, tissues consume less oxygen and suffer an oxygen lack and during periods of reduced oxygen consumption there is increased susceptibility to infection. The rate and range of fluctuation of a blood sugar is controlled by several factors, especially diet and physical activity.

Levels of blood sugar are important in the detection of physical abnormality. Previously, calculation of the blood sugar level by the Folin-Wu method or other standards was time consuming and required the patient to have a painful venipunctures. Measurement of the blood sugar level especially measurements of the low sugar levels previously talked about

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CASE MANAGE MENT...ENURESIS

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Many doctors and many parents are deeply concerned with the problems that enuresis produce in the children under their care. Attempts have been made to ascribe this troublesome condition to Psychic or emotional causes. Efforts have been made to use conditioned reflexes and elaborate moisture sensing devices to alleviate the problem of bed-wetting.

Spontaneous cessation of the symptom sometimes occurs as the child grows older. Fluid restriction and interruption of the child's sleep by the parent to allow the child to void any accumulation of fluids, is good management of the situation. This is a physical, functional, structural problem associated with disturbances of the segments not at the kidney and bladder areas of the spine but at C3 which is associated with the innervation of the phrenic and intercostal nerves.

The respiratory center of man is located in the lower brain stem and consists, as you know, of two divisions, an inspiratory and an expiratory center. This respiratory center is powerfully affected by changes in the CO2 content of the blood in that as the CO2 level rises, the respiratory center is stimulated, it vents off or washes out the accumulating CO2 by increasing the depth or frequency of respiration or both. This increase in the depth or the frequency of the respiration must be accomplished by an increased excursion of the diaphragm and this action must be accomplished by the phrenic nerve which is basically derived from the segments at cervical 34 and 5, principally at cervical 3.

The depth of sleep varies, as you know, with children and adults on two distinct curves. In most adults sleep deepens rapidly to the end of the first hour, then sharply shallows out and then gradually shallows its curve until the person awakes. In the child the sleep curve is different.

There are two periods of deepest sleep in childhood. The initial period occurs in the first one or two hours and there is a second deep sleep curve at the eighth and ninth hour, following which the curve sharply shallows as does the adult's curve as the child nears awakening. It is this different pattern of sleep that sometimes is responsible for the oft told admonition, "not to worry" that the child will outgrow the condition. This is occasionally true but is only sheer chance and unpredictable to say the least. As the child sleeps either at the first deep period or at the second deep period and as the sleep deepens, there is an occasional sighing respiration as the CO2 is vented off by action of the respiratory center. If the nerve control to the diaphragm is normal, there is no interruption of sleep, nor is there any involuntary voiding of urine.

In the treatment of certain mental conditions, a mixture of O2 and CO2 is administered with a gradual decrease in the O2 concentration with an increase in the CO2 content of the inspired gas mixture One of the first things which occur before the onset of convulsive activity is an involuntary voiding of the urine It developes as the CO2 level rises before the motor activity of the musculature occurs. Patients so treated were instructed to void before the treatment was given to avoid the problem It is this loss of sphincter control from CO2 that sets up the enuresis pattern. This factor coupled with a disturbance of the third cervical area by direct or indirect interference with the innervation causes a change in movement of the diaphragm. As the sleep deepens and the CO2 level rises, there is a venting off of the accumulating CO2, but as the diaphragm control is slightly defective, the response is not a total one and there occurs a sort of escapement mechanism.

The decreased activity of the respiratory center which as you know occurs along with a decrease in activity of other basic reflexes in deep sleep, is accompanied in the enuresis patient by the problem of the diminished activity of the motor control of the diaphragm. As a result, the CO2 accumulation fails to be vented off properly since it has escaped the lessened scrutiny of the quiescent respiratory center. This, then, is accompanied by a loss of sphincter control and the patient "wets the bed."

The threshold for most somatic reflexes is definitely raised in sleep and the righting reflexes are almost abolished. Since these righting reflexes are definitely associated with the head position, the normal postural correction-reduction of structural faults is diminished adding to the cervical problem.

These little and sometimes big patients show a characteristic postural pattern of upper trapezius weakness with the occiput tilted one way and the shoulders tilted the other. Although not invariable, this is the usual pattern with the weak trapezius being on the side of the high occiput and the dropped shoulder. In the enuresis pattern, use the neuro-lymphatic reflex along the first three inches of the bicipital groove of the upper humerus on the side of weakness. Stimulate by a rotary light manipulation for about 20 seconds. Apply the same rotary manipulative effort to the posterior reflex at the base of the skull just adjacent to the midline. Retest the trapezius for degree of response. It is often not only necessary to strengthen the weak muscle but it is also necessary to relax the normal but hyper tonic muscle of the trapezius on the opposite side. Accomplish this by a steady pressure applied to the belly of the upper trapezius on the low occiput high shoulder side. Apply the belly pressure for about one minute at the sorest spot, at the belly of the muscle. Carefully palpate and identify the pattern of the subluxations which invariably are present at C3 or C4 and adjust accordingly.

There are other factors that relate to this problem. The most important in the author's opinion is the circulating level of vitamin B. The smooth muscle tone of the bladder as a previous article on vitamin B outlined, is maintained by many things, but paramount is the circulating level of vitamin B which maintains the relative tone of the bladder. The bladder is always full, never empty, and the smooth muscle tone allows an easy reduction from a full state, the size of an orange for example, down to the size of a small plum. In the sleep state, with a slowing of the circulation, the rate flow is reduced and in a deficiency the bladder loses its tone relatively and dilates until stretch reflexes produce either a desire to urinate in the relatively shallow sleeping adult,

or a spontaneous voiding in the enuretic child. This pattern, coupled with the respiratory rise of the unvented CO2, produces additional provocation.

A primary sacro iliac condition in children (frequently a posterior ilium) is often relatively painless but causes, as Dr Nimmo has so ably pointed out, stimulation of the receptors in the sacro iliac ligaments. If triggered by his method, this frequently alters the cervical syndrome which lies at the base of the troublesome bed-wetting problem.

The child and the parent needs reassurance as to the physiological basis for the problem of enuresis. This reassurance is all that is needed for the psychic phase of the treatment to this condition. The stress of coping with a physiological fault by psychological means is often a strain or stress pattern itself. This interferes with normal adrenal function which in turn depletes the already shaky adrenal balance of most children. Witness the dilated pupils that many youngsters possess even in strong light. This is a clinical sign of hypoadrenia, and is generally accompanied by a blockage of neurolymphatic reflexes to the sartorius and the gracilis which in turn produces the posterior ilium pattern previously described in these articles.

Naturally, it goes without saying that a thorough urinalysis should be routinely made since some patients have multiple problems with multiple causes.

Dr. DeJarnette has pointed out that upper cervical subluxations are a primary accompanying factor of the overmovement of the ilium in one direction or another. These elements only go to prove the unity of man's structure. The "whole man" concept is the only basis for the critical analysis of the whole man we have to deal with every day in our offices. It is the careful consideration of all the elements of the patient's structure and chemistry that will produce the response which is our mutual goal.

The recovered patient is the best bulwark chiropractic has, so why throw away a means of defense and attack which is easy, simple and requires only a little thought. You may have heard of the word "serendipity" which means discovering something entirely different than what you started out to look for. Our profession is full of serendipitous discoveries just waiting to be discovered. There is an innate intelligence, there is a powerful force for good in the body, but it is discovering and using it which requires the same dedication of purpose that characterized the early members of our profession. Couple this with the new knowledge of the forever old but forever new body.

There are no new models of the human anatomy. The principles that were true in the time of the ancients, who practiced our profession, are still true today. We live in A.D. time with B.C. bodies — all that has changed is the implementation of knowledge about the body. Use this whole body concept to further advance yourself, your practice and your profession.

Further details and treatment diagrams are available from the author without charge. Kindly enclose a stamped, self-addressed envelope.

SUGAR *(Continued from Page 37)*

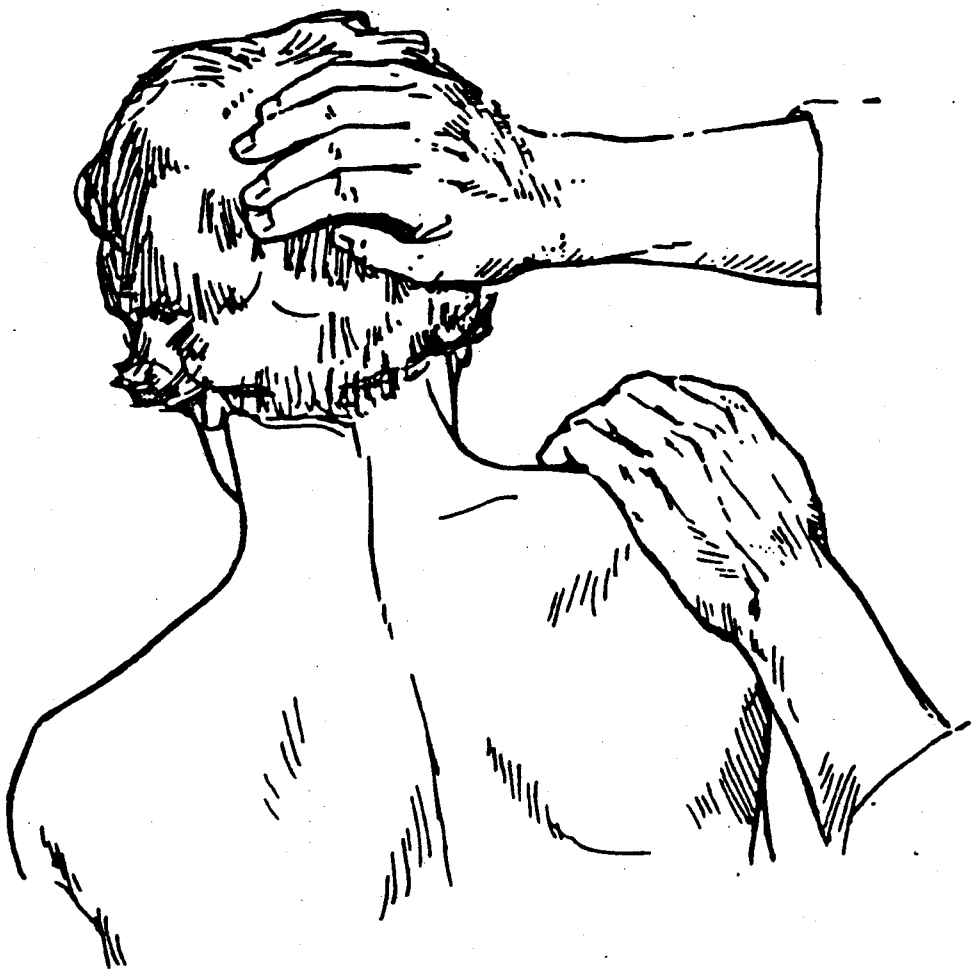
has now become very simple and requires simply finger blood, the use of dextrostix produced by the Ames Company. This is a simple but standardized and now well recognized method of evaluating the level of the blood sugar and requires only one minute's time to read and can be readily performed in the office when the patient is examined and specimens taken for a general diagnostic work-up. In my opinion, any level below 80 mg. is a low blood sugar level and requires remedial treatment.

The dextrostix reagent strips are made by the Ames Company, their catalog No. 2888 and come packaged in units of 25 and generally sell at a very reasonable price. They can be obtained from your local source or thru the college of your choice. They give blood glucose concentration starting at 40 mg., 65 mg., 90 mg., 130 mg., 150 mg., 200 mg. and 250 mg. thus allowing a judgment to be made in only a minute's time without any additional equipment as to the level of the blood sugar. This is a color comparison test and has been well standardized and well accepted.

Not one symptom or symptom complex is indicative of hypoglycemia but it is best to be alert when there are negative signs yet the patient complains of utter exhaustion and nervousness. They frequently come in with a diagnosis of an anxiety neurosis or chronic nervous exhaustion. They are frequently so hungry all the time that they may be obese and this combination of obesity and the weakness caused by an overgenerous production of insulin which in turn causes hypoglycemia, produces in this obese patient a pattern sometimes called by the patient "rubber legs." Many patients find that candy or any form of sugar offer temporary relief but what does not seem to be understood or practiced is that sugar and all carbohydrates CAUSE this disfunction and that sugar and high carbohydrates MUST BE RESTRICTED. The hypothalamus center for carbohydrate metabolism is the control center for many important body functions. It directs thru the autonomic nervous system all cardiovascular rhythms. It also regulates osmotic pressures and many other functions. Any insulin sugar imbalance can so affect the physiology of the hypothalamus that controls various body functions that it may in turn trigger a vascular headache, an asthmatic or any number of conditions. There is a particular kind of headache known as a histamine cephalalgia that comes with excruciating pain when the blood sugar drops to a low level at night and the patient is generally awakened by this pain. With the new method of diagnosing blood sugar levels, it is now possible to pinpoint the diagnosis of many unusual conditions that have failed to respond in the past and it can be done simply and quickly without extensive laboratory equipment. Many cases of low blood sugar are produced by smoking. Many cases of optic nerve disfunction associated with a blood sugar level that is low respond to a hyperinsulinism diet and cessation of smoking. The exhaustion syndrome is quickly improved when a hyperinsulinism diet is followed, so also are the other symptom complexes improved when a hyperinsulinism diet along with careful structural adjusting is followed. Since generally speaking hypocalcemia coexists with hypoglycemia, the therapeutic use of calcium is of prime importance and in many patients attention to the hydrochloric acid level of the stomach is quite important. The object of the nutritional regime is to keep a trickle of usable sugars constantly going into the blood stream. Since the diet requires the patient eat more frequently the juice feeding is important to temper the appetite. Abrahamson, who with Pezet wrote "Body, Mind and Sugar" says, "The weakest most vulnerable cells suffer first. These will differ from person to person and from time to time in the same individual thus producing the almost infinite variety of hyperinsulinism manifestations in different persons at different times of his life. It is often these widely dissimilar manifestations of sugar starvation which explain why hyperinsulinism has remained unknown so long and why now that we know it, it is so often unrecognized. For it is like that fictional detective so adept at disguises that no one knew what the real man looked like."

Continued on Page 64

The postural pattern of a weak trapezius is an elevated occiput with a depressed shoulder level both on the same side. This is best seen standing but is frequently present even with the patient prone or supine. If you find this condition, test the muscle as shown in the upper trapezius drawing, asking the patient to try and touch the ear to the shoulder without any head rotation, you try to separate the ear from the shoulder, the patient resists. The weak side will be the side that cannot resist the standard testing technique and should coincide 100% with the postural standard. Treat the trapezius reflex which is also specific for the eye and the ear, incidentally, by one of two methods, or both if need be: Activate the neuro-lymphatic reflexes at the areas marked in black on the lower drawing by using a pressure such as you could barely stand on your eyeball for a period of 20 or 30 seconds, bilaterally at the upper third of the anterior humerus, and bilaterally at the base of the occiput at the sorest spot which generally is on the side of weakness. Retest the trapezius. It should be considerably stronger by now. If for some reason it is still weak, apply a hard heavy pressure as hard as you can at the origin and the insertion of the upper trapezius on the weak side for 5 or 10 seconds. Retest - it should now test normally left and right. Palpate and/or X-ray cervical column, identify third cervical position, adjust if need be present, pay attention to intrinsic musculature of the cervical column and the cervical vertebra, treat as described in the article on the persistent subluxation. Re-examine posture, trapezius muscle, and note progress. Use common sense minor fluid restriction and patient reassurance, check cervical position, and if necessary repeat above procedures. The addition of low potency natural B-Complex is of great support, restrict excesses of processed carbohydrate. Watch your patient with the enuresis problem respond to total whole body concept of Chiropractic.



PATIENT:
Sitting

Upper Trapezius

PRESSURE TESTING

Against the elevation of the shoulder and the postero-lateral neck extension.

PRESSURE TREATMENT

Against the insertion along the scapula, areas marked in black on muscle drawing, rarely is the origin involved.

(SEE PAGE 90)

FATIGUE

AND ITS MANAGEMENT

By Dr. George J. Goodheart

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Fatigue is a common symptom ometimes felt by both doctor and atient. The fatigued patient with a ormal blood sugar, the fatigued pa- ent who is not anemic or hypothy- id, the fatigued patient who does ot have a postural hypotension, this pe of patient is indeed a problem.

These patients who are otherwise ormal, complain of always being red, but sleep does not restore their nergy. They lack enthusiasm for life nd complain of bizarre symptoms uch as "travelling sensations", weak- ess, and often have a blotchy com- lexion or seem whiter or paler than ormal. They usually have a good in- ght into their problems psychologi- ally but simply sometimes "lack the nergy to get out of bed."

The blood pressure and pulse rate f these patients show normal findings n prone, supine or erect positions but he key finding is the failure of the eart rate to increase when a demand s played upon it such as a repetition f the two step "Master test" ten mes. The Master step test can be sed or the patient can be requested to op on one foot ten times and again n the other foot ten times, making ure that he lifts his weight well off he floor with each hop. This exercise f lifting his own body weight twenty mes is a good, simple, well used and pproved test of the heart's response o exercise since there should be an ncrease in the pulse rate of approxi- nately forty beats, which should then ubside to normal within two minutes. The failure of the heart as an organ o respond to a demand is basically he result of the fatigue problem since t is poor circulation that causes the roblem in the first place. It's just as hough you pressed your foot on the ccelerator of your car expecting it to ncrease in speed, but finding that it's till going at the same rate of twenty miles an hour because there is a failure of response. Here lies the cause of fatigue, the lack of enthusiasm and the waning sex interest. Proper perfusion of the blood through the capillary bed is a prime necessity for good health, however, these patients do not possess this quality, hence the pale and blotchy complexion. They occasionally look as though they needed to wash their faces despite frequent and regular washing.

Heartometer and endocardiographic records may show an increase in time of the first sound, longer than for example 3/25ths of a second, but in the main they show an absolutely normal graph, however, the relative or absolute failure of these patients to respond to a simple exercise test is the key diagnostic feature. This failure of the heart to respond to exercise is not a pathological failure of the heart, but a functional failure. It is not a pathological heart failure any more than the failure of a car that runs well on the level road, to properly go up a steep hill. It represents a failure of adjustment or adaptation rather than a failure of the car or the heart.

Always associated with this condition in my experience has been a weakness on testing of the subscapularis muscle on one side or the other. This associated weakness of the subscapularis muscle is generally due to a blockage of the lymphatics. This weakness is associated with a failure of the lymphatic drainage to the heart and in my experience always accompanies and probably is causally related to this response pattern. Attention to the lymphatic receptors at the second and third ribs bilaterally close to the sternum and lymphatic receptors, bilaterally at the spinous-transverse interspace of the second and third dorsal vertebrae, will cause the previously tested subscapularis muscle to respond very quickly within a minute or so. This normalizes the lymphatic drainage and at the same time normalizes the muscle tone of this part of the chest and shoulder area and concomitantly the lymphatic drainage of the heart since these two structures are drained by the same neuro-lymphatic reflex, just as two houses are drained by the same sewer pipe even though the people in those houses do not know each other or have any apparent connection.

Adding cytotrophic extracts of beef heart to these patient's nutritional pattern also speeds recovery as does the addition of beef heart meat in patient's diet although this may at times be a bit inconvenient. About six to eight ounces a day of beef heart has helped as has three to six tablets a day of beef heart cytrotrophic extracts, available from suppliers to our profession. Approximately two weeks time elapses before the fatigue pattern completely changes, but the heart rate responds in approximately one week.

Upper dorsal rib and vertebral lesions should be corrected, as should careful attention be given to the upper cervicals, but the lymphatic drainage must be done as well, just as when a sterilizer boils dry of water and a circuit breaker circuit is activated to prevent further damage, so also is the case with the neurolymphatic reflex. You must do BOTH things — one does not supercede or take the place of the other.

Taking before and after heart graphs is not only an important and dramatic method of pinpointing the condition itself, but it also shows the excellent response that you will obtain in this type of case. Some patient's heart rate shows no change at all in response to exercise, while others may show a small and inadequate amount but still require therapy. A chronically fast heart may still fail to respond to exercise as well as a chronically slow heart, but in the first instance there may be an additional requirement for more leafy vegetable potassium material, whereas with the slow heart there is a need for the vitamin B foods.

Some, but not all of these patients experience a dizziness which comes while resting in bed. Sometimes when these individuals have a virus or bacterial infection, this dizziness symptom predominates and they are momentarily dizzy on change of position or on head movement. But, as is well known, there is an upper cervical component to this symptom complex which must be attended to, however do not neglect to test for the fatigue response pattern.

Many secondary factors related to circulatory problems clear under better cardiac tone and the subsequent increase in the perfusion of blood through the capillary interchange. Improvement in the acid-alkaline as well as changes in fat or lipid metaholic uptake factors, takes place as lymphatic drainage factors improve with activation of neuro-lymphatic reflexes.

Phonocardiographic and heartometer tracings form a valuable record. Some phonocardiographs have speakers built into the mechanism so the patient can hear the failure of his heart to respond, and later following treatment, can hear the difference. Methods such as these take little additional time and aid measurably in stimulating patient enthusiasm and, in creating the patient referral which is the basis for a good and growing practice.

It is recognized that there are causes for fatigue other than those mentioned in this brief article. Poor food com-

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binations, postural failure and nutritional imbalance are all to be considered in future articles. An attempt has been made to describe a common yet little known cause of fatigue. Attention to the response pattern problem will measurably aid in the fatigue problem. Correction of this condition by first detection and then treatment is one more way to render service to your patient and also to advance yourself and the practice of chiropractic.

Copies of the testing and treating technic for the response pattern problems are available from the author without charge. Please enclose a stamped self-addressed envelope.

HIATUS HERNIA

The GREAT MIMIC

By
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Many patients suffer from the effects of a diaphragmatic hernia, yet these patients are treated for many different conditions since the hiatus hernia can imitate the presence of an angina, or an impending heart attack. Frequently the patient volunteers the information that he thinks he must have an ulcer and sometimes the diagnosis is "gall bladder trouble." Most of the time the complaint is heartburn, and this is genuine enough for the irritated gastric mucosa will often voice its discomfort with the existing arrangements in exactly this fashion.

The anatomic disrelationship produced by the "sliding" variety of the hiatus hernia predisposes to regurge of the acid peptic contents of the stomach while the "rolling" variety predisposes to obstructive symptoms. These occur often at night and create much pain which can radiate into the chest or down an arm with eventual relief coming after an hour or more of acute distress.

The sliding variety preserves the integrity of the cardiac sphincter of the stomach and represents only a slight elongation of the esophageal opening of the diaphragm and the esophageal-gastric junction has very little angulation, or if present is very obtuse. The rolling hernia generally has an acute angle of this same esophageal-gastric junction with a portion of the gastric mucosa herniating up through the relatively large elongation of the diaphragmatic opening trapping part of the upper portion of the greater curvature of the stomach.

The frequency that one sees a patient with hiatus hernia depends upon many things including which authority you read. Wolf says there is an increasing incidence of hiatus hernia from 32% at age 50 to 89% at age 90. Stein and Finkelstein detected hiatus hernias in 50% of the patients referred to the hospital of the University of Pennsylvania. Regardless of authorities, the problem of hiatus hernia is frequent and one which lends itself beautiful and one which lends itself beautifully to intelligent application of chiropractic principles of body mechanics and the whole man concept that must govern our approach to the whole patient that we see in our practice daily.

Obvious postural faults such as kyphosis have been cited even by non-structure oriented investigators as a source of hiatus hernia but again a closer look would reveal the lumbar and pelvic rotations which change the relationship of the tendons of the diaphragm. The shoulder girdle changes that latissimus dorsi imbalances produce, are a part of the structural problem that needs the close scrutiny only our profession can provide. The crura of the diaphragm, as you know, arise from the anterior surface of the bodies of the lumbar vertebrae, the right, which is longer and larger is attached to the upper three lumbars while the left arises from the upper two lumbar vertebrae.

The diaphragmatic esophageal hiatus is a button shaped opening running in an A.P. direction from front left to rear right. The right diaphragmatic crus and tendon cross their medial fibers to the left forming the left side of the hiatus. The hiatus is at about the level of the tenth dorsal, naturally the excursion of the diaphragm (about 30 m.m. on the right and 28 m.m. on the left) changes this level. The diaphragm is at its highest level when the patient is lying down on the back, the usual position for commencement of sleep and the position that the patient says frequently seems associated with his digestive trouble. Sometimes the patient makes the observation himself, or he may have been told by some professional, to sleep partially propped up in a Fowler's position. This lets the gravity drop of the gastric area to take place, pulling the herniation out of the enlarged opening and temporarily freeing the patient of his distress. The use of antacids completes the orthodox approach to this problem and to say the least it is inadequate enough to drive some patients to ill-considered surgery, which even at the Mayo Clinic is reserved for severe disability from hiatus hernia.

The management of the acute problem is relatively simple. Contact the left epigastric area with both hands with outstretched fingers. Contact the gastric area with a downward pressure and literally try to pull the stomach down out of the hiatal trap. This may require repetition until successful, but will provide immediate relief. Contact anterior and posterior fontanels with a stretch reflex, held with a slight tugging pressure until pulsations is felt, then held for at least 20 seconds or longer if desired. This has a tendency to normalize the neurovascular reflexes of the diaphragm. Test the psoas muscle by the method described in the "PSOAS and PRONATION" article; usually it will be found weak on the left in the average hiatus hernia patient. Activate the neuro-vascular reflex as well as the neurolymphatic reflex to the psoas which as you know is related to the kidney lymphatically and vascularly.

There is an intimate relationship between the diaphragm and the respiratory function of the skull as has previously been described. Proper diaphragmatic and for that matter, proper spinal function, is inter-related to proper skull position and function. Weak skull muscles cause a corresponding hyper tonus in the opposite or antagonistic muscle. This has been proven many times in the principles of Applied Kinesiology. These skull muscles, the occipitalis, the frontalis, the temporalis, the epicranius do become imbalanced, and by so doing jam skull sutures so normal respiratory function of the skull is impossible.

The weakened psoas allows the opposite psoas to contract unopposed and as a result the vetebrae go posterior on the weakened psoas side. The normal psoas going into hypertonus as a result of the relative lack of antagonistic muscle pull. Depending on the anaomalous psoas attachments that anatomical authorities cite. (40% do not have psoas attachment to fifth lumbar) the lumbars rotate and tip allowing the crural attachments to rotate as well. The motor units as Bunyon calls each lumbar with the interspace of the disc then operates in a manner discernible on x-ray. The spinous processes of involved vertebrae moving away from the fixed side which may be an occluded or an increased disc space. This in turn forces compensation of the pelvis to this abnormal factor in lumbar bony mechanics, creating pelvic rotation and pelvic tilt. This complicates and further intensifies the hiatus hernia problem and certainly such segmental inter-relationships are not corrected by a regime of antacids and sleeping propped up in bed any more than taking a pain killer would manage the problem of a stone in one's shoe.

The compensatory reverse cervical rotation, (the cervical vertebrae rotating in reverse rotation to lumbar rotation in inverse order) then conceivably add to the confusion in normal body mechanics by altering the relationship of C.3, C.4, and C.5, which

are the source of the phrenic. This then alters skull position which in turn provokes "righting reflexes" which vainly try in a stupid body wisdom effort to correct the problem, but which only serves to perpetuate the problem by the eventual involvement of the skull muscles. The same gears that make the watch run on time, make it run slow or fast when they are disturbed. Fix the right thing at the right time in the right way and the body will solve any problem, be it hiatus hernia or a medial meniscus.

Occasionally the patient may have deteriorated to such an extent that esophageal bleeding or significant esophagitis may continue unabated. These particular patients may require consideration for surgery but in our experience, careful persistence will help most if not all of the difficult hiatus hernia problem cases. Avoiding the constriction of tight abdominal garments is a reasonable precaution as is a preliminary elevation of the head of the bed. Intelligent application of the principles of Applied Kinesiology and body mechanics will lead to a favorable response in this troublesome condition.

The detection, correction and prevention of hiatus hernia is just one more way for the doctor of Chiropractic to advance himself, his practice and his profession. There are many neurological and physiological relationships that have a common origin in disturbed body mechanics. We as a profession should be just that: "BODY MECHANICS."

The privilege of understanding the work of the Master Creator is uniquely ours if we but try to fathom the marvelous segmental inter-relationship of the body. It is just this inter-relationship that crowns our efforts with success even when this success occurs more by accident than by intent. How much better to understand the relationships placed in the body and use them to our consistent advantage and make the practice of Chiropractic an intelligent application of the natural forces inherent to the body from birth and before. Just as the Safety Slogan says "Safety is no Accident," neither is success in the field of healing.

NOTES

Allergies in Chiropractic Practice

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Many patients suffer from patterns of irritability of various organs and systems that are grouped under the generic heading of "allergy". Many doctors themselves also exhibit a symptom pattern of allergy since the basic clinical manifestations are no respecter of person or profession. The symptoms may be present in the digestive system as in colitis or in the respiratory system as in hay fever and asthma, or in the skin with eczema or other forms of pruritic nature which can mean any form of the innumerable itching, whealing, hiving syndromes or the muco-cutaneous rectal itch which is so common. The recurring sinus that appears when the weather becomes moist or rainy, the seasonal allergy called "Rose, Grass" or most usually hay fever, the recurring headache associated with stress, paroxysmal tachycardia, sudden and prolonged diarrhea, the various and sundry so-called auto-immune diseases so common today, as caused by excessive tissue breakdown and the subsequent antibody formation which is in reality antibody against one's own tissues; these are all allergies of one form or another.

Yet there is a common denominator to all these various fractions of allergy and to nitpick the differences between one form and another is to strain at the gnat and to swallow a camel. The common factor in every allergic pattern is a relative lack of HCl systemically and not necessarily locally in the gastric mucosa, although this is more often the case as not. Associated with this HCl pattern is a relative or absolute adrenal deficiency. There are classic structural faults that invariably accompany these previously

mentioned HCl and adrenal dysfunctions. On testing the pectoralis major in these allergic cases we find invariably a weak bilateral pectoralis major clavicular division muscle. There is an associated cranial fault that manifests itself by a bulged parietal on one side with a flattened parietal on the other.

This bilateral weakness of the pectoralis major clavicular division muscle has been a constant factor in every allergy case. It has been associated with the bulged cranial pattern and in many cases there is the classic sign of adrenal deficiency, namely the Ragland effect and a positive Rogoff sign with the usual pupil dilation to light. The constancy of these physical signs with the protean manifestations of the allergy complex reduces the guess and conjecture factor to a minimum and substitutes logic and physiological reason for a hopeless touch-tag game with the poor patients symptoms.

Normal physiological variations in blood or saliva pH are of a very small range and order. The buffer salts prevent wide and dangerous swings of pH. These buffers as you know are sodium and calcium bicarbonate, phosphates and glutamines. Glutamine is a powerful buffer that quickly releases ammonia to prevent any acidosis production. Glutamine is not synthesized in the body. It is found in celery root and fresh rare meat and releases ammonia at the slightest provocation, which is an ideal buffer but like many good things hard to get. The incidence of acidosis is relatively rare in comparison to the prevailing alkalosis, and the balance factor is weighted toward preventing an acidosis so the occurence of an acidosis from even ill advised HCl supplementation is not liable to easily occur.

A high pH tends to throw calcium out of solution as you know bursitis, neuritis, arthritis and allergies become acute under these conditions. The calcium deficiency observation in allergy has often been made but supplementation with calcium has been therapeutically disappointing. The use of an acid calcium has been slightly more rewarding but the underlying factor has been a relative lack of HCl as the primary cause correcting this primary cause, the lack of HCl, is not a simple matter of supplementing with HCl. This of itself will fail just as the early efforts to supply the obvious lack of calcium failed. The mechanics of the situation must be corrected first so that the master balancer of body chemistry can act in its own innately intelligent way.

Temporary balancing of the nutrition helps this process along but the primary structural correction to the skull and lymphatic centers of the

ILLUSTRATION # 1

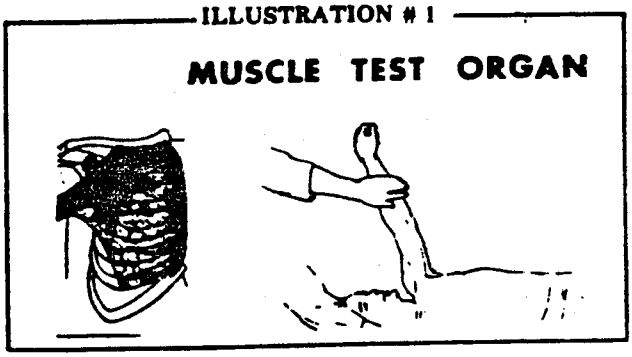
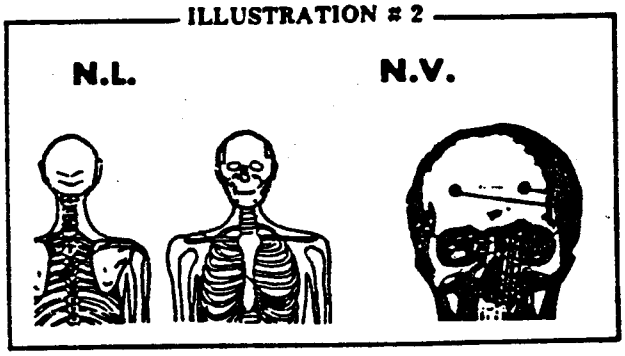


ILLUSTRATION # 2



pectoralis clavicular must most imperatively take place first. The effect of edema on the spinal nerves at their point of exit thru the I.V.F. is well known. Why should we disregard the parallel effect at the jugular foramen of the skull through which 95% of the venous blood leaves the cranium along with the 9th, 10th and 11th cranial nerves. This foramen is located between the occiput and the temporal bone which have a definite cartilagenous union at the jugular process up until the age of 25. The same is true of many other foramina of the ventral surface of the skull. The effect on the vagus from cranial faults parallel the effects we all observe with occipito-atlanteal-axial lesions.

The weakness found bilaterally of the pectoralis major clavicular division is a constant factor in the allergy patients who have had this test made. The testing method is that of Kendall and Kendall as in drawing #1. The neurolymphatic and neuro-vascular reflex areas are diagrammed in drawing #2. The classic cranial fault is that of the so-called "banana head," a description of the increased parietal bulge along with the relatively flattened area on the opposite parietal area. Following the activation of the neuro-vascular areas, efforts are made to exaggerate the bulge as well as to exaggerate sphenoidal and occipital positions. This allows the tentorium to react and the innate intelligence factor is activated by this exaggeration procedure so there is a "comeback or recoil response" effect.

The blood pressure of these allergy patients who have the super-imposed low adrenal pattern as well, will show a drop in the systolic level when the patient rises from the prone or supine position where the original systolic presse reading was made. This is the "Ragland" effect. The Rogoff sign is positive in adrenal depletion of any grade and is a very definite tenderness at the lower rib junction with the erector spinae muscles. Here also there will be manifestations of hyperinsulinism, and for the lab-oriented practitioner, the 17 ketosteroid levels will be below the normal 12 to 15 for men and 8 to 10 for women. There is usually some swelling of the extremities in these allergic patients who also have the adrenal syndrome and this is usually due to the sodium-potassium relationship with the potassium running high and the sodium running low so that in this patient you should increase, not decrease the salt intake. Repeat, in this type of patient. This swelling frequently is associated with changes in environmental temperature and atmospheric pressure.

The adrenal deficiency will also present the usual signs of a posterior ilium, namely pain over the area of attachment of the sartorius, and gracilis origin and insertion. This pain, on palpation, naturally being on the short leg side and responding to the neuro-lymphatic reflex as in the #3 diagram. If activation of the N.L. reflexes do not completely abolish the signs of the posterior ilium, adjust as in diagram #4. In the past, efforts have been made to attach unwarranted significance to abnormal pH variations. This is attempting too simply to classify urine or saliva pH evidence as diagnostic of the actual body condition. In other words, a high pH in the saliva is merely an indication of some abnormality of the acid alkaline balance.

It, of itself is NOT diagnostic per se of an alkalosis as previously thought. Frequently, an alkaline pH IS diagnostic of an alkalosis as previously thought. Frequently an alkaline pH is diagnostic of an alkalosis but a careful evaluation of all factors plus structural correction should dictate the supplementation nutritional changes. The pH of the blood or the saliva which is the more accessible factor, is a product of all the forces acting upon it. The regulation of the blood $CO^{"}$ or saliva $CO^{"}$ is controlled by the respiratory control center in the brain, so here we are back at the skull and its contents.

The usual lack of HCl as mentioned in the average allergy case is accompanied by the adrenal depletion factor which then sets up the site, character and periodicity of the allergy. As you know the adrenal has three groups of steroids, the glucosteroids that assist in the control of carbohydrate metabolism, the mineralosteroids that con-

ILLUSTRATION # 3A

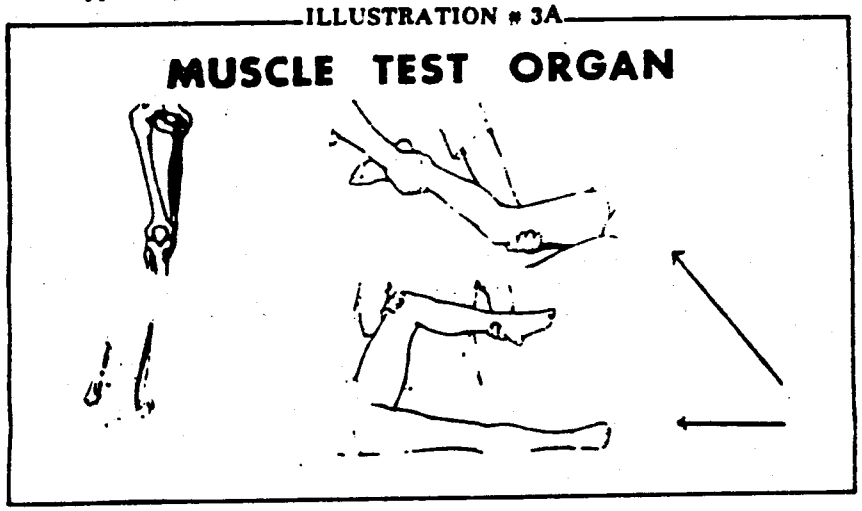


ILLUSTRATION #3B

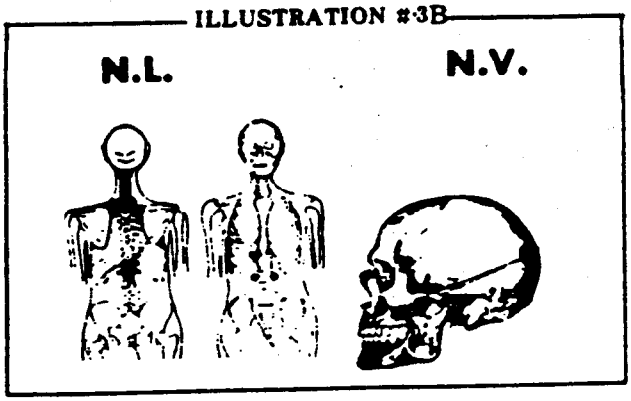
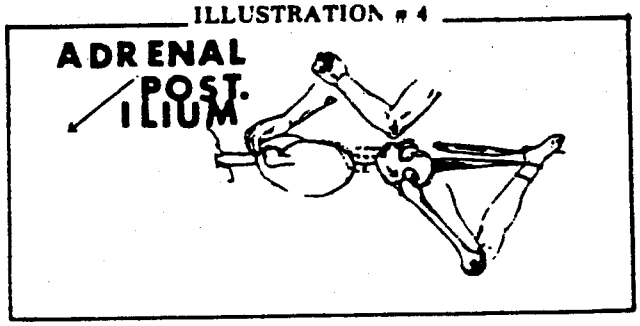


ILLUSTRATION # 4



trol water balance primarily, and the sexosteroids or as mentioned earlier, the 17 ketostosteroids which include the estrogens, progesterones and the androgens. The variations of these factors produce the variability of the allergy symptoms, hence the futility of "Chasing symptoms." The real key is to treat causes structurally, nutritionally, and if needs be psychologically by explaining WHY they have the allergy they do.

Low HCl can be determined by the Diagnex test discussed in earlier articles, but this is specific only for gastric HCl not systemic, therefore saliva pH and a symptom survey from the history plus a trial of an acid ash diet or HCl supplementation is wise. Granted the structural correction is accomplished first. Further adrenal depletion evidence other than already stated, is the marked inversion or marked lowering of the "T" wave of the E.K.G. if you have and use one. The ready availability and relatively good patient acceptance of a hyperinsulinism diet is another easy control that is powerful in providing real therapeutic help.

The increasing desperation use of corticosteroids as therapeutic agents in emergency use may transform the acute allergic patient to a depleted nonresponsive chronic allergy victim who responds slowly if at all. This is due to the suppression of the adrenals by the injudicious use of emergency therapy in the long term.

The full circle physiological pattern in many respiratory allergies such as asthma, involves a locked in flexion or extension cranial bone pattern with a resulting lack of sphenobasilar flexion and extension with a resulting pituitary dysfunction with the consequent disastrous effect on the adrenal. By the cranial fault the HCl factor is also disturbed. The key is to treat what is wrong with the patient, rather than to treat the patient wrong.

The Coca theory of food allergy postulates an increase in the pulse rate when an offending food is eaten. The increase is moderate, perhaps in the range of an increase of ten beats but this simple observation is difficult to accurately apply because of the many normal variables. It is useful at times to pinpoint one offending food while you make the overall corrective therapy which should allow normal latitude in food choice.

Protein as you know is split into amino acids so they can diffuse through the intestinal membrane. HCl is essential for protein splitting and for pancreatic activation for further proteolytic enzymatic amino-acid conversion. When half split proteins get into the circulation they cause, as you know, inflammation and antigen activity. It is the antigen that makes some people react so violently to such small amounts of an offending food. Reason would dictate neutralization of the antigen if possible but reason also dictates temporary common sense avoidance of offending food. The well known and well documented progressive decrease in HCl levels with age explains the remarkable incidence of the signs previously mentioned. The body language tells a story of innate, intelligence flying the distress signal of the bilateral weakness of the pectoralis clavicular and the other signs mentioned earlier.

The glutamine mentioned earlier is as you realize an amino-acid that has a certain two way action. It is a buffer that can release ammonia and glutamic acid as the pH drops even slightly. It protects against acid, as you can see, but it also protects in an innate intelligent way against ammonia as well because much tissue contains glutaminase which miraculously synthesizes the free ammonia back to glutamine. This beautiful balance allows ammonia transfer from the kidney to the liver where it breaks down to urea in the liver. The resulting urea helps protect against any undenatured protein. This rather complicated interfaced spinoff biochemical whirlpool bath is intricate. So is a television set, but you need not know the intimate workings of the color set you own for example, to enjoy the Green Bay Packers, but you do first have to possess a working set, turn it on and have a paid up electric bill to enjoy the superbowl at home. Attention to primary causes produces far reaching end effects.

The use of betaine combined HCl is wise as temporary priming of the HCl pump to "Wet The Washer" so to speak so the pump can siphon the water out of the well. The addition of the betaine which is technically trimethylglycine has been considered for some time to be merely a convenient chemical combination. It has far reaching possibilities in a natural way of neutralizing antibodies. That betaine can neutralize tetanus toxin is a curious well buried but accepted fact. Probably betaine is the balance wheel that maintains normal antibody equilibrium. Betaine comes naturally from our food and from our natural digestion of natural sources of rare protein so here we are again, back to the structure which should be corrected to allow us to take advantage of our hoped for natural diet. All the rest of the amino acids have fascinating spin-off activities. For example, glutathione, a derivative of betaine, does even a better job on antibodies than betaine itself.

The hand of the Master creator is never so evident as in the real study of the peak of HIS creation, the human body. A well rounded knowledge of physiology allows a well rounded therapeutic effort to release the marvelous potential of the innate intelligence of the body once it has been freed of the structural chains that bind it. Those same chains functioning properly, allow normal function to take place.

A "hodge podge" throw in the bag of nutritional components is just as futile as a "hodge podge" "pop and pray" adjustment. The body is the pinnacle of God's creation, treat it with the respect it deserves and you will in the words of a fine doctor up in Vermont recently, "take good care of your patients and they will take good care of you."

An effort has been made to show the pattern of "ALLERGY" in the human body. Further information is available without charge. Kindly enclose a self addressed stamped envelope.

AUTHOR'S NOTE: A light tugging touch will activate the neuro vascular reflex areas. Hold and wait for 20 seconds after pulsation begins. The neuro lymphatic area requires a firm rotary pressure on appropriate areas for at least 30 to 40 seconds.

HYPERTENSION

By GEORGE J. GOODHEART, D.C.

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A Digest Magazine Science Original.

Many patients have symptoms of hypertension, many doctors also may suffer from increased diastolic or systolic blood pressure levels. The upper normal limit for systolic pressure can practically be considered to be 110 m.m. plus half the patient's age. The diastolic upper limit has been estimated to be 100 m.m. Blood pressure is dependent as you know, on cardiac output, which fundamentally is a function of the muscular integrity of the heart which in turn is dependent upon the electrolyte balance and the glycogen storage levels of the heart. The rate and rhythm of the heart is dependent upon the vagal-sympathetic balance and the volume of blood forced thru the vessels depends, as stated before, on the electrolyte balance.

Peripheral resistance is an important element in blood pressure problems and discounting frank occlusions from fatty deposits, and contraction of blood vessels, the one factor that produces increased peripheral resistance is the state of the body musculature.

There are many factors that influence blood pressure, as you know, but most of the mental emotional, food related and diurnal factors are not of therapeutic value except in a negative sense. Occasionally, anemia, contrary to popular opinion, produces an accelerated circulation so that oxygen may be more rapidly supplied to oxygen starved peripheral cells. Correcting the anemia may cure this type of hypertension. But the universality of the hypertensive pattern must have a common basis for its presence in many areas of many different types of people.

Climacteric changes affect blood pressure levels by pituitary stimulation of the adrenals. This begins to act especially in the female as waning ovarian hormone levels stimulate pituitary function and this then causes the adrenals to act as secondary ovaries producing a female-like hormone. The increased adrenal function from pituitary urging also produces increased corticoid secretions effecting naturally the sodium and chloride levels. As a result an increased aldosterone level produces fluid retention with a large amount of epinephrin or adrenalin analogs are also produced. This type of hypertension has a particular type of miserable insomnia that is accompanied by much heart pounding. The increased adrenal type materials causing as well glycogen release from muscle and liver storage areas, the pattern so familiar in hyperinsulism, but here in this case it produces increased fluid volume as the released glycogen takes fluid with it out of the cells into the blood stream adding to the fluid volume.

When the liver is impaired due to low thyroid patterns, the release of A.T.P. ase is interfered with and the resulting combination of the slow sugar absorption thru the intestinal villi along with the disturbance in the production of the A.T.P. ase may cause spasms of blood vessel musculature thus interfering with the relaxation potential of the blood vessel to absorb the systolic thrust.

This interference with the circulation if applied to the kidney, produces in the kidney a substance that increases the local blood pressure of the kidney when it is present in small amounts, and general increases in blood pressure when it is present in larger amounts. If the blood supply of the kidney falls below 70 m.m. systolic, the kidney will automatically in a self-preservation body wisdom effect, produce this type of hypertensive causing material. And it may continue to produce it long after the need has gone. If the circulation interference continues, the kidney continues to produce this material. This self-defense mechanism of the kidney is an occasional source of complication in the treatment of hypertension. The question still remains, what is the therapy of choice and what is the basis for the choice.

The incidence of hypertension, as you know, is three times higher in the obese individual than the nonobese and this is a relatively simple factor as is the protein depletion factor with the blood vessel intima sacrificing some of its wall in low protein states with a subsequent scarring and atheromatous changes. These multiple accessory factors tend to cloud the real picture and obscure the fact that structural alterations of the skull and spine and nervous system cause and perpetuate hypertensive states.

In the case of adrenal depletion with its subsequent Hypotension you will recall that the "Ragland" effect produced in these cases a DROP in the systolic pressure when the patient stood up. In the Hypertension of renal and liver origin the systolic pressure is HIGHER in the recumbent position and LOWER in the erect position. Pressures that show a higher level in the recumbent position require attention to the lower thoracic area in a manner which will be described later.

In those cases of hypertension that show an elevation in the standing or sitting positions, cranial techniques are advised. The most frequent pattern found is spinal fixation of C-4 to T-2, these need specific correction which will be described later. Diastolic levels seem to be most particularly affected by clearing the occipital-mastoid suture. An important factor to consider in the evaluation of blood pressure is the relative presence or absence of gas in the patient's gut. In fact, with many patients who have hypertension, gas pressure and blood pressure are synonymous. The gas which causes the trouble is not food related nor digestive related. It is simply CO_2 derived from diffusion from the blood in the walls of the stomach. Gas as such is not usually related to blood pressure in etiological relationship but the relationship is a valid one. Inflation of the rectum with air during sigmoidoscopy to facilitate visual observation of the rectal mucosa will invariably raise the blood pressure temporarily. The constant movement of gas from the stomach where it is produced to the lower bowel where it is absorbed is the most important factor of the digestive system's relationship to the control of blood

pressure.

Naturally, some gas is produced in the process of digestion, but the majority of the gas is produced independent of digestion by diffusion of CO^2 from the blood vessels of the mucosa of the stomach. The gas is held more and more frequently as time goes on and as the basic lesions go uncorrected. It is held at the pylorus, the ileo-cecal valve, the hepatic, splenic, and sigmoid flexures of the colon. The palpitation, cardiac irregularity or bradycardia which so often accompanies incarcerated gas all disappear quickly when the gut relaxes and the gas passes thru the previously contracted area, and the gas pressure equalizes. The vasoconstrictors in the spinal cord are involved in the production of hypertension, as we all know, witness the sympathectomies that were the surgical vogue for hypertension not so long ago.

There is a compensatory circulation between the spinal cord and the spinal muscles. There is a compensatory circulation between the spinal cord and the circulation of the blood vessels of the abdomen. In other words, if the spinal cord is anemic, the spinal muscles are hyperemic and the abdominal visceral circulation is hyperemic. Have you not seen intensely hyperemic areas following an adjustment, or vice versa, the spinal muscles showing a blanched area following treatment? Have you not seen the consistently persistent hyperemic area many patients have overlying the upper cervical area? Therefore, the effect of spinal treatment should ordinarily depend upon three factors: (1) spinal cord hyperemia or anemia; (2) stimulus intensity; (3) degree of nerve irritability. Therefore, exactly opposite results will ensue from the same spinal treatment if the spinal cord is enemic one time and hyperemic the next. The relative irritability of the nerve cells involved should also regulate the thrust of the adjustment and vice versa. Have you not observed a patient burp with a gas eructation immediately following an adjustment? We frequently effect blood pressure by accident, why not do it on purpose?

An additional factor that complicates this already complicated matter of hypertension is the relative strength and weakness of the heart. There is not enough blood to properly perfuse the entire body at one time. If this were not so, we would suffer from a hypervolemia every time we ran upstairs. The oft told admonition to children of an hour's wait prior to going swimming is based on this simple fact. The brain worker who cannot unwind without a drink prior to eating, the sleeper after a heavy meal all testify to the need for the blood to traverse the body's circulation upper, middle and lower "floors." The head and neck constitute one floor, the thorax chest and lungs and heart constitute the middle floor, the abdominal contents constitute a third floor. There is not enough blood for all these segments at one time. Some of the "clerks" in this three-floor establishment move from one floor to another as the demand occasions. So does the blood in volume flow from one section of the body to another by carefully balanced vasomotor action which an innate intelligence accurately directs in a precise Volumetric hydraulic balance. This nicety of balance when upset by structural alteration of the skull and the spine produce either hypertension or hypotension, as the case may be. A watch may run fast or slow depending on the relationship of the same familiar gears that make it run on time, so also does the circulation vary.

When there is an interference with the flow of cerebrospinal fluid there is a corresponding interference with the circulation of the blood and vice versa, but in the case of hypertension the body attempts to compensate for the low level of spinal fluid pressure by raising the systolic and diastolic pressure in a "stupid" body wisdom effort to maintain the rate of cerebrospinal fluid pressure.

The bones of the skull move when you breathe. This primitive gill mechanism is part of the intricate implementation to the motion of the cerebral spinal fluid. The cerebral spinal fluid is made in the choroid plexus as you know and flows in a very definite pattern through the brain down through the spinal cord until it reaches the sacral water bed. Gray says that small amount of the cerebral spinal fluid may escape through the perineural spaces of the cranial and spinal nerves and reach the lymphatic capillaries. This is quite important. It is obvious the cerebral spinal fluid flows from the choroid plexus down and around the spinal cord and into the sacral water bed for reabsorption.

The presence of the cerebral spinal fluid acts as a buffer for the spinal cord for the central nervous system which is vital to its metabolism and it also carries secretions of the posterior lobe of the pituitary. The production in the choroid plexus and the four ventricle follows the lateral ventricle, the foramen of Monro, the third ventricle, the cerebral aqueduct, the fourth ventricle, the foramen of Magendie, the foramen of Luschka and the subarachnoid space of the spinal cord. It escapes by way of the pachionian bodies into the venous sinuses and, as mentioned before, out along the cranial and spinal perineural spaces and most important through the hollow collagen fibers of the fascia into the lymphatic system. So there is an intimate relationship between the lymphatic system and the cerebral spinal fluid system.

When the brain is observed at surgery there is observable four definite motions: (1) a motion synchronous with cardiac contractions; (2) another motion coincident with respiratory changes on inspiration and expiration; (3) there is a third movement wave unrelated to heart or respiration; (4) a movement which apparently is necessary but as yet its mode of production and its significance is unknown. Many researchers agree that the cerebral spinal fluid does not circulate in the ordinary sense of the word. Fluctuations can occur and will occur with changes in volume, and with changes in blood pressure, and with changes in body electrolyte balance. There are rhythmic changes which change with changes in heart rate and respiration. It is obvious since the dural envelope is inelastic and nonexpansible the cerebral spinal fluid pressure will vary directly as the venous pressure. The venous pressure changes, as you know, with changes in heart rate and respiration; therefore changes in cerebral spinal fluid may reflect changes in circulation or vice versa.

Much research has been produced on the chemical composition of the spinal fluid but not much attention has been given to its circulation or its relationship to body function and disease, other than in connection with disturbances in the flow of the actual spinal fluid itself, such as in hydrocephalus or in tumors. The skull articular mobility was first observed by Sutherland in his casual observation that the beveled articular surface of the sphenoid had a remarkable resemblance to the gills of a fish with the obvious connection of human respiratory skull movement. King, Alberta, DeDarnette and the author, have researched on cranial application to modern chiropractic. Erdman in 1921 postulated the CO^2, anemia, hyperemia spinal treatment approach. It is still valid. Check blood pressure-equalize gas pressure by momentary

pressure at right 5th dorsal, bilateral 10 dorsal and bilateral second lumbar. Recheck blood pressure.

The cranial section of the management of the hypertensive syndrome begins with the patient supine, your fingertips are contacting the cervical spinal muscles. The thenar eminences are contacting the skull at the tip of the mastoid processes, and the force upward is very light and a slow rhythmic motion is made on a count of five, first with the thenar eminence pressing inward and upward, then with the other repeating the same slight, light almost imperceptible effort to mobilize the occipto-mastoid suture. Continue this cranial technique for two to three minutes. Recheck blood pressure, if reduced, do no more at this time. If no perceptible change occurs in the blood pressure, check the cervical and dorsal segments for fixations. Palpation may reveal a palpable subluxation but this is often held in place by a relatively nonpalpable but fixed subluxation above or below. The patient continues to lie on the back and the right and left transverse processes of the same vertebra are contacted and the left transverse is pushed anterior while the right transverse is pushed posterior. The procedure is then exactly reversed, notation is made of the resistance pattern, continue down the entire cervical column in the same manner. If there is a group fixation, great resistance will be felt if attempts are made to move the vertebra in one direction, then another. Use the spinous processes for the dorsals and lumbars.

Attempts to return a subluxated vertebra in fixation to normal meets great resistance, while attempts to increase the subluxation takes place easily. The vertebrae of a group fixation of an anterior type will strongly resist efforts to correct the anteriority, each vertebra will exhibit this resistance. But as you go down the vertebrae the vertebra below the trigger vertebra in an anterior fixation will be noticeably looser and the derotation resistance will be much less on this vertebra which is BELOW the trigger vertebra. Mark the trigger vertebra. In a posterior fixation the same will hold true but the trigger vertebra will be at the top of a unit of three vertebrae instead of at the bottom. Adjust the trigger vertebra, recheck the blood pressure, if reduced do no more at this time. If the blood pressure is still not reduced; run two extended fingers of each hand all along the paraspinal areas from C1 to Sacral 5. Use the same pressure all along the spinal areas. Wait a minute, observe the paraspinal areas for blanching or redness. Over the areas you found to be blanched apply the gentlest possible adjustment or use some external source of heat carefully blocking out all other nonblanched areas with heavy toweling or suitable material. The principle in applying any form of heat in this regard is to be precise and not general in its application. Maintain the heat for approximately ten minutes, recheck blood pressure, it should be reduced approximately 20 to 40 m.m. If reduced, do no more at this time but if unreduced maintain external heat for a longer period of time that is convenient for you and the patient.

Try to reduce the level of cereals and grain foods in the hypertensive case, substitute potatoes and banana for carbohydrate levels. This reduces toxic wastes in this type of patient. Stimulate liver function, minimal levels of iodine minimize thyroid function so watch the inorganic iodine levels and naturally thyroid function. Keep fruit and vegetable potassium sources high in the diet, keep the calcium level supported by proper dietary measures. Vitamin A reduces the cholesterol level of the blood and this relationship is so common that the level of cholesterol can be used as an index of Vitamin A in the body. Supplement if needed but a few raw carrots daily help quite well.

An effort has been made to approach the problem of high blood pressure from a structural point of view. Attention to these factors will aid greatly in reducing the incidence of C V A and will add to your professional standing and stature. By placing service above self and utilizing the natural recovery forces of the body you aid suffering humanity. This is its own reward but by so doing you advance yourself and your profession. Further information on treatment techniques is available from the author without charge. Kindly enclose a stamped, self-addressed envelope.

NOTES

Dear Doctor:

Thank you very much for your interest in the recent article in Chiropractic Economics on the cross-crawl pattern. This should be a valuable addition to your present abilities. Your present abilities should include a good knowledge of the methods of muscle testing of Kendall and Kendall described in their book "Muscle Testing" published by Williams and Wilkins. As you know, this is the basis of the diagnostic technique of Applied Kinesiology. There is also a text published by myself on muscle testing available on request, the cost is $35.00. Both texts are useful materials in evaluating the response to the cross-crawl pattern. Experience has added another dimension to the cross-crawl pattern in that the posterior muscles must also be activated to maintain and preserve good muscle balance. The same pattern of contralateral movement is used. For example: the right knee is flexed and the right hip is extended backwards bv the action of the gluteus maximus while the left arm is extended backwards by the action of the triceps and the teres major and minor. The reverse is then followed with the head turning as previously described in the original article away from the side of muscle spasm. This can be most easily accomplished in the vertical position and should be done approximately 25 times consecutively on a daily basis. Occasionally patients are "switched" not only on a hemispheric basis but also at a spinal cord level and this may cause the patient to occasionally change the apparent side of muscle contracture after they have performed this type of exercise for a period of a week or so. These patients are in the minority but they do constitute an additional problem. Treat what you find at each period of examination. Encourage the patient to do the exercise a minimum of 25 times a day, both on the anterior and posterior portions of the body structure. You must correct any basic structural problem, such as a posterior ilium or a lateral atlas or a jammed occiput. Your attention is directed to previous articles in Chiropractic Ecconomics on these subjects. Precise analysis by muscle testing, precise correction by neurolymphatic, neurovascular, cranial-sacral, nutritional activity followed by precise cross-crawl pattern activity produces remarkable change for immediate and permanent good in many patients' problems. Your own State Association may have already set up Kinesiology Seminars for your on-going postgraduate education. Try to take advantage of these and other convention activities involving Applied Kinesiology by referring to the calendar of events at the rear of every edition of Chiropractic Economics published by Bill Luckey, 906 Chalmers Avenue, Detroit, Michigan 48236.

My best wishes for your continued health and success.

Yours sincerely,

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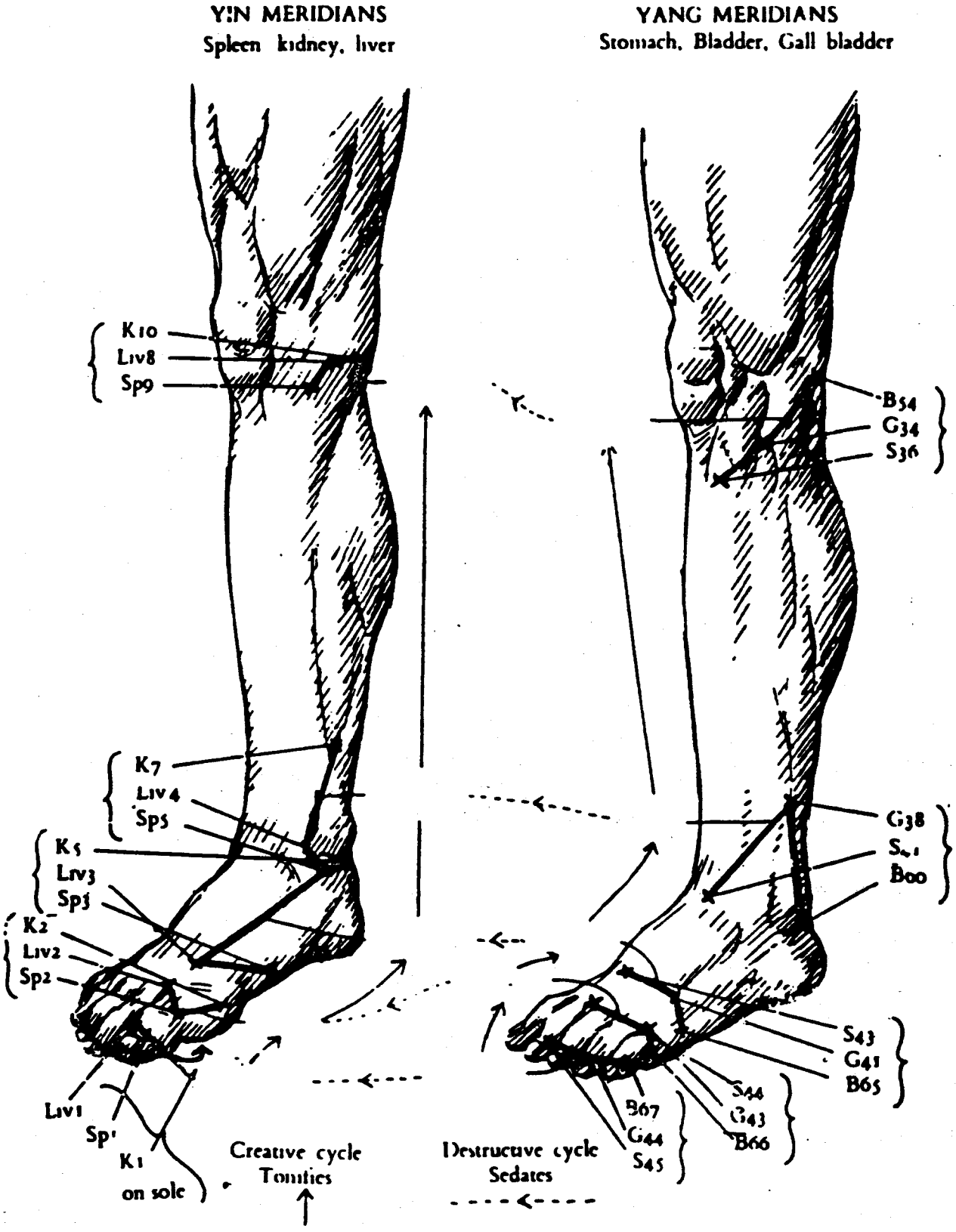
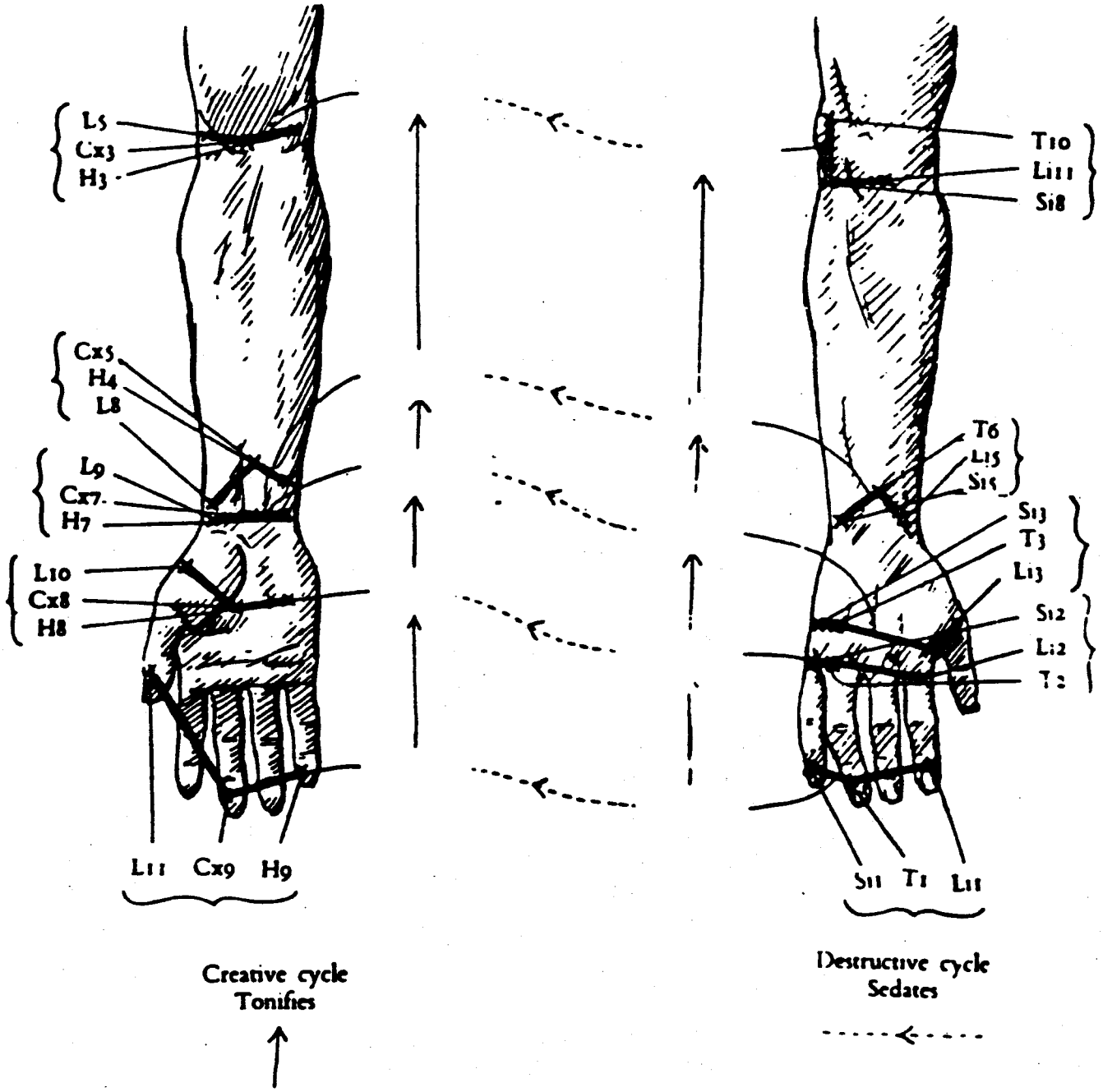
POINTS OF THE 5 ELEMENTS



POINTS OF THE 5 ELEMENTS

YIN MERIDIANS
Lung, Heart, Circulation-sex

YANG MERIDIANS
Large intestine, Small intestine
Triple-warmer



Creative cycle
Tonifies

Destructive cycle
Sedates

Organ	*Tonify*		*Sedate*		*Sedate*		*Tonify*	
Lungs	L9	Sp3	L10	H8	L5	K10	L10	H8
Kidney	K7	L8	K5	Sp3	K1	Liv1	K5	Sp3
Liver	Liv8	K10	Liv4	L8	Liv2	H8	Liv4	L8
Heart	H9	Liv1	H3	K10	H7	Sp3	H3	K10
Spleen	Sp2	H8	Sp1	Liv1	Sp5	L8	Sp1	Liv1
Large intestine	Li11	S36	Li5	Si5	Li2	B66	Li5	Si5
Bladder	B67	Li1	B54	S36	B65	G41	B54	S36
Gall bladder	G43	B66	G44	Li1	G38	Si5	G44	Li1
Small intestine	Si3	G41	Si2	B66	Si8	S36	Si2	B66
Stomach	S41	Si5	S43	G41	S45	Li1	S43	G41
Circulation-sex	Cx9	Liv1	Cx3	K10	Cx7	Sp3	Cx3	K10
Triple warmer	T3	G41	T2	B66	T10	S36	T2	B66

the "frozen shoulder" Syndrome

By

GEORGE J. GOODHEART, D.C.

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Many patients suffer from the so-called "frozen shoulder syndrome." Many doctors also have this bothersome restriction of movement of the arm and shoulder girdle. A variety of explanations have been offered as well as a variety of treatment suggestions. Forceful manipulation under anesthesia has been offered as a method, barbaric though it may seem, a variety of physiotherapeutic measures have been suggested. But all these doubtful therapies have all offered treatment without diagnosis, a cardinal sin.

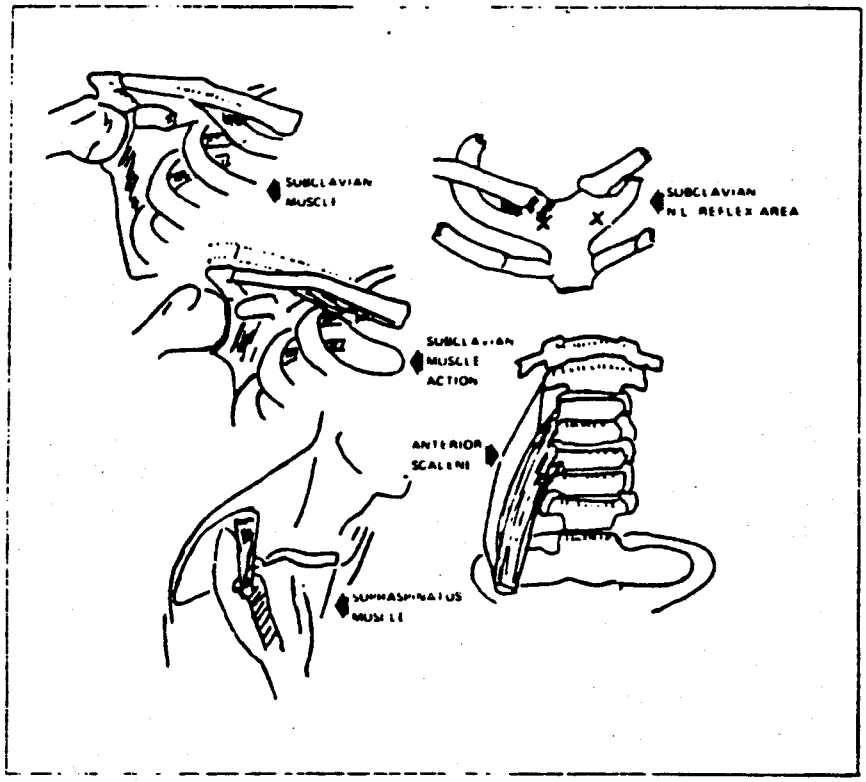
The obvious lack of upward motion, stopping a few degrees above horizontal with the patient straining to alleviate the frozen shoulder-arm combination by futilely bending the lower back into an increased lordotic pattern, is a familiar sight in many doctor's offices. The scapula floats free on the posterior chest wall as you know, the only limiting structural factor is the spacing plus or minus of the acromio-clavicular joint.

Now it is recognized that there are acromio-clavicular, coraco-acromial ligaments and there are bicipital tendons which along with the ligaments are capable of adding to the confusion of the so-called frozen shoulder syndrome. However these structures play only a minor role in this drama of limited body motion with the attendant added features accruing from the lack of movement. Long arduous exercises have been prompted and promulgated for the relief of this frequently met condition, but here again the obvious lack of motion always seems to overshadow the need for CHIROPRACTIC DIAGNOSIS!

The free floating scapula must operate a movement pattern which is a symphony of inter-related and sequentialized movements. Rather than indulge in an anatomical description of the total structure which we are all familiar with, a wiser course would be to analyze the motion pattern itself. When you bend your elbow for whatever reason, the action of the biceps and the brachialis as well as the brachioradialis, start the movement of a filled glass of liquid to the mouth for example. But to accomplish this simple act, the triceps must simultaneously relax as well as the anconious.

As the elbow bends, the corabrachialis activates and as before, the teres minor relaxes reciprocally, then as the elbow is bent, it is abducted and lifted away from position of rest against the rib cage by the most important muscular bundle, namely, the supraspinatus. This is the only skeletal muscle other than the heart diaphragm Basmanajinian and sphincters that works while we sleep. In the text "MUSCLES ALIVE" the author describes the electromyographic activity of all skeletal muscles, and the supraspinatus is the only muscle that shows an action current in sleep. It used to be thought and it was the author's opinion as well, that the deltoid muscles held the humerus in the glenoid. This is an error in all innocence for although the deltoid has the appearance of maintaining humero-huroglenoid opposition, electromyography shows without question that it is the supraspinatus that does this job. And when the supraspinatus has the right nerve and blood supply, it performs beautifully, but if the supraspinatus is compromised in any way it will complain loud and clear all day and all night long since it must work all the time. It is absolutely essential that it be intact to perform its most important job. Remember the supraspinatus starts the first 20 degrees of movement of the arm away from the body, then the deltoid takes over. This sequentialization of reciprocalization of contraction to relaxation is as you know, under the control of innate intelligence. This finely ordered and adjusted motion pattern continues to show deltoid activity until the arm with the bent elbow is almost horizontal.

The individual drinks the fluid but decides to place the empty glass on a high shelf above the level of his shoulder. So the deltoid continues to act, but now the most important and most overlooked action takes place. The subclavian muscle now begins to contract and in so doing pulls the clavicle outer end to the medial thus allowing the encroaching acromial process to have room to also move medially. When this



small but vital action does not take place, the upward motion of the humerus is stopped, the patient strains to overcome this mechanical block and as stated before, even lordoses the lumbar spine to gain a little more elevation. The subclavian muscle as you remember, has its origin at the sternal end of the first rib as well as the costal cartilage, and this all important muscle inserts on the under surface of the middle third of the clavicle. This action starts as the humerus gains an almost horizontal position and continued to activate as the arm goes up to vertical. Since the origin is slightly anterior to the insertion on the under surface of the middle third of the clavicle, it also rotates the clavicle downward as it pulls the clavicle out of the way of the inward movement of the acromial process of the scapula.

This muscle is the key factor along with any other muscle found weak by testing. Activation of the neurolymphatic center, for the subclavian can be accomplished by firm, hard pressure at the N.L. point, a small nodule located at the junction of the clavicle sternum and the first rib. This is a small match head sized nodule which is exquisitely sensitive to pressure. The posterior reflex is located at the intraspinus transverse space of the first dorsal vertebrae. This also happens to be the acupuncture point K27 which is the common point of stimulation for all the spinal vertebrae.

In the so-called "frozen shoulder" it is essential to realize that pressure at the carpal tunnel can produce not only a problem with the opponens muscle as described in the "Carpal Tunnel Syndrome" article, but a nerve entrapment at the wrist can cause a dysfunction of the supraspinatus for example. Frequently we see a tight anterior scalene on the "frozen" side which is entirely secondary to the pronounced weakness of the opposite anterior scalene, and treating the origin and the insertion with a hard, heavy pressure on the weak side, will greatly aid in restoration to normal in cases where there is a history of trauma. Naturally this applies to any muscle of the arm and shoulder girdle which you find weak on testing the specific muscle.

Testing the individual muscles is a vital necessity in the rapid correction of this painful problem. It responds to an intelligent application of the principles of applied kinesiology in a very rapid and satisfactory way. As those who have witnessed this technic on the lecture platform, have observed the arm attain the vertical position quite readily, usually during the approximate ten minute period it takes to test, describe and explain and then treat and explain the technic. In other words, the arm gains at least 70% function in less time than it takes to talk about it.

This is not the occasional lucky accident, but a constant pattern presented to any sponsoring group that contains a member that has this affliction. Generally this individual has had the opportunity for frequent treatment and it is not to consider previous treatment inadequate that these statements are

made, but to amplify the fact that nerve entrapment and reflex disturbance must be carefully and painstakingly sought out and rapidly treated.

The latissimus dorsi is frequently found weak on the opposite side, with a corresponding hypertonus on the same side as the frozen shoulder. The obvious interference here is, again, treat what you find or diagnose, not what you think, hope, feel, expect, or believe with a limited appreciation of the entirety of man's nervous system. The results speak for themselves, as many who have seen these principles applied to a member of their group can testify. The key is not to abandon what has brought us this far along the therapeutic roadway, but to add the newer methods of muscle testing and treatment to an already proven but not necessarily totally complete therapy. Out of the intervertebral foraman emerges *a blood vessel, a lymphatic vessel and a nerve*, and there should be evidence of the original subluxation in all these three areas.

If all there was to the frozen shoulder problem was to find the subluxation, fix it, and leave it alone, this article, or your reading of it would not be necessary. But as you know, there is more to it than that. The proper adjustment at the proper time does perform miracles. We all know this, but sometimes the body's innate intelligence pops out lymphatic vascular and C.S.F. circuit breakers to limit the damage accruing from the primary spinal subluxation. These also must be treated. The body has perfect neurological recall, it but waits for the proper application of the proper therapy for it to turn on its simple intricacies in an intricately simple way.

Innate intelligence does exist, not as a philosophical concept, but a living, breathing, actively correcting entity. But you must turn it on by the method it prefers and if you know only one word or method of communication or command, it fails to react, not because *it* isn't there, but because *you* are not there, at the right place and the right time. Occasionally it is necessary to put a hard pressure into the belly of the apparently hypertonic muscle, the latissimus dorsi for example. Treatment of each individually found weak muscle is essential and imperative for the spectacular result that you will obtain from this approach to the frozen shoulder syndrome. The activation of the subclavian N.L. receptors at the sterno-costo clavicular junction, is also vital to success. The subscapularis is sometimes involved in a post myocardial infract problem and here you must also apply remedial therapy to the cardiac structures as well. It naturally goes without saying that structural correction of the upper cervical and sacral lesions as well as other adjustments must be made. The total body structure must be treated regardless of the area of complaint. The muscle testing is the key to diagnosis. Treatment of the neurolymphatic and neurovascular reflexes as well as cranial contacts, unlock the amazing potential of the body's innate intelligence.

There are variable factors in each case; a slipped bicipital tendon can complicate the natural recovery pattern. Your attention is directed to the original article available on request entitled, "Arm and Shoulder Pain" for further discipline of this and other complicating factors.

A chronically shortened pattern in some muscles may exist and attention to the cross crawl technic described in a previous issue, is a valuable factor in these minority percentage problems complicating the usual frozen shoulder case. Naturally if the X-ray shows signs of extreme ankiosis, this alters the prognosis, but here again this is a minor percentage problem.

Again in a finalization of this discussion of an extremely difficult situation, the supraspinatus must receive activation of the N.L. as well as the N.V.

"frozen shoulder"

reflex and the original technic of hard, heavy pressure at origin and insertion should also be used, for this muscle must work unceasingly morning and night without respite, and it does so willingly when it receives the proper help.

The N.L. area for the supraspinatus is located immediately lateral of the coracoid process at the anterior, and the posterior reflex is located at the most lateral area of the atlas transverse. The neurovascular reflex area is located at the anterior fontanel. Here as opposed to the hard pressure relatively used on the N.L. area, the lightest possible tugging touch is used until a definite pulsation is felt. This is then held for at least twenty seconds. The pressure used on the N.L. reflex is that which you could barely stand on the eyeball. Do not exceed a period of forty seconds in the N.L. reflex.

Rapid, sure and precise correction of the "frozen shoulder" syndrome is just one more way for you to advance yourself and your profession. The perfect neurological recall that innate intelligence possesses, requires but the knowledge of its precise existence, for nerve pressure can exist in many places and when nerve energy flows unimpeded, natural health and recovery naturally follow as surely as night follows day. The love affair we have had with bones have blinded us to the total realization of the total body unity in health and disease. There are more circuits in the human body than in any Apollo space craft. Recognize they exist and the programming of the body's circuitry will follow your therapeutic direction from lift-off to splash-down.

Further information on treatment and technic diagrams are available from the author without charge. Kindly enclose a stamped, self-addressed envelope.

NOTES

Thank you for your interest in the "Frozen Shoulder Syndrome." As you know, the key factor in the diagnosis and subsequent therapy is the proper testing of the muscles. These tests can be found in "Muscle Testing" by Kendall and Kendall published by Williams and Wilkins or are available in the author's own text "Applied Kinesiology" which also contains the original technic for stimulating the origin and insertion of the muscle found weak on testing. The article describes the usual pattern found in the average case but a complicating factor not described in the article is the presence of a weak upper or middle trapezius in the case where the patient cannot put the hand behind the back. The patient, often a woman, complains of inability to fasten garments at the back. There is often an inability to raise the arm smoothly above the head as well. Here the upper trapezius must be tested by having the patient attempt to approximate the ear and the tip of the shoulder, you attempt to separate the two against the patient's resistance. Treat the weak side by treating the neurolymphatic reflex, which is located along a three inch vertical space down the bicipital groove of the humerus on the side found weak on testing as above. The posterior reflex is located between the occiput and the atlas bilaterally in the interspinous transverse space A firm hard pressure at these points should not only reveal a painful nodule but also activate the neurolymphatic reflex to the upper trapezius draining the lymph trapped within the blocked lymph channels. Naturally you will have treated the other areas as described in the original article. Occasionally a hard pressure into the belly of the apparently "hypertonic" muscle must be done temporarily as well. Do not neglect the carpal tunnel syndrome which often is a perpetuating factor. This is available from C.E. or in the book of reprints available from the author containing this and all other articles written by the author. This is available as are the author's textbooks, as advertised in C.E. The price of the reprints alone is $15.00. All other texts are $35.00 each. There are five different books starting with the original Applied Kinesiology, then the neurolymphatic reflex technic for muscles and connected organ function, then the neurovascular reflex dealing with the circulation thermostats of the body's muscles and connected organ. The fourth book is a condensation of the first three with diagrams of all treating areas. The fifth book deals with cranial technic with respiratory assistance and the key to nutritional therapy. Any one book is $35.00; any two are $50.00; any three are $70.00; any four are $90.00; all five are $120.00. The total set with the reprints is available at $130.00. This information is included because of the numerous requests in the letters received asking for it. The fixation technic described in the second section of the neurovascular text was described in the article in C.E. entitled "The Intrinsic Muscles and the Persistent Subluxation." Another question frequently asked was on source of Basmanaginian's book "Muscles Alive." This is available from any bookstore.

Another element that causes trouble is persistent weakness

of the anterior serratus. This weakness which can be tested by instructing the patient to raise the arm 45 degrees above the horizontal, while standing and abducting to the same 45 degrees away from the body, you then place your thumb firmly against the lateral lower border of the scapula. Patient tries to resist your effort to lower the arm. The weakness of the serratus produces a compensatory spasm of the levator scapula and the rhomboid creating another form of scapular lock where the patient must raise his own arm the first 30 degrees with his other arm. The N.L. reflex for the serratus is at the second interspace close to the sternum and the posterior reflex is at the second interspinous-transverse space. Firm hard pressure applied at these areas restores the serratus to normal. Attention to origin and insertion may occasionally be necessary as is pressure into the belly of the levator scapula and rhomboid. The N.V. area is at the anterior fontanal and a light tugging touch until a pulsation occurs is all that is required to enhance the vasomotor tone of the serratus, 20 seconds' time is usually sufficient to produce the desired effect. A weakened muscle may be treated by cold simultaneously while applying heat to the opposite hypertonic side. Be sure to block off the weakened side if you use any form of infrared heat therapy. Do not mistake traumatic avulsion of deltoid or supraspinatus for a "frozen shoulder;" treat origin and insertion of deltoid and/or supraspinatus with hard heavy pressure.

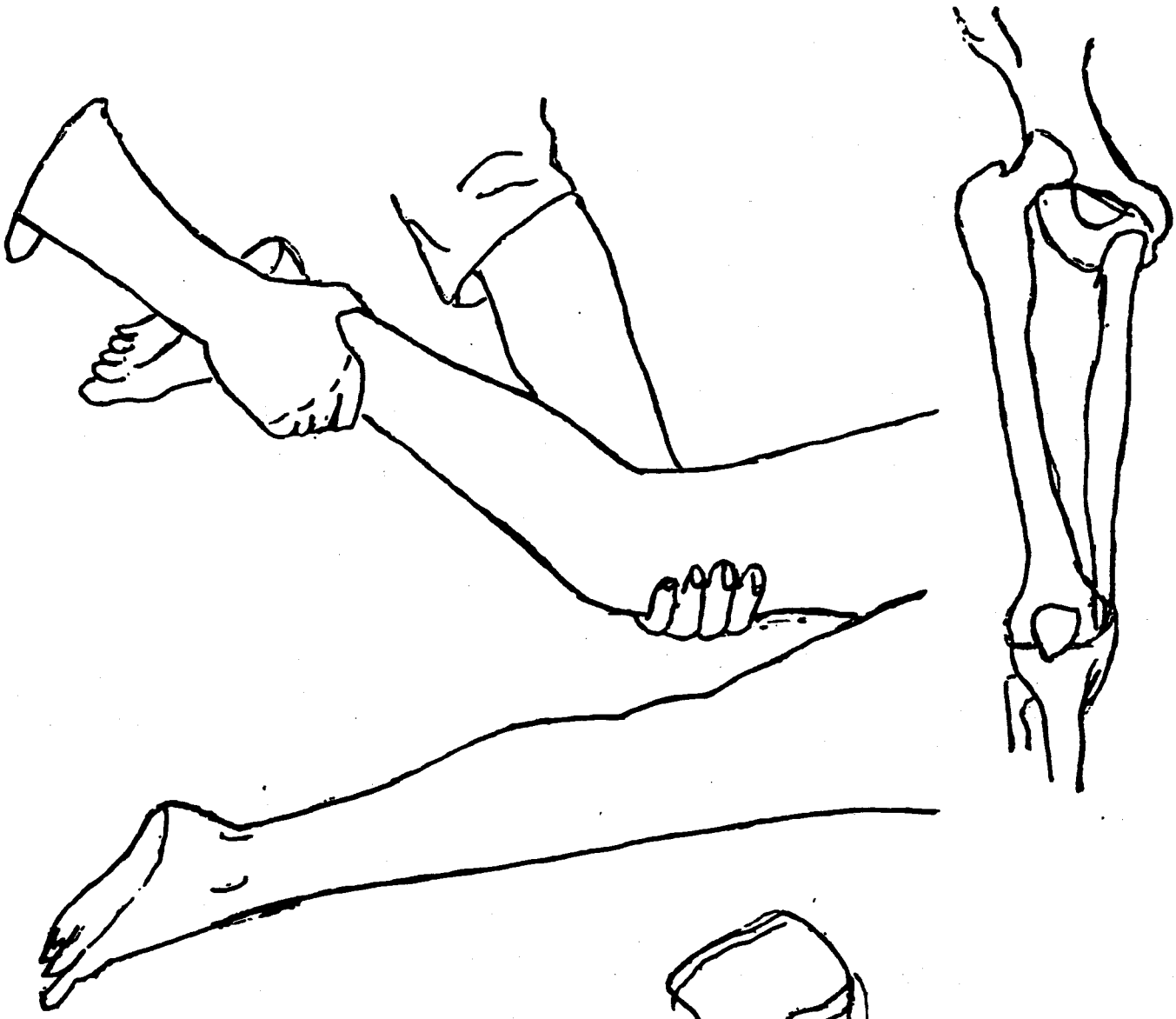
Thanks again for your interest. The calendar of coming events carries a schedule of future lecture dates on Applied Kinesiology. Lectures are given only thru sponsorship of regular state associations.

Best wishes for your continued health and success.

George J. Goodheart D.C.
542 Michigan Building
Detroit, Michigan 48226

Treatment should consist of activating by a light rotary pressure for 30 seconds the adrenal reflex which often suffices to allow a normal osseous recovery of the posterior ilium, about 60% of the time this occurs. The adrenal neurolymphatic reflex is at an area 2 to 2-1/2 inches above and 1 inch on either side of the unbillicus. In the posterior aspect is the intertransverse space on both sides 11th and 12th dorsal vertebrae mid - way between the spinous processes and the tip of the transverse processes. The palpatory pain will disappear rapidly within 20 seconds following the activation of the adrenal reflex, but ask the patient to get up and stand and walk a few steps and then lie down again. This will put further postural stress on the patient and about 40% of the time, the pelvis will need adjusting in the osseous position to accomplish 100% recovery.

When testing the sartorius or the gracilis and finding it to be weak and when there is no history of trauma or if the response is poor, checking the neurolymphatic reflexes for the adrenals is very important. In all cases of hypoadrenia there is a weakness of the sartorius and gracilis and the sartorius and gracilis are often found weak in many cases of the adrenals depleted from infection. Generally, if you find the sartorius or gracilis weak on one side the neurolymphatic reflex on the posterior aspect will only be on that side also. Many times these patients complain of extreme fatique especially in the morning and they complain as if they never have enough rest and they are continually tired. These patients improve as the day goes on and frequently there is a disturbance in the knee joint in these patients that resists therapy. The article on hypoadrenia which appeared in the May and June issue of Chiropractic Economics is good background reading for this particular problem. The adrenal reflex forms the basis for the production of a posterior ilium.



PATIENT:
Prone

Posterior
Ilium
Pattern

Gracilis

PRESSURE TESTING
Against the lower leg at the ankle in a downward outward direction.

Hyperventilation and the Cranial Sacral Mechanism

By Dr. George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Many patients suffer from the effects of hyperventilation, many times the patient as well as the doctor is not aware of the factors involved in the continued production of the symptoms.

The syndrome of hyperventilation is due precisely to just the literal interpretation of the word, in other words the patient overbreathes. But the patient is not aware of this, instead he is under the impression he is short of breath. He feels hungry for air, and frequently exhibits sighing respiration while at rest. The patient first may express a feeling of air hunger at the beginning of an attack, then may feel a strong apprehension, followed by dizziness, faintness, pain or tightness in the chest, numbness and tingling of the face, pounding heart, cramps and muscle stiffness. Occasionally an episode may continue into loss of consciousness. Generally there is a severe tetany of one or more muscle structures, with tingling of the extremities. In most cases the symptoms last much longer than the usual syncope or "fainting spell" of hypoadrenia or hyperinsulinism.

The hyperventilation patient may experience a period of ten minutes or more before he begins to slowly recover. When associated with effort, it takes place AFTER rather than DURING the effort.

Hyperventilation is associated with anxiety states but it is precisely the anxiety that sets it up and this anxiety although often with emotional overtones, generally has a structural basis. The body "language" associated with the cranial or sacral respiratory fault results in the feeling of anxiety. The effort to compensate to the hidden respiratory sacral or cranial inhibitions does result in over breathing, whatever the cause. This in turn causes more CO2 to be blown off, a respiratory alkalosis is produced and the low CO2 content of the blood then produces the central and peripheral vasoconstriction and impaired dissociation of oxyhemoglobin. The respiratory alkalosis like all alkalosis problems in the body, produces spasm of the intercostal, pectoral and diaphragmatic muscles. The E. K. G. may show significant depression of the T and the ST segments, but these are reversible and can be produced by voluntary overbreathing. It is estimated that in a sample of 1000 ambulatory patients at a famous clinic, 10.7 percent of this sample number had hyperventilation. This figure seemed a little low compared to private chiropractic practice—a figure of at least 20 percent is more in line with our experience in an urban area.

The condition of hyperventilation is often associated with the now familiar pattern of hyperinsulinism. Again quoting from figures of ambulatory patients, in 68 selected patients, 28 had hyperventilation, 16 had hyperinsulinism, and 19 had both. Faintness, weakness and palpitation are symptoms of both conditions whereas air hunger, shortness of breath, chest pain, tightness of the chest and numbness and tingling of the face are associated with hyperventilation; hunger, warmth and sweating with headache, are associated with hyperinsulinism.

In the patient with hyperventilation, dramatic relief may be obtained during an attack by the simple expedient of having the patient rebreathe his own air from a paper bag. This solves the immediate problem quickly and dramatically. Treatment of the patient is therefore simple and complex. The symptoms can be elicited by having the patient overbreath for at least one minute. An interesting fact regarding this situation is the ability of the normal person to increase the time of voluntary breath-holding by taking a preliminary deep breath. A patient with hyperventilation cannot accomplish the same thing.

Just as in the case of eneuresis which is a physiological problem with psychologically oriented therapy which naturally is misdirected, so also misdirected is the psychologically oriented therapy of the anxiety pattern that accompanies the hyperventilation syndroms.

As you know, Sutherland proved beyond doubt that there is a respiratory function to the skull. A previous article by this author described in detail this pattern of minute skull bone movement, synchronous with respiration. Another facet of the respiration cycle is the movement of the sacrum, synchronous with respiration and in conjunction basically with movement of the occiput and the sphenoid bone. One symptom that accompanies the failure of proper respiratory function in all its craniosacral inter-relationships is the production of sighing respiration on a fairly frequent, regular basis.

The cranial technic of Alberts, the continuing and recently updated research of DeJarnette in this area, all point to further implementation of the original findings of Sutherland, of the existence of a "gill mechanism" in the sphenoid bone of the skull. There is a parallel importance to the proper respiratory movement of the sacrum—these two elements have immense importance in the treatment of hyperventilation over and above the temporary expedience of having the patient rebreathe his own CO2. The paper bag for rebreathing is as temporary a measure as munching a piece of candy in hyperinsulinism.

There is a structural basis for hyperventilation and as you know, the choroid plexus provides cerebrospinal fluid just as the salivary glands provide salivary fluid. This blood filtrate in the case of the cerebrospinal fluid, is aided in its circulation by the respiratory movement of the skull. If you took a vase and cracked it and then reassembled it without any adhesive, each section or piece of the vase would now have a slight range of motion that it did not possess before. This orderly predetermined skull bone movement is brought about by the reciprocal tension membranes of the skull. The tentorium cerebri and the tentotorium cerebelli act like circus tent shaped trampolines that are attached internally to the various skull structures, aiding in their movement and have therapeutic potential in cranial cases.

The recent research findings of Dr. L. M. Reese of Sedan Kansas, has done much to allow us to further understand the cranial movement es-

pecially of the temporo-sphenoid. He postulates this primitive or throw back gall mechanism that is the temporosphenoid area has along its suture line certain reflex areas to various parts of the viscera and other structures of the body. As he characterizes it, the cerebrospinal fluid is like the battery of a car and the various points along the temporosphenoid suture line are like the distributor of the same motor vehicle. Release of sutural impairments as well as release of the sacrum, allows proper distribution of the cerebrospinal fluid. So we have in this mechanism, the corallary of the vertebral adjustment, for if we liken the release of a subluxation to the opening of a shut valve, the craniosacral release turns on the pump, so to speak. If the valve is released or opened but the pressure is low, there is just a trickle of fluid, but if at the same time the "pump" is turned on, there will be a normalizing of the structures concerned. This then is the situation in most cases of hyperventilation. There is a hidden relatively painless interference with the interrelated craniosacral feedback mechanism associated with respiration, the body senses this and there is a tendency to overbreathe or sigh in an effort to free the mechanism. Interestingly enough, a hard forced respiration frequently is capable of setting this mechanism to rights although it is accidental and no therapy should be based on this premise.

Some patients complain of an annoying click associated with breathing which is often quite audible. This represents a cranial bone "hang up" and a very deep forced inspiration is of great value in freeing the temporary but annoying fault. This must be quite deep and quite forced to be effective.

The symptoms of hyperventilation are quite frightening and often leave the patient with a permanent cardiac or HEART ATTACK neurosis when there is no basis in fact for this fear. The elicitation of the symptoms by forced overbreathing and the prompt release of the pattern by rebreathing his own CO2 from a paper bag clinches the physiological basis for the almost terrifying picture of a patient who is found to be pale, clammy, cold with a rapid pulse and very low blood pressure. Naturally, these may represent other conditions, but invariably accompany hyperventilation.

The complicated but simplified interrelationship of structure and function is but one more piece of evidence of the master hand of the Creator who while working wonders on one hand, made their intricacies simple with the other. It is just this intricate simplicity we must keep in mind when we review any part of the body. The good Lord does not make mistakes, we do in our narrow approach to the whole man when we look at the whole man with any eyes other than those capable of the total look. Treatment of the hyperventilation problem is just one more way for the chiropractic physician to advance himself.

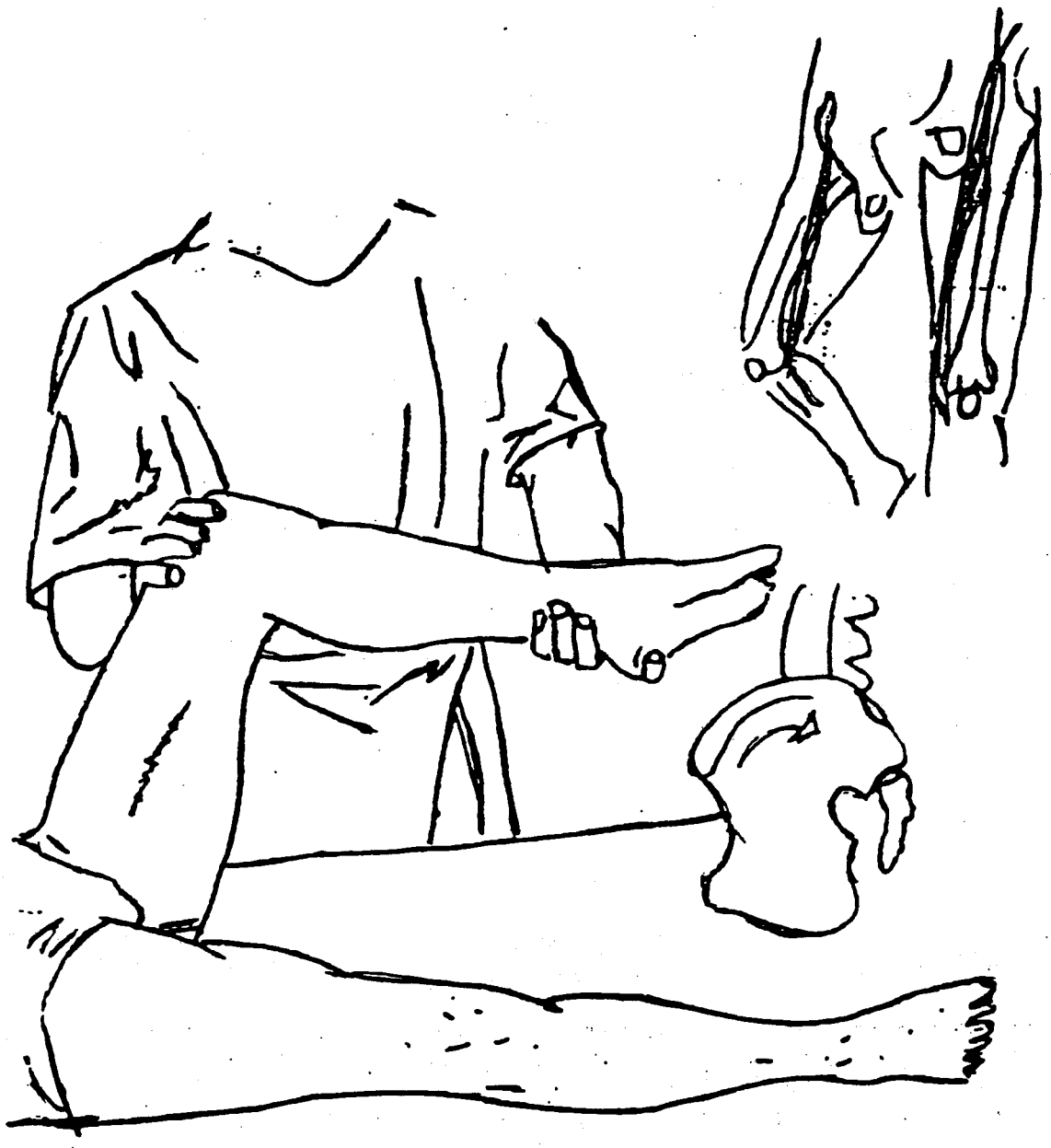
SUGAR *(Continued from Page 39)*

Stimulation of the adrenal sympathetic response by vigorous lower dorsal adjusting along with adrenal, liver and occasionally pancreatic cytotrophic extracts and the addition of vitamin A, F and Betaine products measurably aid in the recovery of these blood sugar problems. Normally, spontaneous recovery from low blood sugar occurs in the healthy adult from he release of glycogen from the liver by adrenal response but when the liver or the adrenal function is poor a chronic state of hyperinsulinism exists, since poor nutrition quickly lowers liver glycogen stores, the importance of good nutrition is obvious. On experiments in rats it was found that only 3% of dietary glucose was converted to glycogen and since the average American who latest statistics show eats about 16.5 lbs. of candy annually in the belief that he is deriving an energy source or reserve, it is obvious that he is depleting and not adding to his energy reserve and disturbing his metabolic mechanism.

The weight loss that occurs in worry and anxiety states comes from the exhaustion of liver glycogen and the turning to muscle and fat for split products to be synthesized to glycogen by the liver and then used to bolster the falling glucose level. The nervous system which we as DC's use must depend, regardless of school philosophy, upon an adequate supply of oxygen and this is inexorably tied to the level of sugar in the blood and this sugar level is adversely and paradoxically affected by sugar in the diet. Herein lies the cause and the treatment of hyperinsulinism.

Treatment consists of strict compliance with the hyperinsulinism diet and regular adjusting, using Gonstead analysis. It has been my experience that many times there is an anterior dorsal subluxation at the level of the 6th or 8th dorsal which should be adjusted. I am indebted for this information to Dr. De Jarnette and his method of adjustment is highly recommended here. Attention to the occipital and spinal nerve fibers following same De Jarnette approach is very valuable. Careful attention to details in treatment of the hyperinsulinism pattern produces a steady and gratifying response in this the most common cause of the two most common symptoms that cause patients to consult their doctor, namely exhaustion and anxiety. A single fasting blood sugar is of little value since it is always deceptive. Challenging the patient's insulin response by a high carbohydrate high sugar meal and checking the blood sugar level 4 hours afterwards invariably will show the low blood sugar so characteristic of hyperinsulinism. Correction of this condition by first detection, second treatment, is just another way that the chiropractic physician can be of service to his patient and to chiropractic.

Copies of Hyperinsulinism diet are available from the Author without charge. Please enclose a stamped, self-addressed envelope.



Post
Ilium
Pattern

SARTORIUS

PATIENT:
Supine

PRESSURE TESTING

Against the anterior and lateral area of the lower thigh, in a downward, inward direction and against the lower leg as if to straighten the lower leg

Drawing No. 1:

The patient is supine and the doctor is seated at the head of the treatment table. The doctor's hands are placed on the temporal bones of the skull, thenar eminences contacting the mastoid portion of the temporal bone with the fleshy part of the thumbs, second and third fingers fitting into the cervical musculature deeply, the fingers are merely anchored here, while the thumb's fleshy tissue presses rhythmically upward against the tip of the mastoid process, tending to rotate the temporal bones while a very gentle traction headward, while the gentle rhythmic coincident with respiration pressure is exerted for approximately 2 to 3 minutes.

It is possible to influence the primary respiratory mechanism by the above technic in all cases that have a slowing of vital processes of elimination, circulation and, paradoxically, in cases of hypotension, as well as hypertension. Use bilateral internal and external rotation of the temporals by contact of the thernar eminces on the mastoid tip, thumbs lying parallel to the mastoids and with a gentle barely perceptible movement, rotate the temporals externally and internally synchronous with respiration.

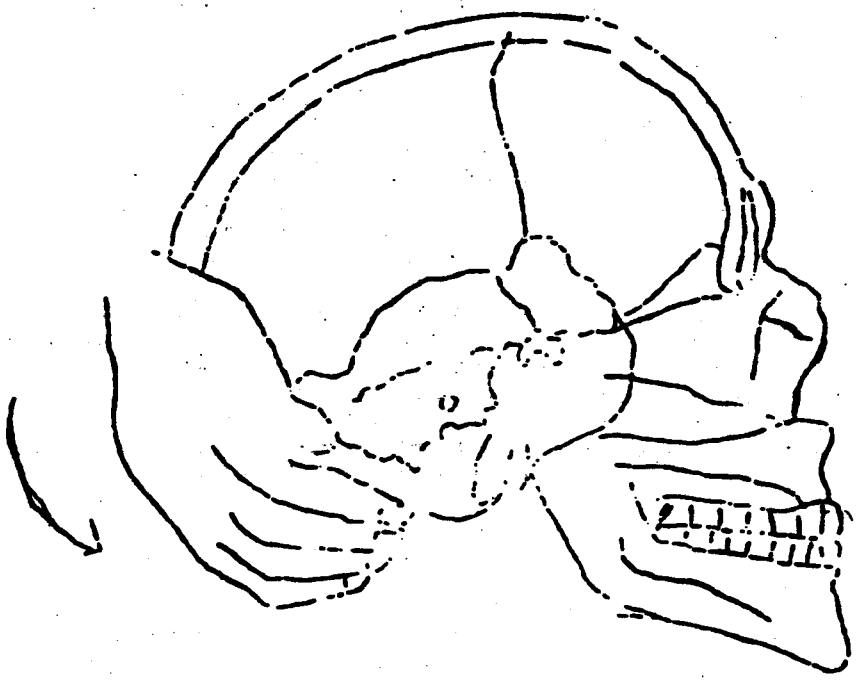
Drawing No. 2:

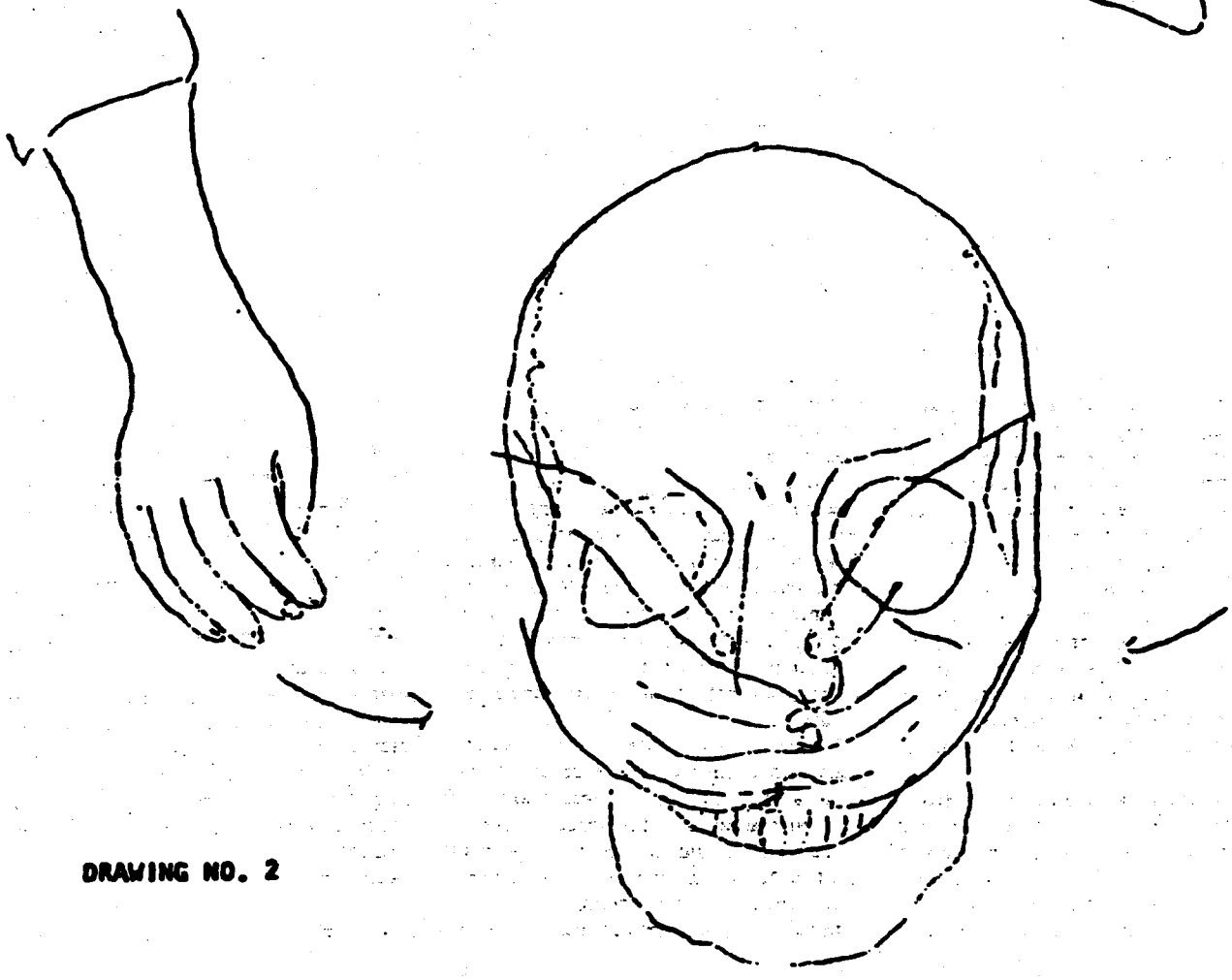
Patients who are high strung, hyperexcitable, hysterical,insomniacs and victims of sudden vertigo, and all over stimulations of the cardiac respiratory and vasomotor centers, greatly benefit from an application to the mastoid process of the temporal bones with the hands placed in the original position, but instead of the inward and upward movement previously described, allow a slight alternate rolling of the thenar eminences so as to permit the middle fingers (placed alongside the cervical musculature and with the fingers interlaced) a slight rolling from side to side is allowed to take place by so turning the tentorium so as to allow a side to side fluctuation of the cerebro spinal fluid, calming and relaxing the previously agitated patient within minutes of the 2 to 3 minute application of the technic.

Dr. Alberts' technic is an excellent addition to your present abilities, Dr. DeJarnette and Dr. King are also highly recommended, the Cottam technic is a good beginning.

You are advised to reread the article on respiratory function of the skull and intensely review the basic anatomy in Gray's.

DRAWING NO. 1





DRAWING NO. 2

POSTURAL HYPOTENSION AND FUNCTIONAL HYPOADRENIA

The clinical significance of postural changes in blood pressure often escapes the attention of the doctor who feels if the blood pressure is within normal limits no further investigation is needed in this area. A simple screening test for hypoadrenia which measures the body's ability to compensate for the hydrostatic effects of gravity takes very little time, perhaps a minute or two: yet this simple test affords the clue to many problems we face every day. The patient who is dizzy on change of position, especially on rising, the patient who can't get going in the morning, the patient who feels best as the day goes on then suddenly seems to collapse around 7:00 or 8:00 P.M. is an example of the hypoadrenia patient and this patient will have perhaps a normal blood pressure sitting or lying but when on assuming the upright position, there is a DROP in the SYSTOLIC pressure of as much as 40 mm. The usual amount of abnormal drop is about 10 to 15 mm but any DROP is ABNORMAL. The Splanchnic veins have no valves and as a result are dependent on the autonomics of the nervous system for their function and the tone of the splanchnic nerve is under the control of the adrenal system. The tone of the blood vessels of the abdomen therefore is under the control of the splanchnic nerves and when the patient stands up from a lying or a sitting position there should be a rise in the systolic blood pressure of 4-10 mm from the recumbent to the erect position. Generally speaking there should also be a rise of at least 6 mm from the sitting to the standing position. The patient who dates his trouble of tiredness and loss of interest following an attack of "flu" and who must force himself or herself to do everything, very often will have a systolic recumbent B.P. of 124, with an erect B.P. of 100.

In the normal person the systolic blood pressure is 4 to 10 mm higher in the standing erect position than it is in lying position. This rise is due to so-called "G" effect. When we stand all the blood rushes to our feet due to the effects of gravity but the receptors in the aorta and other blood vessels communicate this new position to the nervous system and just as a fighter pilot wears a "G" suit or "leg Squeezer" to counter the effects of gravity on a fast pullout from a vertical dive so also do we have our own "G" suit which causes a redistribution of blood from the splanchnic area to heart and muscles when we assume the erect position. This "G" suit mechanism is controlled by the splanchnic nerves. These splanchnic nerves are controlled by the adrenal system since the weak adrenals which should provide the actual chemical substance which allows this redistribution or compensation, hampers this mechanism by not providing enough "sympathin" to influence the valveless splanchnic vein's compensatory mechanism. The same "SYMPATHIN" chemical substance causes the contraction of the iris to light and when it is in short supply, as in hypoadrenia the usual contraction of the pupil to light is not sustained. If the examining light is shone on the eye for 30 to 40 seconds there will occur a paradoxical DILATION of the pupil to light or as is often seen, an alternating contraction and dilation with the pupil getting larger following each alternation, while the examining light is kept on the eye for a 40 second interval. This also is a sign of weak adrenals as well as the postural hypotension and explains why some patients can't stand bright lights or have accommodation defects which defy the usual optometric or ophthalmological efforts. These two signs, a dropping blood pressure on standing and a paradoxical dilation of the pupil to light are two easy, qick, simple, but valid indicators of weak functioning adrenals.

People who suffer from headache and/or dizziness in the erect position or who complain of weakness which is unrelated to blood count, blood pressure or blood sugar levels many times have this adrenal dysfunction as the basis for their complaints. This condition of hypoadrenia often accompanies a low blood sugar with the associated hyperinsulinism. In this regard it is interesting to note that just as low blood sugar symptoms can occur in a diabetic because sometimes it is not the actual *level* of the blood sugar but the *rate* of drop that causes the symptoms; so also can there be falling blood pressure in a person that has high blood pressure as well when he also assumes the erect position, so it is best to be alert for this condition in all varieties of patients.

Following severe illness associated with fever, also following anesthesia, alcoholism, prolonged worry, focal infections, toxic conditions, fractures, to name a few that in my own practice set the stage for a run of the reserves of the adrenal bank account along with the usual patterns of modern life with all its tensions, quickly "overdraw" this adrenal reserve and produce the characteristic pattern of fatigue. Since the adrenals have been closely associated with STRESS it is only natural that stress when excessive can deplete them. Because we cannot avoid stress it is best to prevent the effects of stress on the body or failing that, to recognize the condition and take appropriate treatment measures to balance the system. One primary effect of adrenal stimulation is the release of glycogen from the liver and possibly the musculature. When the blood sugar becomes lowered as was discussed in the article on "Hyperinsulinism" this mechanism of "fight or flee" activity may be continually forced into action to vainly try to keep converting glycogen into usable blood sugar levels when low blood sugar levels occur due to hyperinsulinism or even perhaps the newly discovered reaction to the protein factor Leucine, which also triggers off a low blood sugar pattern. But often these two conditions are found together, namely hyperinsulinism and hypoadrenia so the hyperinsulinism diet is needed along with support to the flagging adrenals.

The same "fight or flee" mechanism that enabled primitive man to escape

the saber-toothed tiger causes him to react to stress. But the stress now is often illness or toxemia* or severe trauma and instead of perching safely though exhausted, on a branch of a tree higher than the tiger could leap, breathing hard and pumping much blood, brought on by the sudden effort through the recently activated adrenal system thereby allowing them to return to normal, man now uses this adrenal system just as if he were being chased by the tiger, but he has no feed-back mechanism to revive the overworked adrenal system, so they go down to a depleted state with the previously mentioned diagnostic findings.

Since the adrenals are concerned with body chemistry, water metabolism, and electrolyte levels, it is reasonable to expect a correlation between blood pressure and body chemistry. The clinical basis for a low sodium diet has been pretty well established in a high blood pressure condition but the mineral management of the hypotensive especially the postural hypotensive has been pretty well neglected as have other measures designed to help this condition of postural hypotension and low adrenals, but what does not seem to be understood or practiced is that sugar and all carbohydrates CAUSE this disfunction and that sugar and high carbohydrates MUST BE RESTRICTED. The hypothalamus center for carbohydrate metabolism is the control center for many important body functions. It directs thru the autonomic nervous system all cardiovascular rhythms It also regulates osmotic pressures and many other functions Any insulin sugar imbalance can so affect the physiology of the hypothalamus that controls various body functions that it may in turn trigger a vascular headache, an asthma or any number of conditions. There is a particular kind of headache known as a histamine cephalalgia that comes with excruciating pain when the blood sugar drops to a low level at night and the patient is generally awakened by this pain. With the new method of diagnosing blood sugar levels, it is now possible to pinpoint the diagnosis of many unusual conditions that have failed to respond in the past and it can be done simply and quickly without extensive laboratory equipment.

Many cases of low blood sugar are produced by smoking. Many cases of optic nerve disfunction associated with a blood sugar level that is low respond to a hyperinsulinism diet and cessation of smoking. The exhaustion syndrome is quickly improved when a hyperinsulinism diet is followed, so also are the other symptom complexes improved when a hyperinsulinism diet along with careful structural adjusting is followed. Since generally speaking hypocalcemia coexists with hypoglycemia, the therapeutic use of calcium is of prime importance and in many patients attention to the hydrochloric acid level of the stomach is quite important. The object of the nutritional regime is to keep a trickle of usable sugars constantly going into the blood stream. Since the diet requires the patient eat more frequently the juice feeding is important to temper the appetite. Abrahamson, who with Pezet wrote "Body, Mind and Sugar" says, "The weakest most vulnerable cells suffer first. These will differ from person to person and from time to time in the same individual thus producing the almost infinite variety of hyperinsulinism manifestations in different persons at different times of his life It is often these widely dissimilar manifestations of sugar starvation which explain why hyperinsulinism has remained unknown so long and why now that we know it, it is so often unrecognized For it is like that fictional detective so adept at disguises that no one knew what the real man looked like."

Stimulation of the adrenal sympathetic response by vigorous lower dorsal adjusting along with adrenal, liver and, occasionally pancreatic cytotrophic extracts and the addition of vitamin A, F and Betaine products measurably aid in the recovery of these blood sugar problems. Normally, spontaneous recovery from low blood sugar occurs in the healthy adult from the release of glycogen from the liver by adrenal response but when the liver or the adrenal function is poor a chronic state of hyperinsulinism exists, since poor nutrition quickly lowers liver glycogen stores, the importance of good nutrition is obvious. On experiments in rats it was found that only 3% of dietary glucose was converted to glycogen and since the average American who latest statistics show eats about 16.5 lbs. of candy annually in the belief that he is deriving an energy source or reserve, it is obvious that he is depleting and not adding to his energy reserve and disturbing his metabolic mechanism

The weight loss that occurs in worry and anxiety states comes from the exhaustion of liver glycogen and the turning to muscle and fat for split products to be synthesized to glycogen by the liver and then used to bolster the falling glucose level. The nervous system which we as DC's use must depend, regardless of school philosophy, upon an adequate supply of oxygen and this is inexorably tied to the level of sugar in the blood and this sugar level is adversely and paradoxically affected by sugar in the diet. Herein lies the cause and the treatment of hyperinsulinism.

Treatment consists of strict compliance with the hyperinsulinism diet and regular adjusting, using Gonstead analysis. It has been my experience that many times there is an anterior dorsal subluxation at the level of the 6th or 8th dorsal which should be adjusted. I am indebted for this information to Dr. De Jarnette and his method of adjustment is highly recommended here. Attention to the occipital and spinal nerve fibers following same De Jarnette approach is very valuable. Careful attention to details in treatment of the hyperinsulinism pattern produces a steady and gratifying response in this the most common cause of the two most common symptoms that cause patients to consult their doctor, namely exhaustion and anxiety A single fasting blood sugar is of little value since it is always deceptive. Challenging the patient's insulin response by a high carbohydrate high sugar meal and checking the blood sugar level 4 hours afterwards invariably will show the low blood sugar so characteristic of hyperinsulinism. Correction of this condition by first detection, second treatment, is just another way that the chiropractic physician can be of service to his patient and to chiropractic.

Copies of Hyperinsulinism diet are available from the Author without charge. Please enclose a stamped, self-addressed envelope.

A Digest Magazine
Science Original

HEADACHE

By
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Many patients suffer with many varieties of head pain and headache, many doctors may suffer as well since the causes of headache are many and varied and are no respecter of professional status. The patient may have the classic hemicrania or migraine while the professional may fall heir to the "tension" type headache from the pressure of professional duties.

Migraine is the periodic recurring headache that is usually onesided and is often throbbing accompanied by nausea and vomiting. A period of vasoconstriction has been postulated followed by a period of vasodilation and severe pain which may last many hours, often days. The so called histamine headache is usually found to occur at night and this type literally drives the patient out of bed. The tension headache is the type that comes on AFTER the big problem has been met, or after the scholastic examination has been completed or AFTER the difficult patient has been taken care of.

The key here is the timing of the head pain. The headache that occurs in sinus dysfunction is bilateral, frontal, occipital and is often worse on one side than the other. This side being the concave side of the nasal septum even though this may seem to the patient and to the examiner the "open" side. This type of headache is worse in the morning and improves as the day wears on and the mucous excretions are eliminated. The patient may volunteer the information that the top of his head hurts when he coughs or sends down. The neck pain at the level of the middle cervical many times overshadows the frontal or maxillary aspect of this type of headache. Regardless of the type of headache or its classification there is a sound solid structural fault at the bottom of the classification pile. The therapy is uniquely chiropractic since structure determines function as you know. The effect of a low blood sugar in the production of much head pain has been previously discussed and the role of hyperinsulinism in producing any and all of the various types of headache is familiar to you all. Hyperinsulinism diets are an essential part in the management of any type of headache with hyperinsulinism overtones.

A basic distortion which is found in much cephalgia is the jammed occiput. This syndrome is manifested by a tilted occiput, and the accompanying muscle weakness will always show on the high occiput side. Test in the standard method for muscle weakness of the anterior scalene and the sternocleidomastoid. It will always test weak on the high side. Activate the neurolymphatic receptors just below the clavicle midway between the proximal and distal ends of the clavicle. Use a rotary manipulation for about 30 seconds. Do the same to the posterior reflex between atlas and axis spinous-transverse space. Retest the muscle. It will now test strong and muscle balancing will have been accomplished. Recheck for skull level and if still slightly tilted, palpate the gracilis and sartorius bellies with the patient supine. Palpate the gracilis and sartorius muscles on the short leg side, compare to the same area on the long side. The short leg will show sharp palpatory pain on the medial lower third of the short leg side. In the jammed occiput the same conditions obtain when the patient is prone or supine. The same leg remains short to the same extent and the palpatory pain remains the same over the same areas. If the occiput is sideslipped as well as jammed, side movement of the head will be restricted in one lateral movement opposed to the opposite direction. In any event release the jammed occiput by a superior thrust on the low occiput side with the patient's head turned so as to allow the low side to be up and available for the superior thrust to unjam the occiput. If there is sideslipping as well as jamming, thrust on the most sore area of the high side of the occiput. Thrust toward the base of the nose with the patient's head facing straight up. The thrust is a simultaneous double thrust towards the nose and a quick simultaneous lift of the low occiput side, lifting headwards as the occiput is adjusted. The same forces that jammed the occiput on one side generally side slip it as well, since the lateral portion of the anterior neck flexors and posterior neck extensors have side slipping action as well as their primary action. These muscles maintain, perpetuate, complicate and add to any primary subluxation regardless of cause.

Another pattern of subluxation in head pain is the lateral atlas with its switching pattern of self correction that somehow a somewhat confused body wisdom cannot quite self correct. The body knows how to adjust subluxa-

tions; it has been doing it for centuries. We live in A.D. time with B.C. bodies and what was true yesterday is true today. In other words, the body adjusts its own subluxations, it must have had to; when it fails to do this, it leaves a postural structural sign that is unique to that particular problem.

This is chiropractic diagnosis as opposed to the more classic type of symptom grouping diagnosis used to classify headache at the beginning of this article. It is THIS type of diagnosis that is sorely needed and often available but little known due to the communications gap so characteristic of our profession.

The lateral atlas shows a pattern of short leg in the supine position with medial thigh pain as does the previously mentioned jammed occiput but in the case of the lateral atlas, the short leg pattern exactly reverses as well as the pain on the gracilis and sartorius bellies. In other words if the right leg was short supine, the left leg will be short prone. If the right medial thigh hurts to pressure supine, the left medial thigh will hurt prone. This is the body language of a lateral atlas and it is a unique characteristic of the lateral atlas. It responds immediately to the right corrective measures. The inferior oblique and the superior oblique allow, when weak, the atlas to move laterally beneath the occiput. Since the opposite side superior and inferior oblique muscles pull with lessened opposition, they either maintain, or perpetuate or interfere with the innate correction of the subluxation. Pressure over the origin and insertion of the inferior and superior oblique on the lateral atlas side of the subluxation will quickly help to balance the structure, adjust in your usual manner, recheck the leg length and medial thigh gracilis sartorius pain pattern and you find these indicators will now be completely gone. Dr. M. B. Dejarnette pioneered in the analysis of body indicators in chiropractic diagnosis and we as a profession owe a great debt of gratitude for the unstinting efforts he has put forth in our behalf. Men like Dejarnette, Nimmo and the late Alberts have done much for us but more should take advantage of the material they have organized and presented.

The most outstanding feature of the average patient with headache regardless of its classification is a marked difference of head tilt relative angle and the relative angle of the interpupillary line or the angle formed by some portion of the orbits such as similar parts of the zygoma, the the zygomatic tubercle for example. This variation of tilt level or in other words the deparrallization of the occipital orbital line points directly to a cranial fault.

The temporal bone is capable of a slight range of motion, this is well known and has been demonstrated by Sutherland, DeJarnette, Alberts and other researchers in cranial therapy. Muscles move bones, this is axiomatic. The cerebrum and the cerebellum rest, as you know, on the tentorium cerebri and the tentorim cerebelli. Imagine, within the skull a trampoline type mechanism but shaped like a circus tent with the tent poles forming a middle sort of a partition between the hemispheres of the cerebrum and cerebellum. The periphery of the tent with the tent stakes are the attachments of the dura to the skull bone structure. Imagine two enormous beach balls resting on the circus tent, separated by the falx cerebri. The meninges act as a water filled shock absorber, the skull boney structures acting as the astrodome cover does for the stadium of the same name. If part of the movable astrodome cover were to jam or malfunction, the total structure would malfunction. So does the skull malfunction when the sutures are approximated or spread. The temporalis, the occipitalis, the epicranious and the frontalis all are primary skull bone movers. Occipital tilting with deparallization can be divided into superior and inferior temporal bone movement. The temporal bone moving in an eccentric rotary fashion, the inferior mastoid process moving superior and slightly posterior with the orbit narrowing in this syndrome of cranial bone movement. In the opposite pattern the inferior portion of the mastoid bone moves inferior and anterior with the orbit widening.

Observation of the patient with the cranial pattern of low occiput with a widened orbit, will show an extruded eyeball on the low occiput side. The reverse being true on the high side.

These two skull distortions are not the only pattern one sees in headache. Occasionally there is sidebending rotation as well, with the skull bulging at one temporal area and not another. Correction of the two main types though is relatively easy and can be presented without too much difficulty.

For the low occiput pattern, contact anterior to the mastoid process on the low side and gently press backwards or posterior with a very light touch letting the tentorium "trampoline" mechanism do the work. For the opposite pattern of the high side contact posterior to or in back of the mastoid process and gently press forward again letting the tentorium "trampoline" mechanism do the work.

Since muscles move bones contact the neurovascular reflexes to the temporalis with a simultaneous hold on the gastric and psoas area on the skull. If not familiar with these areas check the neurovascular text or write for further information. Balancing the skull musculature is just as important as balancing the extrinsic or intrinsic musculature. Remember the fact that as the occiput moves so does the sacrum and thought perhaps you were taught as was the author, that the skull was a bony box incapable of movement but the reverse is true. The skull structures do move, reread the REPIRATORY FUNCTION OF THE SKULL.

Remember the sacro-iliac joint was regarded as immovable but again, the reverse is true as you know. There is predictable regular, diagnostically discernable movement to each skull bone member and to each sutural union. Those unique structures allow movement just like the cracks between the sidewalks allow contraction and expansion between adjacent segments. Jamming of these structures complicate, perpetuate and activate many if not all causes of headache. Some cases of headache require special handling, the "miss a meal—I get a headache" patient needs a hyperinsulinism regime with attention to pancreas adrenal and liver. The tension type requires corrective attention generally to the pelvis subassemblies. Test of head rotation invariably will show greater rotation to one side more than the other when the head is rotated by the doctor in an extended patient neck or nose up position. Irritation of the sacro-iliac ligaments on the pelvic lesion side will quickly rebalance the neck structures if this was the original or perpetuating cause. It goes without saying that the pelvis must be precisely analyzed and adjusted. Reread article on POSTERIOR ILIUM AND POSTURAL HYPOTENSION for further information in this regard.

In the sinus case, use an orifical ultraviolet quartz applicator to contact trigger areas within the nose, generally the lower turbinates are the prime area and need to be contacted intermittently until pain turns off. This requires about a minute for each nostril. A cotton tipped long probe properly lubricated serves a poor second if the U.V. applicator is not available.

One sided neckache following meals especially following coffee, suggest gall bladder disturbances and the avoidance (most coffee is quite rancid) of sources of rancidity is essential in this management sequence. Most headaches are complicated by hyperinsulinism and hypoadrenia and there is

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The Intrinsic Muscles And The Persistent Subluxation

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Many doctors and many patients have problems related to recurrent subluxations. These may exist in the upper cervical area or in the lumbo-sacral or in the area in between. It is obvious that they resist correction since following seminars on various technics, there are usually a large number of doctors who apparently need personal attention for their personal problems with their own body structure. This interest in their own health is commendable but it raises a question as to the permanence of the care they have previously received. The staying power of an adjustment properly given has been a subject of much discussion for some time but the one factor that has hindered the thorough thinking-out of the problem has been the, "bone concept" that we have been saddled with in our concept of the subluxation. That "bone" just does not sit out there in space, it is attached to muscles and muscles move bones. In the case of the spine, it is moved as a unit by the extrinsic muscles of the body. As individual units the vertebrae subluxate because of imbalances of their intrinsic muscles and in the main this is the usual situation. Occasionally, with severe trauma, bones move muscles but this is the exception, not the rule. Ligaments do limit motion and ligaments to become loose, as Hackett the pioneer of sclerotherapy has proven by injecting the loosened ligament with a sclerosing solution, thereby getting a response. Gillet who thinks just the opposite to be true, also succeeds.

Muscles move bones and the vertebrae have the pattern of moving in units of threes because of the arrangement of the intrinsic muscles, namely, the rotatores brevis and the rotatores longus. The brevis runs from the transverse process of one vertebrae across almost horizontally to the spinous process of the vertebrae above and inserts on the spinous process and lamina.

In the case of the rotatores longus, they start at the transverse process of one vertebrae, skip the vertebrae above and insert onto the transverse process of NOT the vertebrae above the transverse attachment, but onto the spinous process of the vertebrae TWO ABOVE. As it is well known by now, the basic principle of Applied Kinesiology states

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that muscles do not contract in abnormal conditions, but only apparently contract in the presence of a weakness of their antagonist or contralateral opponent, so carry this concept on to the rotated vertebrae - carry this concept on to the tipped or inferior vertebrae. Do you not see that in general most vertebrae have either a combined tipping and rotation or a major component of rotation and a minor component of tipping, or vice-versa. Now this all comes about in the case of the rotation of a vertebrae because a rotatores brevis becomes weakened for many reasons (to be discussed later). The resulting vector of forces produces a posterior transverse opposite the weak rotatores. The weak rotatores allows the opposite side to act unopposed and the transverse opposite to the weakness goes posterior, and the spinous process of the vertebrae above moves slightly toward the posterior transverse. Generally the rotatores longus is also involved and in this situation the weak rotatores longus allows the transverse opposite the weak side to go superior and slightly posterior. Now, it is not a scholastic point as to whether the one side contracts or the other side weakens! The apparently contracted side does so ONLY BECAUSE THE OPPOSITE SIDE IS WEAK, THIS IS A FACT AS ANY INDIVIDUAL WHO HAS SEEN OR PRACTICED KINESIOLOGY PRINCIPLES CAN TELL YOU. THEREFORE, IT IS OF VITAL IMPORTANCE THAT THIS POINT BE MADE CLEAR.

In the discussion of common extrinsic muscular patterns, for example, if the occiput is tipped low on the left, attention to the apparently taut muscles will not alter the head level or the testing strength of the muscles concerned, but attention to the WEAK muscles by either a hard rotary pressure to the origin or the insertion for ten or twenty seconds, or activation of the neurolymphatic reflexes, just below the clavicle in the midline on either side and just below occiput base by a gentle rotary pressure will produce a rapid leveling of the head with a rapid response in the testing result of the particular muscles.

This same principle so often demonstrated to various professional groups throughout the country, validates the concept of the weak muscle as opposed to the apparently strong muscle. It will be this principle that we will discuss in relation to the restoration of both rotated and tipped vertebrae. If for some reason, cranial, visceral reflex, postural adaption to fixation patterns, injury or foot lesions, the rotatores brevis or longus becomes weakened, the vertebra in question moves out of its normal range and position and stays out because of the relative imbalance of the rotatores. The intertransversarii muscles participate in this pattern but only to a small degree. This opinion is based upon research treatment of them alone. A hard rotary pressure applied for approximately 20 seconds to the origin and insertion of the weak rotatore brevis muscle opposite the posterior transverse allows normal tone to take place and frequently the vertebra adjusts itself.

Have you not experienced this pattern before, where the vertebra moves as you prepare to contact it prior to adjustment? Have you not seen a perfect level femoral head level with a level sacrum, a level iliac horizontal line and then somewhere in the spine see a tipped or severely rotated segment? Have you not wondered at the modus operandi of such a vertebral lesion? The interspinous muscles again do not seem to participate in this situation to any degree and the treatment is generally confined to the

rotatores brevis or longus as the vertebra condition dictates.

Muscles move bones and there is an inter-related integrated feed back circuitry that maintains postural control, not only with the extrinsic muscles of the spine and body, but also to the intrinsic muscles of the spine. This feed back circuitry is under cranial dominant hemisphere control as so ably demonstrated by Alberts Cranial technic, and is mediated by the postural control of Magnus, again so ably demonstrated by the late F. Mathias Alexander, who so greatly influenced B. J. Palmer in his emphasis of the upper cervical. The body has perfect neurologic recall and this neurological recall is what restores the vertebral position to normal and keeps it there. There is a Nerve AND A BLOOD VESSEL AND A LYMPHATIC Vessel that pass through the intervertebral foramen, and the skeletal musculature is the starting point for the precision diagnosis of the primary problem.

The posture is the key to the pattern of weak muscles with the compensatory hypertonus of their opposite number. The muscles are tested and the correlation between X-ray and muscle testing is a perfect one. There is a lymphatic component to the primary problem - there is a neurolymphatic reflex that permits rapid treatment response and recovery of muscle tone in seconds. There is a vascular component which is easily treated and the response is again immediate via the neuro-vascular reflexes mainly on the skull, first discovered by Dr. Terence Bennet and recently researched by the author. This was found to be the missing link of the primary vascular block that accompanies the neurolymphatic block. Both occur after the primary subluxation has occured and perhaps even after it has been corrected for they are the perpetuating factors. If you have a sterilizer that boils dry and if that sterilizer has a circuit breaker to protect it and if that electrical circuit breaker type of fuse, before you can get the sterilizer running again you have to refill it with water, turn it back on, activate one or both circuit breakers, THEN the sterilizer will work as before since it has perfect electrical recall because of the way it was built. So does the body have perfect neurological recall because that is how it was built. However, don't oversimplify the complex marvel of the body as a single over-simplified bony concept.

Palmer did not oversimplify the subluxation, he may have possibly overclaimed its total therapeutic effectiveness but he did not endorse the simple nerve pressure idea causing a lack of nerve force. This is an example for lay people to quickly grasp BUT THERE IS MORE TO IT THAN THAT. There is a hypertonicity of one set of rotatores and a hypertonicity of the opposite number, there is a weakness of an end organ namely a skeletal muscle. This is detected by testing and by postural analysis.

There is a neurovascular, neurolymphatic approach to this postural pattern of the extrinsic muscles. There is a neurovascular neuro lymphatic component to the end organ muscle weakness. This total approach to the problem corrects the result as well as the cause and by using the end organ's nerve supply origin, you can backtrack and test the vertebral area associated with the nerve supply of the particular muscle or muscles that the testing technic has revealed. Usually the skeletal muscle balancing has eliminated the subluxation about 60 percent of the time in the author's experience, but regular scrutiny of the spine based on this pattern of investigation yields excellent results in the author's experience and in the experience of those who are associated with the author.

The upper cervical presents a peculiar pattern of muscle activity as well as anatomical activity for as you know, there is no disc between the occiput and C1. Nor is there a disc between C1 and C2, nor are there any "side rails" or the slight lipping of the outer surface of the articular facets, so these segments are peculiarly susceptible to subluxations.

The literature is now full of references to subluxations such as Dr. Ruth Jackson's excellent monograph on the "Cervical Syndrome". Alterations in the rotatores longus and brevis equivalents here are the restus capitis posterior and the oblique inferior. There is also the oblique superior. It is the imbalance of these muscles that precipitate and perpetuate the cervical subluxation pattern especially the commonly occurring pattern of axis posteriority on one side and atlas posteriority on the opposite side. When the rectus posterior and oblique inferior becomes weak on one side, the opposite side pulls with less opposition. In the case of the inferior oblique it has to pull on something, this something is the transverse of the atlas. Correct the origin and the insertion of the rectus and inferior oblique with a hard, heavy rotary pressure for about 20 to 30 seconds. Repalpate the posteriority of the axis and the usual posteriority of the atlas on the opposite side and they will be remarkably reduced if not totally so. If not - adjust.

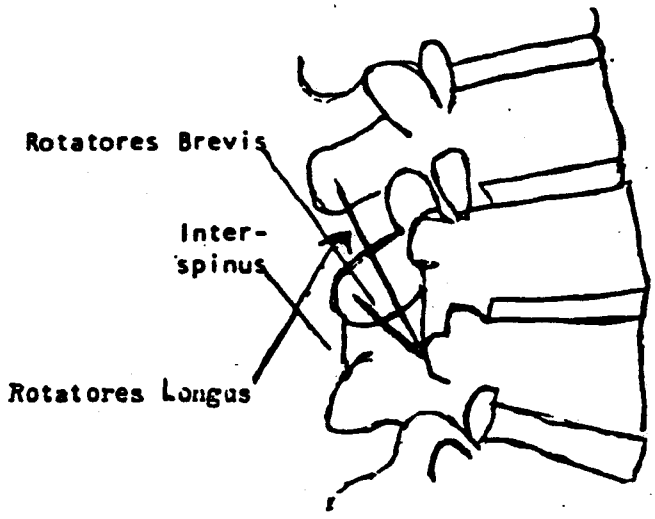
Keep in mind that many cervical subluxations are compensatory in reverse order and reverse position to lumbar rotations, to quote De Jarnette. "Do not expect one thing to do another."

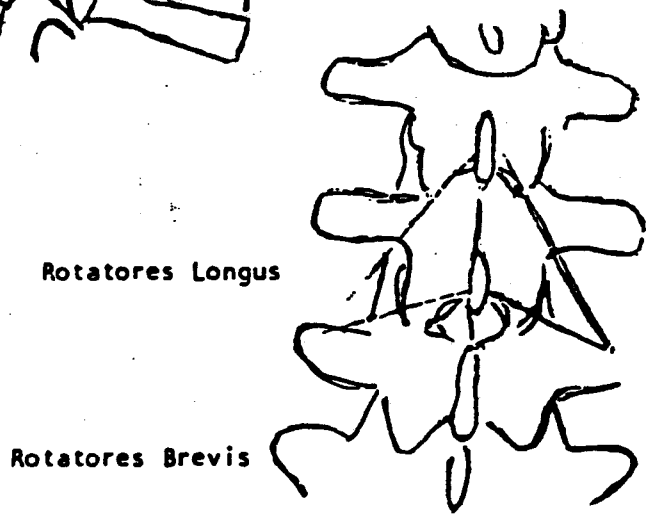
There is an indefinite variety of patterns of the upper cervical. The smaller intrinsic muscles are too small to be tested but the lack of testing allows a postural analysis as well as a vertebral position analysis by palpation or by X-ray. Correct the extrinsic muscles of the neck first by testing as dictated by posture, then by correction by the original kinesiology pattern mentioned above, or if necessary, by the vascular component. Use the anatomical neurological and vascular systems of the body to gain a faster, more effective and above all a more intelligent approach to the chiropractic point of view which is above all the neurological approach. Do not neglect the longissimus for it is often a factor. Rediscover the fascination of the total anatomy of the structures we deal with. So often there is only a bony concept in mind. Rediscover the enthusiasm of intelligent understanding of what Palmer the senior talked about when he said, "The reader will observe that a nerve may be impinged upon without being squeezed, pinched or compressed. An impingement consists of pressure on one side, pressure against; where as a nerve must be between two substances to be pinched. It has never been proven that subluxated vertebrae pinch, squeeze or compress nerves as they pass through the intervertebral foramen." (Page 482, the Chiropractors Adjustor 1910.)

We should re-examine what we do, why we do it, and why things heal the way they do; for we treat the entire body whether we acknowledge this fact or not. Chiropractic is a fascinating art and science. Treat it with the intellectual respect it deserves and watch your practice grow. This is just one more way the chiropractic physician can put service above self and advance his practice, his profession and himself. Further information and diagrams are available from the author without charge. Kindly inclose a stamped, self-addressed envelope.

The spinal joints are limited motion heavy load bearing joints, the portion of the musculature that stabilize the joint must act with great force, exactness and smoothness. The diagrams show the brevis and longus rotatores muscles. Sometimes one or the other act to subluxate a vertebrae. The general rule would be to check the extrinsic muscles by postural analysis and muscle testing as outlined in Applied Kinesiology, then check the intrinsic muscles. Analyze via palpation and X-ray, then for example if there is an inferiority on the left of any vertebrae (excluding the two upper cervicals) use a hard heavy pressure on the inferior transverse and a hard heavy pressure on the side of the spinous two above the previously mentioned inferior transverse. Use this pressure on the Lamina and spinous process on the same side, for example a left inferior transverse, use the pressure on the left inferior transverse and the left spinous two above it.

In the case of a posteriority use a hard heavy pressure on the anterior transverse and on the spinous process on the same side as the anteriority but on the spinus process of the vertebrae ONE above the subluxated vertebrae. Various combinations may be dealt with by using these principles. In the case of an anteriority with the spinous process showing the soreness to anterior pressure at the inferior tip that is typical of an anteriority, use a double thumb pressure between the Lamina and the transverses of the vertebrae immediately below the anterior vertebrae and have the patient force his breathing for a few seconds. All pressures are applied for a very brief period, perhaps 20 seconds in all cases of both inferiorities, posteriorties and anteriorities. For the two upper cervicals reread the original article.





THE ILEO-CECAL VALVE SYNDROME

By Dr George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Many individuals have symptoms or a disturbance of the ileo-cecal valve and its function. This valve is situated as you know, between the one way action small intestine and the two way reciprocal action large intestine. It should operate like a subway turnstile but in many individuals it operates like a pair of swinging doors much to the detriment of the patient.

The mesentery which supports the ileo-cecal valve contributes more to the support of the chiropractic physician and his family than it does to the patient's poor viscera. In other words, the stretching of the mesentery by a variety of causes, overeating at holidays, overwork producing gravity fatigue, emotional upsets disturbing vagus and lower dorsal sympathetic balance, to name a few, causes more pain in more places than can readily be imagined.

Sudden pain is the outstanding symptom, "I just bent over and it hit me right here in the back," or "I reached up and I felt like I'd broken my arm off right here," or "I bent over and I couldn't get up." Heart fluttering, chest pain, and right shoulder pain are also symptoms.

All these subjective descriptions are typical of the ileo-cecal valve syndrome. The mesentery is stretched or twisted, afferent or incoming fibers are irritated, they then carry impulses to the central nervous system which do not come into the realm of consciousness where they reflex and carry motor impulses along the efferent or outgoing fiber causing a sudden pain and spasm and most important a REFLEX subluxation in an area frequently in the second or third lumbar or frequently the fourth or fifth dorsal. Remember these are REFLEX subluxations and are not, I repeat, to be adjusted for position. If some doctors would spend eight minutes looking and thinking and two minutes treating, they would have vastly better results, they wouldn't be so tired, and they would not need tabloids to get patients into their offices, although they are a very good thing.

Frequently when you palpate or examine by X-ray or by some other heat recording or sensitive galvanometer, you will get readings on these points, but you have probably found that adjusting these areas gives only short-lived results, if any at all, and treatment continues till the patient's doctor or the doctor's patient gives up.

The next time you see an acute low back, generally with much laterality or bent forward and the patient denies trauma recent or past, examine the patient and treat the patient in this manner:

1. Stand the patient before a plumb line (if you haven't got one, make one; it impresses the patient greatly with chiropractic principles within his own mind and it is an invaluable guide to faster and better results in all cases, for it lets you see what you did or did not do to the patient's distortion. This in itself arouses confidence and lends sincerity to your approach, especially when you can prove to yourself that you have helped the patient. Chiropractic is a wonderful thing but a great many D. C.'s are practicing in 1967 with 1907 technic).

2 Mark the spine where it deviates from the plumb line.

3. Palpate the abdomen with the patient on the back. Notice if there is pain on pressure in the lower right quadrant. This is not a constant finding. There may be a slight bulging.

4. Draw a line from the crest of the ilium on the right to the lateral edge of the right rectus abdominis. Treat at the point where this line meets the rectus abdominis muscle. Treat by using a simple stretch reflex by allowing the fingers to contact this area and then stretching gently until a definite pulsation is felt under the fingers. Hold for about 30 seconds.

5. Test the tensor fascia femoris by asking the patient to abduct the leg while lying on the back. Generally the right tensor fascia femoris is weak in the ileo cecal valve syndrome. Blockage of the neurolymphatic reflexes to the colon is associated with weakness of the facia femoris. The anterior reflex for the colon is

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within an area an inch from the greater trochanter down to within an inch below the patella. Stimulate this area by a rotary manipulation along the lateral aspect of the thigh with as much pressure as you could stand on your eye ball for about 20 to 30 seconds. The upper section of the right side is especially important and should be checked and rechecked. The posterior reflex is located from the transverse process of the 2nd lumbar vertebrae to the transverse process of the 4th lumbar vertebrae in a triangular area reaching across to the ilium. Manipulation of the posterior reflex is done in the same manner as the anterior reflex.

6. There are many other areas for auxiliary treatment such as the anterior right humeral head area and the mid nipple line of the 5th interspace area, as so ably taught by Dr. De Jarnette, as well as foot reflexes. These are of value in both the chronic and acute ileo cecal valve problems. A deep lifting to the opposite shoulder contact is maintained with these auxiliary contacts.

Treatment at area 4 above is a neurovascular reflex and requires a very light tugging touch. Hold for pulsation and maintain for about 30 seconds. The other areas mentioned are neurolymphatic reflexes and require a fairly heavy pressure, approximately that which you could stand on the eyeball. These areas of neurolymphatic reflexes are multiple areas of lymphatic blocking and require multiple application to the involved areas.

The spinal subluxations as mentioned are reflex in character and quickly reappear within minutes following adjustment if the reflex areas are not treated as well.

Following the treatment of the areas as previously described, have the patient turn and lie on the back. Take both hands and grasp the tissues of the lower right quadrant and sharply lift the tissues with a quick jerk. Repeat this five times.

This completes the ileo-cecal valve technic. In our experience fully 50% of all acute cases that enter our offices are complicated by this syndrome. Many cases of torticollis present this syndrome and the response to this therapy is not only gratifying to the patient but is tremendously satisfying to the conscientious chiropractor to see your therapy smoothly applied not to the part of the patient's anatomy that is complaining, but to the source of that complaint which is frequently far removed from the area of complaint.

We keep accurate records, not only of those who paid and those whom we will bill, but more important of what we found on plumb line analysis and occipital and visceral-spinal analysis. Regularly in all cases of heart fluttering, palpitation, chest pain on activity, the ileo-cecal valve syndrome appears. This naturally is not the only cause of these symptoms but it is a major cause. We feel that when the ileo-cecal valve becomes incompetent and gas pressure in the colon blows it open, the normal to and fro peristalsis of the colon regurgitates the colon's debris out of the relatively non-absorbing membranous colon into the highly absorbing ileum where toxic products then circulate in the blood stream and these products then may irritate a deltoid or a lumbar muscle or a neck muscle or the heart muscle or it very often causes a Mennieres syndrome, (again speaking from experience) or a migraine headache, or very often it causes a dependent adema of the ankles. We have had seven consecutive cases in which this was the deciding factor in this previously baffling condition. Many right shoulder "bursitis" cases have this as the main cause and if treated properly gives spectacular results in one to two treatments. In this condition, it has been our experience to first make the abdominal contact in the usual way, but instead of merely holding it, use gentle rotary abdominal treatment while holding a shoulder contact. This bursitis condition is about the only type of case where this version of the ileo-cecal technic is used.

Colonics and the usual type of enema are the enemy of the ileo-cecal valve by blowing an already distended colon up further and causing by increased pressure on the part of the colon in response to the dilation to blow open an already open valve. But if a normal saline enema is given following a bowel movement (very slowly and quite cool), toning of this valve occurs and the morning backache, the chest fluttering, the shoulder pain on reaching and the recurring stiff neck and mid-afternoon dizziness are greatly relieved.

Enemas should be prescribed, as given above, twice a week for at least a month, even though all symptoms may disappear with the first treatment. Tell the patient the purpose of the enema is to tone the valve rather than to effect a bowel movement increase.

Many times interrogation of the patient will reveal that he notices a bulge of the lower right abdomen at times. The patient may also state that during the time he has the problem whatever it may be with the ileo-cecal valve, he notices that the stool is either very small in diameter as compared to normal, or is composed of many small balls as opposed to normal. Having the patient stand while you press inward and upward towards the opposite shoulder is good differential diagnosis. Relief is a positive sign of ileo-cecal valve syndrome. This syndrome is involved in so many conditions in so many ways, it should always be considered as a possible etiological factor in any problem case or in any difficult acute case. The rectum is frequently found abnormally tight in these conditions and is another diagnostic sign in the full blown pattern of an incompetent ileo-cecal valve. X-ray evidence is occasionally positive for this condition but absence of positive x-ray signs is not conclusive proof. A trial of therapy as directed above is best.

Group fixations of cervical 4 down to dorsal 2 are often the hidden and possibly primary factors in some cases of abdominal ptosis. This directly affects ileo-cecal valve function and position and testing for fixation in this area is strongly advised. Using the principle of counter-resistance on one vertebrae and pressing on another and then reversing the procedure, is the easiest method to find the fixations in these areas. The principle of adjustment being to hold one transverse in a double transverse adjustment while the transverse of the vertebra above or below the held transverse is adjusted.

Proper recognition and treatment of the ileo-cecal valve syndrome is just one more way to serve your patients better and to put service above self. Devotion to your patients welfare by alerting your mind to problems such as these pays enormous dividends in patient satisfaction and referral.

Chiropractic properly practiced is 90% analysis and 10% treatment. Most of the time it is just the opposite and that's stretching a point. We are so anxious to prove to the patient that we have the answer to his problem that we overadjust and create more problems rather than eliminate. The only thing that will sell chiropractic to the public is consistently spectacular results and these cannot be derived by luck and the law of averages.

Results require a pair of hands that are highly trained hands, that belong to a head that can think for itself and a heart that wants to help people first and itself second. Further information and treatment diagrams are available from the author without charge. Kindly enclose a stamped, self addressed envelope.

HEADACHE *(Continued from Pg. 70)*

usually both upper cervical and or cranial faults. Correction of the cranial faults give tremendous response to good chiropractic management and the work of Alberts and DeJarnette is highly advised as is rereading the original article on skull movement by the author.

Headache can be a demoralizing, debilitating irksome thing and you will earn the patient's undying love and admiration as well as recommendation if you help him. Help him you will if you apply the 'whole man concept' to your patient and to yourself for that matter. We succeed many times by accident, why not succeed on purpose with the God given innate recovery indicators and methods available for the asking. There is a reason for everything if we but look, not with eyes that fail to see the perfection of God's creation but look behind the obvious, and see the hidden but revealing view of the innate wisdom of the body, frustrated though temporarily it may be. It but waits for your hand and your heart to unlock its fantastic ability to recover. Reawaken within yourself that inner enthusiasm which radiates to the patient and builds the true confidence that so greatly helps recovery.

Further information on treatment technique is available from the author without charge. Kindly enclose a stamped self addressed envelope.

Thank you for your interest in the recent article "The Ileo-Cecal Valve Syndrome." The occiput is the switchboard for the abdominal viscera and palpation of the occiput gives much information to those who take the 30 seconds to do it. Start at the occipital protuberance, run the fingers along the occiput until you are about halfway between the protuberance and the junction of the ear and the mastoid. Pick the sorest spot on either side of the occiput, pick the sorest transverse of the third dorsal, the fourth dorsal, the first and the second lumbar. Pick the sorest transverse, compare the transverse pain to the occiput pain, it does not matter if they are not on the same side. Hold the sorest area while you vigorously manipulate the other area, be it occiput or transverse. Vigorously manipulate the least sorest area while you firmly hold the sorest area until there is no more pain at the previously mentioned sorest area. Request the patient to turn over and lie on the back while you use a deep posterior pressure in the right lower quadrant until you meet resistance, then press straight headward and generally to the opposite shoulder, maintain the pressure for about 30 seconds. Cold packing externally, not ice but cold water from the tap, across the lower abdomen is good home adjunctive therapy. Maintain the cold pack without renewing for 20 minutes. Now follow this routine with treatment based on the instructions on page 32, number 3 through and including number 6, in C.E. article. A bulky substance is of great help temporarily to secure proper and regular colon evacuation. Esscolloid or Neutrabland or some other equivalent material is of value in producing regular evacuations. Attention to the cervical fixations by the method outlined on page 35 in C.F. article is also essential. Many times the receptors in the sacroiliac joints are also involved, so a heavy hard almost bruising pressure momentarily exerted on all sore ligamentous areas of both sacroiliac ligaments is of great help in the difficult case. The inclusion of sufficient Vitamin "B" complex such as may be found in an ordinary yeast cake taken once daily helps to maintain bowel tone so essential

to ileo-cecal valve function. The pH of the bowel and the saliva is an indicator of function. The pH of the saliva should be 7.8, according to Hawkins the recognized authority in the nutritional field of dentistry; the ileo-cecal valve functions best when the saliva is maintained at this level and it is a good indicator. Increasing the natural fats and oils along with the B complex helps the function as well. Be careful not to give too much B to a sluggish liver case, the yeast cake seems to work best in these cases. The pH of the stool should be 6.8 to 7.0. When the stool is too acid the colon loses tone and the ileo-cecal valve malfunctions. When the stool is too alkaline the colon becomes spastic and the ileo-cecal valve malfunctions, so you see pH is important and can easily be measured with phydrion* strips available from your local supplier or from the Vitamin Products Company or from other companies supplying our profession. Vegetables, potatoes and fruit increase the alkalinity of the saliva. Meats, fish, eggs and cottage cheese decrease the alkalinity of the saliva. Butter, cream, fats and oils help to increase the alkalinity of the saliva. Cereals, bread, cake and all grain foods decrease the saliva alkalinity. Milk and cream cheese increase the alkalinity, so you can see that slight alterations in the diet along with treatment is of great value in the ileo-cecal valve syndrome. Natural B complex is also essential to function as well as maintenance of normal pH of both saliva and stool.

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NUTRITIONAL FACTORS IN EVERY DAY PRACTICE

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Many patients and many doctors suffer from lactic acid excess. It is this excess that produces the symptoms of a vitamin B deficiency. The patient who complains of drowsiness after meals, the patient who says he must get up frequently at night to urinate a small amount but has no frequency in the daytime. The patient that says he feels as though he has a hat on or a band sensation around the head, these are all symptoms of a vitamin B deficiency. There is an obligatory cycle between carbohydrate and vitamin B in that the ingestion of most modern urban available carbohydrate requires an equal amount of vitamin B and since the carbohydrate is invariably a processed starch with only enrichment's dubious values, the average carbohydrate eater is eating his way into a vitamin B deficiency with the associated accumulation of lactic acid and pyruvic acids since the metabolism of carbohydrate obligates the body to come up with an adequate amount of vitamin B whether the food contains adequate amounts or not. Just as the income tax department levies its toll whether you have the money or not, so does the body require vitamin B for its metabolic utilization of carbohydrate. In its metabolic lack there accumulates an increased level of lactic or pyruvic acid with the accompanying acidosis type symptoms of poor breath holding (less than 20 seconds), frequent yawning and fatigue, lack of appetite and bloating due to an accumulation of fluid with the accumulation of lactic and pyruvic acids.

Sometimes these symptoms are most aggravated after exercise where the body cannot metabolize the increased amount of lactic acid brought about by the exercise which is not vented out of the body by perspiration.

The lactic acid which is lost by the body during perspiration unfortunately is also accompanied by a measurable amount of vitamin B so if you are not in balance to begin with, the exercise which should stimulate the circulation also depletes the body further so it is a good idea to stay in balance by keeping the processed carbohydrate to a minimum, delectable though it may taste.

The frequent failure of a low carbohydrate diet or a high proten diet to accomplish its purpose in weight reduction or increased energy, is brought about by the relative water excess that occurs when the body in a "stupid" body wisdom effort tries to dilute the accumulating excess lactic and pyruvic acids. This is the reason why in beriberi the ankles swell and the patient bloats.

Earlier D. C.s accomplished miracles not only because of the chiropractic adjustment, but also because of the springboard the more natural nutritional balance some of those earlier patients had So use the nutritional base of the patient to potentiate the normalizing effects of proper chiropractic treatment. If you have a bone out of place in the body, all the whole wheat bread or vitamin B will not put it back unless you manage to hit the offending structural member just right with a considerable weight of the stale, hard wheat loaf but so also no adjustment can make up for dietary errors of the patient even though he may not be aware of these errors.

A doctor is a teacher as well as a physician and you are derelict in your duty to the patient if you do not advise him of the need for a change in his diet. It is not necessary to use supplemental nutrition if you can change the patient's diet so as to include high sources of natural B complex. But this is difficult as you know, so the help that natural B complex concentrates provide is a practical method. Many patients make the mistake of using high levels of synthetic materials in order to get a fast response. This is ill advised although there are times when the synthetics are of great use. As one who is familiar with both ends of the potency pattern in general, I find that the lower potency is best in the long run for the average patient. To get the high potency some advertise to the general public as "natural", the pill would have to be the size of a baseball and highly compressed at that, so many use a natural base and add synthetic thiamin. This is good but as mentioned above for nutritional, not "drug" use, the lower potencies with the natural synergists are best as many are belatedly discovering.

Smooth muscle tone is maintained by many inherent factors, but the level of circulating vitamin B is also an important factor.. For example; the patient mentioned earlier who has no frequency during the day but experiences an exasperating frequency at night with each passage being only a small amount, shows the effect quite well of the smooth muscle-tone factor.

As you know the bladder is never empty, it is always full and although the patient may think he has emptied his bladder, it really has gone down from the size of an orange to the size of a small plum for example. When the circulation is moving fairly fast, the available B goes past the smooth muscle at a fairly good pace, but with cessation of daily activity the rate flow slows down and the bladder muscle becomes relatively atonic. It receives urine but continues to dilate until a stretch reflex rather than a normal urinary reflex occurs, but the muscle is so relatively weak the amount urinated is small, the bladder quickly resumes a full position and the urge to urinate occurs and occurs and occurs all night long.

The use of as little as 125 U.S.P. units of natural B complex 3 times daily, (approximately 1 Mg!) quickly clears the nutritional component of this condition and the patient is greatly relieved. Naturally, as you know there are other reasons for nocturia and frequency, but this condition is prevalent and responds well Sometimes an excess of lactic acid in the intestinal environment predisposes the patient to a lactic acid excess. Testing the stool Ph is a good and simple method to evaluate this factor. If it is too acid, try occasional colon irrigations or simple enemas to aid in the reduction of this complicating factor – since extra B will not solve the intestinal factor. Careful attention to the lumbar spine and sacro-lumbar joints is essential in this area of the lactic acid excess.

Tenderness of the calf muscles and burning of the soles of the feet is a

frequently met symptom. It is a manifestation of the vasodilation that an excess of lactic acid produces in a high activity muscle. Much back pain is experienced by patients especially at night and this also is a condition that responds to an increased B level. Most of the B in the nervous system is in the myelin sheath and it is in this storage battery that the acetylcholine formation takes place. As you know, this acetylcholine is a chemical intermediary in the propagation of the nerve impulse so that in any interference with the nervous system, this factor should be considered, because the decrease in acetylcholine not only provides a weak storage battery, but the absence of it actually produces a thinning out or loss of the insulation on the nerve, making it more susceptible to pressure or to "crossed wire" interference as we see in "trigger syndromes".

The concentration of B is highest in the tissues. They contain twenty times more than the blood, and the heart is highest in the tissue concentration of this material since it is such an active muscle. In this regard many B deficient patients have as an easily detectible pattern, a slow heart beat, lowered temperature and as mentioned before, a poor breath-holding time, for example – below 20 seconds. Many of these patients also show an increased weight which is basically fluid and the ill advised high protein diet sometimes ritualistically prescribed in these people only aggravates the existing situation, since one of the factors that require an uptake in the B level is an increase in protein. So you see, God does not make mistakes, we do, and since we cannot abandon our present mode of life and food readily, attention to the quality of the food is essential to the recovery of many patients.

The use of synthetic sources many times embarrasses the system, for it is just as if you had ten children and gave only one a Christmas present. When you use high concentrates of synthetics, they often cause deficiency symptoms themselves since they imbalance by balancing. As in the case with the ten children, it is better to give each a small present and satisfy all than to give a large present to only one thereby creating more problems than you already have. Sometimes the need for synthetics is necessary for rapid saturation as in the case of an inveterate alcoholic, but these are the exceptions in my opinion in general chiropractic practice.

Low concentration of natural complexes high in the water soluble B factor have worked best over the past twenty five years. Foods that are high in B are readily available such as unprocessed cereals, peas, beans, peanuts and yeast to name a few. In the East an extract of rice polishings (tikitiki) is used as a preventative of Beriberi much like quinine used to be for malaria, so unprocessed or brown rice is also an excellent food. The response to the use of natural B complex available from suppliers to our profession, is truly remarkable and fast and gratifying.

When large quantities of carbohydrate, alcohol are taken or when the level of vitamin B has been low for a considerable period of time, the liver fails to detoxify or inactivate estrone and the resulting imbalance between estrone and progesterone produces many symptoms, such as spider nevi, those little dilated or broken blood vessles radiating out from a central point found on face, chest, or often following along the lower rib line on the front of the chest.

The water loving quality of the accumulated estrone or estrogen causes the breasts to swell and body weight gain at onset of the menstrual period as well as a long, heavy period with a short interval between periods. There are other reasons for this very common condition as you well know, but this B deficiency factor along with specific lumbar lesions comprise the most commonly met situations.

An interesting fact is that clams and salted herring contain a strong thiaminase which destroys vitamin B, so the lesson here is obvious.

An increased psychotic tendency, a lack of vibration sense to an ordinary tuning fork, intolerance to noise, apprehension, are all mental signs in B deficient patients and here again is the demonstration of the weak link which undoubtedly has the structural fault of subluxation as its primary cause, but with the deficiency hitting the area which is weakest constitutionally or environmentally. Correction of the structural phase of a mixed problem is just as important as correcting the nutritional phase. One inter-relates with the other and here is where the whole body concept should guide the progressive doctor of chiropractic. If our main job is to correct any and all interferences with the nervous system, why should not the nutritional component be as much of a responsibility as the structural component, since the nerve cannot function without acetylcholine and since vitamin B is necessary for its production and "storage battery use!"

Dietary histories of innumerable patients seen by the author and compiled by the patient as part of his orginal starting record, show that the average patient does not get even the minimum requirements. Why neglect the opportunity to get the patient better faster, naturally, allowing the natural forces of the body to operate in the way the Good Lord intended them to act.

The ptyalin in the saliva is a good measurement of the vitamin B level of the body and many dental straight thinkers have observed the effects of lack of B in their patients and some have measured the ability of the ptyalin to reduce the starch in a starch iodine solution. The solution which is blue in color rapidly decolorizes when mixed with samples of small amounts of the patient's saliva. After long observation of this test, a conclusion has been reached that a normal Ph is necessary for salivary ptyalin to be formed and to operate. Therefore a rapid screening test is to determine if the saliva is slightly alkaline. Extremes at either end of the Ph means B deficiency in the author's opinion and are a good index of progress and of nutritional therapy since they give an indication as to when, if needed, to increase the supplemental nutritional support, when to decrease it or when to cease it.

As you already know, the inability of many patients to achieve a quick and fast departure to sleep is due to a lack of calcium in its diffusible form, but when the patient gets to sleep, then reawakens and finds it difficult to resume sleep, the answer usually lies in the use of extra B and perhaps in the more resistant cases, adrenal support which incidentally is another function of the versatile vitamin B, which is the nervous system's and the chiropractor's friend.

Modern chiropractic should include the concept of the whole man since man is a structural, chemical and psychospiritual unit whether you believe it or not. If you neglect any one of the three components, you will fail to produce the rapid and steady response to normal upon which our profession was built and which now sustains it. This "total concept" will continue to advance our profession to heights never before scaled.

An effort has been made to show the inter-relationship of the water soluble fraction of the vitamin B complex known as natural thiamin or aneurin. Subsequent articles will deal with the alcohol soluble fraction of the of the B complex, namely the G or riboflavin and niacin fractions.

Further information on testing for, uses of and sources of vitamin B is available from the author without charge. Kindly inclose a stamped, self-addressed envelope.

(NUTRITIONAL DIRECTIONS – NEXT PAGE)

NUTRITIONAL DIRECTIONS

(Please eat only these foods unless otherwise advised.)

ON ARISING -- Orange, half grapefruit, or 4 ounces of orange or grapefruit juice.

BREAKFAST -- Choice of fresh or frozen fruit or juice; one egg, with meat of some sort, such as bacon, ham, or fish; one small slice of unbleached whole wheat bread or toast toasted for 50 seconds; plenty of butter; beverage -- milk or one cup of coffee (whole milk or fortified skimmed milk as directed). If more coffee is desired decaffeinated coffee should be substituted, or weak tea, tea ball -- not brewed; no sugar.

2 HOURS AFTER BREAKFAST -- 4 ounces of fruit juice.

LUNCH -- A tomato juice cocktail prepared as follows: Add the following to a glass of tomato juice:

1 teaspoon of Brewers Yeast — grated rind of one lemon
1 teaspoon of Wheat Germ — juice of one lemon

Choice of meat, fish or cheese; multicolored salad of raw vegetables if desired; one small slice of whole wheat bread or toast with plenty of butter; fresh or frozen fruit dessert; beverage -- milk or fruit juice.

3 HOURS AFTER LUNCH -- 6 or 8 ounces of milk.

1 HOUR BEFORE DINNER -- 4 ounces of fruit juice.

DINNER -- The same as lunch except in smaller quantities.

2 TO 3 HOURS AFTER DINNER -- 8 ounces of milk.

NOTES

Unless otherwise instructed, you may have any fresh or frozen fruit or juice you desire. Because of higher carbohydrate content grape and prune juices are restricted.
Eat sparingly of bananas, figs, and dates for the same reason.
You may have three baked white potatoes each week, if desired.
Liver once a week is strongly advised.
All smoking is forbidden.

Avoid Absolutely

All desserts and beverages in which sugar is used, such as pies, pastries, cookies, ice cream, fountain drinks, pop, colas, candies, etc. Spaghetti, macaroni, and noodles are not allowed. Also avoid alcoholic beverages, such as wine, cordials, cocktails, beer.

If you can't take milk or fruit juices substitute a handful of almonds, walnuts, etc. -- raw not roasted and salted.
The object of this nutritional regimen is to prevent blood sugar starvation by keeping a trickle of usable sugars constantly going into the blood stream. The first feeding on arising starts the body's machinery, and breakfast builds it up to speed. The midmorning juice helps maintain that speed until lunch, while the afternoon milk prevents the late afternoon slowdown, so common in hyperinsulinism. The juice before dinner acts as a governor -- takes the edge off the now-ravenous appetite and prevents overeating. Since the diet requires that the patient eat more frequently, this juice feeding is important, as surrender to the untempered appetite might result in an excessive weight increase. The additional feedings between dinner and bedtime care for the bodily activities until the machinery again is at rest.

VITAMIN B

Dear Doctor:

As you know, there is an antagonism between the pancreas and the liver and it is also true there is an antagonism between Vitamin A and B. When you increase the level of Vitamin B, you speed up pancreatic function and this in turn depresses liver function. A sluggish liver doesn't absorb Vitamin A very well, therefore it is unwise to feed high levels of Vitamin B when the liver is sluggish or when the Vitamin A level is low. Seventy percent of patients surveyed in Calif. showed a low level of A and it is perfectly possible to have a good level of A and still have low levels in the body due to poor assimilation by sluggish liver function. Twenty-eight percent of the patients surveyed were low in Vitamin B so in giving patients natural B Complex be sure to include small units of Vitamin A as well, perhaps 1500 units once or twice a day along with one milligram of Vitamin B daily. Incidentally, Vitamin A reduces cholesterol beautifully and aids liver function when given with liver pumping manipulation. The Ptyalin level runs parallel to the Vitamin B level of the patient and when Vitamin B is given there is always a rise in the Ptyalin level. B Complex is much more effective than thiamin of synthetic sources and wheat germ is highly efficient as is brewer's yeast. The extremes of Ph. seem to be indicators for low levels of Vitamin B since the Ptyalin level acts best in a slightly alkaline media. A good test is to take a 5% starch solution consisting of 10 gms. of laundry starch (Blue Argo), 200 cc of distilled water and 26 drops of fresh Lugol's iodine solution, add 3/10ths of a cc of saliva to 2/10ths of the 5% starch solution, shake and observe. If the blue color does not disappear, there is a B deficiency. This is a further modification of the Oelgetz test and is a screening test which does not require the usual incubation. Another good test is the relative Ph. of the stool. An acid stool is an indication of lack of Vitamin B if no lactic acid products are being fed. As mentioned in the article, a slow pulse, a low temp. and a poor breath-holding less than 20 seconds are clinical guides. The products we use are from a Milwaukee concern. Remember that a high protein diet produces an increased need for the whole B Complex. High levels of the synthetic thiamin along with calcium in 5 to 20 mg. levels is occasionally useful in a severe neuritis, but only for a short period long enough to reduce the pain, then switch to the natural B Complex. The usual phosphorus content of natural Vitamin B produces an undesirable acidosis in neuritis, therefore the synthetic fraction does have value in a severe neuritis. The inability of a patient to flex the pads of his fingers to the palms of the hands with the knuckles held flat and free from flexion is a valuable hint for B-6 deficiency, which often accompanies a general B deficiency and the swelling of the hands along with numbness and tingling and disturbances in sodium and potassium relationship is greatly helped by 25 to 50 mg. of B-6 daily. This should be from a natural source, such as yeast, pecans or peanut concentrates. Natural nutrition provides the springboard for effective structural adjustments. Use natural low potency concentrates to obtain the good results we would all like to see in every patient. Produce a spectacular result as often as you can by "thinking" the patient's problem out on a "whole man" basis -- then nothing our opposition can say or print will change the results with patients.

Best wishes for your continued health and success.

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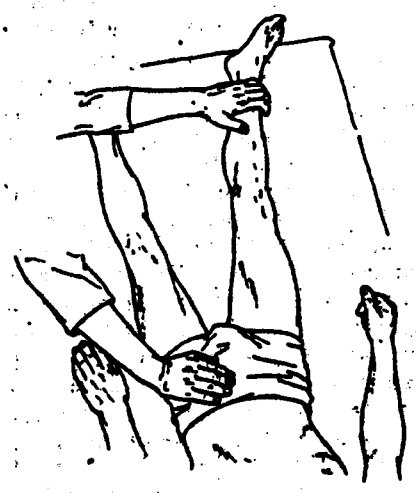
The Psoas Muscle and The Foot Pronation Problem

By Dr. George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Many patients suffer from the effects of a unilateral or bilateral foot pronation problem. This is also a common problem personally to the chiropractic physician since he spends much time standing and sustains as well the effect of the thrusts he gives so many times a day. The problem begins fundamentally as an inward roll of one foot or another or of both, with a resultant lengthening of the foot with an automatic stretching of the plantar foot muscles. This in itself produces many reflex patterns that evidence themselves as sciatic pain, numbness, tingling and various other paresthesias, all of reflex origin. But as the foot pronates and rolls inward, it also produces an inward roll of the talus and the inward roll continues to have an inward torque on the tibia and ordinarily the fibula follows suit with the torque continuing through the knee joint and producing a sustained torque to the femur which then allows the lesser trochanter to move in a rotary fashion backwards and laterally, causing a micro-avulsion of the trochanteric attachment of the ilio-psoas.

This pattern can be proved by the simple application of the principles of muscle testing. Test the psoas as in the muscle testing diagram. If you find it weak and there is a pronation problem involved, treat the neurolymphatic reflexes at the areas one inch on either side and one inch above the umbilicus, treat the posterior reflexes at the interspinous-transverse space between the twelfth dorsal and the first lumbar on both sides. Use a rotary pressure over the lymphatic receptor areas with as much pressure as you could stand on your eyeball, use it for approximately twenty seconds. Retest the iliopsoas, it will be strong. Request the patient to stand and ask him to exaggerate the pronation problem by walking on the inner edges of his feet in such a way as to almost walk knock-kneed, ask the patient to again lie down, retest the psoas, it will be weak if the avulsive stimulus to the neurolymphatic reflex is still active even though it recently tested strong. Retest the neurolymphatic reflexes as before. Retest as before and you will find the ilio-psoas will again test strong. Now request the patient to assume the erect position, but this time attempt to walk by placing the weight of the body along the OUTER edges of his feet, then again have him lie on his back and again retest the ilio-psoas. This time it will have maintained its strength regardless of the pronation problem because the outer edge weight-bearing position or the literally bowlegged position stopped temporarily the inward roll that sets up this entire syndrome. The patient is impressed, first, by the rapid recovery and second, by your accurate prediction as to which foot position will maintain recovery of the ilio-psoas tone and which will not.

The patient may complain of sciatic pain or numbness and/or tingling



which follows a sciatic nerve distribution pattern. The patient may complain of coldness or burning and many times the parestesia is not only confined to the limb or limbs, but it may affect the rest of the spine as well, for when the psoas weakens, the lumbar attachments at lumbars one through five on the weak side of the lumbar spine goes posterior on the side of muscle weakness, while the normal but hypertonic side now allows the anterior pull of the opposite psoas to operate unapposed by the "weak" psoas.

Normalizing foot position by a traction thrust against the lateral aspect of the subluxated talus, is the first step. The patient lies on the back, the thenar eminence of the left hand for example contacts the distal border of the subluxated right talus, the rest of the contact hand assumes a natural grasp around the right heel tendon. The other hand encircles the volar aspect or top of the arch of the foot, both hands exert traction to eliminate all "slack" in the ankle joint and a sudden traction pull is exerted while the talus contact is simultaneously thrust medially. An audible snap is produced and the "point pain" at the lower lateral aspect of the border of the talus bone, a diagnostic feature of this pattern, is immediately eliminated. A scaphoid pad is placed at the medial aspect of the patient's shoe and a piece of 1/4 inch adhesive felt is cut oversize to fasten the scaphoid pad in place. The rubber scaphoid pad is precut and beveled and may be required in one or both shoes, (do not confuse the scaphoid pad with an "arch support").

The scaphoid pad adds permanence to the ilio-psoas balancing and of itself will not balance the two muscles. But when added to an intelligent appraisal of the ilio-psoas pronation problem, it enhances and reinforces your eventual therapeutic result. The off-center position of the calcaneous and the talus in regard to the posterior weight bearing line of the rest of the leg, contributes to a natural "shearing" effect that predisposes the foot to an inward roll and a subsequent lengthening of the foot. The navicular bone of the foot or the scaphoid bone as it is sometimes called, has a tendency to subluxate laterally along with the talus and although the talus can be well adjusted by the previously mentioned method, the support the scaphoid pad provides is essential to prevent reoccurrence as well as to improve the response to therapy. In other words, it is easy to adjust the talus but it is easier to support the scaphoid or navicular.

The peripheral nerve irritation will frequently be accompanied by obvious subluxations of the sacro-iliac joint as well as subluxations of the lumbar spine, but the response is lacking in permanence as well as effectiveness if the pronation is not corrected. Frequently there is a concomitant hypertonus of the peroneous longus and brevis with an associated weakness of the anterior tibial. The anterior tibial is inserted as you know,

on the plantar surface of the first cuneiform and also on the first metatarsal. The pull of the anterior tibial along with the pull of the posterior tibial which is attached to the scaphoid, literally cooperate to prevent inward roll of the foot and also literally pulls the foot together at the vital midpoint where most weight is born. It is the weakness of the anterior tibial coupled with the peroneous hyper tonus that cause the foot to elongate and roll inward. This is a specific problem with a specific solution and although foot levelers or foot postural supports are essential, it is also absolutely essential that the doctor do his job as well.

Many times treating the ilio-psoas by methods such as the method of Dr. DeJarnette who pioneered in the research of the psoas, especially in those cases where a definite hyper contraction existed, are productive of good results. Many times treating the ilio-psoas when there is a demonstrable weakness of one psoas or both, is productive of good and lasting results. But there are occasions where the foot pronation problem seems to set up a cycle of micro-avulsion or partial pulling off of the attachment of the ilio-psoas, along with this we are now finding more of a feed back circuit that triggers off a disturbance in the neuro-lymphatic or neurovascular reflex. This complicates the already existing problem but just as the gears of a watch make it run on time, so do the same gears make it run slow or fast when there is a maladjustment of their relationship. This is also the case with the pronation problem and each gear or component of the problem must be analyzed and treated or repaired. The pioneering work on pronation in regard to skeletal problems was first done by Jones, who published the text, "The Postural Complex." But as is common even with orthopedically oriented authors, the subluxation complex is neglected or perhaps omitted due to lack of specific knowledge. The far reaching structural effects of pronation often overshadow the fact that the pronation must have a cause as well. This cause may well lie primarily in a disturbance of the righting reflexes at the base of the skull. The primary cause wherever it may be, is of interest scholastically or perhaps philosophically as well as therapeutically, but attention must be directed to the local problems.

The ilio-psoas is an unerring guide to the pronation causation in this instance, and testing the ilio-psoas by the method of Kendall and Kendall, is the primary starting point to validate this inter-relationship both to yourself and to the patient. The patient will be impressed by your clinical acumen and by the immediate predictable response to the different forms on weight bearing while trial walking. There should be no blind acceptance of any principle, but the cold light of reason in modern chiropractic will make an intelligent application out of a "POP and PRAY" pattern.

An interesting application of the psoas test is in the case of the common "whiplash" problem and certainly no muscle is further removed from the usual scrutiny of the structures involved in a whiplash pattern than the psoas. But regularly time and time again, the psoas tests weak in a large percentage if not all of the whiplash cases the author has seen in the past six year. Treatment of the psoas has immeasurably speeded up the response in time as well as symptom disappearance and if there was a previous or a post pronation problem involved, it became a definite factor not in the original traumatic causation, but in the perpetuating of the condition, and its correction offering a definite help to a speedy recovery.

A particularly distressing symptom frequently met with is an annoying ache of the mastoid portion of the temporal bone. This sympton will abate in approximately one minute if the patient assumes a "bowlegged" stance bearing the weight on the outer borders of the feet. The treatment is obvious if this relieves it. Support the scaphoid and adjust the talus. Treat the psoas if it is involved. Not every psoas case involves the pronation pattern, not every pronation case involves the psoas, but they are most frequently found together. Apply the sense of logic and testing in contrast to the blind routinism which may succeed on the law of averages, but often fails when you need a positive result the

The various shoe appliances made available to our profession are invaluable and are highly recommended as a permanent solution to the temporary scaphoid pad, but they also require the doctor's understanding of the basic problem or the patient will regard them as "just another pair of arch supports" which they definitely are not. The plantar aponeurosis and the flexor digitorum brevis are stretched by the inward roll and elongation. This of itself adds to the problem and many times there is also micro-avulsion of the narrow tendon of the flexor digitorum brevis from its attachment at the calcaneous, or at the insertion

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There are many variations of foot problems that begin with an inward roll and the subsequent lengthening of the foot. Just as a bridge supports itself and the traffic on it by maintaining an erect position, so also does the foot support itself and the bodies weight when it too is in an upright position. But when the bridge supports lose their vertical alignment and tilt, the bridge loses its function and structures that were meant to bear a vertical burden, and no longer function as they were engineered to do for now there is a lateral thrust as well as the vertical component when the supports tilt. The foot functions well as a bony bridge but poorly as a bony roller bearing.

The length increase is a common observation of many patients and the patient may confuse the OUTER HEEL wear with a lack of inward roll. The explanation here is the oft remembered quotation, "for every action there is an equal and opposite reaction" as the foot rolls inward with weight bearing. It assumes this exaggerated inward position but as the weight is removed, it then rolls OUTWARD just as much and the next step begins with the contact at the lateral border of the heel, hence the heel wear at the lateral or outer portion of the heel of the shoe. The elongation secondary to the inward roll may produce an infinite variety of great toe and lesser four toe positions but as you can readily see, it is either the stretch pattern or the avulsive weakness that allows the usual positions sometimes seen. A common pattern is the overlap of the second toe over the great toe which comes from the imbalance of the dorsal interossei which arise like reins of a horse from adjacent sides of the metatarsals, and the insert into the medial side of the second toe and into the lateral sides of the second, third and fourth toes.

Press on the belly of the hypertonic interossei and stimulate the weakened origin and insertion attachments. Analyze the problem, balance the total structure, support the scaphoid and watch the response to the intelligent application of the whole body concept to the foot structure problem.

ATTENTION to the iliopsoas pronation problem, is just one more way for the chiropractic physician to advance his profession as well as himself, by placing service above self and searching for the true and real reasons behind the problems of suffering humanity. Ours is a noble calling all the more ennobled by those who practice it, practice with the respect for the body's Creator whose intricate simplicity is hampered only by our straining at the gnat while swallowing a camel.

Further information and treatment methods are available from the author without charge. Kindly enclose a self-addressed stamped envelope.

NOTES

ADDITIONAL INFORMATION

As mentioned, the scaphoid pad may be obtained at any leather findings establishment. If there is not one in your community, the Wolverine Findings & Leather Co., 8306 West Davison, Detroit, Michigan, will supply. The pads come in four different sizes for children, women and men, and it would be wise to carry all sizes. The adhesive felt is "chiropodist adhesive felt one yard long, six inches wide, and a quarter inch thick," obtainable from any surgical supply house, or from your local druggist. The beveled edge of the scaphoid pad is placed against the inner or medial aspect of the shoe directly against the side or the "counter" of the shoe and then held in place by the adhesive felt which is cut oversize to allow fixation of the pad in the proper position. Once you have established the value of the pronation correction in the patient's problem, recommend permanent correction by way of the foot levelers or postural foot supports available to our profession. Correction of the foot structure and if need be the knee, hip or vertebral structures must accompany the foot support. The psoas muscle is an important muscle, as you know, and many times the iliacus is also weak or at fault, the iliacus is tested in a similar fashion to the psoas but the foot and leg are elevated to an almost vertical and similar lateral position to the psoas muscle test drawing described in the article. The N.L. reflex is the same for the psoas as it is for the iliacus, treatment here is the same as described in the original article. In the occasional patient with a severe pronation after you have tested and treated the anterior tibial and, if necessary, any other muscles by the O.K. method (hard, heavy pressure applied to origin and insertion), instruct the patient if he must stand a great deal in his work to construct a small peaked platform something like the peak of a roof to give a slight outward tilt when standing for a long period of time. This is an exceptional situation and does not occur very often but it is occasionally necessary, do not build up the inner side of the patient's shoe to accomplish this. Develop the habit of testing muscular structures to determine their relative weakness since this plays an important part in the production and the perpetuation of many structural problems patients have every day. The body is a unit which responds to a unit approach and the whole man concept demands only your knowledge of anatomy and your appreciation of how wonderful Chiropractic can be to further develop our fine profession. Your strong support of your local, state and national organizations is a prerequisite to the advancement of our profession. In my own small way, I am doing my part. Can we not all together in our own ways help each other and in so doing help unite Chiropractic and advance ourselves at the same time. Do not neglect the psoas muscle which when relaxed allows a posterior lumbar situation and an automatic cervical counterrotation producing an equal and opposite posteriority of the cervical vertebrae. This interrelationship is extrelely important in all cases. The psoas can also produce inferiorities when it contracts in the absence of an antagonist. This produces an effort on the part of the muscles attached to the cervical column to pull up on these inferior lumbars producing again unilateral cervical lamina tension. This "stupid body wisdom" results in cervical problems directly caused by lumbar disturbances. The "righting reflexes" of the skull try to level the skull and when it is off level will disturb the pelvis in an effort to level the head, so attention to both cervical and lumbar components of any distortion or subluxation pattern is important.

POSTURE Its effect on STRUCTURE ... FUNCTION and SYMPTOMS ...

By Dr. George J. Goodheart
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Most patients, and many doctors, stand on their feet. This is not a statement of the obvious, but an observation of a common error. People should stand on their heels, NOT on their feet. The weight bearing line you are all familiar with travels through the malleoli, not the metatarsals. If it were necessary to walk home on your hands, you would bear the weight of the body on the "HEELS" of the hands. Yet the lessons of postural weight bearing so ably set forth so long ago by F. M. Alexander have largely gone unheeded, although it was Alexander's work that greatly influenced the second Palmer to appreciate the unique relationship of the upper cervicals. It was Alexander's work that prompted DEWEY, the great educator, to recommend changing the then prevalent physical education programs in the public schools. It was changed, as was chiropractic, with far reaching effects.

The present PHYSICAL FITNESS program is the effort to catch up and fill the void left by Dewey's failure to replace the existing program with something better. Chiropractic has fared somewhat better, but still there was, and is, a decisive force which need not be if all understood the tru effect posture has on structure and function, and most important, on symptoms that patients have every day in our offices.

Alexander found that there was a powerful postural reflex. This was corroborated by the well known research biologist, Magnus, who also found this same central control in animals of all kinds. This control exists in the complex of muscles where the head joins the neck. This vast treatise was published in 1924, yet Alexander had discovered it not in animals by dissection, but by observation of living human beings.

In 1926 Professor Coghill of the Wistar Institute in London also found in living animals that all movements were governed centrally from the place where the head joins the neck.

In 1937 Dr. Mungo Douglass in his book "Reorientation of Viewpoint Upon the Study of Anatomy" said the stupendous importance of these discoveries cannot be realized.

So much for the historical background of Alexander's discoveries. Are you beginning to see why the late B. J. Palmer was so interested in the upper cervical area? The president of the British Medical Association said of a case of flat feet that he sent to Alexander: "Please note that Alexander was not interested in the foot. What he did was to teach the patient how to use his brain and muscular mechanism, and in the process not only the disabilities associated with the dropped arches disappeared, but THE DROPPED ARCHES ROSE". Now these were not the words of B. J. Palmer, as you might suspect, but of the president of the British Medical Association in his presidential address in 1926.

This article is not being written in defence of, or in opposition to the upper cervical approach. It is an exposition of the facts that relate to posture, not the myths that are commonly offered when this subject is discussed. To give you an example of the poor use that most people put the body to, ask the next patient you are having difficulty with to open his mouth. If you watch from the side, you will see the vast majority will tilt their heads back sharply instead of merely dropping the jaw. In other words, they open their heads instead of opening their mouths. Again, looking at these patients from the lateral view will invariably show the plumbline passing through the occiput, indicating the head to be too far forward. Recognize here though that the total structure is too far forward, not just the head. Watch the next patient yawn, or ask him to yawn and watch the head tilt backward, and if he puts his hand over his mouth politely, watch the upper lip slide by and slide upwards past the politely held hand. These are postural and functional indicators. The body must be balanced both by structural adjusting of osseous faults and by muscular balancing, but also by simple, easy, practical, quick and workable postural techniques. Patients that need postural correction often can be detected by observing the lateral posture. the plumbline shoud line up with the auditory meatus or the lobe of the ear, line up with the center of the glenoid fossa, fall through the center of the femoral head, pass through the center of the knee malleoli and fall just anterior to the ankle malleoli. These patients that fail to line reasonably will often complain of "tightness of the upper trapezious, neck tension and so called disc and root syndromes", involving the upper and lower extremities with symptoms of sciatic neuritis and brachial neuritis, as well as a numbness or tingling of the affected extremities. Correction of the obvious osseous subluxations, using a Gonstead or a DeJarnette analysis, is advised following x-ray indications and using indicators for osseous follow up as so ably devised by Dr. DeJarnette, but incorporating a rehabilitation and re-educational technique to maintain corrections and prevent reoccurrences. Why should you be responsible for the faulty postural habits that the patient has, or why jeopardize your reputation by failing to instruct the patient in simple demonstrably correct postural techniques that you can prove to the patient while he is in your office will relieve pain and allow him to get up from a chair when he says he or she cannot without much assistance? Prove to these patients that palpatory pain can be made to disappear by a few simple alterations

in the patient's posture that you can initiate and they can maintain without unnecessary braces or postural correction garments, even though these very often serve a very useful purpose when indicated.

The average patient, or the average doctor, for that matter has not had any training in posture, or how to sit down and how to get up from a chair, or how to walk or how to stand. Yet these vital patterns form the basis for our bodies mobilities and structural functions. They form the basis for the start of many problems and the perpetuation of many more. It is as if you called the fire department to put out a fire in your home from the improper use of some electrical appliance, and then continued its improper use. The necessity for extinguishing the fire is paralleled by the need for fire prevention, granted we understand the principles of fire prevention.

The following instructions are given to many patients and have been furnished without cost to many doctors who have inquired about them.

Use of the posturometer, as devised by Dr. Lyman Johnson, or Dr. Masters' postural instrument is greatly advised since these instruments are a credit, as well as an asset, to our profession and its public image. They help you to help the patient, and in so doing, help you to help yourself and your profession.

"The weight of the body should rest chiefly on the rear foot. In other words, on the heels, put the hips over the heels, the movement starts at the ankle and the hips should go back as far as possible without altering the balance effected by the position of the feet and without deliberately throwing the upper body forward". Assist the patient to understand the heels hips position by placing your hands over the anterior iliac spine and pressing gently backwards. Tell them to try to line up the trouser seam vertically in line with the ankle malleoli. Do not allow them to "stick out the rump". Merely instruct them to keep the hips over the heels without altering the position of the upper body deliberately. Continue to tell them to keep the hips back while you move up to the chest for correction there.

"In standing, the feet should seek a normal base. The most perfect base is obtained by setting the feet at an angle of about forty-five degrees to one another. Defects become exaggerated as this angle decreases, the back hollows and the stomach protrudes".

"Breathe naturally so as to allow the chest to WIDEN at the bottom of the rib cage. In other words, widen the back at the lower ribs lengthening the spine at the same time."

Assist the patient to understand the instructions by placing the palms of your hands against the lateral lower borders of the chest and tell the patient to widen his chest by breathing in such a way as to spread your hands apart with his chest expansion while breathing. Many people breathe deeply, they think, by heaving the chest up. This accomplishes very little, if anything, in increasing vital capacity. The hips over heels pattern draws in the lower abdomen automatically, the side expansion of the chest draws in the upper abdomen automatically. The abdomen should come in, not be drawn in.

"Let the shoulders hang DOWN like a couple of old wet raincoats hanging from a couple of hooks. Do NOT throw them back. You will find the hanging position brings your shoulders down as far as they will go, which is their proper position."

"Dangle both arms. Let your forearm dangle from the elbow, the hand from the wrist and the fingers from the palm."

"Don't forget to allow the lower part of your chest to expand largely sideways. Do not sniff. We live at the bottom of a sea of air. You need not think about your breathing. Think only of expanding and contracting your ribs. Let the air in."

"Now comes the most important part, the position of the head. Let the head be forward and up. This may sound complicated, but just imagine putting your head about a fourth of an inch forward of the position it normally occupies, not down, not back, not up, but forward. Do not crane your neck but merely PUT it ever so slightly ahead of its usual position."

The head position should be that position which when assumed by the patient will allow an easy opening of the mouth with no observable movement of the head backwards. It is easy enough to understand the need for a slight forward movement of the head when the head is behind the plumbline at the ear lobe, but it is more difficult when the reverse is true. In other words, when the head is already ahead of the plumbline, as mentioned earlier, but the point to bear in mind is that the whole structure is off, not just the head; and by placing the head ahead of its usual position, the rest of the body will line up underneath it. This, in essence, is the secret of the Alexander discovery. The control operates when the head is in proper relationship to the neck. It is as if you had your fingers in your ears, and complained that you could not hear very well. All you have to do to hear successfully is to take your fingers out of your ears. So, also will you or your patients stand and be properly structurally oriented when you take advantage of something that is already there for your immediate use. It only remains for you to tell the patient about this remarkable postural control. A dramatic method to demonstrate the existence and power of this God given control is to have the patient assume his usual stance following treatment. He usually feels better following treatment, but tell him that some pain you will now find is his fault or concern, since you have done your part. Palpate deeply across the left or right pectoralis major at its fleshiest part just about the breast at the third or fourth rib at the mid nipple line. This will prove painful. Press hard and move deeply back and forth across the sarospinalis at the area just lateral to the third lumbar left or right or both if convenient. Press deeply into the fleshy part of the gluteus maximus, left or right or both. All of these areas are always painful in a patient with poor posture. Put the patient into the correct postural pattern and then repalpate. The pain will either be gone completely or markedly reduced. This method impresses the patient with your skill and knowledge, and assists him in following the right postural patterns. A lot of pain is subjectively caused by poor or faulty postural patterns that the patient is not aware of, and it is our duty and our professional function to provide the patient with this information and instruction.

"The properly coordinated person stands with the back of the hands facing forward, the thumbs inward, and the elbows slightly bent outwards. Where the human machinery is concerned, nature does not work in parts, but treats everything as a whole, so now you must coordinate all these parts by a mental resolve. This allows your body to stand naturally as the good Lord intended, and like having good mental and moral habits, these new BODY habits quickly can become a part of you with better health and better appearance and better function as a reward."

Sitting down and standing up require a few more bits of advice. As you go to sit down, follow your usual inclinations, but press the knees together as you lower yourself into the chair or seat. Reverse the procedure as you rise. Press the knees slightly outward."

Many people ask me about posture. You don't choose your posture, your posture chooses you. It is my job to treat and adjust any and all departures from normal of your body, back to normal position and function. You can help by observing a few simple rules regarding the proper use of your body. Poor use of your body produces many ills, perpetuates many others and prevents full recovery from many conditions.

At the back of the head and the upper part of the neck there exists a vital region which controls the brain and the body as a unit much as the central exchange controls the telephone system. This area is "the primary control." Good postural patterns can become a "conditioned reflex pattern" that "brainwashes" for a good purpose, since no one has ever taught you to stand, sit or walk.

1. The weight of the body should rest chiefly on the rear foot. In other words, on the heels, put the hips over the heels, the movement starts at the ankle and the hips should go back as far as possible without altering the balance effected by the position of the feet and without deliberately throwing the upper body forward.

2. In standing the feet should seek a normal base, the most perfect base is obtained by setting the feet at an angle of about forty-five degrees to one another. Defects become exaggerated as this angle decreases, the back hollows and the stomach protrudes.

3. Breathe naturally so as to allow the chest to WIDEN at the bottom of the rib cage. In other words, widen the back at the lower ribs lengthening the spine at the same time.

4. Let the shoulders hang DOWN like a couple of old wet raincoats hanging from a couple of hooks. Do NOT throw them back. You will find the hanging position brings your shoulders down as far as they will go, which is their proper position.

5. Dangle both arms, let your forearm dangle from the elbow, the hand from the wrist and the fingers from the palm.

6. Don't forget to allow the lower part of your chest to expand largely sideways, do not sniff, we live at the bottom of a sea of air, you need not think about your breathing, think only of expanding and contracting your ribs, let the air in.

7. Now comes the most important part, the position of the head. Let the head be forward and up. This may sound complicated but just imagine putting your head about a fourth of an inch forward of the position it normally occupies, not down, not back, not up, but forward. Do not crane your neck but merely PUT it ever so slightly ahead of its usual position.

8. The properly coordinated person stands with the back of the hands facing forward, the thumbs inward, and the elbows slightly bent outwards. Where the human machinery is concerned, nature does not work in parts but treats everything as a whole so now you must coordinate all these parts by a mental resolve. This allows your body to stand naturally as the good Lord intended, and like having good mental and moral habits these new BODY habits quickly can become a

part of you with better health and better appearance and better function as a reward.

9. Sitting down and standing up require a few more bits of advice. As you go to sit down, follow your usual inclinations but press the knees together as you lower yourself into the chair or seat. Reverse the procedure as you rise, press the knees slightly outward.

10. For example, sit in an ordinary chair with a straight back. Place your feet lightly on the floor, a few inches apart, calves as near to the edge of the seat as possible but not touching it. Let your back rest against the chair, hands relaxed in your lap, think - "Head forward and up, neck relaxed, spine lengthening, back widening. The rib widening straightens your back. Now tell your hip joints to bend your torso forward in the chair, let your knee joints go forward and away from each other, bend your hips and ankle joints and the next thing you know you are on your feet.

11. The movement of sitting down is the reverse of getting up. Give yourself the four orders in quotes above, let your knees go forward and come together, let your hips go back and your ankles forward, and you will find yourself lightly as a feather seated well back in the chair with your torso bent forward from the hip joints, keep this position for a second, think for a split second of tnose four orders and then order your hip joints to bend and you will find yourself gracefully seated upright. All good actors and actresses sit down and get up this way, that's why they're such a delight to watch. It is the power of movement that makes the great actress or actor, not just static good looks. This kind of attractiveness of poised and controlled movement makes those that have the secret stand out from others. Use gravity to help you not harm you.

12. Walking can be a pleasure if it is done properly. Stand in front of the first step of some stairs, place your right foot on the first step with the weight of your body on the left heel as is normal in standing. As you transfer the weight from the left heel to the left ball of the foot to go upstairs with your left foot, you must spring forward on the ball of your foot. Walking is like going upstairs but on the flat. In other words, you spring forward slightly on the ball of your foot while you walk and your heel lifts as you walk. This produces a beautiful movement which is never fatiguing and is literally a treatment for your circulation and your spine.

GOOD LUCK.

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Chiropractic Reactions in the Light of Protomorphology

By Dr. George J. Goodheart, Jr., of Detroit, Michigan
Member of the National Chiropractic Association

Author's Note: It is not the purpose of this article to minimize the mechanical effects of adjusting procedure but rather to enlarge upon the physiological effects of articular adjusting in all types of patients. A study of this article will reinforce your convictions regarding the fundamental basis of chiropractic adjusting.

DR. ROYAL LEE, DDS, and his assistant, William Hanson, have published a text "Protomorphology"—the principles of cell auto-regulation. They say that "the experimental evidence we have reviewed indicates that a primary organizer of specific proteins does exist." This primary organizer is characterized by the presence of certain trace mineral groups in a highly complex arrangement. A layman would say that this primary organizer is the framework or skeleton for a specific biological protein molecule.

Now, you ask: What has all this wordy work to do with why Mrs. Jones feels so awful after a treatment and Mrs. Smith feels so well? The answers to this and many other exclusively chiropractic problems are found in this fine book—if you look for them.

Each time a cell divides the cell secretes a substance called allelocatalyst which sparks the synthesis of new tissue; a small amount of this speeds up cell reproduction, too much retards or stops cell reproduction. Therefore, when the cells have undergone a certain number of divisions and the tissues have accumulated a certain amount of this secreted substance, called allelocatalyst, they catalyze each other; a critical state develops wherefore the cell reproduction is prevented.

Alexis Carrel, who kept the chicken heart alive for so long, found that the heart would kill itself unless this accumulated allelocatalyst was removed. Dr. Turck has concluded that the allelocatalyst and the previously mentioned primary organizer of specific protein are one and the same thing—called now morphogen or protomorphogen.

The morphogen hypothesis basically entertains the following fundamental ideas: Chromosome fragments, called morphogens, accumulate in cell fluids as the basic cause of senescence and death. Morphogens are the determinants for every cell and every molecule; morphogens can only be synthesized in chromatin material but must be present in the cellular fluids for synthesis of protein to occur. Again you ask, what possible connection does this possess to my every-day practice? Read on, and you will see.

Dr. Turck, in 1933, was led to a study of protomorphogens as a result of his observations at a greenhouse. He found that to secure optimum growth of plants he mixed 5-10 per cent exhausted soil to virgin soil. Plants grew better on this mixture than in complete virgin soil, all other factors included. This is a good example of the morphogen hypothesis: The exhausted soil was not only sterile because of exhaustion of food stuffs, but it was poisoned by an excess concentration of plant morphogens which inhibited and prevented further growth.

In the human, cellular tissue is surrounded by tissue fluids which require special mechanisms to supply food and eliminate wastes; the supplying of food and waste elimination is a constant problem.

Dr. Galin and many other biological workers concluded long ago (1889) that connective tissue can be saturated by poisonous substances floating in the blood stream even when normal toxin eliminating functions (viz. kidney) are normal, and conclusive evidence was shown that when kidney function was disturbed elastic connective tissue served as a depot for storage of various poisons. Are you beginning to see the light? Remember the widely heralded Russian discovery of A.R.C.S. of Boyomoletz?

Burrows (1926) has this idea of how tissue toxins or protomorphogens are bound into connective tissue fibers. He says that all cells liberate a substance called "archusia." In low concentrations this substance is beneficial to health and growth of cells; high concentrations of archusia cause cessation of growth and death of cells occur. Archusia and protomorphogen are one and the same. At certain concentrations of this material the cells secrete a fat-like substance called "ergusia." This seems to lower the cells' resistance and makes them more susceptible to this above-mentioned archusia. There is ample evidence that archusia is very similar to vitamin B, and ergusia is very similar or identical to vitamin A. This same investigator Burrows added cells to plasma in the laboratory. He found that the result was a form of two-stage coagulation, the second stage being an actual fibrin stage. He said that this ergusia works on fibrinogen precipitating it to fibrin and there is therefore a universal fibro-plastin present in all tissue.

Drinker (1942) says scar tissue formation is a similar phenomenon, being the result of excess fibro plastic growth to accumulation of

substances ordinarily removed by lymph. Lee and Hanson suggested that this ergusia material is actually "archusia" or protomorphogen with a fatty envelope preventing toxic effects. So for the purpose of this article we must keep in mind the thromboplastic activity of protomorphogen and the conception of connective tissue as a local storehouse for discharged protomorphogen and other toxic substances. Can you now see how general adjusting of articulations may break up, so to speak, the toxic storage, and if the patient's over-all elimination is good, results are good? If elimination from all sources is poor, results are poor, which may improve with time.

The fundamental reaction in blood coagulation is fibrinogen to fibrin conversion which incidentally is the basis for white connective tissue. This reaction in man is precipitated by platelet breakdown; the substance in platelets responsible for this action is thromboplastin. Quick, who has spent his lifetime studying blood coagulation, says of thromboplastin: (1) Thromboplastic activity is diminished by liquid solvent extraction; (2) thromboplastin activity is diminished by heat but not destroyed; (3) thromboplastin possesses a limited degree of species specificity.

Recall the attributes of protomorphogen: (1) protomorphogen is extracted by liquid solvent; (2) relatively thermostable; (3) relatively species specific. Lee & Hanson contend that all physiological thromboplastin is either protomorphogen or protomorphogen end-products or breakdown products, but that all protomorphogen is not necessarily active thromboplastin.

The presence of protomorphogen in platelets suggests a means of blood stream transfer to facilitate excretion.

Lung tissue has a high thromboplastin activity—therefore a high protomorphogen activity. This is highly significant. Turck reports that when he sprayed minute amounts of protomorphogen into cages where cats were kept, it resulted in lethal inflammation of lung tissue. Does this explain the unusual susceptibility of some patients to lung irritations from practically no exposure or cause? The normal presence of a high protomorphogen content in lung tissue indicates that its ratio is close to the danger point and a small excess may cause inflammation. As a point of speculation, Turck says that perhaps the British scientists who pioneered the entrance into the tombs of Egyptian mummies were exposed to protomorphogen-laden dust which eventually caused their unusual deaths; another point in speculation is the importance of argon, a rare gas usually present in air.

Dr. Hershey, of University of Kansas, found that ants died from fibrosis of lungs when there was no argon in the air. Argon is highly soluble in liquid material and may be a hidden insulator of protomorphogen since it is quite inert, and high concentrations of argon have been found in the brain. Placental tissue has a high thromboplastin activity, and it is likely that the mother is producing an embryo which is rapidly secreting protomorphogen by the active mitosis going on. This extra amount invariably shortens the coagulation time which we find so common and which is naturally necessary. Administration of tissue extracts have caused fatal thrombosis in pregnant patients, which have no effect on nonpregnant patients.

The basic problem under discussion is the manner in which the organism controls and disposes of the protomorphogen constantly secreted. Lee and Hanson say that raw protomorphogen is automatically masked by an association with a lipoid complex, that it is an active thromboplastin, and, most important to chiropractic thought, that it is attached to and combined with or absorbed on fibrin which is precipitated into connective tissue. The connective tissue is therefore a great storehouse more or less temporary for all protomorphogens secreted by all living cells. What happens to the stored protomorphogen is another matter we will try to demonstrate.

Burrows mentions that epithelial tissue secretes a lysin which dissolved the protomorphogen-induced clot so it is reabsorbed and used for growth. It is possible that morphogens transported in the blood stream are designed for attachment to the chromosomes and genes in terminal tissue. It seems not altogether impossible that morphogens from an embryo may find their way into the mother's blood stream and become attached to chromosomes in the ova, thereby influencing character of subsequent offspring. Here note that the opinion among animal breeders is widespread that pure-blooded females are ruined by successful mating with mixed breed males. Expensive animals have often been sacrificed as a result of such accidents. Animal breeders are practical men and are not prone to sacrifice thousands of dollars on superstition. Sex hormones seem able to detoxify raw protomorphogen; thyroid is a denaturant also. Trypsin is a normal constituent of blood. It accelerates coagulation; it is likely the trypsin splits protomorphogen removed from connective tissue by other factors. Small amounts of Trypsin result in a relative incoagulability of the blood by stimulating heparin release. Heparin inhibits the release of thromboplastin. Heparin seems to maintain or stabilize blood platelets in preventing their release of thromboplastin, and, when combining with the protomorphogen in platelets, forms a complex.

In general, the following factors prevent or step down the lethal action of raw protomorphogen: sex hormones, thyroid, epithelial substances, trypsin, allantoin, vitamin F, and U.V. rays, etc. This, of course, is quite speculative

but some evidence is available for the statement made above. Allantoin from the allantois sac of certain animals is phenomenally effective as a healing agent, as is urea, and has been used as such by many natural healing physicians.

Cholesterol seems to be involved in sheathing of raw protomorphogen, as is vitamin A Some thymus activity is associated with the supply of lipoid material for sheathing. Witness the so-called thymic complexion—smooth and juvenile as opposed to wrinkles and aged complexion when excess vitamin D is produced. Vitamin D is reported to break down organic phosphorus compounds, and thus may impair their sheathing activity.

All this is well and good, you say, but, as before, what has all this to do with my Mrs. Jones who reacts so strongly to treatment? Continue to treat our patient; use heavy adjustment but—a most important thought—insure that avenues of elimination and deoxification are open. Manipulate for thyroid activity; use small amounts of U.V.—not enough to build up vitamin D; pump liver to normalize cholesterol metabolism; use moderate stimulation of thymus. Doesn't the regression of the thymus at puberty suggest the reduced necessity for lipoidal sheathing material consequent to the reduction in protomorphogen metabolism when growth is attained?

Over 95 per cent of the plasma phospholipides in man contain choline. Choline and methionine are partners. One functions best when the other is around; therefore a proper intake in the diet, rather than an indiscriminate supplementation of synthetic methionine and choline, is recommended. The unsaturated fatty acids are also involved with sheathing material, so the inclusion in the diet of such saturated fats as hydrogenated fats and oleo is foolish from this point of view. Iodine is utilized in some physiological form in the fatty acid transfer of lipoprotein protomorphogen molecules in the liver, and since Burrows found "ergusia" to be similar to vitamin A, and since ferrous iodide will relieve many symptoms of vitamin A deficiency, it is evident that iodine is an important element in the health and vitality of every tissue.

The acceleration of degenerative senile changes following prostate removal is well known Huggins and McDonald have reported a fibrolysin in the prostatic fluid. The existence of a fibrinolysin in prostatic fluid further fits the protomorphogen theory in that it prevents the formation of products which would react with morphogens. Therefore, prostate normalization and paraurethral gland normalization in the female is necessary to maintain the proper protomorphogen metabolism.

A logical question one might ask is: If all this is so, why does not a young infant embryo kill itself by an overabundant production of this protomorphogen? Many do. The placental barrier, notwithstanding, and the special antibody system, which must be developed after the placenta no longer is the "iron curtain," soon develops as a result of the contact of tissue protomorphogen, which reacts, with immune centers, to produce a natural antibody, although the lower immune response of the newborn is an oftdemonstrated phenomenon.

Another possible avenue of protomorphogen elimination is bile. The bile of hibernating animals accumulates as high as four times the normal content. This may be an expression of the accumulation of protomorphogen and products normally excreted by the biliary route. Rehfuss and Williams have identified a fraction of bile, which is exceedingly toxic, to various forms of animal and vegetable life. The improvements following removal of bile by duodenal drainage is a consequence of the degree of detoxification from this procedure, they say. This may well be protomorphogen.

There is evidence that the kidney can excrete protomorphogen and thus assist liver and bile. Kidney enzymes split the protomorphogen molecule which collects in the renal capillaries; the diffusible residues may appear in the urine, non-diffusible in the liver-bile pattern.

In senescense the protomorphogen cycle can be outlined in this manner:

1. Protomorphogens accumulate due to gradual impairment of elimination system.
2. A progressive nerve inhibition with more dystrophy and less trophic impulses.
3. This causes increased permeability.
4. This allows ph changes and electric potential changes.
5. This process continues with progressive decrease in cell activity and changing morphology until some vital organ succumbs and death ensues.

Thus there is a general damming up of protomorphogen throughout the organism and a disordered elimination with low concentration in some and high concentration in others. Some individuals may lack the means to make themselves available of their own necessary protomorphogen with the resultant lack of healing. When the elimination mechanism, on the other hand, is inadequate, when the kidney, liver, and reticulo-endothelial defenses are down, the addition of factors which would make more protomorphogen available merely make the blood and tissue fluid too high. Witness the disastrous effect of thyroid and sex hormones in elderly patients. The protomorphogen elimination route is a complicated and nicely balanced system which may compensate for minor inadequacies, but which is particularly sensitive to major unbalances which may be promoted inadvertently by therapeutic measures.

Pertinent morphogen links with cancer.

Further Chiropractic Reactions in the Light of Protomorphology

By DR. GEO. J. GOODHEART, JR., D.C.

A previous article in the N.C.A. Journal (June '51) described the protomorphogen hypothesis and its application to our profession. Simply stated the connective tissues of the body serve as depot storage units for accumulated or excess tissue toxins or protomophogens. This tissue toxin or protomophogen is closely associated with thromboplastin if not actually thromboplastin. In short, the practical application of the protomorphogen cycle lies in the increased coagulation time or in the ancient application of the "too thick blood" idea.

This oversimplified and casual statement is shockingly true—so true that we should have more respect for the ancient ideas of earlier physicians. Repeated evidence in practice has proven the simplified application of the highly complicated protomophogen theory. In other words, short coagulation time should be the sign to stop, yes, stop general adjusting, use specific gentle adjustment or purely reflex technics (foot, occipital, visceral, spinal) and build up liver, spleen and kidney elimination by all possible means. Here lies the correction of hypertension, diabetic retinitis, varicosities, heart disease. True, cases of these aforementioned diseases respond to many therapies, but how many respond? We are too prone to speak of our successes and to forget our failures. Nothing can be more disturbing to the conscientious chiropractor—to see one case respond in spectacular fashion and another fail to respond in just as spectacular a fashion. Why does one adjustment cure, so to speak, and another repeated adjustment given with all due regard for position, fixation, nerve inhibition and stimulation innate, etc., turn the patient back to where he was? Why did the empirically guided earlier members of our profession say, "Find it, fix it, leave it alone"? Why is the impression common among laymen that frequent trips to the DC's office become necessary when once he starts? Why the division among our members, the H.I.O., the Basic, the general adjusting, the colonic enthusiast, the fasting advocates, the vitamin and food pushers—with all due respect to their sincere motives in promoting their particular form of therapy? The protomophogen theory explains fairly well all these empirically sound and proven divisions and gives a common understanding to these apparently unreconcilable views. Recollect how many patients have gotten over chronic ailments when hurt or injured with loss of blood? How many patients feel better and do not hesitate to remark that a nosebleed makes a big difference in how they feel; that a hemorroidal bleeding though alarming and disturbing frequently changes an ailment's course, regardless of the blood pressure which is not high enough to permit the idea of pressure relief to enter the picture? These cases we have seen and remembered, as has Aschner, famous for his discovery of the oculocardiac reflex. He remarks repeatedly of this in many of his works. His work in the blood chemistry lab of a large hospital brought him many patients for research in an endocrine problem. He observed that many patients recovered from many diseases without any treatment following a withdrawal of a quantity of blood for the endocrine problem. He conclusively ruled out the psychological factor in a thorough fashion.

Witness the now literally discontinued practice of bleeding, remember the old and now recently heralded use of leeches, remember wet and dry cupping, remember purging, remember blistering.

If the level of protomorphogen is too high, adjusting may so increase it as to liberate even more protomorphogen. If the elimination can be startled or shocked into long discontinued activity by this excess—a wonderful result, but if this does not happen—"Doctor, I feel worse"—"You are retracing" or "You have to take time to get better; you did not get sick overnight" or "The nerves have to be built up and reconstructed" or "Where is my patient? He (or she) did not come back this week" etc., ad nauseam. Check the coagulation time or better still try a new technic which we are beginninig to use—a surface petechiometer. Use it as a guide to treatment, if the petechiae average on both arms and both legs in borderline cases is 2 or 3, conditions are normal if the reading was taken at 20 m.m., if the level is high, 10 to 12, use little thrusting force or better still use reflex technics until the index drops. If the level is low "blast" the articulations, break the fixations, treat frequently, forget about diet, etc.—this is an "old-fashioned" Chiropractic patient, the type of patient that has helped to build chiropractic to where it stands today, this is the H.I.O. trumpet sounder, the fixation theory booster, the "feel so good after you give me a treatment" patient, the "don't chiropractors adjust any more?" questioner if he happened to take treatment from a foot reflex or a nutrition enthusiast.

Those patients who have a high protomorphogen level; a high coagulation level, greater than average amounts of thromboplastin-like substances giving a coagulation level below 2 minutes from ordinary skin punctures taken between meals (coagulation is more rapid after meals) or if you are using a petechiometer a level of 10 to 15 petechiae at 30 m.m., require special handling and since these patients constitute our greatest problem they deserve investigation. Adjustments stimulate connective tissue to liberate their stored protomorphogen levels. If the blood level or the coagulation time is low, fine, but if the coagulation is high and the first week or two shows little reaction, good or bad, remember the elimination routes of protomorphogen, kidney, liver, spleen, bile. Stimulate these by any means except articular adjusting, give any technic—dietary, reflex, electrical, eliminative—to stimulate liver function. Drastic starch reduction is a great help as is a compatibility diet. When the coagulation level rises or the petechiometer level drops, then adjust according to the particular technic you use but adjust so-called major only, watching the levels carefully.

In an excellent article originally given as a lecture at the 1949 convention of the N.C.A. and later printed in the November '49 journal Dr. H. Schwartz and Dr. G. Hartman surveyed a 3350 patient sample of mental disorders treated by DC's; this survey showed that in response to the query, "Was any other drugless therapy used in treatment?" 64% replied in the negative, 20% used hydrotherapy or physiotherapy, 9% recommended vitamin dosage, 7% introduced dietary control. Mental disease is perhaps the least

apropos of all conditions involving chiropractic and the protomorphogen theory but these figures are the only recently published figures showing types of practice and in a percantile breakdown. The figures for improvement under therapy are interesting in that they are broken down in time as well as in results. Following treatment 27.5% showed an immediate gain, 23% reported one or more of these combinations, immediate change with later improvement, immediate change with cumulative betterment, immediate change with later improvement and cumulative betterment. 27% mentioned cumulative betterment alone, 17% specified later improvement, 3% admitted nothing noticeable, 1% became worse and .5% became much worse and .5% of 350 is a very low figure. Now the figure of 27.5% showing immediate gain in a chronic condition is very similar to our experience as do the other figures although the figures for lack of improvement are much lower than our average in mental disease. Do you see the correlation between these figures and the probable or possible levels of protomorphogen in these patients although as has been mentioned prior mental disease is the least useful example of how the theory can be applied. 27.5% showed immediate improvement showing here a low level or a long coagulation time postulation. 23% showed immediate change with later gradual improvement, here perhaps a slightly higher level with activation of elimination route, 27% showed no immediate change with cumulative betterment showing here perhaps an even higher level with gradual elimination from repeated mobilization of connective tissue. 17% showed no immediate change but with later improvement showing either a very low level or a relatively high level with elimination routes picking up from some kind of therapy. 3% were no better or no worse showing a locking and a balance which the therapies used could not touch. .5% became much worse showing an extremely high level with damming up of all elimination routes. Since our profession is very frequently on trial in many disorders and since economic survival as well as professional survival is a problem which we all face to a greater or lesser degree, the lack of immediate improvement in many cases often loses a patient who would later respond. A more complete understanding of the situation will lend conviction and sincerity to one's explanation which no amount of "selling" can produce and by the same token help to speed results.

Those patients who show lack of immediate improvement constitute our greatest problem. We boast of the cured cases and remain very silent about the failures, as one discerning patient said one day after reading an alluring tabloid sent out by a D.C. in his neighborhood, "Don't you fellows ever fail just a little bit?" Let's concentrate on those cases which a problem to all of us. As a man in Upper Michigan who is outstandingly successful in his community and throughout the state said the other day at our recent convention while sitting quietly in the lobby of the hotel, "If I knew which patients I would fail on, I'd never have a failure!" meaning he wished he knew some way of screening patients that would respond to his type of treatment. Here too is an answer to be found in the protomorphology approach. If the coagulation level is very rapid and the patient's age is above 50, the prognosis becomes increasingly poor with age and frequently the first treatment will increase the blood coagulation level to an alarming degree with a subsequent rise in diastolic pressure. This type of patient is best to refuse or to take with no promise of complete recovery.

To recapitulate--if the coagulation reading is below 2 minutes or the number of petechiae averages 10 to 15 at 30 m.m. or empirically if the response to any form of articular adjusting is poor in two weeks, stop all forms of articular adjusting and concentrate on all forms of protomorphogen elimination, then recheck in a few weeks, then readjust with cautious vigor, reexamine and observe. The practice of chiropractic is an art, the philosophy of chiropractic should be a science not a single-minded, blind-leading-the-blind, oversimplified doctrine or dogma. Have faith in chiropractic. Many patients have more faith in it than many who practice it --find out why and you'll reaffirm the principles of chiropractic with a sincerity you never knew before.

NOTES

The Respiratory Function of The Skull

By Dr. George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Most patients, and many doctors, are unaware of the fact that the bones of the skull move in a definite pattern with respiration, specific movements occurring on inspiration and on expiration. This skull articular mobility was first observed by Sutherland in his casual observation that the beveled articular surfaces of the sphenoid suggested a resemblance to the gills of a fish with the obvious connection of a human respiratory skull movement.

The early efforts aimed at adjusting the skull articular structure were crude and so called skull molding was relatively ineffective except occasionally by accident. The brain sits on sort of trampoline mechanism which resembles a cross between a trampoline and a circus tent in that the two cerebral hemispheres are separated, yet cushioned by the horizontal vertical trampoline tent construction of the tentorium cerebri and cerebelli, and this coupled with the water bed cushioning of the meninges provides a unique apparatus to give the brain both protection and functional ability. The choroid plexuses act as the parotid glands act to provide the cerebrospinal fluid which in turn is pumped by the blood flow as with the saliva, but more important by the respiratory movement of the bones of the skull. If there is an interference with the regular easy minute, but definite, articulation of one skull bone with another, many symptoms result.

The patient who complains of an inability to concentrate on a simple written discourse, the patient who is never the same after a skull fracture or a mild concussion, these are cranial patients. Also the reoccurring sacroiliac lesion with cerebral symptoms; since, as you would imagine, the sacrum has a respiratory function as well, for as the sphenoid flexes forward with inspiration on the accompanying forward movement of the sacrum it is lifted by the dura, since as you know, there is no attachment of the dura of any consequence below the 3rd cervical until the body of the 2nd sacral segment, so the end effect is a rotation of the sacrum with the base moving posterior and the sacral apex moving anterior towards the symphysis. During the anterior flexion of the sphenoid, the occiput moves inward at the base of the occiput and the superior section of the occiput moves posterior. When this system fails to function as it should, it locks, changes the flow of cerebrospinal fluid and, as is well known, causes a change in the general lymphatic flow with a breakdown of both nerve functions, as well as lymphatic drainage, depending on local conditions for the actual symptoms to develop.

The occiput, the sphenoid, the ethmoid, mandible hyoid vomer and the sacrum all rotate about a transverse axis and as such flex forward and extend backwards with each inspiration and expiration. The rest of the skull bones, which as you may note, are not midline structures, all either externally rotate or internally rotate so the respiratory cycle is a flexion of the midline bones with an associated external rotation of the peripheral bones, with a reverse cycle accompanying exhalation of extension of the midline bones and an inward rotation of the peripheral bones.

So, can you not see the relationship of the respiration to the real beginning of life outside the uterus and the initiation of respiration also initiates the skull movements as well as the movement of the sacrum with respiration, and any interference with these vital interrelationships can cause grave problems. The open fontanels and the relative absence of developed sutures are body insurance to prevent interference with this vital link in our bodies' physiological and neurological balance.

The implementation of the respiratory function of the skull is imporatant in the management of hyper tension especially, and is a necessary rehabilitation factor in all chronic conditions and requires very little time, is simple to apply, meets with immediate patient

requires no heavy thrusts or pressure and the response, especially in the case of hypertension, is immediate and readily observable.

In the case of hypertension, that is accompanied by a considerable increase in pressure on recumbency (normally, as you know, the pressure drops 6 to 10 mm on lying down, the drop normally seen being replaced by a definite rise) points the way to kidney and liver subluxations generally in the region of 8 and 9 thoracic, correction here by relaxation or stimulation by adjustment is effective, but in the case of persistent hypertension which fails to respond to the above technic, the use of cranial technic is especially useful. These cases generally show a much higher pressure on sitting or standing than the usual rise of 6 to 10 mm. The patient is supine and the doctor is seated at the head of the treatment table. The doctor's hands are placed on the temporal bones of the skull, thenar eminences contacting the mastoid portion of the temporal bone with the fleshy part of the thumbs, second and third fingers fitting into the cervical musculature deeply, the fingers are merely anchored here, while the thumb's fleshy tissue presses rhythmically upward against the tip of the mastoid process, tending to rotate the temporal bones while a very gentle traction headward, while the gentle rythmic coincident with respiration pressure is exerted for approximately 2 to 3 minutes. Recheck the pressure and there should be a gratifying drop, especially in the diastolic pressure which ordinarily resists much change in the average case of essential hypertension. As mentioned, early cases of nephritis generally have higher pressures lying down than when sitting or standing, while the so-called essential hypertension shows just the reverse, the pressure being much higher sitting or standing.

The skull-sacral respiratory mechanism is the control to the costal or regular respiratory cycle. The regular cycle is controlled by the skull and sacrum and although it may not coincide in time with the costal respiration, it can and should do so and most cranial technics are aided by timing them to the respiratory cycle in a general way.

It is possible to influence the primary respiratory mechanism by the above technic in all cases that have a slowing of vital processes of elimination, circulation and, paradoxically, in cases of hypotension, as well as hypertension. Use bilateral internal and external rotation of the temporals by contact of the thenar eminces on the mastoid tip thumbs lying parallel to the mastoids and with a gentle barely perceptible movement, rotate the temporals externally and internally synchronous with respiration.

Forced external rotations of the temporal bones held for a few moments exerts a powerful restorative force in all cardiac and respiratory emergencies, and should be held until some degree of recovery takes place. It may be repeated as often as necessary.

Patients who are high strung, hyperexcitable, hysterical, insomniacs and victims of sudden vertigo, and all over

stimulations of the cardiac respiratory and vasomotor centers, greatly benefit from an application to the mastoid process of the temporal bones with the hands placed in the original position, but instead of the inward and upward movement previously described, allow a slight alternate rolling of the thenar eminences so as to permit the middle fingers (placed along side the cervical musculature and with the fingers interlaced) a slight rolling from side to side is allowed to take place by so turning the tentorium so as to allow a side to side fluctuation of the cerebro spinal fluid, calming and relaxing the previously agitated patient within minutes of the 2 to 3 minute application of the technic. For insomnia, the desired effect can be taught to the patient by putting the cupped hands behind the occiput and using gentle compression along with deep breathing, the effect is immediate and is helped especially by having the patient concentrate on expiration slightly.

The various teachers of cranial technic all follow Sutherland's original ideas, but the technic of Alberts is especially recommended here for his additional discovery of a vital "switching concept" which carries cranial technic one step further than the original Sutherland concept.

There are clues to the diagnosis of cranial lesions found on inspection of the face, such as the supranasal vertical fold produced by a scowl or frown moves to the side, for example that the frontal bone has moved back with the sphenoid. The prominent eyeball is always on the side of the elevated sphenoid, and the naso labial crease that extends from the corner of the nose down to the mouth is always deeper and longer on the side of the externally rotated maxilla. The upper teeth slope more laterally on the side of the externally rotated maxilla, while patient who apparently seems to have his forehead moved left or right slightly, especially, when viewed from above, will show a lateral shift of the sphenoid basilar articulation with the sphenoid moving laterally. The lower more prominent ear indicates the externally rotated temporal. A crowded suture is indicated by a ridge, a separated suture is represented by a barely observable (to palpation) groove. Tenderness over sutures with a negative history of recent trauma is an indication for treatment using the original technic mentioned. A light touch is essential for both diagnosis and therapy. Visualize the sutures. Detect by careful palpation if the suture is compressed or crowded, or if the suture seems separated or wider than usual.

Reawaken your interest in palpation and cranial vault anatomy. Use a light touch with a diagnostic determination if respiratory cooperation is needed, and watch the response of the whole body to the whole body therapy that is so necessary in the treatment of the whole man by the whole body oriented doctor.

The intelligent application of cranial technic is just one more way the doctor of Chiropractic an put service above self, help more of his patients with the truths of anatomy and physiology, and allow a greater concept of the inestimable value of chiropractic therapy to reach more people more effectively. Diagrams indicating cranial technic, hand and movement direction details are available from the author without charge. Kindly enclose a stamped, self addressed envelope with your request.

NOTES

The THYROID An Overlooked PROBLEM

By George J. Goodheart, D. C.
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An estimated 15 million people have an undiagnosed and unsuspected borderline hypothyroidism.* Because the thyroid dictates the metabolism of every cell, the symptoms of subclinical hypothyroidism may be many, mostly nonspecific, but the patient that goes to pieces easily, dislikes working under pressure, being watched, the patient that fails to lose on diets, the patient with a history of chronic constipation, unhelped by usual treatment, the patient that has difficulty concentrating, that is easily distracted and in the case of women, especially those that cry easily, these are all symptoms that often present themselves to you in your office for relief and treatment. Familiar thyroid function tests — PBI, I^{131}, serum cholesterol determination, BMR — are time consuming, inconvenient and relatively costly and variations in methods and techniques often distort results of single tests. Today there is rising general acceptance of a simple thyroid test that every doctor can perform and interpret in his office quickly and easily and which will give an accurate estimation of thyroid function. It is the Achilles tendon test and to test the patient the patient kneels on a stool or treatment table, a "receptor-feeder" is placed near one heel and either electromagnetically or photoelectrically this unit transmits voltage changes effected by tapping the heel tendon with its subsequent tendon muscle contraction and relaxation. These changes can be recorded on an EKG which not many DC's have or by a new attachment soon to be manufactured for the endocardiograph or by direct reading of a relatively inexpensive instrument available to our profession thru usual sources of supply or thru your college. Measurements reveal the time span in fractions of a second between the hammer tap and the relaxation. This relaxation time is significantly longer in low thyroid patients and as Dr. Kupperman, who has done extensive work with thyroid problems, has said: "If I had to use just one test for thyroid function, it would be the Achilles tendon test." In my own practice the use of a Burdick Photomotograph FM-1 based on Gilson's design in conjunction with a standard electrocardiograph has revealed many cases of both high and low thyroid that I would never have suspected to have had this condition and each was confirmed by conventional lab test. The beautiful thing about this test is that the instrument is readily available, can be obtained inexpensively and although, as mentioned above, some units require an EKG there are several reliable inexpensive units which do

Dr. Goodheart

not and are well within the range of purchase of any doctor interested in this problem.

The thyroid is susceptible to the influences of temperature, emotions, such as fear and anger, and physical exertion. Diet and food intake are very important in thyroid function. The thyroid has an important function in its dominance over liver activity and is quite important in its effect on activating bone marrow to produce blood cells. Patients that have frequent infections and poor resistance to all infections many times have poor liver function secondary to borderline hypothyroidism. The skin depends to a great extent on the thyroid and activity of the testicle and the ovary are dependent upon thyroid and the lack of thyroid function produces specifically a low progesterone and this certainly is at the bottom of many menstrual problems, especially those that are prolonged and frequent. The symptoms mentioned above many times can be supplemented by a peculiar state of dizziness which apparently is better in the afternoon and worse in the morning and an unusual kind of short-windedness where the patient says they just do not seem to breathe deep enough. It is well known that increased cholesterol levels are present in low thyroid patients and certainly loss of hair, dryness of the scalp, loss of the hair of the outer third of the eyebrow and brittle flaking fingernails are also well-known signs as is the digestive disorder which obstinately resists all treatment, the patient with the frequent headache and the mild deafness, and those patients who have a big flat tongue are all members of this low thyroid fraternity.

A normal PBI may lead some unsuspecting doctor to assume thyroid function to be normal, but with the use of the Achilles tendon test you will find that measuring the level of the inorganic iodine as opposed to the PBI will lead you to cases of low thyroid function. When the thyroid function is depressed and the costo cartilages are palpated, you will find that the rib cage is extremely sensitive to very light pressure. This may be present on either the anterior or posterior aspect of the rib cage and it is a sign of low inorganic iodine and low thyroid function. Many asthmatics need iodine and leg and muscle cramps are frequently caused by the lack of iodine relative to a low thyroid function which can be easily checked by the Achilles tendon technique. The inorganic iodine does not have to be treated for a very long time as when the iodine exceeds a certain point (3.0 gamma percent) it then depresses the thyroid function and what served to help now hinders so you can see the fallacy of long continued iodine supplementation regardless of the claims of some purveyors of this material.

A neglected relationship that is not too well known is that of the salivary glands and the thymus gland and the thyroid. The salivary glands return iodine to the thyroid and is an essential part of the thyroid cycle those patients who had a blocked esophagus from lye or from inoperable tumors who have fed themselves thru a stomach window with a funnel, found that unless they first masticated their food with saliva it was quite inadequate in nutritional effect.** The thymus is the partner of the thyroid and removes end products of thyroid function which are physiologically hazardous unless properly disposed of.*** There is no better method, in my opinion, than the use of thymus ma-

terial and stimulation of the thymus by manipulative normalization of neck and clavicular function and position in treating cases of hyperthyroidism.

In treating cases of hypo or borderline hypothyroidism, attention to the position of the clavical and sternal relationships is important as is attention to the cervical fascia using a sweeping thumb movement from the second rib deeply upward almost to the occiput with repetition of this manipulation for approximately 2 or 3 minutes. Inunction with iodex ointment or any glyceryl extract of iodine available to our profession directly on the skin over the thyroid or by vaginal tampon, is a useful method of supplementing the above manipulation. This can be done once or twice a week along with the use of thyroid cytothrophic extracts and attention to iodine levels as previously mentioned. Phosphorus extracts such as orthophosphoric acid, cereal sources, also aid low thyroid cases. Results are gratifying and can be readily measured by the Achilles tendon test which takes about 14 days before it changes to any extent, even though the patient may begin to respond to treatment much earlier than this.

In cases with a low thyroid - for example 400 milliseconds but with hyper-thyroid symptoms such as tremor and nervousness etc., or versus a 200 millisecond time but with sluggishness, falling hair and fatigue, ribonucleic acid is indicated. In these "reversed cases" thyroxin has been made but it is literally locked out of the cell and accumulates in the blood stream thereby causing symptoms of both low and high thyroid at the same time. The R.N.A. unlocks the cell door and lets the thyroid hormone enter. This is a factor in many cases and supplementation on an ascending dosages (some patients require up to fifteen tablets a day to "unlock the door") of this yeast source material helps many patients. It helps especially failing memory patterns.

An occasional patient may have a low thyroid from overdosing himself with large quantities of vitamin A. Since this is frequently combined with iodine "stop and go" supplementation methods are better than a constant intake beyond approximately a three month period.

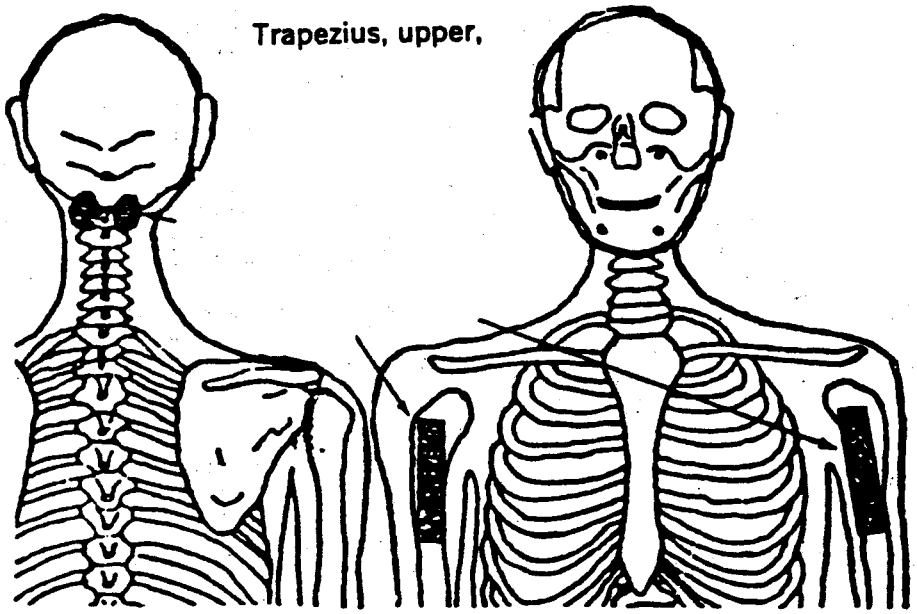
The Achilles tendon test can measure hyperthyroidism as well as hypothyroidism and these people perhaps are more recognizable with their thin skin and fine features and poor balance when standing on one leg, with a fast pulse rate being a fairly constant symptom and an increased appetite with a decreased weight, strong healthy teeth and occasionally erratic, flighty behavior. The use of Vitamin A with thymus and perhaps long continued use of some source of food iodine along with the above-mentioned manipulations frequently restore to normal a thyroid problem that has been overlooked. An effort has been made to describe a simple 3-minute test for accurately measuring both low and high thyroid function which is readily reproducible and is not affected by emotion, pregnancy, sciatic nerve problems or iodine containing cough medicines or iodized salt which so adversely affects the PBI or BMR. The equipment is available from your usual sources of supply or from your college. this is a useful, diagnostic tool which will advance you, your practice and chiropractic and will be just one more means of rendering service to your patients.

REFERENCE

*Leonard A. Scheele, Chief U. S. Public Health Service.

**Wolf - Wolf, Human Gastric Function, 2nd. page 8, Oxford University Press.

***Deutche Gesellshaft Fuen Innere Medizin 57th Congress.



QUICK... SIMPLE... VALID... URINARY TESTING METHODS

By George J. Goodheart, D. C., 542 Michigan Theatre Bldg, Detroit, Michigan

Many tests have been proposed and used for urine diagnosis and analysis. Kits of unusual reagents have been assembled and offered to the profession. All the tests on urine are useful in excluding gross pathology but of what value in treating a patient is a urine analysis report which is negative for albumin — sugar, blood, pus cells — and possibly indican, bile and casts?

A negative respond is an assurance of some sort, not always valid, of freedom from gross pathology — but it is of little value in treatment and maintenance of a particular patient.

Tests which do have a bio-chemical significance and which materially help in the care of patients directly are sometimes little known. An evaluation of the specific gravity, total calcium, chlorides, phosphates, judgment as to liver function and vitamin C level, is possible and simply done in a matter of minutes without expensive kits or equipment by use of simple — yet fully authentic and standardized tests on urine samples. These tests are regularly performed in our office — take little time — require little equipment and yield much positive information in the care and management of patients habits and diet as well as specific indications for treatment.

Urine specific gravity is usually checked — if within normal limits forgotten — or disregarded — this simple test is an aid if interpreted properly to liver — not only kidney function. Generally speaking 1.018, not 1.021 or 1.022 is normal, if specific gravity is as low as 1.010, three factors may be present:

1. Kidney elimination is poor.
2. Faulty assimilation.
3. Mineral intake is low.

The most common cause of low specific gravity is a sluggish or torpid liver — body wastes do not eliminate when liver fails to function properly. Some low gravities are the result of a low food intake of individuals trying to control hypothyroidism by diet.

Only a very few low specific gravities are caused by kidney disfunction *Applied Nutrition — Hawkins. These facts justify the thought that low specific gravity of urine specimens indicate poor liver and thyroid function rather than a possible kidney difficulty. Treatment suggestions therefore, would be to stimulate liver and thyroid function. Since the liver is supplied roughly by 5, 6, 7, 8, 9, spinal sympathetics and vagal parasympathetic; inhibitory adjusting in parasympathetic regions — upper cervical and lower lumbars and sacrum would be a good approach — use the specific gravity as an indication of treatment liver and thyroid technics and support would also be indicated. There is biochemical application of treatment based on a simple specific gravity test. What could be easier?

The well known Sulkowitch reagent for estimation on urinary calcium is available through a California supplier "uri-blood-cal" or it can be made up as follows: 2.5 gm oxalic acid — 2.5 gm ammonium oxalate — 5 cc glacial acetic acid. Dilute up to 150 cc with distilled water. Add equal parts of this solution and morning prebreakfast urine and observe for about 20 seconds for cloudiness and flocculation. A hazy cloudiness is the general rule in most patients since most patients have a disordered Ca-P ratio. This indicates heavy amounts of urinary calcium — an absolutely clear solution indicates low urinary calcium. This test takes about 40 seconds, can be performed while patient is dressing, and yields useful information. Unless the patient is ingesting a high calcium diet which is well nigh impossible with our superrefined foods, or supplementing with calcium in some forms, the heavy calcium indicates, generally speaking, loss of calcium via urinary route — foods high in vitamin D will help to bind calcium to blood stream — foods high in vitamin F transport calcium from blood steam to tissues. Foods high in A and C help keep it there. Many factors influence calcium in the body rather than reglect any — here they all are — some are useful, some are not.

1. Amount and character of calcium in diet.

2. The hydrochloric acid level — special attention is directed here to the fact that if HCL level is good it doesn't seem to make much difference what form of calcium is ingested if not — the lactate or the gluconate is best — try to raise the HCL by adjusting — this is also best! HCL support may be needed.

3. The amount of phosphorus assimilated a high protein and cereal-nuts, chocolate, and bean diet is high in phosphorus and causes an increased loss of calcium in urine.

4. The amount of potassium, assimilated potassium has a high electrochemical activity and can displace Ca and increase it in urine. Modern diet trends make it difficult to keep a level of potassium rich foods such as juices — fruit, vegetables, wheat bran, soft drinks, low enough in diet.

5. The amount of magnesium in diet, magnesium displaces calcium like potassium but with exception of milk of magnesia addicts it is not essential to consider.

6. Basal metabolic rate — high thyroids lose Ca easily in urine — low thyroids do not assimilate it, therefore both cause high urine calcium.

7. Vitamin D and bile both act alike on calcium, increase its excretion in the urine but — increase its assimilation with an edge toward assimilation.

8. Rate of growth is self-explanatory. A decrease during this period would be explainable this way.

9. The level of iron in the body. A high urine calcium with poor assimilation is often associated with a low iron or hemoglobin level.

10. The activity of parathyroids. Calcium levels are raised in both blood and urine levels by parathyroid increase in activity but is followed later by a decrease.

11. Intestinal rates too fast will decrease calcium in urine and blood.

So find out what calcium level is, apply yardstick of above items and generally speaking, an increase in Vitamin F, liver function, HCL or calcium intake will change the urinary calcium incredibly quick. Here again adjusting for better liver function is important — loosening of neck musculature and lymphatics promote parathyroid activity. Certainly enough gastric disorders due to low HCL have responded to adjustings in the upper dorsal region (even though this is a sympathetic area)

to warrant careful adjusting, not overly stimulating. Apply logic in analysis — use adjustment as indicated, and watch the calcium level change — a simple test — 40 seconds — a few minutes thought and common sense in treatment gives a biochemical control.

A simple test for chloride level and adrenal function. Also important in the control of hypertension, in the treatment of hypertension and in general use is the Koenigsberg Test. Two solutions are used — Potassium chromate 10% — Silver Nitrate 0.74%.

Take ten drops of morning urine add one drop of potassium chromate — shake well — add drop by drop silver nitrate until a brick red color develops — a low sodium diet gives about eight drops to the end point. A regular diet based on about 1000 specimens tested runs 23-35 drops.

The urine chlorides is a good index of total intake and can be used in all but a few liver and kidney and adrenal pathologies. A low level with hypertension would warrant an increase in table salt, a high level with hypertension would warrant a decrease in salt and high sodium foods. A high level of fats in the diet show an increase in urine chlorides, as also with potassium. Since a good HCL level favors better calcium levels and since many patients suffer from calcium losses and hypertension and low gastric acidity causing gastric symptoms, two problems can be solved by getting the chlorides normal—

Urinary phosphates can be detected microscopically or by boiling urine if a cloudiness develops following boiling which disappears on addition of acid, these are phosphates. Another method is the ph determination with PHdrion paper or with Squibbs nitrazine PH testing strip — simple and quick. Usually the greater the acidity the greater the phosphorus. The same factors controlling calcium and control phosphorus since in the main it is excreted in combination with calcium or with potassium. So, therefore, these factors are involved.

1. The level of phosphorus in diet.
2. The level of fatty unsaturates.
3. The level of HCL.
4. The level of bile and vitamin D.
5. Pancreatic function.
6. Vitamin B — vitamin B stimulates the pancreas and aids phosphorus assimilation.
7. Presence of infections — these seem to increase the phosphate level tremendously in our experience, slowing up almost always, and changing with the subsidence of the infection — how many of you recall seeing a urine loaded with some deposit in infections then clearing — again phosphates. Therefore, to sum up modify diet to provide adequate amounts of phosphorus — generally present in meat, fish, and eggs — supply foods in high "F" and adjust to get better HCL and liver function as before and try careful amounts of high B foods or concentrates to improve phosphorus assimilation

The following chart, if copied and kept near urinalysis table, will materially aid in dietary changes to be made from the tests run.

	Specific Gravity-Acidity & Phosphorus	Urine Calcium	Urine Chloride
Meat – Fish – Eggs – cottage cheese	Increases*	Increases*	Increases*
Vegetables	Decreases*	Decreases*	Decreases*
Potato – fruit – Cereals and Grains	Decreases*	Decreases*	Decreases*
Foods Fats, oils	Increases†	Increases†	Increases†
Butter, cream			
Milk	Increases†	Increases*	Increases†

*–same action on blood
†–opposite action on blood

The Ames Company of Elkhart, Indiana, produces excellent enzyme reactant strip which will quickly give pH, albumin, sugar, blood, and for those interested in infant care, the presence or absence of phenylalanine in the urine. These enzyme coated strips are marketed as combi-stix. (albumin, sugar, and pH.) Hemi-stix's give blood in urine and other solutions; Pheni-stix's give phenyl-alanine, and keto-stix's give acetone. A multiple dipping of combi-stix's, keto-stix s, hemi-stix's gives a yes or no answer to sugar, albumin, blood, acetone, and pH levels within 15 seconds after dipping, with no other preparation. What could be simpler or quicker for detecting gross urinal pathology. Hemicombistix now are available

Vitamin C levels can be estimated by the use of dichlor phenol, indo phenyl indicator material using equal quantities of urine and indicator material. This indicator in tablet form can be secured from Good Health Supply Company, 16 Gothic Avenue, Toronto, Canada. The Sulkowitch agent for calcium is also available from this source.

Further simple tests for evaluating nutritional, physical and bio-chemical status will be forthcoming.

NOTES

ACID OR ALKALINE DIET CONTROL

1 Fruits	2 Vegetables	3 Starches	4 Proteins	5 Fats
Alkaline ASH	Alkaline ASH	Acid ASH	Acid ASH	Neutral ASH
Apples x	Almonds xx	Bran xx	Cheese x	Bacon
Apricots x	Artichokes x	Bread (white) xxx	Clams xxx	Butter
*Bananas x	Asparagus xx	Bread (rye) xx	Crabs xx	Cotton seed
Berries x	*Beans xxxx (dried lima)	Bread (graham) xx	Eggs xx	Cream
Cherries x	Beans xxxx (fresh green)	Bread (wh. wheat) xx	Eggs xxx (yolks)	Lard
Citron x	Beets xx	Cereals xxx	Eggs x (whites)	*Milk
**Cranberries x	Beet tops x	Corn (dried) x	Fish x	Olive Oil
Currants x	Brussels sprouts x	Cornstarch x	Meats xxx (lean beef)	Peanut Oil
Grapefruit xx	Cabbage x	Crackers x	Meats xxx (chicken)	Sugar (white)
Grapes x	Carrots xx	Flour (white) x	Meats xx (lean pork)	
Lemons x	Cauliflower x	Gravies (flour) x	Oysters xxxx	
Limes xx	Celery xx	Molasses x	Poultry xxx	
*Melons x	Corn (sweet) x	Oatmeal xx	Shrimps xxx	
*Oranges x	Cucumbers -	Pastries xx	Lentils xx	
Peaches x	Endive -	Peanuts x		
Pears x	Lettuce x	Popcorn x		
Persimmons x	Mushrooms xx	Potatoes (peeled) x		
Pineapple x	Olives (ripe) x	Preserves x		
**Prunes x	Onions xx	Rice xx		
Raisins xxxx	Oyster plant x	Spaghetti xx		
Tangerines xx	Parsley x	Squash x		
Tomatoes xx	Parsnips x	Soups (thick) x		
	Peas (fresh) xx	Sugar (raw & brown) x		*Reduces Acidity of Urine.
	Peas (dried) x	Tapioca x		*Increases Acidity of Urine.
	Peppers (sweet) x			
	*Potatoes (unpeeled) x			
	Sauerkraut x			
	Radishes x			
	Spinach x			
	Summersquash x			
	Tomatoes (raw) xx			
	Turnips x			

DIRECTIONS: To obtain best results the following instructions are given:

1. Eat only the foods listed in Column _____
2. Eat only one of the foods in Column _____ at any one meal.
3. Eat only Column _____ foods when eaten with Column _____ foods.
4. Do not eat foods in Column _____ until advised.
5. You may eat foods in Column _____ marked with _____ X or less.

FURTHER INSTRUCTIONS: _____

_____

_____

_____

The above list should be returned for a re-check on _____

DR. _____

ADDRESS _____

Form No. VS-176

THE PRINCIPLE OF MUSCLE BALANCING

BY GEORGE J. GOODHEART, D.C.
542 Michigan Bldg., Detroit, Mich. 48226

Many patients have problems which involve apparent muscle spasm. Many doctors also have problems which relate to the all too common presence of muscle spasm producing some disfunction in their bodies. Muscles do contract, there is no question of this, as witnessed by the usual muscle spasm of the psoas or the trapezius or some other commonly involved muscle group. Yet it is our experience that rarely do we ever find actual primary muscle spasm in most patients that come in for our attention.

Generally, there is great and overwhelming evidence of muscle spasm, both by posture or by symptom recital, but when these patients are examined by the simple expedient of muscle testing it is found that an overwhelming majority do not have primary muscle spasms but have muscle weakness which then CAUSES the opposing muscle or the antagonistic muscle or the contralateral muscle to contract. In other words, there is no question that muscles do contract but in the main they usually and most generally contract only in the presence of predictably identifiably prima facie evidence of muscle weakness.

Testing the muscle or muscles involved by the methods of Kendall and Kendall or by the methods devised by the author invariably reveal the presence of actual, and many times profound muscle weakness of the opposing muscle to the muscle which is in apparent spasm. The hypertonus of the muscle only exists because of the hypotonus of the opposing muscle, and an example can be cited to typify this relationship.

The mast of a sailboat has equal tension on the two lateral stays, loosen the stays on one side and the mast tilts toward the side of the intact and untampered stay. The tilt of the mast is obviously due to the weakness of the loosened stay, the apparent hypertonus of the opposite stay is only apparent and not actual because the first stay that was loosened ALLOWS this apparent increased tension or hypertonus. The remedy therefore is not to loosen the normal tension of the normal stay but to tighten the loosened stay. In the process it may be necessary to slightly loosen the normal stay while adjustments are made but the prime purpose of restoration to normal in this example is to tighten the loosened stay.

So also in the obvious but only apparent muscle spasm do we find by muscle testing, the evidence of a muscular weakness with the apparent—again, emphasize apparent hypertonus. Therefore, the remedy is obvious. Tighten the loosened muscle rather than attempt to loosen the muscle, which is only apparently hypertonic but which is in reality quite normal.

Have you not had the experience of applying some type of heat by infrared or diathermy to a patient who walked into your office with a low back problem and who once he became recumbent upon a treatment table with the soothing heat in full therapeutic evidence, found that he could not rise from the table which he was able to put himself down upon just minutes before?

Heat further weakens an already weakened muscle and since most muscle spasm is only apparent and not actual, the use of cold is much more rational when applied to the actual weakened muscle. This has been our experience time and time again in every variety of muscular disability which involves the ready-made and obvious diagnosis of muscle spasm but which by clinical testing proved to be muscle weakness. This evidence is overwhelming in its frequency when the standards of muscle testing is applied to these patients.

Occasionally the degree of pain does not permit muscle testing and therefore a postural or X-ray analysis is as valid as the primary but temporarily inapplicable method of muscle testing. The variable factors so beautifully shown on a full spine 14x36 X-ray are the most graphic evidences of identifiable, predictable and actual muscle weakness that can be found.

A high shoulder when accompanied by a level pelvis and level occiput is not evidence of a contracted latissimus dorsi on the low side but is evidence of a muscle weakness on the high side. This is simply a fact and can be readily

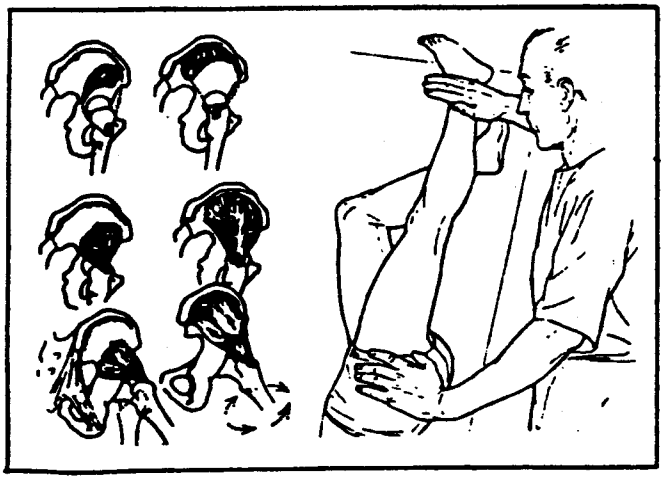
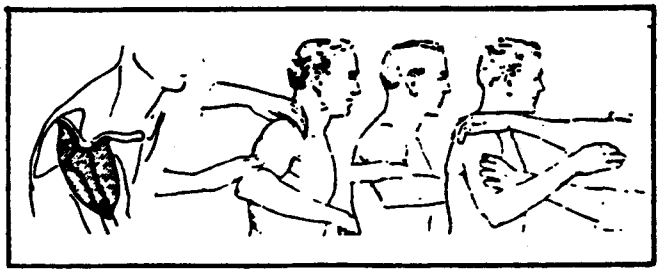


Figure #1

Figure #2



proven by anyone, for anyone, to anyone, anywhere, anyhow, anytime.

The presence of a tilted occiput when accompanied by a level shoulder and a level pelvis is absolute evidence of a weakness of the anterior neck flexors and the posterior neck extensors on the high side rather than contracture of these flexors and extensors on the low side. The high hip, the high shoulder, the high occiput, all on the same side is indisputable evidence of a weak gluteus medius on the high side, and when the patient is put in a side lying position with the inferior leg slightly bent at the knee and the superior leg extended and elevated ceilingward, pressure downward at the ankle will easily be resisted by the intact side and will readily cause yielding on the high or weakened side each time, every time, all the time, by anyone, for anyone, to anyone, anywhere, anyhow, anytime.

Muscle testing and its attendant diagnostic information is a gold mine for the intelligent chiropractic physician and yields the most precise, accurate and predictable information as to why people look as they do, act as they do, walk as they do, and complain as they do. It is also the most useful means of gaging response to treatment since when therapy is applied to the weakened muscle the response is immediate, startling and overwhelming in the restoration of strength to the weakened musculature involved.

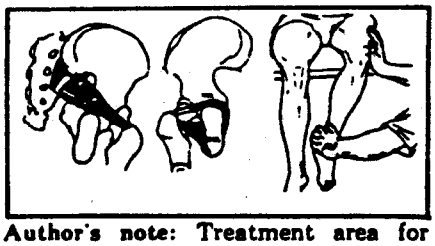
A pelvic tilt may be evidence of a weakened psoas, a weakened quadratus or a weakened gluteus medius. It takes but seconds to accurately test the muscles involved and then therapy becomes obvious, definitive and apparent, especially to the patient who sees with his own eyes and his own feeling the immediate recovery in the weakened muscle.

Muscles respond to definitive techniques but diagnosis before treatment is both logical and imperative if one wishes to keep abreast of the ever swelling stream of sick patients who knock at our doors in desperation at the failure of previous treatment.

Muscles become weakened and then cause apparent muscle spasm when they suffer a micro-avulsion from trauma. Sometimes this micro-avulsion is visible on X-ray as witnessed by the frequent avulsion of the insertion of the deltoid. In this case the patient cannot abduct the arm away from the side of the body and when the deltoid is tested it is found profoundly weak.

This is not the only cause of the inability to abduct the humerus. But when this is the cause. X-ray evidence of the mocro-avulsion at the deltoid insertion is visible and a hard, heavy rotary pressure applied for 20 or 30 seconds to the micro-avulsive area quickly restores the previously weakened deltoid to normal and literally reseats or reseals the periosteal micro-separation. The apparent speed of recovery is spectacular but an actual fact. When the deltoid becomes weakened many times other muscles such as the teres major or minor and the pectoralis clavicular and sternal division become contracted and go into spasm. This spasm is immediately relieved by correction of the weakened deltoid.

Every time a muscle contracts an opposing muscle relaxes. When the elbow is bent for whatever reason, the biceps contract and the triceps reciprocally relaxes. It is this reciprocal relationship in the normal which also operates to both the patient's benefit and detriment in the abnormal. Proof of this fact may be found on testing the piriformis muscle. Evidence in the external position of the leg, the femur being held in external rotation by the apparent piriformal muscle spasm. The patient is seated, the knee is flexed, your hand is placed at the lateral knee of the testing side and your other hand is placed at the internal malleoli. The malleoli hand exerts pressure directly lateral while you steady the patient's knee with your other hand and he resists the lateral movement of the malleoli hand. This is the method of testing the piriformis muscle. Weakness will be found on the side that yields most readily to the testing pressure while the patient resists with his greatest ability.



Author's note: Treatment area for piriformis both neuro lumphatic and neuro vascular is identical with gluteus medius.

This weakness will always be found opposite the side of the previously mentioned external rotation of the femur. Correction of the lymphatic drainage block which frequently is the cause of muscle weakness can be accomplished by stimulating the lateral margins of the synphysis pubis on the weakened side using a hard pressure for about 30 or 40 seconds, then stimulating the posterior neurolymphatic center at the junction of the fifth lumbar transverse with the crest of the ilium. This neurolymphatic receptor activation starts the sump pump circuit breaker and activates the lymphatic drainage which is one of the causes of muscle weakness. The increased drainage allows proper tissue respiration just as in the flushing of a toilet readies the unit for further function, the muscle returns to normal and you have accomplished your therapeutic task.

On retesting the apparent hypertonus on the external rotation side, the externally rotated femur will now readily rotate internally, which it did not before, and is now in the state of muscle balance. This lymphatic drainage interference is common to many muscular problems from the psoas to the pectoralis, from the gluteus medius to the trapezius, and was the basis for much of the early success that the methods of Applied Kinesiology enjoyed.

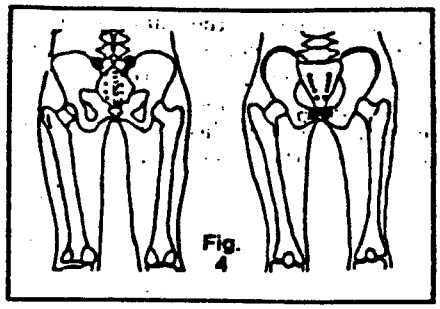


Fig. 4

There is also a circulation to each muscle with the attendant "thermostatic" regulation of the blood supply. When the muscle contracts it produces lactic acid, this lactic acid accumulation causes further dilation in the blood vessels of the hard working muscle. Since this dilation must take place thru the nervous system any blockage of the neurovascular receptors does not allow normal lactic acid response to take place.

These neurovascular receptors were first discovered by Dr. Terence Ben-

nett in the early 30's and have proven valuable thru the years by Imperical methods of treatment. Dr. Bennett, a California chiropractor, had no knowledge of the intricate and incredibly accurate correlation of these neurovascular areas to spcific muscles, and just as Dr. Chapman was not aware of his lymphatic receptor correlation to muscles, neither was Dr. Bennett aware of this precise interrelationship. It remained for the application of the principles of Applied Kinesiology to show, verify and validate the unusual but highly predictable receptor connection to specific muscles.

The neurovascular receptor for the gluteus medius muscle is located at the parietal eminence. As previously mentioned the high hip, high shoulder, high occiput was an indication of a gluteus medius weakness. The previous method of testing the combination of the postural defect and the observable muscle weakness would indicate activation of the neurovascular reflex at the parietal eminence. A light, tugging touch is applied at the parietal eminence on the side of weakness until a definite pulsation is felt. Hold this contact for approximately 20 seconds of finger felt pulsation. Retest the mus-

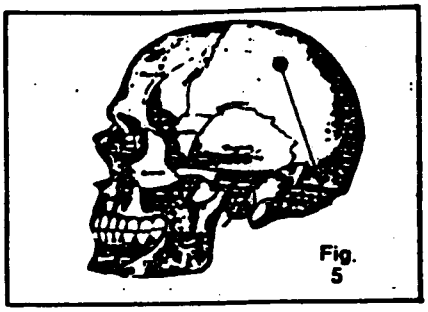


Fig. 5

cle. There will be an immediate and overwhelming response with a return in strength and an observable postural correction.

Naturally when the gluteus medius is weak, the opposite gluteus medius becomes hypertonic. The patient is either laterally flexed or presents a lateral hip on one side and a lateral shoulder on the other. In the latter distortion, the patient looks, in going through a doorway, as if he would touch one side of the door opening with the lateral hip on one side and touch the other side of the door opening with the lateral shoulder. Naturally in these gluteus medius problems, there will be vertebral rotations and vertebral inferiorities of lumbar vertebra especially with secondary involvement of THEIR balancing intrinsic spinal muscles. Pain will be present on palpation at the belly of the hypertonic gluteus medius muscle which is the result of the postural pattern of the weak gluteus medius muscle. Pain may also exist now in many and varied areas. Correction of primary problems produces primary results.

Chiropractic properly practiced is both diagnostic and therapeutic. One should balance the other. We work with innate intelligence, it knows these facts of muscle weakness. Treat these areas by intent rather than by accident. The methods are available, they have been published in a variety of journals. Seminars have been conducted, patients have been treated, the response has been noted by many in different parts of the country. Muscle testing is an integral part of chiropractic since it proves beyond a doubt that structure determines function.

NOTES

FURTHER INFORMATION ON "THE PRINCIPLE OF MUSCLE BALANCING"

Your present abilities should include a good knowledge of the methods of muscle testing. The book "Muscle Testing" by Kendall and Kendall, published by Williams and Wilkins, is an excellent text. Muscle testing, as you know, is the basis of the diagnostic phase of Applied Kinesiology. There is also a text published by myself on Muscle Testing and includes the original method of treating the micro-avulsion pattern which formed the basis of the first breakthrough in specific muscle treating.

Because of repeated requests, the following information is also made available: The author's textbooks, as advertised in C.E., may be purchased on the following basis: The price of the reprints alone is $15.00. All other texts are $35.00 each. There are five different books starting with the original Applied Kinesiology, then the neurolymphatic reflex technic for muscles and connected organ function, then the neurovascular reflex dealing with the circulation thermostats of the body's muscles and connected organ. The fourth book is a condensation of the first three with diagrams of all treating areas. The fifth book deals with cranial technic with respiratory assistance and the key to nutritional therapy. Any one book is $35.00; any two are $50.00; any three are $70.00; any four are $90.00; all five are $120.00. The total set with the reprints is available at $130.00. The new 1970 edition describes how to use muscle testing to find cervical, dorsal, lumbar, sacral, fixations, and how to quickly release them with a spectacular response of the previously tested muscle immediately. It contains the essential cranial technic for a whiplash problem and many disturbances of the special senses.

Activation of neurolymphatic, neurovascular and cranial contacts followed by appropriate nutritional supplementation creates an immediate and amazing response in the muscles previously found weak. The cross crawl should relieve any secondary hypertonus remaining in the chronic patient and the use of the GE-5 is occasionally extremely valuable in erasing isolated areas of hypertonus in a muscle chronically shortened from long continued weakness of an opposite muscle.

The use of cold on the weakened muscle and the use of simultaneous heat on the apparently hypertonic muscle is good auxiliary therapy in the acute or extremely chronic problem. Do not use heat on a weakened muscle under any circumstances.

If you have not already had the opportunity, try to attend an Applied Kinesiology Seminar put on by your State Association. Your own State Association may have already set up Kinesiology Seminars for your on-going postgraduate education. Try to take advantage of these and other convention activities involving Applied Kinesiology by referring to the calendar of events at the rear of every edition of Chiropractic Economics published by Bill Luckey, 906 Chalmers Avenue, Detroit, Michigan 48215.

My best wishes for your continued health and success.

George J. Goodheart, Jr., D.C.
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Detroit, Michigan 48226

A New Route to the Brain . . .

Structural Imbalance and Nutritional Absorption

by Dr. George J. Goodheart
542 Michigan Bldg., Detroit, Mi. 48226

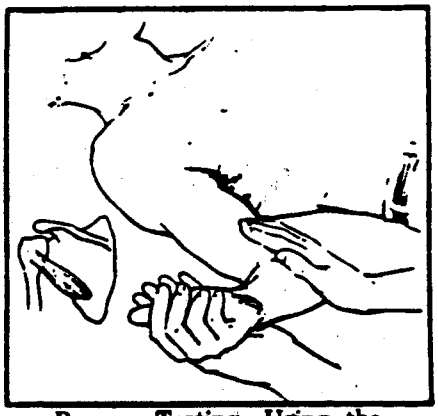
Many patients suffer from nutritional deficiencies. Many doctors also suffer from these results of the urbanization of our lives and our removal from the source of much of our food. The almost necessary change in the food to allow distribution to a large urban area far removed from the rural source, has altered the national dietary pattern.

Foods are processed to retard spoilage, processed to provide better shelf life, processed to prevent evidence of rancidity, artificially ripened to provide better crop processing, etc. These measures though reprehensible when carried to the extreme are sometimes necessary for the producer or the distributor to allow general market distribution at a fair price and profit to all concerned.

Natural foods should be eaten in their natural state, we are what we eat, these are all patently evident truisms but the admonition to eat natural foods in their natural state is difficult, if not impossible for the average urban resident. So . . . he supplements his nutritional balance with nutrition supplements. What could be more simple, yet although nature or innate intelligence never makes a mistake, many are made in the field of nutrition no matter how well meaning the intent to correct the obvious imbalance of the nutritional pattern. The nutritional pattern after all, is the springboard we all use to obtain therapeutic results with patients.

Many patients respond to a variety of therapeutic approaches in the practice of chiropractic, but in some the response is lacking or erratic or slower than the average case in the doctor's experience. Sometimes the result at first gratifying, slows down like an old gramophone record and like the old wind up record player, the patient requires more frequent treatment. We have all experienced these situations in our daily practice. The variability of the response has left the impression that the total response varied in different individuals.

In individuals who have suffered obstruction of their esophagus for some reason, such as a child swallowing lye contained in a bottle that might contain some frequently used beverage and swallowing it by mis-



Pressue Testing. Using the forearm as a lever, pressure is applied in the direction of internally rotating the humerus.

take, the obstructed esophagus requires plastic surgical repair. During the process of plastic surgical repair, an artificial opening or stoma is made in the stomach and the food properly liquefied with the right number of calories and vitamins added is inserted into the artificial opening or stoma. These patients do rather poorly and develop many problems, but when these patients are asked to chew the food that they cannot swallow, there is an immediate response in their general condition and they begin to regain lost weight and cease having the problems they had originally, which would include anemia, kidney stones and arthritis. This is a well-known observable reaction in patients unfortunate enough to have this particular kind of situation.

It is also well known that in individuals having a low blood sugar pattern that a recovery in symptoms many times takes place following the ingestion of food; for example, protein food, in such a short time that digestion of any state could not have taken place. Yet the response in the patient's symptom pattern, such as the weakness and faintness, are immediately alleviated. We have all seen a crying child, an infant especially, stop whimpering and start smiling immediately upon the ingestion of food. The effect is immediate and could not be digestive in character. It is also a well-known observable fact that the iodine level of food is greatly influenced by chewing.

If the iodine content of a common food, such as seafood, is measured prior to chewing, and then the patient is asked to chew the food and then the iodine content of the food is remeasured prior to the patient's swallowing the food, there is a great reduction in the measurable iodine content. The parotid gland acts as if it is an electronic magnet pulling the

iodine out for subsequent use by the thyroid. This has been a recorded phenomenon by many biochemical observers. Using these three unrelated facts as a guide, an attempt was made to discover if absorption of nutritional concentrates by chewing could affect muscle response. A patient was selected that had responded to an adrenal disturbance with low blood pressure, but whose response to thyroid treatment and stimulation was inadequate. There was a weakness of the teres minor muscle common in thyroid disorders.

This patient was taking nutritional support for the thyroid on an adequate intake. The teres minor muscle at this particular instance was again found to be weak on testing and had been repeatedly treated with only a fair response. The patient was asked to chew the nutritional concentrate she had been taking for support of the thyroid. There was an immediate response in the strength of the teres minor muscle. This was prior to her swallowing the material. The patient remarked that the sense of well-being had improved sharply.

An effort was made to determine the modus operandi of this particular phenomenon. A patient was asked to simply go through the motions of chewing, muscles were tested before and after, no response was noted. A patient was asked to chew a simple source of food material to determine if carbohydrate absorption was involved since ptyalin does start the initial stages of carbohydrate digestion in the mouth, no response was noted. The psychological pattern was ruled out by negative suggestion being given to the patient as to the effect of what the nutritional support would do upon being chewed and the patient would then say that the negative suggestion (that no response would occur) was incorrect since there was an observable response. The patient was given the same material to swallow without chewing, in a larger quantity, a sufficient period of time was allowed to elapse, and the previously tested muscle was tested again, no response was observed except in a very minor way.

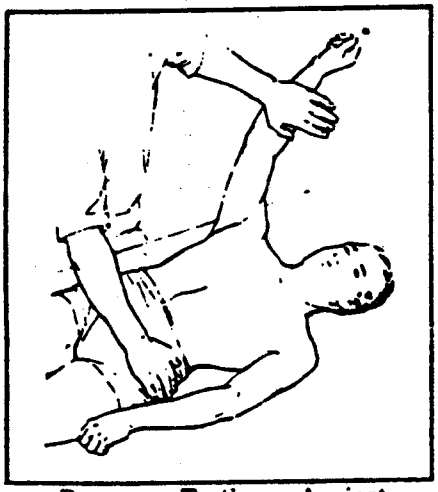
Science Generally Proves what Innate Specifically Knows

It was obvious that a new fact had been discovered about the principles of Applied Kinesiology, in that chewing of a nutritional substance in the natural order, a low concentration from a natural source could produce a phenomenal response in a particular muscle. There seemed to be a response in a particular muscle to a particular substance. This was validated, first by repeated observations of over 200 separate and distinct instances and second by the observation of other practitioners in this area to whom this information was communicated. A so-called double blind study was also done in which neither the doctor nor the patient knew the nature of the substance that the patient was to chew. The response was appropriate, immediate and highly individualized.

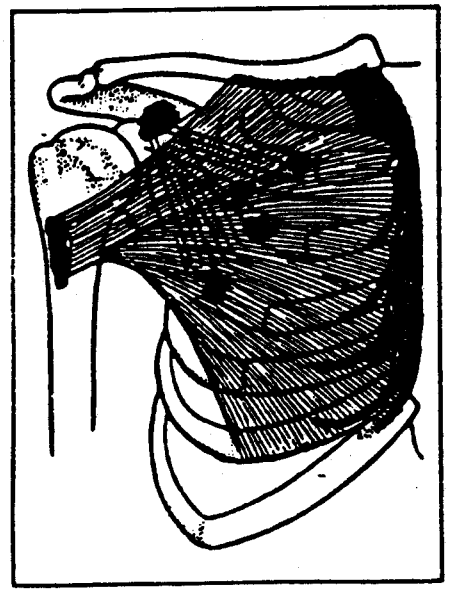
It soon became apparent that many individuals had more than one muscle weakness that could be observed in this particular fashion. The pectoral major muscle, for example, in its sternal division is associated, as you know, with the lymphatic and vascular reflexes of the liver. The gluteus medius muscle is associated with the sex glands, as you know. There are neurolymphatic and neurovascular contacts for both of these muscles. There is also a means of establishing cranial respiratory assistance technique to these muscles. In other words, the patient is asked to take a deep breath, the muscle is tested, observations are made as to whether this increases the strength. The patient is then allowed to expire the air and hold the expired air out and the muscles retested. There is an observable strength increase in many cases on either inspiration or expiration. This is done first. This information is then recorded for future use.

So, for example, the pectoral major muscle is tested, and if it is weak in its sternal division, a low concentration of natural Vitamin A, 1500 units, is given and the patient is asked to chew the material. Ten seconds after the patient has finished chewing the material (this is an approximate time) the muscle is retested and there will be a phenomenal increase in strength of the previously weak pectoral major muscle in its sternal division. If, for example, you had already tested the gluteus medius muscle as well and found it to be also weak, there would be no response whatsoever in the

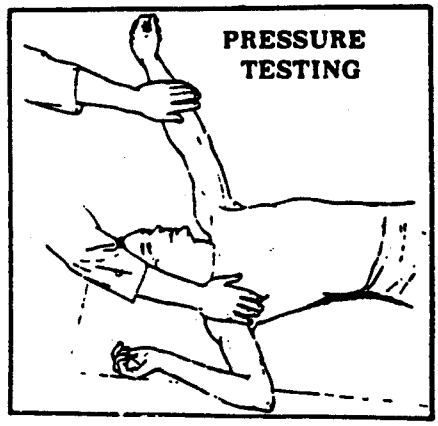
Continued on page 22



Pressure Testing. Against the forearm, in an upward-outward direction.



Pectoralis major



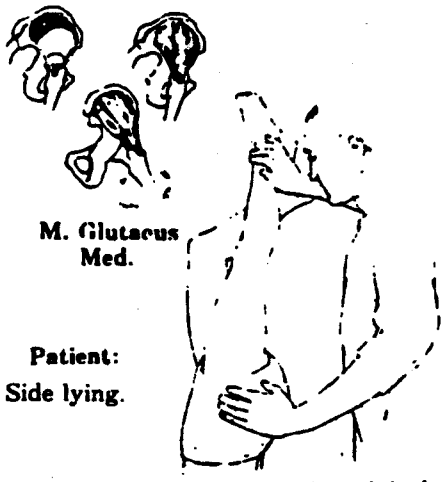
Pressure Testing with the elbow extended, against the forearm, in an outward and slightly downward direction.

But if the patient is then asked to chew a source of natural Vitamin E concentrate as low as 2 units per tablet, following chewing there is a phenomenal increase in strength of the previously weak gluteus medius muscle. This can occur on the same side as the pectoral muscle or on the opposite side. The body has an innate, unerring sense of where the material is needed and seems to immediately respond to the particular substance in the natural order that it apparently requires. If the reverse situation in the case mentioned above takes place in a patient—in other words, if the Vitamin E is given first, the gluteus medius responds and the pectoral major sternal division is unresponsive until the natural source of A is given, then the pectoral major responds.

There is an apparent specific relationship of a nutritional substance to a specific anatomical muscle response. The side of muscle weakness has apparently no relationship to the speed or to the specific mode of response since the right pectoral major muscle sternal division responds to A, and a left gluteus medius responds to E, or the opposite may occur. (The opposite here referring to the side on which the muscle was found weak, namely left or right.) Efforts were made to identify specific nutritional substances with specific muscles and the response or lack of response was noted.

There was an observable definite identifiable pattern. The pectoral major sternal division is affected by small concentrations of natural Vitamin A and also responds to bile salts since as you know, this muscle relates in its lymphatic and vascular refexes to the liver. The pectoral major clavicular division is associated, as you know, with the stomach and this muscle is affected by concentrates in a low potency of Vitamin B Complex and also of G Complex. The B Complex being the most common nutritional substance affecting this muscle, although occasionally concentrates of the G Complex is needed to obtain a complete response in the pectoralis major clavicular division. The gluteus medius, the gluteus minimus, the periformis and the abdominal muscles all respond to natural low concentrations of Vitamin E Complex.

Again, as noted above, the patient chews a tablet that contains as low as 2 units of Vitamin E. An interesting fact in this regard is that the higher milligram dosage which of necessity



requires some refining of the original source, apparently has very little effect when chewed or ingested. The upper trapezius muscle responds to low concentrations of Vitamin F and Vitamin G Complex. Bear in mind that these concentrations of natural materials must be thoroughly chewed prior to swallowing. It is just as if in one instance when the person chews the substance it goes direct to where the trouble exists; whereas if the patient swallows the substance, there is a general distribution. It is something like occupant mailing which produces perhaps a soap coupon in your mail as opposed to a certified registered letter addressed to you personally producing a singular response.

Here again, we have the natural order showing its effect in human physiology. The sartorius and gracilis muscles respond to natural concentrations of adrenal substance of a non-drug nature. Test the anterior neck flexors and the posterior neck extensors. If you find a weakness, have the patient chew a concentrate of niacinamide and B-6. There should be an observable response of at least 75% after the tablet has been chewed or if the material is in capsules after the capsule has been allowed to either dissolve in the mouth or opened and the capsule contents chewed and mixed with the saliva. The only exception we have observed in this particular situation has been the type of muscle weakness of the neck flexors and/or neck extensors immediately following a severe cervical strain or postwhiplash patterns.

A period of 24 hours apparently is necessary for recovery to take place sufficiently to allow nutritional concentrates to operate in the manner previously described.

It is obvious also that there may not be only one substance that is needed in a particular muscle organ pattern situation. In other words, a muscle may respond to, for example, Vitamin A and/or bile salts in the case of the pectoral major sternal division. There may be other substances as well in the natural order that would cause a response in this muscle and its associated liver pattern. Further research in this area is now being conducted.

At this stage of the research in the nutritional relationship to muscle balancing, the one remaining question is the quantity and the duration of time that the appropriate material must be given. At this time we give a moderate amount, 3 a day, for example, of a very low potency natural concentrate which could only have a simple nutritional effect and not the drug effect that some high concentrates or some substances are capable of producing. Observe the response from one treatment to another, increasing or decreasing or eliminating the material as the response indicates. It is obvious that there is an immediate response in strength that is lasting and strange to say in some instances requires only a single tablet to produce the desired response This is the exception. In other instances, a continued supplementation is required but the usual instance is that following 2 or 3 weeks of a natural source intake chewed, there is a sustained and observable response not only in the muscular pattern but in the general physiology of the patient.

This information was first recorded in the publication, "Cranial-Sacral-Nutritional Reflexes and Their Relationship to Muscle Balancing" in early 1968. In the November 4, 1968 issue of Science, Volume 163, an article entitled, "Direct pathway to the brain" was abstracted. Whole body autoradiographic studies demonstrated that, when isotopically labeled glucose is placed in the ligated oropharynx, there is a rapid movement of the isotope directly to the intracranial cavity. This passage involved nonspecific diffusion bypassing all

recognized routes to the brain. (Bold print author's emphasis.)

The one hundred year old admonition of Fletcher to chew our food one hundred times, apparently was based on good clinical observation as well as good common sense. His recorded recovery patterns were out of proportion to the foods involved. The evidence is strong that we should chew not only our food well, but that we should chew our nutritional support as well. Dr. Royal Lee was the first to consistently advocate the chewing of nutritional concentrates.

The reverse of the situation is also true. For example, the common high shoulder, weak latissimus dorsi pattern found in hyperinsulinism and diabetes is immediately made worse, much weaker on testing when as little as one c.c. of ordinary glucose is ingested and held temporarily in the mouth. The same is true of any other toxic substance which relates to any disease pattern when ingested and held temporarily in the mouth and chewed or insalivated.

Innate intelligence or body language never lie. There is always valid, reproducible evidence if one looks carefully enough. The language is unmistakable, the practice of muscle testing verifies what we have all known and felt about the validity of the chiropractic concept of health and healing, but now we have proof of the incredible ability of innate intelligence even in the field of human nutrition. The experiment with the radio-active carbon 14 isotope showed conclusively that "apparently the glucose or labeled fragments of it can pass directly from the mouth to the brain, bypassing the gut" and most importantly "bypassing all recognized routes to the brain." This negates naturally, the well known sublingual absorption route familiar to all of us.

The unique selectivity of the hypothalamus can be demonstrated most succinctly in the pattern one observes in the acute whiplash or its chronic state. The general response of the anterior scalene sternocleidomastoid and and splenius capitis, is divided by body wisdom into two high niacinamide, low b-6 concentrates components. The sternocleidomastoid responds quite well, but the special response of the anterior scalene is lacking. A high B-6 component with a low niacinamide quickly restores testing strength to the anterior scalene.

Naturally the muscle testing is the key factor in the identification of material to be used in nutritional testing. Naturally again, the nutritional factor is only ONE component of the composite whole of the particular problem posed by the particular patient. The high degree of selectivity and discrimination speaks well for the original concept of innate intelligence first propounded as a philosophical principle, but is now validated, not only by this nutritional method but also by the cross-crawl method proposed by Delacato and previously described by the author in recent literature and in the pages of this magazine.

Man is the total sum of the components of his parts but he is endowed with more than that. He is motivated and guided by a force within that is sometimes so obscure as to make its presence unknown. But it is there, and this innate intelligence that is the birthright of each cell, functions perfectly when unimpaired and unimpeded, but when impaired and impeded, must be released in all its potential for true health and recovery to take place.

This we do, this we should do, this we can do if we but listen and look with ears that truly hear and eyes that truly see. We are privileged to deal with the pinnacle of God's creation. We should have as Schweitzer said "a reverence for life." Treat the body with the respect it deserves, allow it to respond with the true potential it possesses. Doing this will perform a service for mankind, for your profession, and for you.

NOTES

FURTHER INFORMATION ON "STRUCTURAL IMBALANCE AND NUTRITIONAL ABSORPTION"

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The gluteus medius, the gluteus minimus, the periformis and the abdominal muscles all respond to natural low concentrations of Vitamin E Complex. Again, as noted above, the patient chews a tablet that contains as low as 2 units of Vitamin E. An interesting fact in this regard is that the higher milligram dosage which of necessity requires some refining of the original source apparently has very little effect when chewed or ingested. The upper trapezius muscle responds to low concentrations of Vitamin F and Vitamin G Complex.

Bear in mind that these concentrations of natural materials must be thoroughly chewed prior to swallowing. It is just as if in one instance when the person chews the substance it goes direct to where the trouble exists; whereas if the patient swallows the substance, there is a general distribution. It is something like occupant mailing, which produces perhaps a soap coupon in your mail, as opposed to a certified registered letter addressed to you personally producing a singular response.

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The only exception we have observed in this particular situation has been the type of muscle weakness of the neck flexors and/or neck extensors immediately following a severe cervical strain or post-whiplash patterns.

A period of 24 hours apparently is necessary for recovery to take place sufficiently to allow nutritional concentrates to operate in the manner previously described. Testing the abdominal muscles by the standard method and if a weakness is found, have the patient chew a source of natural E Complex, again as small a unit dosage as 2 milligrams, and retest the abdominal muscles. There will be a spectacular phenomenal increase in the testing strength of both lateral abdominal muscles as well as the rectus abdominis.

The upper trapezius muscle, as mentioned previously, responds to both Vitamin F and G when chewed. This muscle, as you know, is related to the drainage of the eyes and the ears and seems to respond most frequently to natural sources of the natural F Complex. Occasionally sources of G Complex are used, especially in eye conditions. Test the muscle related to the thyroid; namely, the teres minor. If you find a weakness, give the patient a source of organic iodine to chew or some non-drug cytotrophic extracts of thyroid material. There should be immediate observable response in the testing strength of the teres minor muscle.

Test the strength of the middle trapezius muscle. The middle trapezius muscle, as you know, is found weak in infections and in disturbances involving the spleen. This muscle responds when found weak immediately in tone and strength to natural sources of Vitamin C Complex when chewed. A single tablet is sufficient to initiate the response.

Test the supraspinatus muscle. If you find a weakness in a testing strength of the supraspinatus muscle, try using cytotrophic extracts of brain material. There should be an immediate response in the testing strength following the chewing of the indicated brain cytotrophic nutritional extract.

Test the strength of the subscapularis. If you find a weakness, use a source of low potency natural Vitamin G Complex. There should be an immediate response in the weakness of the subscapularis muscle weakness.

Test the fascia lata. If you find a weakness in the fascia lata, this will respond to a variety of substances. We have found a good response to occur following the chewing of a lactic acid yeast product; we have found a good response following the chewing of a combination of fenugreek and comfrey materials; we have found a response to exist most often on the use of either the lactic acid yeast product or some other source of lactic acid production material.

In this regard it is interesting to observe that in every severe case of hypochromic anemia we have ever observed where the hemoglobin has been below 10 grams, there has always been a bilateral weakness of the fascia lata. The significance of this particular observation at this particular time is difficult to ascertain, but the inference is obvious in that the correction of the anemia by the use of the usual iron compound is naturally indicated. The material containing the iron should be chewed and attention to the lower bowel apparently increases the availability of the iron in some fashion or other.

Test the latissimus dorsi muscle. If you find it weak, have the patient chew a source of A, F and betaine concentrates. If you found the muscle weak, following chewing of this material, there should be an immediate increase in the testing strength of the muscle immediately following the chewing of the material.

Test the strength of the gluteus maximus muscle. If you find a weakness, there should be an immediate response in strength if the patient chews a source of natural Vitamin E Complex. Test the strength of the gracilis and sartorius muscles. If you find a weakness which is especially found in a hypoadrenia or in the usual posterior ilium situation accompanying this condition, have the patient chew a source of cytotrophic extract of adrenal material. There should be an immediate response in both muscles and many times all indicators for this type of posterior ilium completely disappear, temporarily or permanently.

Test the strength of the serratus muscle and the deltoid. If a weakness is found on either muscle, there will be an immediate response in the testing strength following the chewing a source of lung cytotrophic extract.

My best wishes for your continued health and success.

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the SCHIZOPHRENIC pattern

Many patients have a variant of he schizophrenic pattern of mental llness. Many doctors fail to recognize hat the schizoid type of sympoma- ology is not a mental problem per se. ut is a purely physical phenomenon. he mental symptoms naturally pre- lominate but the cause is purely ysical and can be shown to be so, asily and demonstrably. The patient ith schizophrenia may be depressed, atigued, listless, and may have very oor muscle tone. These people have rouble judging time, distance and ounds. Some may have fears that hey are being listened to in a very ecret way, and feel they are being ersecuted or plotted against. They ay feel that they have unusual au- hority or abilities and attempt to ct the part of the false position they eel they have assumed.

Notice here that the word "feel" is sed repeatedly, for this is what the chizoid mental process is all about. hey do "feel" the sensations that hey experience are real, for they ave no other way to judge their ex- eriences except by their senses. When these senses play them false, hey are forced to act on these false eelings. Therefore the problem is to etermine what produces these false eelings and what will normalize them nd reorganize them into a more cceptable pattern of human behavior.

The incident of schizophrenia is no reater or no less than it has been for he past decade—there is no great eographical difference. There are a ariety of theories as to the cause of chizophrenia, but none hold water in he therapeutic application, partic- larly the mental or commonly psy- hiatric counseling type of approach.

If the psychiatric treatment of chizoids is such a failure, what could e the basis for the opinion that this llness is a physical and not a mental ondition?

(1) Lucy and Lea, two researchers found that schizophrenics could take enormous quantities of histamines which produce allergies in most people.

(2) Arthritis and asthma were practically nonexistent in repeated surveys of the psychiatric patient population. Out of 3000 autopsies, not one patient showed any evidence of arthritis in their bony structure.

(3) Diabetes is a rarity in mental hospitals, the level being far below the average for a random sample of the general population.

(4) Schizophrenics can suffer and endure extensive burns, fractures, heart attacks and a variety of other shocking illnesses with abnormal lack of shock and with great detachment.

(5) When the blood of schizophrenic patients is fed to a certain type of spider, the spider weaves an abnormal web. When the blood of normal individuals is fed to the same type of spider, the spider weaves a very normal web.

The evidence is overwhelming for a physical cause of this perplexing mental disease which accounts for much of the case load of the average mental hospital and of the average physician who treats mental illness.

The well known hereditary pattern of schizophrenia would indicate that there is chromosomal imbalance which allows schizophrenic individuals abnormal biochemical departures from normal body chemistry. Here is the key factor to understanding and to the therapy of schizophrenia and related disorders.

We are all familiar with the pattern of the adrenal glands in a flight or fight situation. Additional quantities of adrenalin and adrenalin like compounds are released by the adrenal medulla during these stress situations. As mentioned in previous articles, these produce a rather typical response that has allowed man to outrun the sabre toothed tiger and to survive to this day. Man has survived and the sabre toothed tiger has not. It was man's superior adrenal system that allowed this survival. These additional adrenalin or adrenalin like substances are lysed or destroyed once the crisis is over, by a substance appropriately called adrenlysin.

Here again we see the wisdom of the body's innate intelligence and the master hand of the creator at work. But when this finely balanced system is disturbed by faulty structural relationships, certain other changes take place. Adrenalin normally breaks down to a highly toxic substance called adrenochrome, which in turn breaks down into a harmless leuco-adrenochrome and a highly toxic adrenolutin compound. The leuco-adrenochrome with characteristic evidence of innate intelligence is the balance wheel against any excess of adrenochrome or adrenolutin. In schizophrenics for some reason, this neutralizing substance is not formed, and the two highly toxic substances are formed with literally no antidote.

Dr. Hoffer and Dr. Osmond are two men who have been singularly responsible for the adrenochrome hypothesis. By accident a patient of theirs who had occasional asthma, took some adrenalin compound by inhalation which had changed color. Normally, as you know, adrenalin as commonly supplied is colorless. The toxic substance adrenochrome which can be made easily in the laboratory, is pinkish in color. The druggist who supplied the discolored adrenalin was hesitant to sell it to the patient but it was purchased because of the immediate needs of the patient.

A Digest Magazine Science Original

By George J. Goodheart D.C.,
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After inhalation which had its usual effect upon the asthma temporarily, the patient felt extraordinarily alert but had difficulty in judging distance, time and had bizarre thoughts. This was the start of a recovery from his asthma, but the beginning of a mental state which thoroughly frightened and disorganized this previously very normal individual. He suffered anxieties, compulsions, bizzare thought patterns, depressions and a host of other schizophrenic symptoms. He became very free of his asthma but so disoriented that he could no longer participate in ordinary family life. He happened to mention the discolored adrenalin solution to a friend who was familiar with its toxic effects and who warned him against its use. He discontinued the prophylactic inhalations of the discolored material which he had maintained despite the unusual absence of symptoms. It should be clear by now that adrenochrome and adrenolutin are true hallucinogens, similar to the widely presently known mescaline and L.S.D.

Since the substances adrenochrome and adrenolutin are toxic and since the normal antidote leuco-adrenochrome is not produced in sufficient quantities, the conclusion should be obvious. Increase the production of leuco-adrenochrome and/or neutralize the two toxic substances, adrenochrome and adreno-lutin by some natural antidote or method.

The obvious additional pattern of reducing adrenalin production is not worth considering since its production is vital to survival, even in this day of "paper" sabre toothed tigers. Naturally, avoiding the life situations that stress the individual is wise, but often impossible.

There are other incidental factors that increase adrenalin production, that can be reduced, such as smoking. Copper increases the oxidation of adrenalin and should not be used loosely, supplementally.

Up to this point, the discussion has been mainly biochemical and the alteration of normal biochemical changes in the breakdown of the adrenalin molecule. If, as it has been said, that schizophrenia is a physical condition and not mental, what are the physical clinical signs?

The use of muscle testing has been particularly invaluable in testing schizophrenics. Every patient with a previously validated diagnosis of schizophrenia, had a variety of muscle imbalances with the usual weakness causing hypertonicity of the opposite or contralateral antagonistic muscle. Coincident with each patient, there was weakness of the anterior flexors bilaterally and occasionally unilaterally. This weakness responded to the usual neurolymphatic and neurovascular reflexes, but the response was not permanent as usual and further research showed there was a specific response to niacin and also to niacinamide. This was reported earlier in the 68 research manual and has been further documented in terms of direct oral absorption by the Mellon Institute of the University of Pennsylvania. The immediate clinical response to the oral absorption without swallowing is an interesting phenomenon, in that it occurs within ten seconds.

The result is long lasting and when combined with the previously mentioned neurovascular and neurolymphatics, produces an excellent response in the weak neck flexors. The niacinamide or niacin produces a steady and progressive response in the physiology of schizophrenia. An interesting sidelight is the unique ability of the body's innate intelligence to telegraph its nutritional needs. In a weak neck flexor problem involving both anterior scalene and sternocleidomastoid, the response is to niacinamide, or to niacin or niacinamide with B6.

In the anterior scalene syndrome by itself, the response to niacinamide or to niacin or to niacinamide B6 combinations is only fair. But when high B6 and low niacinamide combinations are given, the response is as spectacular as with the niacin product in the combined problem. The patient's progress is steady and progressive and barring temporary emotional upsets from unavoidable life situations, the patient returns to normal in a preceptive way and becomes a useful, productive member of society.

Frequency of treatment should be twice weekly, at first with an approximate level of 300 mg of natural source of niacin or niacinamide B6 combination daily. In the severe aggravated highly acute problem, a temporary use of a very high level of synthetic niacin or niacinamide is occasionally required with an eventual rapid return to the more balanced lower level of niacin intake.

The adrenal makes adrenochrome or adrenolutin in certain individuals, in a vain effort to balance body equations, but with the tragic effect of disturbing biochemical balance more severely. It is as though you entered a cabin from the bitter cold and attempted to build a fire in a fireplace that had a closed flue. The resultant heat from the fireplace warmed the individual, but the resultant smoke drove the occupant outside to get away from the smoke the fire was producing, and the individual was back in the cold again. The heavier dose of niacin is occasionally necessary to get rid of the accumulated "smoke." Once the flue was opened mechanically, the lower level of niacin would be adequate to allow the fire to draw properly. This crude analogy points up the need for immediate treatment as well as the long term maintenance program.

There are a variety of cranial faults in these schizoid patients, but they vary from one patient to another. The unvarying constant element in each patient with a previous diagnosis has been the weakness of the anterior neck flexors. Naturally not every patient with weak anterior neck flexors has schizophrenia, but each time, every time, each schizoid exhibits this constant factor. This factor diminishes with treatment and proper nutritional management and provides a useful barometer of progress. Your attention is directed to the superb monograph by A. Hoffer and H. Osmond, entitled "*The Chemical Basis of Clinical Psychiatry.*" This book is published by Charles C. Thomas, Springfield, Illinois, and can be obtained from your usual book source or from your college library. Another source is "*Niacin Therapy in Psychiatry*" by A. Hoffer, by the same publishers.

We have a duty to be physician to the whole man, not only to the sum of his parts, and the factors that produce mental disease are as much a part of our responsibility to the patient as any other factor, producing disease. The immediacy of the patient's problem may be such as to require protective custodial care, but this cannot be continued forever any more than continued avoidance of fats will therapeutically clear up a gall bladder problem.

The answer is obvious, remedy the basic problem rather than avoid the precipitating factors. Niacinamide therapy along with appropriate structural corrections of cranial and spinal faults, offers definitive therapy which is basic to the problem.

In some resistant cases, or in a particularly difficult behavior problem in an older individual, the addition of

ribo-nucleic acid is one of great advantage in restoring the literal "CELL MEMORY" that is needed for total recovery. An interesting fact in this regard is that failure of cell memory following proper adjustment of the patient's structure, does not mean faulty technic, but faulty nutritional background on the part of the patient's previous pattern. In any resistant chronic disease pattern, regardless of symptomatology, it is a good policy to consider that the innate intelligence of the body may have a temporary "hysteria" or perhaps a "lapse of cell memory" which can be stimulated by proper adjustmet. But in the event of a lack of proper response, addition of R.N.A. (the cell memory raw material) is good therapy.

Many patients with schizoid problems may require long term care and perhaps lifelong intake of niacin factors since they have a congenital chemical imbalance. The patient is rewarded by normal behavior and society is rewarded by a proper citizen in all his productive ability.

NOTES

FURTHER INFORMATION ON "THE SCHIZOPHRENIC PATTERN"

As you know, the usual pathway for the chemical destruction of adrenalin is ADRENALIN --- Adrenochrome --- LEUCOADRENO CHROME
ADRENOLUTIN.

The LEUCOADRENOCHROME must balance the adrenalin. If there is too much adrenalin and not enough leucoadrenochrome the patient is anxious and tense. In schizoids the adrenochrome breaks down to adrenolutin; both adrenochrome and adrenolutin are poisonous. There are many natural substances in addition to niacin or niacinamide that can modify adrenochrome and adrenolutin. Natural vitamin "C" is one, another is glutathione and also cysteine. These last two are related to the aminoacids. Adrenochrome also interferes with the eventual breakdown of acetyl choline and this increased amount of acetyl choline at the synapse makes for more irritability of the brain while at the same time it slows the oxidation rate of glucose which cannot be stored in the brain, so you have an unhappy combination of low energy, profound fatigue and a paradoxical hyperirritability.

Correction of the anterior neck flexors must be accomplished by first testing the sternocleidomastoid and the anterior scalene. The patient's head is raised, turned, and the operator places his hand against the parietal aspect and presses diagonally downward against the patient's resistance. This is repeated left and right, as well as testing the muscles bilaterally, by simply having the patient raise his head while he is in the same supine position as before; and pressure is made on the patient's forehead so as to extend his head back down towards the table against his resistance. When testing these anterior flexors, have the patient tested in the usual fashion, note the response to testing, then have the patient take a deep breath and retest while the patient holds the breath; note the response. Do the same test while the patient lets the air fully out and holds it out; note the response. In all anterior neck flexor testing the hands and arms must be in a comfortable position - on either side of the patient's head thruout the test. If a deep inspiration helped the patient's left neck flexors, for example, press the mastoid process on the left side forward coincident with inspiration with about 3 to 4 pounds of pressure. Use your thenar area of your hand. Do this five times, then retest to see the effect of the cranial respiratory technic. If holding a deep breath out helped the test, press the mastoid process backward on the weak side coincident with expiration, use 3 to 4 pounds of pressure, do it five times, retest. The testing strength should have now responded to the cranial correction if it was needed. Activate the neurolymphatic receptors to the neck flexors by a vigorous manipulation of the N. L. area for the neck flexors, which is located just below the clavicle on either side midway between the proximal and distal end. Activate the posterior reflex which is at the interspinous transverse space of the atlas. Manipulate vigorously for approximately 40 seconds, retest the flexor strength. By now there should be marked improvement in the testing strength of the anterior flexors. Familiarize yourself with the testing technic. Familiarize yourself with the treating technic. See the response on a few patients who simply have a weak flexor pattern. Once you have seen this spectacular response you will understand this is the structural correction.

There is a highly specific nutritional response as well. Test the patient's neck flexors as before. If found weak, prior to any structural activation have the patient take the contents of a 50 mg niacin capsule, or in the case of an extremely bad schizophrenic patient, have them chew a tablet containing 500 mg and retest the particular neck flexors found weak by testing. Have the patient chew but not swallow the material. When thoroughly chewed there should be a great immediate response in strength. Give 300 mg a day in the mild case and give, temporarily, 3000 mg daily in the severe case. Reduce the synthetic material down from the 3000 mg level as soon as the response warrants it by gradual reduction and substitution of the natural 50 mg niacinor niacinB6 combination at the 300 mg level.

Activation of the neurovascular receptors for the neck flexors is good therapy as well. These receptors are located on the ramus of the jaw, just below the zygoma and can be activated by a light tugging touch until you feel a pulsation beneath your fingers; continue to hold for at least 20 seconds. More complicated cranial technic is occasionally required in weakness which is bilateral. This will be discussed at a later date, or at a seminar sponsored by your state association on Applied Kinesiology.

R.N.A. is the crude raw material not only of memory as we know it, but of actual cell memory, and in many cases the actual cell of a target organ or tissue has literally forgotten what it knows or knew how to do. R.N.A. plus definitive treatment targets the treatment and the therapy to the area involved. Use 5 to 10 mg chewed daily for a period of two weeks, evaluate the response, increase if necessary. Some patients are very sensitive to changing levels of R.N.A., and in these patients reduce the intake to just a pinch of a powdered tablet daily, with a great increase in their water intake. Vitamin "C" complex in moderate dosage is also useful, as is a high quality source of amino acids from a natural source. The natural source makes this portion of the nutrition a bit more expensive than the synthetic source, but the results would warrant it. Natural sources of total amino acids all contain tryptophane, a highly critical amino acid which is the precursor of niacinamide, the prime balancing agent in the adrenalin breakdown cycle; Tryptophane, an essential amino acid, prevents the symptoms of niacinamide deficiency. Can you not see the wisdom and the innate intelligence that is resident in man's body?

Use patience, care, and understanding with these schizophrenic people. They will respond very nicely and although the chromosomal hereditary pattern may require lifelong maintenance of nutritional and structural patterns, the reward of a normal contributing member of society is well worth the time and effort. The written manuals on Applied Kinesiology Technics now encompass 7 volumes, and an eighth is now in preparation. They are available as described in Chiropractic Economics.

Best wishes for your continued health and success.

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the tarsal tunnel syndrome

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Many patients suffer from a tarsal tunnel syndrome. Many doctors also suffer from this painful pattern. but oftentimes it goes unrecognized since it frequently resembles a disc problem with herniation and radiculitis. peripheral vascular diseases or neuritis. Diagnosis requires awareness of this entrapment neuropathy.

The so-called "tinel" sign or nerve trunk tenderness. can be elicited over the tarsal tunnel. or over the medial arch. Weakness of toe flexors. and abductor hallucis. often accompanies this common but frequently overlooked syndrome. There may be burning pain. numbness and tingling in the legs and feet. There may be retrograde referral of pain along the sciatic axis up to the buttock. Sometimes in diabetes or peripheral vascular diseases of the older individual. the pain they experience may be ascribed to these degenerative diseases. when in reality it is due to the trapping of the posterior tibial nerve at the tarsal tunnel. just as the median nerve is trapped in the carpal tunnel syndrome. Here again as in the carpal tunnel syndrome. the key diagnostic factor is in the detection of muscle weakness.

The weakness found in the carpal tunnel syndrome is. as you know. the weakness of the opponens muscle. In the tarsal tunnel syndrome there is demonstrable weakness of the flexor hallucis longus and brevis (drawing #1). This may be tested with the patient prone. the knee flexed and with the foot and ankle in a neutral position (drawing #2). pressure is exerted against the plantar surface of the proximal and/or distal phalanx of the large toe. in the direction of extension.

Dr. George Goodheart

Occasionally it is necessary to completely flex the foot rather than leaving it in a neutral position. to eliminate implementation of the toe flexors by total plantar flexion. The neutral position is best. but some patients lock the toe flexors and use the plantar flexors to imitate a normal test in the presence of a weak flexor hallucis longus.

The neurovascular bundle that the posterior tibial nerve accompanies. contains the tendons of the posterior tibial muscle. the hallucis longus and the extensor digitorum longus. This neurovascular bundle or neurovascular tendon bundle occupies a groove just posterior to the medial malleolus. The lancinate ligament and the tensor retinaculum roof over this groove behind the medial malleolus. is referred to as the tarsal tunnel.

The lancinate ligament and the tensor retinaculum extend from the tibial medial malleolus to the os calcis. It is the compromising of the space of the tarsal tunnel that produces the entrapment of the posterior tibial nerve with its sciatic disc syndrome imitation pattern. The posterior movement of the os calcis entraps the nerve by tightening the lancinate and the tensor retinaculum with the subsequent impingement of the posterior tibial nerve.

This posterior movement is in turn set up by the medial pronation syndrome. The medial pronation syndrome is in turn produced by the lateral talus subluxation described earlier in "The Psoas Muscle and the Foot Pronation Problem."

Correction. first requires a knowledge of the structures involved and second. a realization that only weakened plantar lateral and medial muscles could allow the backward movement of the os calcis to take place. Naturally severe trauma can play a disruptive part in this syndrome. but the history would bring this factor into prominence.

Mark the most painful medial aspect of the area. inferior to the medial malleolus. Mark the lateral talus' most painful point. Correct the lateral talus pattern first by a traction thrust against the lateral aspect of the subluxated talus. The patient lies on the back; the thenar eminence of the left hand for example. on the distal border of the subluxated talus. the rest of the contact hand assumes a natural grasp around the right heel tendon. The other hand encircles the volar aspect or the top of the arch of the foot. Both hands exert a traction toward the operator to eliminate all "slack" at the ankle joint. and a sudden traction pull is exerted while the talus contact hand is thrust medially. An audible snap is frequent. but not necessary. The pain at the lower lateral aspect of the talus bone is immediately eliminated. The disappearance of this diagnostic feature is essential.

Next. correct the tarsal tunnel syndrome. The patient is prone. the knee on the affected side is flexed to approxi-

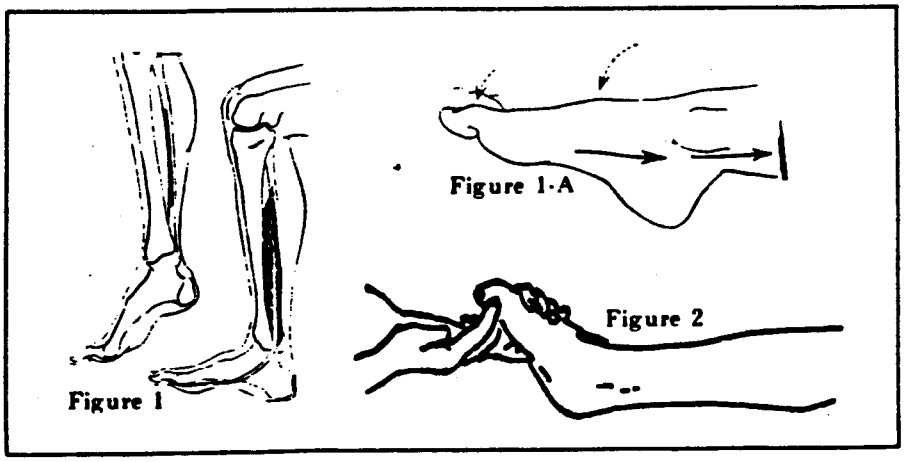


Figure 1

Figure 1-A

Figure 2

mately forty-five degrees. The volar aspect of the foot is supported with the right hand, and the left hand contacts the right os calcis for example, and the contact hand thrusts the posterior or heel portion of the os calcis towards the volar aspect of the arch. In other words, the os calcis is thrust (with the knee forty-five degree flexed in the prone position) in floorward, toeward position. Retest the point-pain pattern at the medial malleolus.

If the pain has not entirely disappeared, rethrust repeatedly four or five times to completely reposition the posterior os calcis. Use a hard, heavy pressure on the origin and insertion of the lateral and medial attachments of the plantar muscles. Use rotary, heavy pressure or a unit such as the G-5 or an equivalent device. Use the heavy, hard rotary pressure for at least forty seconds to allow muscle balancing to take place. Prescribe a suitable anti-pronation device or a temporary scaphoid pad while the prescribed foot leveling inserts are obtained. The prompt relief and the reduction in disability is gratefully received by the patient. This pattern many times accompanies actual degenerative conditions such as diabetes and arteriosclerosis and the ubiquitous disc syndrome, but seldom is the tarsal tunnel given the blame for the symptoms it produces.

Granted, the non-presence of the posterior ilium or ischium, these lesions of themselves often cause occlusive nerve or blood vessel symptoms when left uncorrected. The method of identification and correction of Dr. M.B. DeJarnette is highly recommended here. The use of an occlusive cuff such as the blood pressure cuff of the Velcro type, is also a good diagnostic method. Fasten the cuff around the mid-calf, request the patient to advise you "IF AND WHEN" it hurts, as you pump up the cuff.

This pain experienced is general calf pain on the mercury scale. Repeat twice for an average. Record the average and repeat on the opposite limb at the same calf area. Here too, there will be a notable increase in the ability of the patient to tolerate the occlusive effect of the pumped up cuff. Frequently there is an increase in the patient's tolerance to the pressure in the order of forty to sixty m.m. of pressure, indicating better circulation. In this regard, increments of a natural source of "E" or its chromatin synergists, frequently aid in speeding sciatic recovery time by promoting the acetyl choline reaction necessary at the myoneural junction.

The vasospasm sciatic referred pain and myotonus set up by the tarsal tunnel syndrome, are all favorably affected. Mineral dosage levels in the order of eight to ten units daily seem to do the job very nicely as opposed to the heroic doses of other widely read investigators. This is not to criticize the dosage levels of others, it is merely to report our experience level in this area. Do not forget to activate the weakened hypotonic lateral and medial plantar muscles by hard, heavy pressure at their origin and insertion, after the method of the original applied kinesiology.

Correction of the tarsal tunnel syndrome naturally should be accompanied by proper structural correction of all segments of the human structure involved. It is one more way to serve our suffering fellow-man, our profession and ourselves. Expand your influence in the community by serving best, for in this way you will serve the most. All of this benefits your patients, benefits your community and benefits yourself.

NOTES

Sacroiliac and Ilio Sacral Problems

by
Dr George J Goodheart, 542 Michigan Bldg, Detroit, Mi 48226

Many patients suffer from lower back problems. Many doctors also suffer lower back disabilities. The pelvis as an assembly unit, and the subassembly of the sacrum and the two innominates, are a potent source of difficulty: for man, although unique in his biped stance, pays a penalty for unique erect position. This penalty is a relatively narrow range of functional tolerance between the assembly of the pelvis as a unit and its subassembly sections. Structural disturbances beyond the minimal tolerances of position produce definitive changes with corresponding changes in body language.

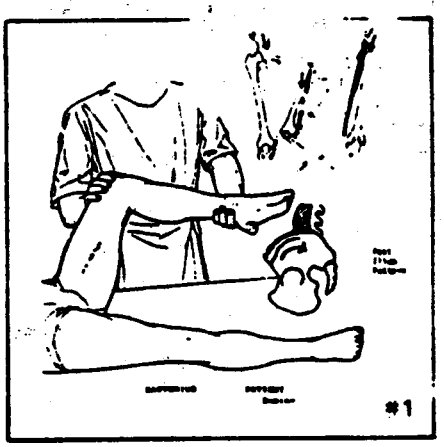
The gracilis muscle is the most superficial of the medial inner thigh muscles. Its function is to act as a flexor and to rotate the thigh inwardly after it has flexed the knee. It also acts importantly as a "tie down" muscle to the pelvis, permitting both anterior and posterior rotation of the ilium. Here the sartorius and the gracilis are both involved, and when weakness of either muscle occurs, or both, a posterior rotation of the ilium becomes a potential reality and it only takes a very slight trauma, and even the stress of every day living, to further deplete the now minimal tonus pattern, and thus permit the ilium to escape normal muscle tone. And with the sartorius and gracilis becoming weak, the ilium will subluxate posteriorly, and this is due basically to the failure of the sartorius and gracilis to hold the ilium forward, firm, and to "tie it down". Now, when the ilium subluxates posteriorly, as you all know, the leg becomes short on that side when examined in the supine position, the medial malleoli showing a marked difference when the ilium is posterior. On the posterior ilium side that medial malleoli will be very short, sometimes up to half an inch, because the sartorius and gracilis are straining to hold the ilium in a normal balance position, because the gracilis and sartorius are straining to keep the ilium from subluxating further posterior. Both the upper end of the sartorius and the gracilis will be sensitive to pressure and be painful.

To recapitulate: the upper attachment of the sartorius, and also the upper attachment of the gracilis on the anterior aspect of the ischium or short leg side, will be sensitive. The lower attachment of both muscles in the lower third of the thigh on the short leg side will be sensitive to pressure in the medial one third, right down to the tibia tubercle. Here is the diagnostic key, therefore, to the posterior ilium, based upon body language. Body language indicates here that the gracilis and sartorius, although lacking sufficient tone to make an adjustment, are pulling desperately in an effort to hold the ilium in a more normal position. Therefore, their attachments will be sensitive to pressure. (1) The upper attachment of the sartorius muscle will be sore to palpation on the short leg side. (2) The upper attachment of the gracilis muscle will be sore to palpation on the short leg side. (3) The lower medial one third of the thigh, or both the sartorius and gracilis muscles forming the fleshy part of the inner thigh three to four inches above the knee on the medial side, will be sore.

This soreness will be at the sartorial canal, which is approximately four fingers above the medial malleoli of the knee, and this soreness will extend down to the attachment entrance of the gracilis and the sartorius muscles on the short leg side. All these measurements are accomplished with the patient lying in a supine position. It takes about 10 or 15 seconds to validate the existence of a posterior ilium. The short leg exists on the posterior ilium side because of the eccentric rotation of the ilium. The ilium acts like a wheel on an axle, with the leg pulling up where the leg is attached to the periphery of the wheel, and since the axis of the rotation is also at the periphery, X-rays taken when standing or lying in an AP or PA position will show a greater millimeter vertical height difference on the posterior ilium side. This is a constant you can depend upon and will always be found in conjunction with the previously mentioned signs given above.

The upper groin sign on the short leg side and the medial thigh pain sign were first mentioned by Dr. DeJarnette as early as 1945. Although he made no mention of the obturator sign, namely the attachment of the gracilis in a posterior ilium, he most deservedly should receive credit for first publishing and researching this particularly ubiquitous pattern of the sacroiliac joint. It is the observation of many individuals who treat disturbances of the lower back that there is a definite stress pattern involved in the production of many of these disabilities. The sartorius and gracilis muscles are both drained by the same neurolymphatic reflexes as that of the adrenal, and if weakness of either muscle occurs, posterior rotation of the ilium becomes a potential reality as mentioned before; and with further stress the adrenal fails, the lymphatic drainage blocks, the sartorius and gracilis fail to hold the pelvis in position, and it then subluxates easily, producing the classic signs.

Diagnosis should consist of first eliciting the above mentioned signs testing the sartorius gracilis muscles as per the accompanying diagrams. Having found weakness to exist on the short leg side, treatment may commence. The treatment should consist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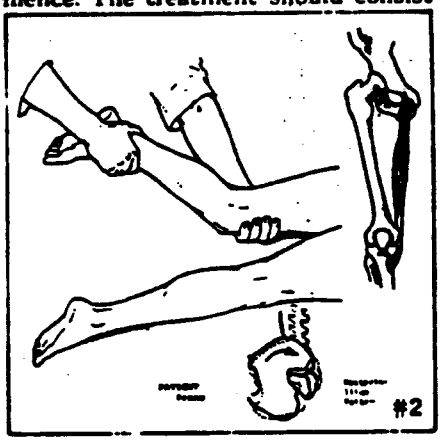
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of activating the adrenal reflex, which is an inch on either side and two inches above the umbilicus; and a firm hard pressure, as much as the patient can tolerate for approximately 30 or 40 seconds, will activate the adrenal reflex allowing a temporary increase in the lymphatic drainage of the associated channel that the adrenal sartorius and gracilis share. Many times, activating the adrenal reflex on the anterior and posterior between the 11th and 12th interspinus transverse space for 30 or 40 seconds allows a normal osseus recovery of the posterior ilium in about 60% of the times this occurs. The palpatory pain previously discussed disappears within 20 seconds following activation of the adrenal reflex as shown in the adrenal reflex drawing, but many times there is not sufficient tone in the adrenal sartorius gracilis combination to maintain proper position.

Ask the patient to stand and walk a few steps and then lie down again. This puts further postural stress on the patient. Many times the previously mentioned posterior ilium signs will reappear. Here the pelvis needs to be adjusted to correct the osseus subluxation to insure 100% recovery. In our experience this temporary pattern occurs about 40% of the time.

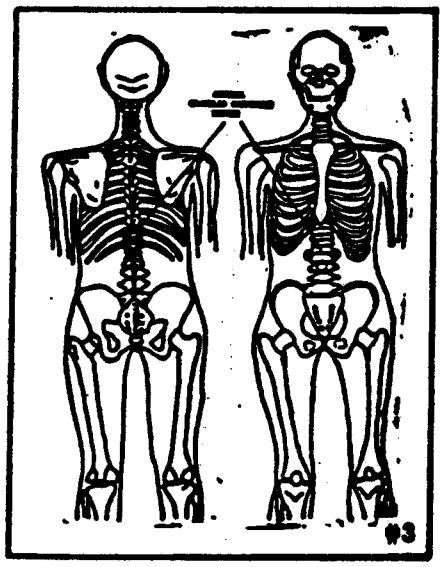
When testing the sartorius gracilis and finding it weak, and where there is no history of trauma, or the response is poor, checking the neurolymphatic reflexes to the adrenal is important. In all cases of hypoadrenia there is a weakness of the sartorius gracilis and the satorius or the gracilis are often found weak. In many cases the adrenal is depleted from infection. There will be a postural hypotonus with a dropping blood pressure from the prone to the erect position, and generally there will be pupil dilation to light or paradoxial reactions consisting of alternation to light. The adrenal neurolymphatic reflex, as mentioned before, is two to two and one half inches above the umbilicus, and an inch on either side of the umbilicus, and the posterior aspect in the inter transverse space on both sides of the 11th and 12th dorsal vertebrae, midway between the spinous process and the tip of the transverse process.

Generally when you find the sartorius and/or gracilis weak on one side, the neurolymphatic reflexes on the posterior aspect will only be on that side also. Many times these patients complain of extreme fatigue, especially in the morning, they feel that they never have enough rest and are continually tired. These patients improve as the day goes on, and frequently there is an accompanying disturbance of the knee joint, as in the previous article in Chiropractic Economics. This particular knee joint problem many times resists therapy. The previous article on hypoadrenia, which appeared in the May and June issue of Chiropractic Economics, gives you a good background for this particular problem. The adrenal reflex forms a basis for the production of many posterior ilium patterns.

THE POSTERIOR ISCHIUM

The hamstring muscles which act as the posterior "tie down" muscles to prevent anterior iliac movement, many times become weakened. When they do, along with the associated weakness of the gluteus maximus, they allow the anterior flexors of the hip to pull the ilium forward, subluxating on the sacrum, producing a so-called posterior ischium or anterior ilium. The biceps femoris especially is weak in a posterior ischium, as also are the pectineus and the vastus lateralis, as well as the adductor longus. These muscles are consistently found weakened in posterior ischium conditions, and as mentioned before, allow the muscles to subluxate the hip anteriorly on the sacrum.

The attachments of these muscles will be sore to the palpatory touch of between 5 and 8 pounds. Diagnostic signs for a posterior ischium therefore are: (1) Upper pectineus and upper adductor longus will be sore to palpatory touch roughly one half of the inguinal right down to and including the medial aspect of the symphysis pubis. This is on the long leg side and tested with the patients lying supine. (2) The lower attachment of the vastus lateralis and the lower attachment of the biceps femoris will be sore to the palpatory touch on the long leg side, roughly the lower one-third of the long leg on the lateral aspect, down to just below the knee. (3) Directly over the ischium at the attachment of the biceps femoris on the longer leg side, it will be sore to the palpatory touch using between 5 and 8 pounds. When testing both the outer and inner hamstrings and finding them weak, and when there is a history of trauma, and when the response to avulsive technique is poor, check and treat the anterior reflexes for the rectum, which are located at the lesser trochanter of the femur, just adjacent to the ischia.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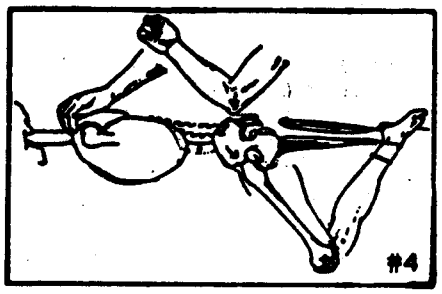
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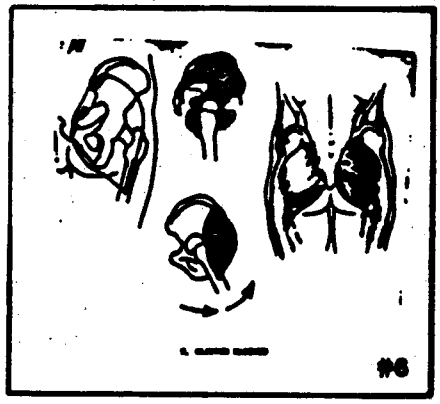
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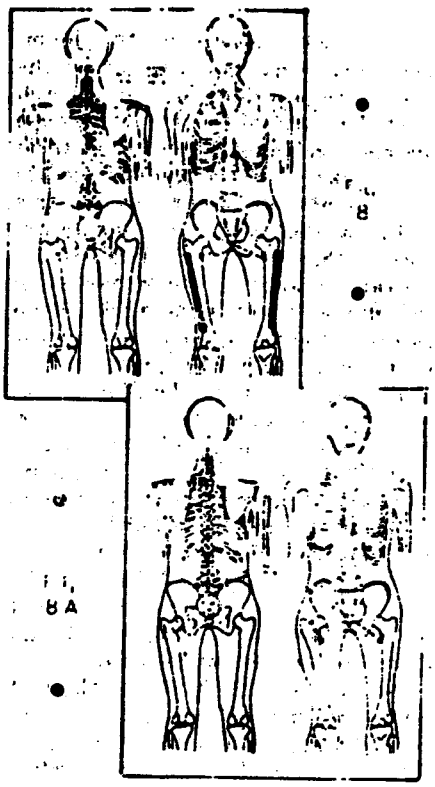
located by finding first the ischium and passing onward to the femur.

Also check the posterior neurolymphatic reflexes close to the ilium at the upper end of the sacroiliac joint, where the sacrum meets the ilium at its upper contact. This reflex which, as you know, is useful in cases of hemorrhoids, is also useful when the patient complains of fatiguing in the leg, restless legs, weak legs, and invariably when treated will cause an increased response in rectal problems. It always seems to improve those patients that cannot seem to eliminate fecal material from the rectum. These reflexes, along with the gluteus maximus weakness forms a basis for many posterior ischium problems. (4) The long leg exists because of the eccentric rotation of the ilium with the leg attached at the periphery and the axis and rotation on the periphery. X-rays taken standing or lying in the AP or PA position show a shorter distance between the posterior ischium side, or millimeter vertical height. This is a constant of the long leg posterior ischium position pattern.

The reader recognizes by now that there are many and multiple causes for a short or long leg. The findings so far characterize the reasons for their appearance and describes the reasons for their presence, and also the means by which they are corrected.

The amount of movement of the ilium or the sacrum is minimal and is measured in a micro fashion, yet the amount of movement in terms of short leg or long leg is maximal and is measured in a macro fashion because of the muscular pattern involved; and it is the body language attempting to correct the problem that produces the relatively short leg or the relatively long leg and its macro dimensions, and it is due to the effort of the body to try and correct this problem. First, the palpatory pain is present, and second the relative signs of imbalance



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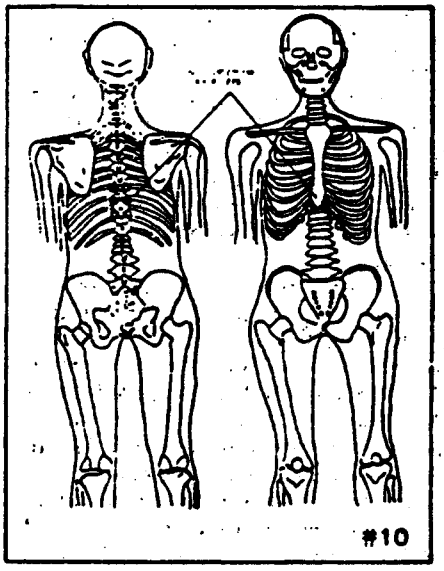
8A

are present, as measured by leg length. The amount of movement in the sacroiliac joint, despite the presence of Illi's ligament, is something like a speck of dust in your eye. The size of the speck is very small, but the amount of trouble it can cause is very large.

After activating the appropriate neurolymphatic reflexes in a posterior ischium, again have the patient stand and walk about and then lie down once more, to check for the signs of the posterior ischium. If they are still present, or possibly reappear, then the ischium must be adjusted in the mechanical position. If you find signs of the posterior ischium, have the patient lie on the short leg side with the long leg side up. Place the toe of the long leg side behind the knee of the short leg side and roll the patient over until he is practically lying face down, hold his upper shoulder back. Press down with your hand on the ischium and you then give a satisfactory thrust to the ischium, restoring its position to normal. In many instances, especially with a heavier individual, it is wiser not to lock the toe behind the knee but to let the leg hang simply downward to allow weight of the leg to assist in the eventual restoration of the posterior ischium position. Recheck the indicator signs at the upper groin and on the lower lateral thigh, and over the ischium. They should show a disappearance of the signs of the previously mentioned posterior ischium and the legs will even out.

One thing to consider in the iliac conditions is that the percentage has always been a preponderance towards a posterior ilium. One of the reasons why the posterior ilium is more apt to occur is because of the presence of stress. Stress naturally depletes the adrenal and when the adrenal becomes depleted, the neurolymphatic reflex to the sartorius and gracilis becomes blocked. When they become blocked there is a corresponding over-action of the muscles on the opposite side, basically the quadriceps, and this causes the ilium to subluxate posteriorly.



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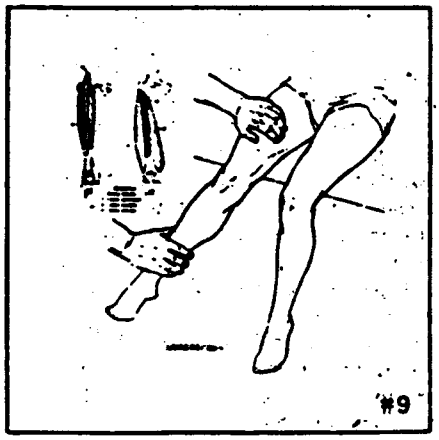

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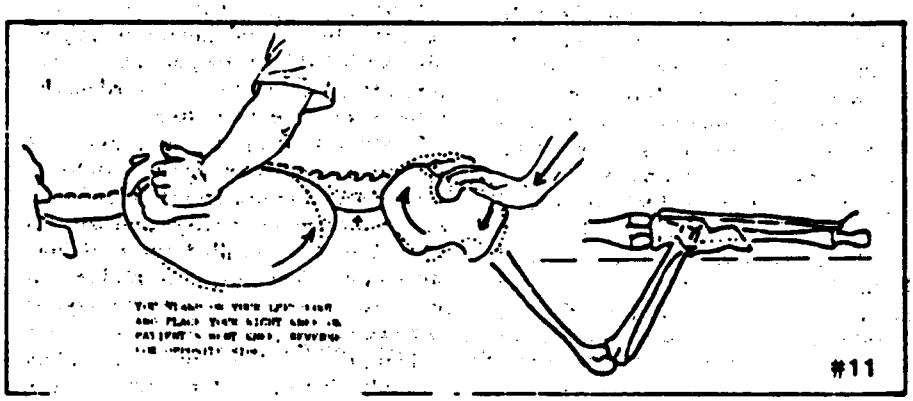


#11

Normally the rectus abdominus muscles have a tendency to pull the ilium in a posterior direction, but when they have become weakened, the rectus abdominus muscles allow the ilium to be rotated forward, producing the posterior ischium, and this is another reason why the sign of the palpatory pain in the lower half of the ileoinguinal ligament adjacent to the pectineus is present.

Many times the fascia lata of the lateral lower one third of the leg on the long leg side is palpated for soreness. It is oftentimes a therapy by which accidentally the neurolymphatic reflexes for the gluteus maximus is activated. There is also a concomitant lymphatic engorgement of the lower one-third on the long leg side in this condition, but this is not a constant finding. When you have a posterior ilium think in terms of stress, emotion, anxiety, fatigue, infection and so forth. When you have a posterior ischium think in terms of hamstring muscle weakness, rectal pathology such as hemorrhoidal conditions, disturbance in the anus, imbalance in the lower colon, disturbance in the prostate or uterus; or think in terms of disturbances of the digestion of the small intestine, since the neurolymphatic reflexes to the small intestines are related to the quadriceps. When blockage of the neurolymphatic reflexes to the small intestines occurs there is a blockage of the neurolymphatic reflex to the quadriceps, as evidenced by the accompanying diagrams.

As mentioned before, any osseus movement of the ilium creates within the body an effort to effect the adjustment, and any osseus movement of the ilium always disturbs and distorts the neck because of the compensation as the body attempts a vain effort to effect an adjustment of either the posterior ilium or the posterior ischium.

The Acupuncture point K-27 and the sunction of the first rib, the sternum and the clavicle should be activated by heavy, hard pressure for approximately thirty seconds. This greatly assists any pelvic adjustment.

External and internal movement of the posterior superior iliac spine, complicates many back problems.

EXTERNAL AND INTERNAL ROTATIONS OF THE ILIUM

External and internal rotations of the ilium often accompany and are associated with either a posterior ischium or an anterior ilium. Sometimes they are present by themselves, sometimes in association with posterior or anterior subluxations of the ilium. The x-ray signs show changes in the size of the obturator foramen as well as in the width of the iliac transverse distance and most often, when there is a weakness of the gluteus medius and minimus muscles on one side, this will allow that particular ilium to elevate on the same side and as it does, (elevate because of the weakness of the gluteus medius) there will be an associated external movement of the posterior-superior iliac spine.

This movement of the ilium in an external direction at the posterior-superior iliac spine, will cause a corresponding movement of the symphysis pubis in the opposite direction. When this occurs there will be an extraordinary facilitation of the inward rotation of the leg and foot on the same side. When you turn the foot toward the medial, there will be an extraordinarily inward rotation sometimes (in children) the toe of the foot pointing almost directly posteriorly with the patient lying on the back. This weakness of the gluteus medius frequently is the cause of an external rotation of the ilium and adjustment of the external rotation should be accomplished as well as activation of the gluteus medius either by the O.K. technique or the N.L. reflex technique, depending on your response.

Have the patient stand. Then resume the supine posture once again. Recheck for the inward rotation and when the inward rotation diminishes, following activation of the neurolymphatic reflexes, nothing further need be done. However, if the inward rotation reappears following the assuming of the supine position after standing adjust the ilium so as to bring it into a more normal position. This can be accomplished in a number of ways, but the easiest method in our experience has been to place the patient with the affected side up and instead of putting the upper toe behind the lower knee, put the lower toe behind the upper knee. Thrust the patient's ilium as far posterior as possible while holding the patient's shoulder and thrust directly backward on the anterior-superior iliac spine.

There will be an audible movement and since you have made a definite muscular correction prior to this, there will be a permanent alteration toward normal of this so-called external iliac movement. Weakness of the abdominal muscles, especially the transversalis abdominalis, allows the gluteus medius and minimus to pull unopposed and as a result there is a tendency for the posterior superior iliac spine to move internally on the sacrum, widening the iliac margin of the transverse diameter of the ilium and narrowing the obturator. This requires activation of the neurolymphatic reflex to the abdominals which is related to the duodenum.

Testing of the abdominal muscles will generally reveal weakness of one or another abdominal muscle and quite often there is a compensatory spasm of the gluteus medius and minimus. A hard pressure applied to the belly of the gluteus medius and minimus following activation of the neurolymphatic reflexes to the abdominals is many times sufficient to correct this internal iliac rotation. Have the patient stand, walk around, resume the supine position, and recheck for leg turn-in. If the leg turn-in has improved, leave well enough alone. If the leg turn-in has resumed its normally restricted position, which one has in an internal iliac rotation (internal referring here now to the movement of the posterior-superior iliac spine) then adjustment of the ilium with the patient lying on the unaffected side and thrusting directly downward on the lateral aspect of the anterior-superior iliac spine in an effort to open up the sacroiliac articulation at the posterior is indicated.

Therefore, when there is an internal movement on the sacrum of the posterior-superior iliac spine, there will be a greater width of the ilium on x-raying, along with a narrowed obturator and there will also be restricted turn-in of the leg on the same side. Following activation of the abdominal muscles, there should be an increased turn-in of the leg on the affected side, in (the wide ilium side). If there is not, adjustment of the ilium is accomplished. When there is an external movement of the posterior-superior iliac spine away from the sacrum, there will be a narrowing of the transverse width of the ilium with an increase in size of the obturator and there will be an abnormal leg turn-in. When there is an abnormal leg turn-in along with the X-ray signs mentioned above, activation of the neurolymphatic reflexes to gluteus will cause an activation of the neurolymphatic reflexes to the uterus or the prostate and seminal vesicles causing a corresponding increase in tonus of the gluteus medius, allowing the hip to move externally, producing a better and more balanced rotation of the foot on the affected side. Both feet should now turn in equally. The leg turn-in or failure of the leg turn-in is the sign for the external or internal

rotation of the ilium. When the ilium has moved its posterior iliac spine internally, there will be diminished leg turn-in. When the posterior-superior iliac spine has moved externally on the sacrum, there will be increased rotation of the femur and leg on the affected side. Correction will change and normalize this structural alteration.

An effort has been made to demonstrate the more common sacroiliac and ilio sacral problems. This is by no means a complete evaluation of this area.

Future articles will go into further detail. Utilization of proper structural correction using muscle balancing, kinesiological technics will benefit you, your patient, and your profession. Give more of yourself in an informed keen awareness of patient problems and you will gain tenfold. You can only keep what you give away. Give knowledge, kindness, expertise and professionalism, and this will be the product you will keep.

Further information and technical details are available from the author without charge. Kindly enclose a stamped, self-addressed envelope.

The Digest of Chiropractic Economics
JANUARY/FEBRUARY, 1972

PART 2

Sacroiliac and Ilio Sacral Problems

Due to the great number of requests for additional information on sacroiliac and ilio sacral problems, and to the previous article relating to the knee, the following material is being presented as section two of the sacroiliac and ilio sacral problems.
S/The Publishers

by
Dr. George J. Goodheart, 542 Michigan Bldg., Detroit, Mi. 48226

Many patients suffer from lower back problems. Many doctors also suffer low back disabilities. The pelvis as an assembly unit, and the subassembly of the sacrum and the two innominates, are a potent source of difficulty; for man, although unique in his biped stance, pays a penalty for unique erect position. This penalty is a relatively narrow range of functional tolerance between the assembly of the pelvis as a unit and its subassembly sections. Structural disturbances beyond the minimal tolerances of position produce definitive changes with corresponding changes in body language.

External and internal rotations of the ilium often accompany and are associated with either a posterior ischium or an anterior ilium. Sometimes they are present by themselves, sometimes in association with posterior or anterior subluxations of the ilium. The X-ray signs show changes in the size of the obturator foramen as well as in the width of the iliac traverse distance and most often, when there is a weakness of the gluteus medius and minimus muscles on one side. This will allow that particular ilium to elevate on the same side and as it does elevate because of the weakness of the gluteus medius, there will be an associated external movement of the posterior-superior iliac spine. This movement of the ilium in an external direction at the posterior-superior iliac spine, will cause a corresponding movement of the symphysis pubis in the opposite direction. When this occurs there will be an extraordinary facilitation of the inward rotation of the leg and foot on this same side. When you turn the foot toward the medial, there will be an extraordinary inward rotation. Sometimes in children, the toe of the foot will point almost directly posteriorly with the patient lying on the back.

This weakness of the gluteus medius frequently is the cause of an external rotation of the ilium and adjustment of the external rotation should be accomplished as should be activation of the gluteus medius either by the O.K.® technique or the N.L. reflex technique, depending on your response. Have the patient stand. Then resume the supine posture once again. Recheck for the inward rotation and when the inward rotation diminishes, following activation of the neurolymphatic reflexes, nothing further need be done. But if the inward reappears following upon assuming the supine position after standing, adjust the ilium so as to bring it into a more normal position. This can be accomplished in a number of ways, but the easiest method in our experience has been to put the patient with the affected side up and instead of putting the upper toe behind the lower knee, put the lower toe behind the upper knee. Thrust the patient's ilium as far posterior as possible while holding the patient's shoulder and thrust directly backward on the anterior-superior iliac spine. (Note that the position of the doctor in this move is reversed from the usual lumbar roll position and the doctor is facing the back of the patient.) There will be an audible movement and since you have made a definite muscular correction prior to this, there will be a permanent alteration toward normal of this so-called external iliac movement.

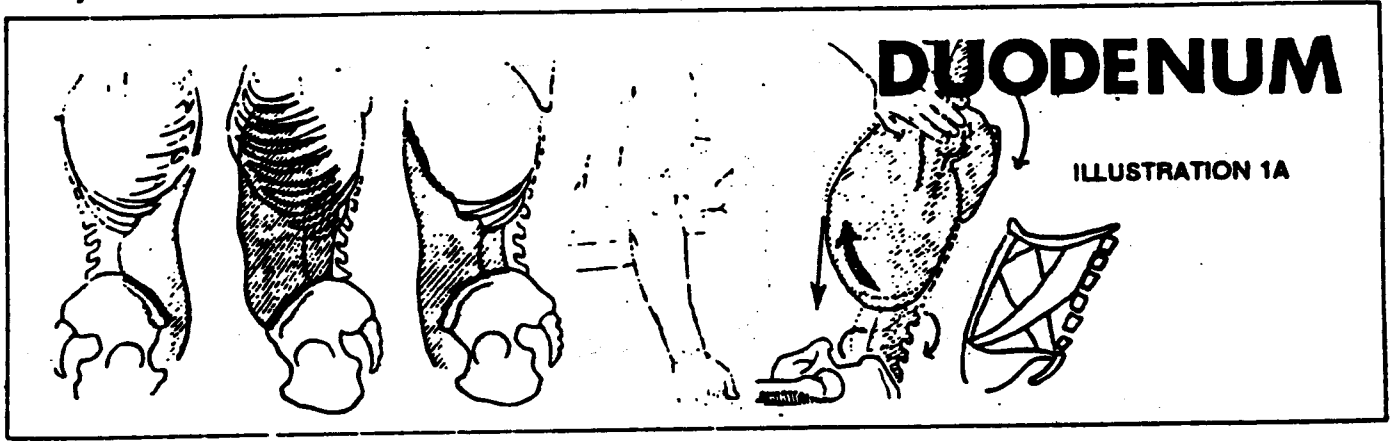


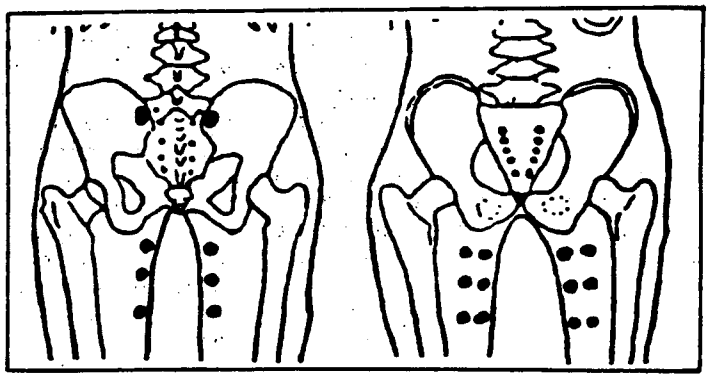
ILLUSTRATION 1A

Weakness of the abdominal muscles, especially the traversalis abdominalis, allows the gluteus medius and minimus to pull unopposed and as a result there is a tendency for the posterior superior iliac spine to move internally on the sacrum, widening the iliac margin of the transverse diameter of the ilium and narrowing the obturator. This requires activation of the neurolymphatic reflex to the abdominals (illustration 1-B) which is related to the duodenum. Testing of the abdominal muscles (illustration 1-A) will generally reveal weakness of one or another abdominal muscles and quite often there is a compensatory spasm of the gluteus medius and minimus. A hard pressure applied to the belly of the gluteus medius and minimus following activation of the neurolymphatic reflexes to the abdominals, is many times sufficient to correct this internal iliac rotation.

Have the patient stand, walk around, resume the supine position, recheck for leg turn-in. If the leg turn-in has improved, leave well enough alone. If the leg turn-in has resumed its normally restricted position that one has in an internal iliac rotation, internal referring here now to the movement of the posterior-superior iliac spine. Then adjustment of the ilium with the patient lying on the unaffected side and thrusting directly downward on the lateral aspect of the anterior-superior iliac spine, in an effort to open up the sacro-iliac articulation at the posterior. Therefore, when there is an internal movement on the sacrum of the posterior-superior iliac spine, there will be a greater width of the ilium on X-raying along with a narrowed obturator and there will be restricted turn-in of the leg on the same side.

Following activation of the abdominal muscles there should be an increased turn-in of the leg on the affected side, on the wide ilium side. If there is not, adjustment of the ilium is accomplished. When there is an external movement of the posterior-superior iliac spine away from the sacrum, there will be a narrowing of the transverse width of the ilium with an increase in size of the obturator and there will be an abnormal leg turn-in. When there is an abnormal leg turn-in along with the X-ray signs mentioned above, activation of the neurolymphatic reflexes to the gluteus will cause an activation of the neurolymphatic reflexes to the uterus or the prostate and seminal vesicles. This causes a corresponding increase in tonus of the gluteus medius allowing the hip to move externally, producing a better and more balanced rotation of the foot on the affected side. Both feet should now turn in equally.

ILLUSTRATION 1b



The leg turn-in or failure of the leg turn-in is the sign for the external or internal rotation of the ilium. When the ilium has moved its posterior iliac spine internally, there will be diminished leg turn-in. When the posterior-superior iliac spine has moved externally on the sacrum, there will be increased rotation of the femur and leg on the affected side. Correction will change and normalize this structural alteration.

SACRAL POSTERIORITIES AND INFERIORITIES

The piriformis muscle runs from the anterior surface of the sacrum in its upper one-third and sacral foramina 1, 2, 3 and 4, inserts on the greater trochanter. There is normally equal balance between right and left piriformis, but, when the piriformis becomes weakened on one side, muscle testing of the piriformis (illustration 2) will indicate weakness and there will be a corresponding posteriority of the sacrum on that side. Activation on the neurolymphatic (illustration 3-A) reflexes (illustration 3-B) for the piriformis which are the same as that of the gluteus medius, namely, the uterus and seminal vesicles, will cause a rapid restoration of the piriformis to its normal tonus, correcting the posteriority (illustration 3). This posteriority can be elicited by having the patient in the prone position and palpating over the upper two-thirds of the sacrum from the midline upward. Check to see which side is the sorest, and, just as in a vertebra which moves posteriorly on one side, there will be corresponding soreness. So also will there be corresponding soreness of the posterior surface of the sacrum, when the sacrum has moved posteriorly due to a weakness of the piriformis on that side. There will be a corresponding contraction of the piriformis on the other side.

Another sign will be in the presence of a normal X-ray pattern in terms of transverse iliac width and normal obturator foramina. Yet increase the midline lateral sacral distance and this X-ray sign will be corroborated by a physical sign of failure of the leg to turn in on the normal side and an abnormal rotation inward of the leg on the weakened side. In other words, the posterior sacral side will show an unusual inward rotation of the leg and foot, whereas the contracted side will

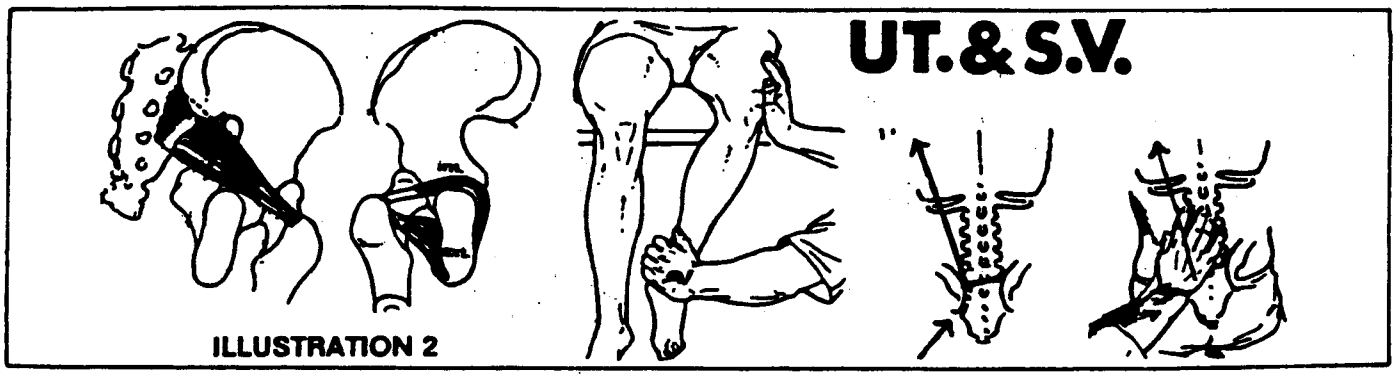


ILLUSTRATION 2

show diminished rotation. There will be an increased midline to lateral sacral distance on X-ray. There will be palpatory pain over the posterior aspect of the sacrum and there will be alterations in leg turn-in when there is a sacral posteriority.

Normally, the effort of the body to correct itself in a sacral posteriority will cause a corresponding rotation of the neck, and generally speaking, there will be weakness of the splenius capitus. The origin and the insertion of the splenius capitus will be sore on the same side as the sacral posteriority. This will be on the high occiput side 90% of the time in uncomplicated cases. So, when there is a sacral posteriority, there will be: 1) Palpable soreness over the upper two thirds of the posterior aspect of the sacrum from the midline out of the lateral sacral margin. 2) The piriformis will be weak on testing on the posterior side. 3) The spinous attachment as well as the mastoid attachment of the splenius capitus will be sore on the posterior sacral side since the body attempts to counter rotate the cervicals to vainly correct the sacral posteriority, continues. The occiput will be high on the posterior sacral side 90% of the time and the splenius capitus will test weak on the high occiput side. (Illustration 4) The sacral midline to lateral sacral margin millimeter distance will be increased in an A-p X-ray, standing, lying, or frogleg.

If, on checking the piriformis and treating it via the neurolymphatic reflex or the kinesiology technique, there still presents evidence of the posteriority on palpation, adjust the sacrum posteriority. Have the patient lie on the side with the knees drawn up to a 90 degree angle, the lower arm hanging off the table. Instead of having the patient rest on his shoulder, the patient's arm is behind in this position. The patient lies on the side with the shoulders practically lying flat on the table with the knees drawn up to an 80 degree angle. Have the patient use a cooperative breathing and muscular action to replace the sacral posteriority, so the sacral posteriority is reversed by a direct action with a guiding force, using a respiratory and muscular coordination of the patient. Place the patient's knees against your thighs so that the weight of the patient's legs is resting on your thighs. Place your hand over the patient's upper shoulder. Then have the patient inhale and exhale. Instruct him to slowly reach toward the floor with the hand closest to you. Take up the slack with an increased pressure of your hand on his shoulder. Repeat the breathing phase about three times. The knees are carried toward the head a slight amount with each exhalation. This increases the rotation and reversing mechanism of the spinal action, allowing the sacrum with the forward bending torsion to replace itself in an anterior direction. It is simple and easy and uses the respiratory and muscular coordination of the patient.

The patient responds very well to this technique and the sacral posteriority palpatory pain should be gone by the time you replace the patient face down and recheck. Many methods of adjusting the sacrum on its posterior side can be attempted. This is useful and works readily and easily.

Inferiorities of the sacrum are based on the same pattern of piriformal weakness. When there is evidence of sacral inferiority, the piriformis muscle will be weak on the sacral inferior side. There will be generalized palpatory soreness over the sacrum, both from midline out on either side, but this is not too significant a factor. There will be a very definite tenderness on the same inferiority side of the splenius capitus attachment, both at the spinous attachments of the splenius and the mastoid. There will also be a very definite long leg on the side of inferiority in the prone position. When the patient lies face down there will be a very definite long leg in the prone position which will not always evidence itself in the supine position and along the inferior sacral iliac junction at the lower third of the sacroiliac junction, right over the sacroiliac joint, there will be palpatory soreness on the inferior sacral side, just at the sacroiliac joint line.

Dr. George Goodheart

This sacral inferiority can best be adjusted by many methods; Dr. De. Jarnette method of holding the ilium down with the patient in a supine position while the knee on the affected side is flexed, forcing the sacrum to travel upward past the ilium. But a simple method is to have the patient lie prone, with the operator standing on the side of the table of the inferiority. Take the thenar eminence of the hand, (illustration 5) for example, standing on the left side of the table you would use the right hand on the patient's left inferiority and secondly with the patient's feet comfortably apart so there is no bind in the sacroiliac joint, ask the patient to turn the toe in medially on the affected side. This gaps the sacroiliac joint posteriorly and then, third, have the patient breathe deeply holding the breath in

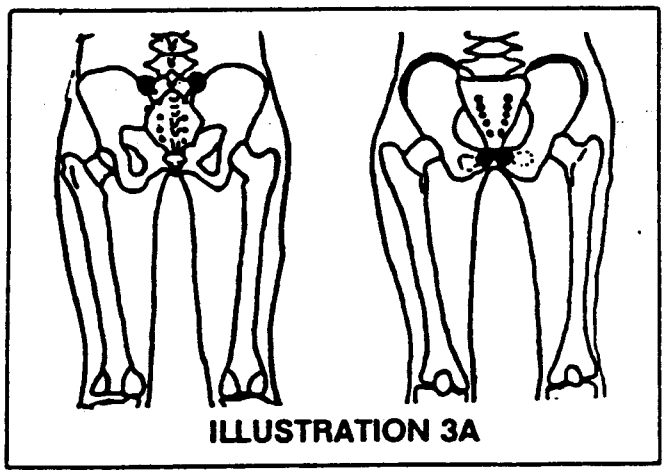


ILLUSTRATION 3A

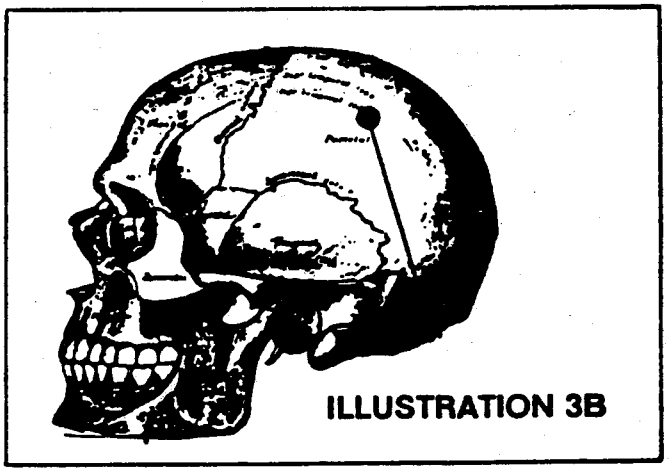


ILLUSTRATION 3B

and then take in another breath deeper, without letting the breath out, breathe again even deeper. All this time you exert a rhythmic pressure along the direction of the inferior sacroiliac joint line at the inferior lateral angle, pressing upward. Request the patient to exhale, then you use a pressure on the inferior lateral angle until the complete exhalation is accomplished. This generally allows the respiratory motion of the sacrum to free itself and your hand then guides it into position.

This generally is all that is needed once you have accomplished the neurolymphatic or the kinesiology preliminary treatment of the piriformis which is always involved in any posteriority or any inferiority. The neck signs disappear also following satisfactory adjustment.

There is an unusual type of sacroiliac condition because it involves both a sacral position along with an iliac position. There is generally an interference with the normal sacral respiratory excursion.

Dr. Sutherland and many other researchers in the cranial field have postulated and stated that the sacrum moves with respiration. It moves in a position of flexion on inhalation and moves in a position of extension on exhalation. Since the sacrum also moves in a gyroscopic fashion when the individual walks, there is actually both a rocking motion forward and back and a gyroscopic twisting motion left and right on a transverse axis when the patient is walking and breathing. It is essential that the sacrum be allowed to perform this vital task of movement and it, is because of this fact that it moves in this way that Dr. Illi's discovery of the Illi ligament, which actually restricts sacral movement and iliac movement, is important.

When there is an uncorrected sacral posteriority or inferiority, which restricts the sacral movement on one side, there is a tendency for the body in its innate wisdom to throw the ilium out on one side or another by causing a contraction of muscles which can produce either a posterior or an anterior rotation of the ilium. Always associated with this distortion is the characteristic head tilt with pain present on the high occiput side at the attachment of the splenius on the mastoid, along with pain at the spinous attachment of the splenius at the 3rd, 4th, 5th, 6th, and 7th cervical laminae on the same side as the sacral inferiority or posteriority.* (Illustration 4) There seems to be a time element in production of some sacroiliac lesions and this particular type of sacroiliac lesion generally is accompanied not only by a weakness of the piriformis on one side, but, generally speaking, there is a contracture of the piriformis on the other. There will also be pain in the belly of the piriformis halfway between the sacrum and the greater trochanter, deep in the buttock muscle. This pain in the piriformis is the indicator for the pelvic lesion side, the piriformis generally going into spasm.

Correct the weak piriformal side first. Use a hard, heavy pressure on the tight piriformis side. Second, have the patient turn over, having noted which side had pain on the belly of the piriformis. Then examine the patient in a supine position for either a short or a long leg. Then check for pain on either the medial side of the leg if it is short, or the lateral side of the leg if it is long. There should be pain along the previously mentioned lower one-third, but because this is apparently a time element sacroiliac, there has not been sufficient time* for pain to develop in the upper ends of the muscles. This still requires an adjustment and it still requires the neurolymphatic reflex if it is a posterior ilium for the adrenals or, if it is a posterior ischium, it still requires the neurolymphatic reflex for the rectum and the small intestine. Many times these also require a specific adjustment to correct the posterior ischium or the anterior ilium, but this is apparently a times sequence sacroiliac condition, which is very often present in conjunction with sacral posteriorities or sacral inferiorities.

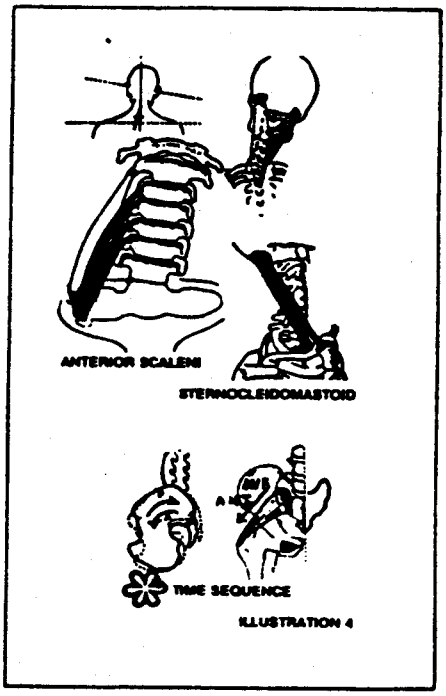


ILLUSTRATION 4

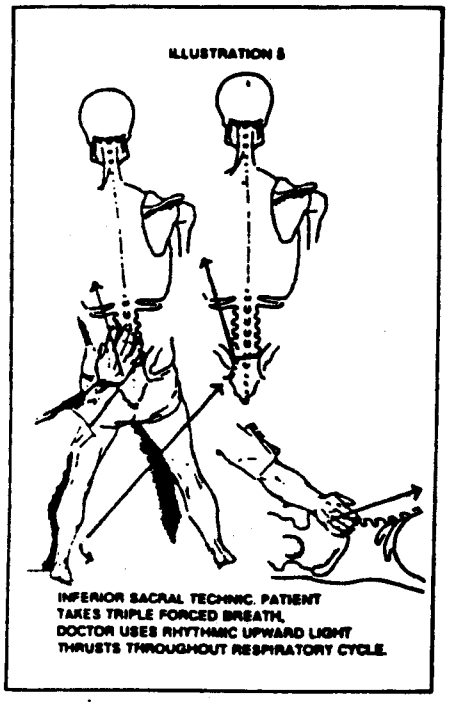


ILLUSTRATION 5

INFERIOR SACRAL TECHNIC. PATIENT TAKES TRIPLE FORCED BREATH, DOCTOR USES RHYTHMIC UPWARD LIGHT THRUSTS THROUGHOUT RESPIRATORY CYCLE.

Bilateral piriformal weakness or bilateral piriformal contraction will produce sacrum changes. In a bilateral piriformal weakness, there will be a posteriorly based sacrum along with a very marked inward rotation of the foot on both sides. In a bilateral piriformal contraction, there will be an anteriorly based sacrum. The sacrum will be in flexion and there will be extreme limitation of inward rotation with almost a "Charlie Chaplin" type of walk and foot position with the feet in external rotation, whether the patient is supine, prone, or standing. Any hard pressure over the piriformal belly, will release a piriformal spasm and pressure over the origin or the insertion of the piriformis will tone up a weak piriformis. Or, as mentioned before, use the neurolymphatic reflex for the piriformis which, as stated, is the same as the gluteus medius, as shown on the accompanying drawing.

Utilization of proper structural correction using muscle balancing, kinesiological technics will benefit you, your patient, and your profession. Give more of yourself in an informed keen awareness of patient problems and you will gain tenfold. You can only keep what you give away. Give knowledge, kindness, expertise and professionalism, and this will be the product you will keep.

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KNEE JOINT PROBLEMS

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Many patients suffer from disturbances of the knee joint. These disturbances may evidence themselves as inability to flex or inability to extend the knee. There is usually limitation of movement, pain and swelling. The pain may be diffuse and the patient may have difficulty in pointing particularly at the point of greatest pain, but if palpation of the knee joint is undertaken, palpation at the area of the medial meniscus generally evidences more pain from the patient's subjective point of view than other areas. This is the most common disturbance we find in knee joint problems. The knee joint is not unduly complicated as joints go; but it is not simple either.

The ability to bear weight with efficiency and also stability and yet maintain the free range of motion that it enjoys has caused the knee to be endowed with a number of ligaments, cartilages and muscular aponeuroses that offer limitless potentials for anatomy quizzes. An accurate diagnosis of internal derangements of the knee, therefore, depends upon knowledge of the normal anatomy of the knee and also upon the basis of a correct history.

Much attention has been given in the literature to the quadriceps muscle in knee joint disturbances. The quadriceps mechanism as you know, serves to lock the knee in extension by effecting a lateral rotation of the tibiofemeral condyles. This is a sort of "screwing home action" which stabilizes the extended knee and protects it and allows proper weight bearing. When the knee is put out or use, most authorities discuss the quadriceps atrophy which begins at once and recommend early graded exercise to limit the prolonged disability which occasionally does result from lack of quadriceps activity. Naturally, an inability to use the knee in the manner to which it is accustomed does result in lack of quadriceps activity since the patient will generally walk with the knee in a partially flexed position, minimizing quadriceps activity. This is the reason why the quadriceps begins to atrophy but the quadriceps muscle and its effect on the knee is a "post hoc" factor or after-the-fact muscle.

The muscle group most frequently involved in causing the most usual problem that occurs in the knee medial meniscus is the sartorius and grocilius muscle group. If one thinks of the meniscus cartilaginous spacing of the knee joint as a rectangular space, literally a sandwich, with the condyles above and below, the filling of the sandwich is represented by the meniscus cartilage material. There are ligaments which bridge the rectangular space, but primarily muscles move bones, and ligaments merely limit the degree of motion. There must be a balance of the sartorius and grocilius muscles on the medial side coupled with a balance of the fascia lata on the lateral side. This helps to stabilize the knee joint in lateral medial motion.

Another most important primary muscle in terms of internal derangement of the knee is the popliteus which is a muscle which acts as a ligament along with the previous mentioned "screwing home action" of the quadriceps and the flexion activity of the hamstrings. Therefore, this potential rectangular cartilaginous space between the condyle is maintained a rectangular space by the balanced action of the muscle groups on the anterior, posterior, medial and lateral sections of the knee joint. Many patients will complain of inability to bear weight, the knee giving way and buckling under normal weight bearing, and the symptoms may run the gamut of pain on going up or going down stairs or continued pain on non-weight bearing. But the use of a standard method of muscle testing such as that of Kendall and Kendall as used by the author, reveals an interesting pattern in both chronic and acute knee joint disturbances.

A professional football player was examined following knee joint surgery which was ineffective in producing a normal stability of the knee joint and his performance on the team was such that he was to be cut from the team's roster. In an effort to maintain his playing ability the sartorius and grocilius muscles were tested. This individual was a large well built 240 lb. professional defensive center, and his muscular strength was more than adequate, but testing of the sartorius and grocilius muscles on the injured knee, showed a remarkable weakness of both structures. The constant production of the medial meniscus syndrome with a disturbance in the normal rectangular spacing of the knee joint became obvious in the light of the information that could be obtained by muscle testing.

A tennis professional of national reputation was examined for recurrent knee problems which limited his ability to participate both as a teaching pro and in active professional competition. Using the principles of muscle testing again, weakness of the sartorius and grocilius muscle was found producing again an internal derangement of the knee, changing the normal rectangular space to a wedge pattern which allowed bulging of the medial meniscus producing the characteristic pain at a dime sized area on the medial meniscus. As it is well known in the principles of applied kinesiology, a number of factors may be present which produce muscle weakness. A micro-avulsion of origin and insertion of the muscles tested and found weak may be the determining factor. Since every muscle has a lymphatic drainage there may be a limitation of the lymphatic or the vascular drainage reflex to the particular muscle in question.

Both of the previously described athletic type knee injuries showed a characteristic weakness of the sartorius and grocilius coupled with the point of pain on the medio aspect of the knee over the area of the mediomeniscus (see illustration "A"). This is the most

common pattern one sees in the usually occurring knee joint problem. A frequent accompaniment of the weakened sartorius gracilius producing a disturbance in the normal rectangular spot of the knee joint is a parallel weakness of the popliteus. The action of the popliteus, as you know, internally rotates the lower leg on the femur, but it mainly seems to act as posterior knee joint "ligament". When weak, it allows hyper-extension of the knee or fails to cause proper balancing limiting internal rotation of the knee.

This popliteus muscle runs diagonally downward across the knee joint from lateral to medial and its origin is on the interior portion of the groove of the lateral condyle of the femur and its insertion is against the popliteal line of the tibia. The patient may be tested prone with the knee flexed to his ability, or the patient may be seated with the knee flexed and pressure is exerted against the medial aspect of the base of the large toe while the patient resists the rotation testing. A very simple test is to simply observe whether the patient can medially rotate the lower leg on the femur but pressure testing is required to elicit the proper performance of this particular muscle. (see illustration "B").

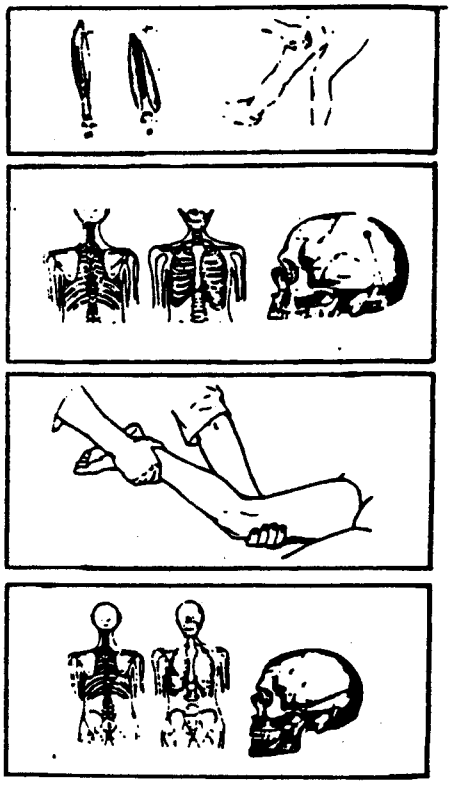
In any knee joint problem it is wise to elicit proper performance of all the muscles which are capable of influencing the knee joint. Testing of the quadriceps may be done with the patient seated on the treatment table with the knees bent over the side of the table and the pressure testing is against the lower leg just above the ankle in the direction of attempting to bend the knee as in the illustration "C".

In the case of a micro-avulsion of this particular muscle, which occasionally happens, a hard heavy rotary pressure against the anterior head at the groove just above the rim of the acetabulum, is occasionally necessary. The rotary pressure at the insertion of the tibial tubercle of necessity must also be quite hard. When the quadriceps is weak there is often a weakness in stair climbing as well as getting up and down from a seated position. There is also a tendency to follow a pattern of forcing extension which is necessary to lock the knee when the quadriceps is weak.

Here again when the quadriceps is weak, and there is also an associated popliteal muscle weakness, many times the tibia can subluxate straight posterially and will require an adjustment designed to bring the tibia more anterior. Here again, if the muscles are not strengthened to maintain normal position, the adjustment of the posterior subluxation must be repeated ad infinitum. Occasionally one will see an intact sartorius with a weakened gracilius, and weakness of the gracilius permits a loss of internal lateral stability of the knee and prevents proper stability and also permits a relative knock-knee condition, many times of unilateral basis. This also permits an external rotation of the lower leg on the femur which sets up the medial meniscus which then becomes trapped in the now no longer rectangular, but now wedged cartilagenous space.

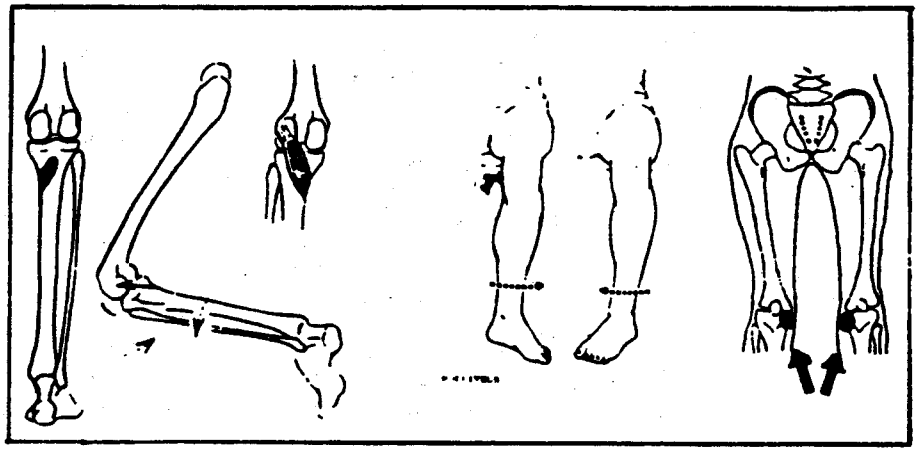
The gracilius muscle is tested as in the illustration "D" and "E" and the pressure is against the lower leg at the ankle in a downward, outward direction. It is always a wise idea to test the hamstrings, and the hamstrings consist basically of three major groups —medial, central and lateral group. The biceps femoris is a central muscle running from the ischial attachment down to the central aspect of the tibia, whereas the semitendenosis runs from the ischial attachment to the posteral medial aspect of the tibia and the semimembranosus runs from the ischial attachment down to the fibular attachment just below the meniscus. Test the hamstrings as shown on the testing drawing "F" and "G". The testing drawing is the method used for the biceps femoris with the foot outwardly rotated, to test the semitendenosis and semimembranosus inwardly rotate the foot.

In each case though, the knee is flexed as in the original drawing. The tensor fascia lata is tested as shown in the drawing "H" and "I". The pressure is against the lower leg in a downward and inward direction and weakness here sometimes produces a unilateral bowleg position. Usually there is some contracture and checking the adductors will show weakness of



the adductor areas allowing this tensor fascia lata tension.

There are an infinite variety of variations on the original theme of the medial meniscus. The tendon of the popliteus as you know, crosses behind the knee joint helping to stabilize it posteriorly and laterally and most important of all, it also initiates unlocking of the extended knee joint when flexion begins. Many times it is difficult to start the unlocking of the knee joint and therefore attention to popliteus both diagnostically and therapeutically is necessary. Further stabilization of the knee joint is given by the tendons of the semimembranosus and the biceps femoris muscles and also again, importantly, by the lateral and medial heads of the gastrocnemius muscle. The gastrocnemius traverses



the knee joint and although it is not too frequently thought of in reference to knee problems, it is tested with the patient lying prone with the knee straight and the foot over the end of the table.

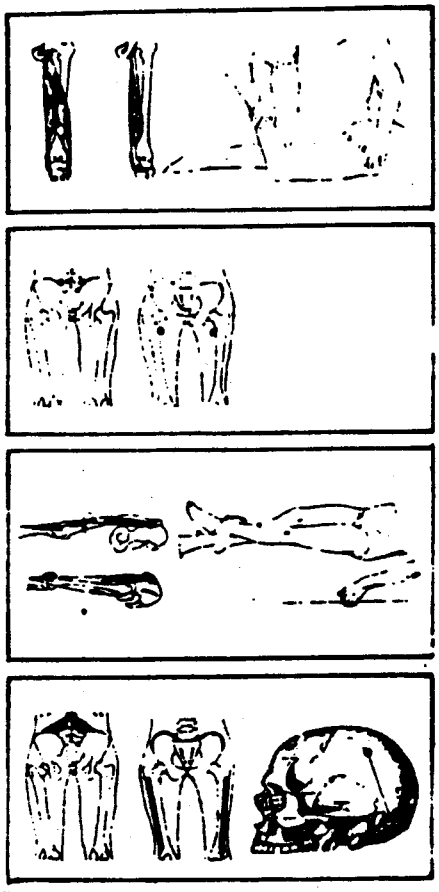
The pressure testing against the sole of the foot and equally against the os calcis while the patient tries to pull the heel upward. Testing can also be done with the patient standing as in the illustration "J". [illegible] a very primitive test and

Many times th[illegible]on of the heads of th[illegible]id. here rotary pre[illegible]at the medial head [illegible]of the mediocondia[illegible]nd against the lateral head of the gastrocnemius, on lateral condyle of the femur, will help considerably. A weakness many times produces a hypertension of the knee and a tendency to produce a calceneus position of the foot, with a slight forward lean of the lower leg on the weak side. In reference to this relative forward lean that one sometimes sees with a knee problem, it is wise to also test the soleus. The soleus is tested with the patient's knee flexed at a right angle or as close to that as possible. The pressure is against the heel at the os calsus after the foot has been flexed as in the illustration "K". Try to pull or push the heel straight upward or ceilingward.

Again here we find frequently micro-vulsion in the athletic injury and rotary pressure against the origin on the posterior surface of the head of the tibia and along the upper third of the posterior surfaces of the body of the fibula. This muscle when found to be weak usually is part of the cause of a forward or anterior lean of the body, which is sometimes confused with a marked Lumbar Lordosis. The soleus holds the knee back so the vertical body weight passes through the ankle malleolus and through the knee. Treating the soleus quickly straightens the lateral aspect of the body posture and allows proper knee joint weight bearing. Each time one examines the knee, one is brought back to the concept of the rectalinear space that the medial meniscus occupies and this rectalinear space should be a constant rectangle. It is a disturbance of muscles above and adjacent to and below in traversing this particular rectalinear space that transforms it from its relative rectangularity to a wedging in one direction or another.

Naturally, it goes without question that all traumatic cases should be immediately x-rayed even prior to examination and thorough x-ray examination of the knee joint is a must for proper diagnostic work-up of any knee joint problem. Because of the nature of the knee and its associated muscles, the medial meniscus pattern is the most frequently occurring and it is a common accompaniment of the arthritic knee. Organization of the muscular structure along with the traction torque adjustment produces much benefit and satisfaction to the patient's comfort. Orthrograms are many times a necessary and able adjunct to the usual x-ray examination, and this is usually deferred, except in the most recalcitrant of problems, but it is very valuable in revealing tears of the internal structure of the knee.

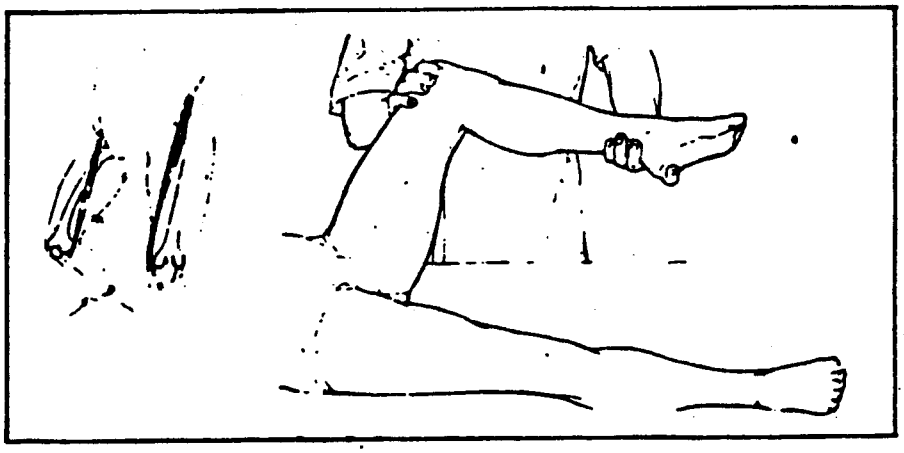
Because cartilage has such a poor blood supply and such a relatively rich nerve supply, we generally recommend muscle balancing by a primary technique, both neuropathic and neurovascular. Following muscular balancing, the traction torque adjustment of Dr. A.L. Schultz is used. The patient is supine, the affected leg is extended as far as possible, the foot is rotated medially. The tibia is grasped with one hand, in the case of a left knee problem, the tibia is grasped with the left hand crossing the foot so as to maintain

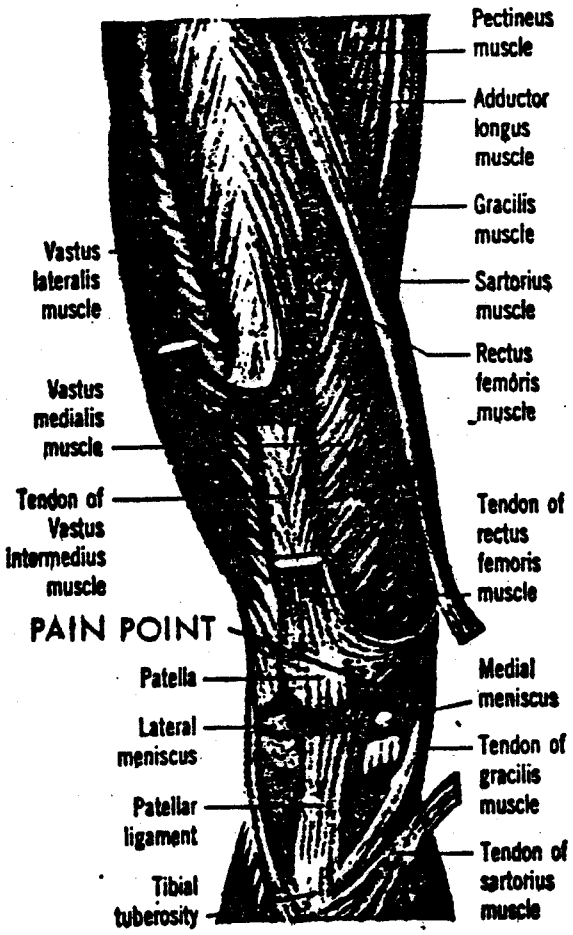


the medial foot position. In other words, the volar portion of the operator's forearm contacts the lateral portion of the patient's foot and the hand grasps the medial mid-portion of the patient's tibia. The operator's other hand firmly grasps the patient's lateral malleolus. A sharp forceful pull is exerted by the operator to open the wedge space of the medial meniscus converting it to a rectilinear space.

The relative medial torque position of the patient's foot is maintained during this sharp traction pull adjustment, but no additional torque is added to the pull which is straight toward the operator. The medial meniscus pain previously evident on palpation should now be sharply diminished to subsequent palpation. Repeat this torque traction adjustment two or three times if necessary to effect proper palpatory pain reduction.

Following organization of, and balancing of the muscular structure, physical therapy may be initiated to increase local blood supply and increase the healing of torn or injured ligaments. Generally speaking, heat is contraindicated, in the early stages of the average knee joint problems as is aspiration. Aspiration is not generally recommended and the use of Schultze's Criss-Cross Tape Method, reduces any

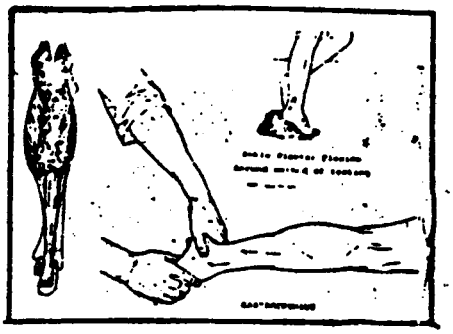


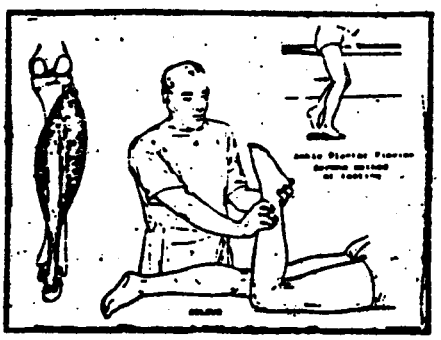

Pectineus muscle
Adductor longus muscle
Gracilis muscle
Vastus lateralis muscle
Sartorius muscle
Rectus femoris muscle
Vastus medialis muscle
Tendon of Vastus intermedius muscle
Tendon of rectus femoris muscle
PAIN POINT
Patella
Medial meniscus
Lateral meniscus
Tendon of gracilis muscle
Patellar ligament
Tendon of sartorius muscle
Tibial tuberosity

joint effusion very nicely.

The use of diathermy to assist both joint and ligament healing, is recommended after proper muscular balance has taken place. The unfortunate thing about the use of any form of heat or diathermy in the early stages is, that muscles that are already weak are weakened by heat and this further disturbs the derangement of the knee joint. It is our recommendation in the average knee joint problem to apply cold applications rather than heat, since cold increases the tone of the muscle which has generally been weakened in a multiphasic pattern. The cold initiates a vasomotor response which actually produces heat in response to the cold pressure effect. There is an increase in circulation with the application of cold which far exceeds any response that heat could provide in the initial phases of any knee joint injury.

The use of ice is generally contraindicated except in the extreme emergency situation where the athlete must perform and when adequate examination has revealed the absence of any torn or ruptured ligament structure. Ice will allow a temporary performance of a particularly valuable player. Good practice would indicate the use of a cold application in the form of a towel soaked in cold water and applied to the knee joint, then left undisturbed for twenty minutes. This is repeated two or three times daily along with other treatment previously outlined. No attempt has been made to discuss the reflex disturbances that occur in knee joint problems, but it is interesting to note that the popliteus muscle has been shown to be drained by the same lymphatic circuits as that which drain the liver and gall bladder. Frequently in many knee pain problems, there is a corresponding disturbance in the liver and gall bladder. Attention to the liver and gall bladder will usually aid this type of knee pain, but this is beyond the scope of this particular article and will be discussed in future manuscripts in this area of therapy. Body language does not lie. The disturbance in the knee joint will evidence itself in a variety of ways and measures, but the body will unerringly clue you to both the diagnosis and method of treatment. Testing of the muscles is the means of understanding body language in each and every condition that comes into your office. The innate intelligence of the body acts in a true and unerring fashion. Its response to proper and definitive treatment is quick and efficient, and certainly to the patient's great delight and satisfaction. There is a wisdom within the body which acts to augment the diagnostic skill of even the most astute clinician.





This wisdom is evidenced in the language of the body and this language may be understood and comprehended by a very simple procedure of muscle testing. Muscle testing is a primary diagnostic device to the understanding of many problems, not only of the knee but the rest of the body structure. Man is an equilateral triangle composed of structure, chemistry and psychology. Each side supports the other and there is an equilateral balance between structure, chemistry and psychology. Disturbances in the knee joint which reflect themselves in the weakness of sartorius and grocilius will invariably lead one to augmenting the structural integrity of the sartorius and grocilius which share its lymphatic drainage with that of the adrenal. Therefore adrenal support in the average knee case where there is weakness of the sartorius and grocilius although seemingly far removed, is very effective.

This adrenal support material is available from many of the suppliers to our profession and should be chewed prior to its absorption by the digestive system. The quadriceps shares this lymphatic drainage with that of the small intestine and attention to digestive enzymes again, although seemingly far removed, will help in the recurrent knee problem where there is weakness of the quadriceps which does not respond to simple exercise.

Weakness of the hamstring muscles will respond to proper neurolymphatic and neurovascular as well as microvulsive techniques. If there is any persistence of weakness in the average knee problem, the addition of small unit dosages of a natural source of vitamin E complex is effective in preventing a recurrence of many knee problems.

As previously discussed, the popliteus muscle shares it lymphatic drainage with that of the liver and gall bladder though seemingly far removed, and the addition of bile salts with efforts at liver and gall bladder stimulation, frequently will aid the popliteus in maintaining its normal pattern. Gastrocnemius and soleus apparently seem to share the common drainage pattern that the sartorius and grocilius have with the adrenal, and use of adrenal support measures helps this gastronemius ascilious group as well. The tensor fascia femoris responds to a variety of agents basically concerned with action of the bowel since the tensor fascia femoris shares its lymphatic drainage with that of the large bowel. Acidophilus products and other products of this type seem to support the tensor fascia femoris in those cases where it is found weak in recurring knee problems, and this nutritional support is of value in the chronic pattern involving weakness of the tensor fascia femoris.

The two professional athletes mentioned above responded well and are active in their respective sports.

Further information is available without charge from the author. Please include a self-addressed and stamped envelope.

The Posterior Ilium and the Neurolymphatic Reflex

By Dr. George J. Goodheart 542 Mich. Bldg., Detroit, Mich. 48226

Many patients and many doctors are subject to conditions of stress. This stress may be physical, mental, toxic, infective or traumatic. Whatever the cause, the stress is felt by the patient through the agency of his adrenal glands since they are the stress glands and as has been mentioned before, stress is like being chased by a sabre tooth tiger. If you could run faster and leap higher than the tiger in primitive times, you survived safe but out of breath perched on a limb of a tree breathing hard and pumping much blood past the recently activated adrenals, reviving and restoring them to normal. This is the normal response pattern but if the stress is modern and unavoidable, there is no feed-back of circulation to the adrenals which are under the stress of modern living, since there is no physical response to the pressure of stress such as the leap to the branch of the tree and the subsequent survival pattern of recovery. This is our heredity whether we like it or not and if we did not learn to run faster and leap higher than the sabre tooth tiger, he would have taken care of any heredity problems.

The discovery of the neurolymphatic reflex and the associated muscle pattern has answered many questions of structure and function. Briefly stated, the neurolymphatic reflex is the circuit breaker to the sump pump that drains the organ and the associated muscle. Every muscle has a lymphatic drainage, every organ has a lymphatic drainage, there is a common drainage circuitry in the nervous system for both that functions beautifully and surely even though we may not be aware of its existence. But following prolonged stress of any kind even for example of long hot humid weather, the adrenals become depleted by constant reaction against the "tiger" without any feed-back circulation and even though the stress was climatic, the neurolymphatic reflex to the adrenals becomes also exhausted. As a result the associated muscles become blocked in their lymphatic drainage and in this instance the gracilis muscle and the sartorious lose their tone, therefore when tested by the standard testing methods, show unilateral weakness, sometimes bilateral weakness.

The weakness of these two muscles allow the antagonists of these muscles to pull relatively unapposed and the result is the posterior ilium with the associated symptoms. The acutely angled forward or sharply lateral angled patient with much pain, inability to rise from a chair, or get out of a chair, severe spinal muscle pattern spasms generally unilateral and severely painful; these are all symptoms of the adrenal posterior ilium pattern from stress.

These patients have either acute disc-like pain patterns or in the chronic pattern are almost chiropractic addicts since they require constant readjustment to stay mechanically integrated and relatively free of pain and spasm. The characteristic signs of hypoadrenia are always present in these patients as well as the acute back problems. These signs are as you remember, the dilating pupil to light shone on the eye with the otoscope beam or an alternation of constriction and dilation with a thirty to forty second exposure of pupil to light. The second sign as you recall, is a failure of the blood pressure to rise slightly when the patient goes from the horizontal to the vertical position. The amount of movement of the ilium is very slight but Illi's ligament is evidence that there is preordained a slight range of motion but when this slight normal range is exceeded, it is the same situation as a speck of dust in your eye. The size of the speck is all out of proportion to the trouble it can and does cause. The same is true with the slight range of over motion of the illium, the body goes into a virtual spasm to limit further trouble at the expense of the patient. This pain and spasm is itself stress which is added to the overdrawn adrenal bank account and the vicious cycle continues.

Osseous correction of the posterior ilium is an obvious necessity but in many cases the posterior ilium is an effect, and the primary problem that is most often masquerading, especially in the acute case, is the depleted adrenal neurolymphatic reflex. This technic was recently demonstrated live at the A.C.A. in Los Angeles with actual patients giving case histories, and with treatment given on the lecture platform with a response which was obvious to all who attended this convention.

Dr. Goodheart

This is a most common condition which adopts many disguises such as, "tired back", "diminished disc space of 4 and 5 lumbar", "recurrent sciatic pain" all arising from the constant ligament strain with referred pain from the strained ligaments.

The gracilis muscle is the most superficial of the medial inner thigh muscles. Its function is to act as a flexor and to rotate the thigh inwardly after it has flexed the knee. It also acts most importantly as a "tie-down" muscle to the pelvis permitting both anterior and posterior rotation of the ilium. The sartorius and the gracilis muscles are both drained by the same neurolymphatic reflex as that of the adrenal. When weakness of either muscle occurs, posterior rotation of the ilium becomes a potential reality and it takes only a very slight trauma or even stress of every-day living to further deplete the adrenal pattern and thus permit the ilium to escape normal muscle tonus, front and back and with the sartorius becoming weak with adrenal stress, it will subluxate posteriorly and, as we mentioned, mainly due to the failure of the sartorius to hold it forward and the gracilis to hold it firm and tie it down.

Now, when the ilium subluxates posteriorly as you all know, the leg becomes short on that side when examined in the supine position; the medial malleoli showing marked difference when the ilium is posterior. On the posterior ilium side that medial malleoli will be very short, sometimes up to a half an inch short. Because the sartorius is straining to hold the ilium in a normal balanced position, and because the gracilis is also straining to

hold the ilium from subluxating further posterior, both the upper end of the sartorius and the lower end of the gracilis will be sore. Roughly the upper half of the inguinal ligament will be sore on the short leg side as will the upper attachment of the gracilis on the anterior aspect of the ischium on the short leg side and the lower attachment of both muscles in the lower third of the thigh on the short leg side will be sore, so here is the diagnostic key to the posterior ilium: (1) The upper attachment of the sartorius muscle will be sore to palpation on the short leg side. (2) The upper attachment of the gracilis muscle will be sore to palpation on the short leg side. (3) The lower medial one-third of the thigh where both the sartorius and gracilis muscles form the fleshy part of the inner thigh, 3 to 4 inches above the knee on the medial side, will be sore. This soreness extends down to the actual attachments of the gracilis and the sartorius muscles on the short leg side. All of these measurements are accomplished with the patient lying on the back and it takes only 10 to 15 seconds to validate a posterior ilium. (4) The short leg exists on the posterior ilium side, because of the eccentric rotation of the ilium. The ilium, acting like a wheel on an axle, with the leg pulling up since the leg is attached to the periphery of the wheel and since the axis of rotation is also on the periphery. (5) X-rays taken standing or lying in AP position will show a greater millimeter vertical height difference on the posterior ilium side. This is a constant that you can depend upon and it always will be found in conjunction with the previously mentioned four signs given above.

Treatment should consist of activating the adrenal reflex which often suffices to allow a normal osseous recovery of the posterior ilium, about 60% of the time this occurs. The palpatory pain will disappear rapidly within 20 seconds following the activation of the adrenal reflex but ask the patient to get up and stand and walk a few steps and then lie down again. This will put further postural stress on the patient and about 40% of the time, the pelvis will need adjusting in the osseous position to accomplish 100% recovery.

When testing the sartorius or the gracilis and finding it to be weak and when there is no history of trauma or if the response is poor, checking the neurolymphatic reflexes for the adrenals is very important. In all cases of hypoadrenia there is a weakness of the sartorius and gracilis — the sartorius and gracilis is often found weak in many cases of adrenals depleted from infection.

The adrenal neurolymphatic reflex is at an area 2 to 2 1/2 inches above and 1 inch on either side of the umbillicus. In the posterior aspect is the intertransverse space on both sides 11th and 12th dorsal vertebrae, midway between the spinous processes and the tip of the transverse processes. Generally, if you find the sartorius or gracilis weak on one side, the neurolymphatic reflex on the posterior aspect will also be weak on that side only. Many times these patients complain of extreme fatigue especially in the morning and they complain as if they never have enough rest because they are continually tired.

These patients improve as the day goes on and frequently there is a disturbance in the knee joint in these patients that resist therapy. The article on hypoadrenia which appeared in the May/June issue of Chiropractic Economics is good background reading for this particular problem. The adrenal reflex forms the basis for one production of a posterior ilium.

The chiropractic profession is indebted indeed to Dr. M. B. DeJarnette for much original research. The observation of three of the four areas found in the posterior ilium was first made by Dr. DeJarnette in his earlier writings and subsequent publications. These observations have stood the most difficult test of all, the test of time since truth stands up and those who teach the truth endure. The continued efforts of Dr. DeJarnette, after forty years of writing and teaching, speak volumes for his durability and dedication to our profession.

The method of treating the posterior ilium and the adrenal reflex pattern is just one more means of placing service above self and helping your patient, thus advancing yourself and the practice of chiropractic. The body has the unique ability of "perfect neurological recall" provided it is given the right treatment along with the opportunity for self correction. There IS an innate intelligence. The body DOES heal itself. We merely HAVE the Godgiven opportunity to assist in this process. Don't sell His creation short by a narrow and limited perspective of the human body and its reparative process.

Details of methods used to test the gracilis and sartorious can be found in the book "MUSCLE TESTING" by Kendall and Kendall, published by Williams and Wilkins, or in the author's text "APPLIED KINESIOLOGY" or are available from the author on request. Please enclose a stamped self-addressed envelope.

NOTES

THE CERVICAL CHALLENGE

by DR. GEORGE J. GOODHEART

Many patients suffer from problems related to the upper cervical segments of the spine. Many doctors also suffer from the universal pattern of altered relationship of the occiput, atlas, axis, and to a lesser extent the segments below those first three vertebrae.

A variety of methods have been devised including exhaustive critical analysis involving X-ray technic. The natural anomalous nature of the bony segments prohibit precision methods of measurement beyond a certain degree, and to strain the issue with minimal measurement changes is to miss the point. This is not criticism of those who advocate a precise approach to the upper cervical region or any other region for that matter.

We have a tool at our disposal, a tool which adapts itself to anomalies, which adapts itself to previous bony injury, which adapts itself to speaking a "body language voice", unerring in its precision. This tool is the simple procedure of muscle testing and the use of a technic termed "Cervical Challenge." The body is homeostatic in normality and so is it relatively homeostatic in a disease state, give or ta small variations in disease intensity. It is this homeostasis both in health and in disease that provides the basis for the principle of combining muscle testing and the cervical challenge.

The body resents the intrusion of a specific pressure applied to the upper cervical segments which disturbs its relative homeostasis. The resentment takes the form of a counter resistance to the applied force on whatever plane the force may have originally been applied. In other words, the body "pushes back" in exactly the opposite direction from which the original challenging thrust pressure was applied. But to challenge the position of any segment would be pointless if there was no element with which to measure before and after results. Here is the invaluable contribution which standard muscle testing can provide before and after any segmental challenge. The unique quality the homeostatic pattern the body possesses, produces a paradoxical strengthening when the microsubluxation is increased and a decrease in testing strength when the microsubluxation is reduced. If there is for example, an inferior position of the atlas at the posterior tubercle, and this position is challenged in an inferior direction, the body temporarily pushes in the opposite direction causing a slight alteration back to normal, increasing the testing strength of the muscle or muscles involved. But if the atlas tubercle is pushed in a superior direction, the body pushes back, increasing the microfault temporarily. So despite the obvious and the evidence of your senses, *the direction of correction is in the direction that produces weakness.* The proof is in the response to therapy following proper adjustment. There is an immediate and spectacular response in the previously tested muscle, and furthermore it cannot be rechallenged into the previous pattern of weakness.

The material that follows will deal fundamentally with new data which we have been able to accumulate, relative to the position of the upper cervical in relationship to muscle testing. In San Francisco, and also at the Palmer College in Davenport, Iowa, we have in recent weeks demonstrated the existence of an upper cervical fault which many times eludes the usual method of analysis, either X-ray or Neuro-calometer or other heat recording or heat seeking instruments. Yet, the evidence is conclusive in terms of muscle testing.

We proceed in the usual fashion, analyzing the posture, analyzing the TS line, checking for cranial faults—the usual pattern we have observed in the past—but we then add one more factor to this particular equation in that we assume the presence, (either with or without an X-ray) of an upper cervical fault. As you know, there have been many methods and many means devised to try and identify upper cervical faults. This is a predominant segment of our profession, and some people feel very strongly about this. But as Leon Truscott has mentioned, in fact to quote Dr. Truscott in The Truscott System of Angular Analysis and Controlled Adjusting, by Leon Louis Truscott D.C., and Granville Kimball Frisbee D.C.: "The number of years HIO has been taught would at least superficially seem to have been sufficient to have proven it superior, in fact to have brought every adjusting chiropractor into its orbit, and even most of the non-adjusting chiropractors into the scope of its influence, because superior results would soon make it mandatory that we use it.

"That this is not the case is evident. It can't be that all chiropractors are inefficient and incapable of learning or slovenly in their efforts to correct subluxations."

Truscott made a distinct effort to discover something and in his original material, which was copyrighted in 1952 (the first edition came out in 1946, had a revision in 1948 and the copyright issued in 1952) he discussed the fact that a very light contact held in the region of the atlas, would cause a movement of the limb, causing a shortening. If, for example, you touch the left thumb to the left side of the atlas, if the atlas had moved away from your left thumb, the right leg would become short. He evolved a system which was very complicated and based on some very, very esoteric ideas which, although valid, seem to be very difficult to apply in practice.

This is by no means a criticism of the monumental work that Truscott has done. In fact, this paper could be the means of advancing the basic ideas which he was able to establish. It seems that the rather rigorous analysis that must be applied to the upper cervical, demanded perhaps some type of body language. In cranial corrections, as you know, one aggravates the fault. The tentorium cerebri and the tentorium cerebelli, make the actual corrections. One can assume that since the intrinsic muscles, for example; the superior oblique and inferior oblique, weaken on one side, the muscles on the opposite side, again the left superior oblique and the left inferior oblique, contract. Literally they shove the atlas in a lateral direction, causing a right lateral position. If one were to contact the left side of the atlas under those conditions and shove it further away, this might reawaken those stretched muscles, (the weakened ones) and stimulate them to produce a temporary response. This was the key to the new analysis and the new dimension that is used in muscle testing and adjusting.

PROCEDURE

The patient is supine and notation has been made of previous observations in terms of posture analysis,

muscle weakness, and any other condition or, the patient may be lying prone, depending on the stage of the examination. But in any event, after proper analysis, test any convenient muscle such as the pectoralis major, clavicular or gracilis, or the facia lata. Any muscle that seems indicated by the temporal splenoidal line or by posture, or even by the patient's symptoms may be used; test it against respiration etc. Then simply contact the left lateral atlas portion and press it (5 to 8 lbs.) from the left to right, and observe the response in the muscle that you previously found weakened. Now reverse the procedure. Contact the right lateral atlas and press it from right to left (5 to 8 lbs.). This should neutralize any temporary strength that you may have achieved by your previous pressure. Apply the same left to right pressure to the axis and then right to left, then see whether or not one pressure increases the strength of the muscle being tested, the opposite pressure diminishing it. This is usually the case. Then test the atlas from A to P. Press it from P to A, then press it from A to P; then press it from P to A on the other side and then from A to R. Make appropriate observations. At this point press the tubercle of the atlas downward and observe. Press it upwards and observe. In each instance the body will respond by reacting against your pressure.

In other words for example, in a right lateral atlas the atlas is pressed from left to right and it improves the strength of the muscle, then as it is pushed from left to right, the body pushes back from right to left. The muscle weakens from pressure right to left. This response indicates a RIGHT lateral, indicating the right side is to be adjusted in a lateral direction from right to left. Again, press the axis from left to right and if it improves the strength of the muscle tested, mark the right side to be adjusted because temporarily, as it is pressed from left to right, the body pushes back and actually moves it out of this right lateral position slightly enough to increase the strength of the muscle. The same being true with pressure anterior on the posterior portion of the atlas in the forward direction, for example on the left side. If the atlas is anterior on that side as it is pressed forward, the body will pull it back out of its relatively anterior position and increase the strength of the testing muscle. If it is anterior en masse, then pressing both sides together in a posterior direction, will increase the strength, or, if it is posterior en masse. The same is true if it is in rotation, so here is an effort of the body to correct itself by challenging its homeostasis.

The same is true on pressing the atlas tubercle downward. The body will resist this and pull it upward, and if it is INFERIOR it will temporarily improve the testing strength of the muscle. Pressing it superior will weaken the strength. This gives you the direction of your atlas adjustment. The direction of thrust is therefore to superior, repeat SUPERIOR aspect of the atlas. (thrusting either in a superior or inferior direction) depends upon superior or inferior atlas position as proved by challenge response.

Experience has shown that the classic position of a right lateral atlas axis with an anterior on the same side, is an average pattern, but certainly, it is not a frequently encountered pattern. Frequently the atlas is anterior on the side of laterality, and frequently it is not.

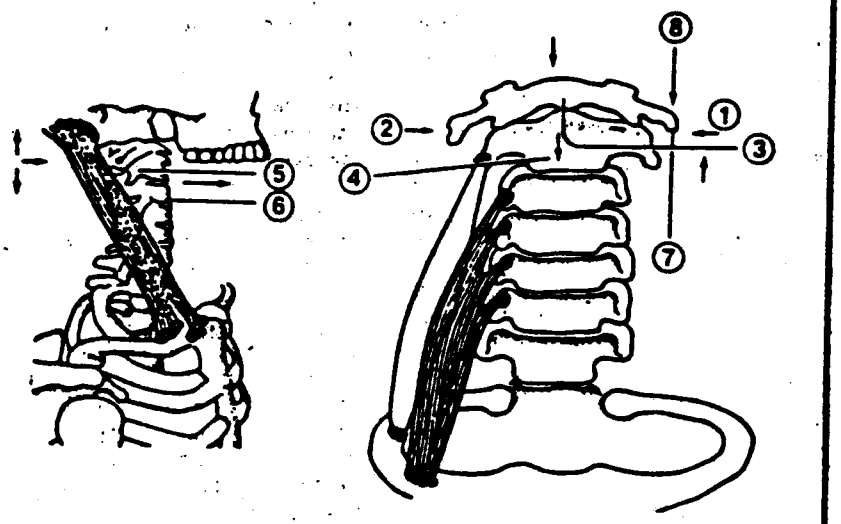
A good test of the relative anterior-posterior position, (although it is not totally significant) in an atlas anteriority or posteriority, follows: Place the patient's head in an extended position (facing upwards towards the ceiling), to the length of his neck extensor muscles and then rotate the head left, and rotate it right. It will rotate further on the side that is anterior and not as far on the side that is posterior. In other words, if the anterior atlas exists on the left, the atlas has already turned to the left so that the patient's head will turn much further to the right. But when it is turned from right to left, the atlas has to first, come out of its relatively anterior position on the left. There is some period of time where the head may be turning, but the atlas is not assuming the central position as yet. The reason is, if the anterior atlas is on the left, the head does not turn too well to the left, but it turns more readily to the right. However this is also true of a posterior atlas, and this test merely corroborates what is found.

In other words, it corroborates the relative position but not the actual anteriority or the posteriority. Now it seems that there is a law of diminishing returns. Proceeding downward to the third, fourth, fifth through sixth and seventh cervical segments, there is less and less interference with cervical position influencing muscle weakness and this continues to appreciate itself (with the exception of the fixation indicators with which you are familiar), until reaching the first lumbar or the dorsal lumbar junction. Then there seems to be an increasing frequency of mechanical interferences with muscle weaknesses, and this is

Test the indicator muscles with all eight of the vertebral position challenges. The response will tell you the position of micro-subluxation. Then and only then are you ready and able to deliver a precision thrust.

The eight position challenges are:

(1) Left lateral.
(2) Right lateral.
(3) Spinous superior.
(4) Spinous inferior.
(5) Transverse anterior (both left and right).
(6) Transverse posterior (both left and right).
(7) Transverse superior (both left and right).
(8) Transverse inferior (both left and right).



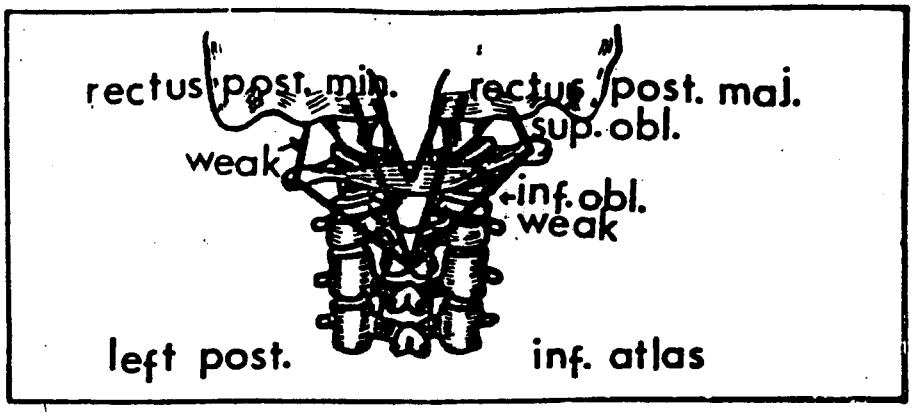
in no way related to a segmental pattern.

In other words, a first lumbar may affect a cervical and a cervical muscle area. A cervical muscle area of an atlas, axis area, may be involved in this dissimilar pattern as an extremity weakness of the anterior tibial pattern or peroneus longus or brevis on one side. Once the position of the atlas and axis, and also the occiput is established by muscle challenging, recognizes that the body always presses back, it will press against the challenging finger Use about 5 to 8 pounds of pressure on the atlas or the axis in whatever direction you press, and then your technique for adjustment is relatively simple.

In the anterior atlas en masse, or in the anterior atlas, we use the method of adjusting (described in previous Kinesiology texts) making a contact on the relatively posterior condyle of the occiput, and driving towards the vertex and the base of the nose. In any posterior rotations of the cervical, if the cervical for example, should be posterior on the right, contact the left spinous with the hooked finger while patient is in the seated position, and contact the left side of the spinous to make the cervical adjustment by rotating the posteriority in using the contact on the left spinous. Again, and more or less as Truscott and other authorities have recommended, take out the rotation first. In general, take out rotations before taking out laterality except, in case of anterior en masse. Then, generally take out the anteriorities and then reduce the lateralities. Second, the balancing of the cervical neck muscles naturally is paramount since we have found that the usual techniques prior to making any specific upper cervical adjusting, is a practical thing.

Many times, if there is a cranial fault, no amount of upper cervical adjusting, no matter how precise, will correct a cranial fault. Both the cranial and sacral faults predominate in many difficult and persisting upper cervical faults.

One young student at one of our colleges, had received over 150 adjustments, and another one had had more than that on his upper cervical, and still presented evidence of upper cervical faults as evidenced by muscle testing. The response the next day showed no evidence of the problem. In my communication with his D.C., this continues to be the case in this particular individual. So here we have a tool of immense worth, a pearl of great price for analyzing both the frank position of the X-ray evidence of the upper cervical as well as the occult, hidden but still capable of producing a nerve impingement fault.



Its correction is simple because its diagnosis is simple. Its diagnosis is based on the fact that there is an innate intelligence which produces a quick and easy response This quick and easy response is based on the fact that the body will press opposite to the pressure you exert, and if the atlas for example, is right lateral as you push it further right lateral by pressing on the left side for example, the body will push back against your pressure. Granted you don't maintain it—press it and let go, and there will be a temporary response in any muscle that you test. This does not take the place of the previous Kinesiology techniques, it merely supplements and adds to it. However, it is a highly effective method of demonstrating the efficacy first of the diagnosis, and second the efficacy of your chiropractic adjustment. It takes the chiropractic adjustment out of the "by-guess and by-golly" and applies the rule of muscle testing to an even more critical area in terms of response.

The technique of putting pressure on the spinous process in one direction or another, can be applied in case of the cervicals, dorsals and lumbars. Get on the lateral aspect of the vertebra, and pressing on the spinous process, utilizing the challenge technic will quickly identify the actual position of the vertebral segment. The direction of your thrust should then allow a quick response on any muscle you have tested. The law of diminishing returns begins to operate until the dorsal-lumbar junction, then the response seems to increase in frequency. Our main effort so far has been to research the upper cervical and we critically analyzed 500 to 600 patients with good responses.

An effort has been made to validate by muscle testing facts that have already been know empirically. The true nature of the tremendous potential of man's intelligence is revealed in the response of the muscular system before and after vertebral adjusting. Primary muscle balancing is still a prime requirement prior to adjustment, and a necessity to maintain the precision balance the body is capable of producing.

The challenging of the vertebral position can and is being applied to a variety of patients at the present time. The facts and the therapeutic response both show a remarkable correlation. Use of this challenge technique is just one more way of serving better by doing more. To "Do what you can, with what you have, where you are" is good advice. Do this for yourself, for your profession and for the enhancement of your own self image. See the body respond in its own innately intelligent way, to your intelligent use of its amazing faculties and facilities.

Further information is available on request. Kindly enclose a self-addressed and stamped envelope. G.J. Goodheart D.C., 542 Michigan Bldg Detroit, Mi. 48226.

The R.N.A. Meridian Relationship to Applied Kinesiology

By
Dr. George J. Goodheart, 542 Michigan Bldg., Detroit, Mi. 48226

Many patients suffer from many chronic complaints. Many doctors also are unwilling heirs to many chronic complaints. Sometimes these conditions elude the usually successful types of chiropractic care and pose a problem to patient and doctor alike. The release of nervous energy accomplishes miracles in the problems of both acute and chronic patient care, but when the expected result is not forthcoming, it may be a combined problem of cellular reception of the long awaited proper nerve impulse and the proper cellular response.

Occasionally the cellular response may be lacking due to a disturbance in the cellular memory or in the ribonucleic acid metabolism at the cellular level. The concept of R.N.A. in relationship to memory is by no means a new idea. Cameron and others have reported memory changes in geriatric patients for some time, but the concept of cellular memory is a relatively new idea. Cellular memory has come into prominence recently with the R.N.A. — D.N.A. hypothesis.

Ribonucleic acid is the basic crude raw stuff of memory. Memory is chemical as well as neurological and the chemical material of memory is as important as spinal fluid in the overall function of the nervous system. The now famous planaria experiment done at the University of Michigan is the basis for much conjectural analysis regarding many clinical situations.

Planaria are earthworms, and two groups of earthworms were kept under similar conditions, but each time one group of earthworms was fed, a small electric shock and a light went on, whereas when the other group of similar earthworms was fed, the electric shock and the light were not allowed to relate. In other words, the other group was given the electric shock and light, but in no connection with feeding, so that no conditioned reflex took place in these relative primitive earthworm participants in this interesting experiment. Following a learned response, the one group of earthworms who were given the conditioned reflex patterning, in other words each time they were fed they were given the slight electric shock and the light was turned on — following the learned response, these animals who had learned this response to food by way of electric shock and light were sacrificed, as were their companions who did not learn the relationship of food to the electric shock and the light.

At one stage of their existence, planaria earthworms are cannibalistic, and the trained earthworm material was used for food for another group of earthworms who were divided into two sections. The first section was fed the trained earthworm material as food, whereas the other group, only the untrained earthworm material was used as food. When the conditions of the experiment were allowed to take place, in other words the electric shock and light, a significant number of the new earthworms who had eaten the trained earthworm food rapidly moved to the site where food was provided. In other words, they had eaten the memory; whereas the earthworms who had been fed the untrained earthworm food saw no relationship.

This experiment has been repeated in many different fashions by researchers all over the world and it is now an established fact that memory is chemical. This Ribonucleic acid molecule is a long molecular string shape with a configuration similar to that of a spiral staircase or twisted ladder, in that there is a spatial relationship of the ladder sides and the ladder rungs in more or less a corkscrew type configuration.

These molecules are ordinarily quite extraordinarily long. For example, one could have a ladder of 176 molecules long, shall we say. Each ladder rung, of which we have an inexhaustible supply, has for example a different color, and the color combinations are the key to the particular memory for the particular situation for which this particular chemical substance is used.

As this memory chemical structure must eventually divide as part of the cell division, this cell as it goes into bi-division, must then have only half of this spiral ladder. A template R.N.A. chemical is then used to organize the search for a particular ladder of, for example, 176 rungs with a particular color coding and with a particular male-female two-pronged, three-pronged, four-pronged sequence cycle, for the ladder rungs to combine with another appropriate nature. This is how memory reproduces itself, and it is a fascinating subject.

To strengthen or tonify a weak muscle make double contact at points 1 then double contact at points 2.
To reduce residual hypertonicity or sedate a contracted muscle, make double contact at points 3 then double contact at points 4.

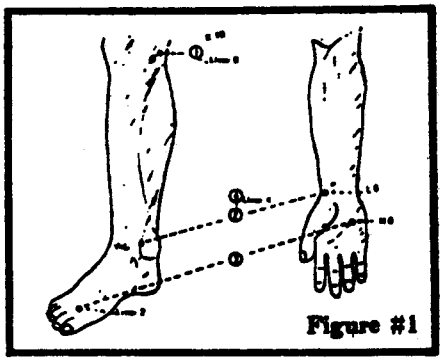


Figure #1

NOTE: Points 3 & 4 should be used routinely on hypertonic side as well as points 1 & 2 on weak side.
On foot or leg hold for pulsation. On hand or forearm use contact only; pulsation not required.

Perhaps therein we can understand why our geriatric patient cannot remember where he left his glasses, yet can remember when his cousin fell into the haymow and the ensuing disturbance that resulted. It's the reason why older people have poor memory of recent events and a relatively good or perfect recall of ancient events. They literally have enough ladder rungs, but have run out of ladder sides, and the body is faced with the situation of either breaking down old established ladder patterns or going without, since new ladder sides are not available. Ribonucleic acid from yeast and other sources in our food provide an inexhaustible supply of ladder sides as well as ladder rungs.

Our body chemistry is continually producing vast quantities of ladder rungs in a never-ending store, but ladder sides are another matter. Yet

in this particular discussion one can recall forgetting a particular or a familiar telephone number, or a particular individual's name, or some fact that needs to be remembered but somehow has forgotten, and the idea of a lack of perfect recall is familiar to all of us. The thought of memory is generally

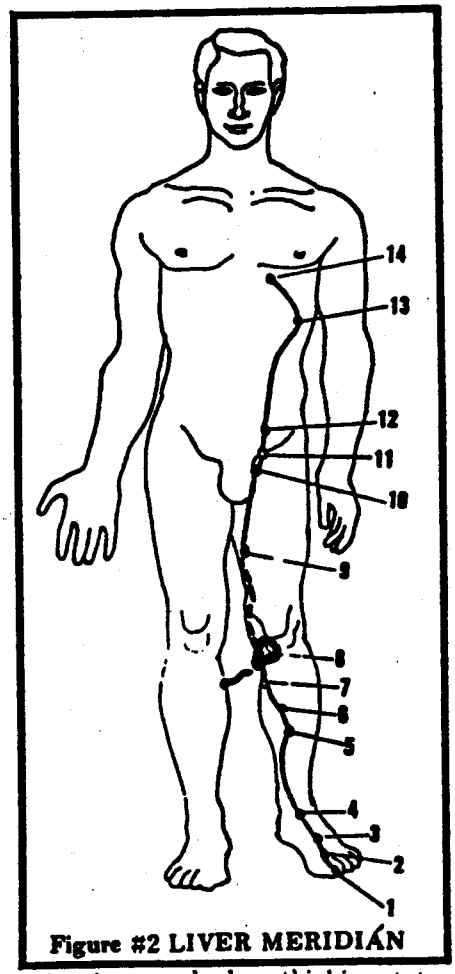


Figure #2 LIVER MERIDIAN

related to a cerebral or a thinking state. But there is a cellular memory, as one can readily imagine, and the concept of a failure of cellular memory is just as valid as the appreciation of a lack of thought process involving memory.

In many instances when one has accomplished what one should in terms of correction of the original primary subluxation, correcting the fixation, clearing the neurolymphatic, neurovascular and cranial sacral spinal fluid patterns along with proper nutrition, sometimes the clinical result is still not forthcoming in terms of the patient's response. Naturally these cases are at a minimum, but they do occur, and there is a reason for their occurrence.

An effort was made to try to evaluate memory as a clinical subject and it was extremely difficult to equate memory, other than the ability perhaps to retain a recall of the printed page, for example, until it was observed in many individuals that in doing the Romberg Test there was an unusual pattern in a number of the individuals. The ability to stand on one foot is a combination of many factors involving proprioceptive impulses, but the visual pattern in those individuals who are sighted is a strong and determining factor. However, when one attempts to stand on one foot after one has learned the trick of balancing and then closes the eyes, there is only one element which produces a stable one-foot-standing pattern, and this is relative clinical memory of where one's ankle is.

This can be performed on one foot or the other, and we generally ask the patient to stand on one foot with the eyes open and attempt to balance. He is then asked to stand on the other foot and is again asked to try to balance, and an effort is made to time the relative period during which the patient can remain relatively stable in the one-leg-balancing position. Some individuals are unstable even with the eyes open, standing on one foot or another.

One factor in this particular equation is that one must make certain that one has cleared any upper cervical fixation or structural distortion, because this does disturb the righting reflexes, and the righting reflexes must be in a relatively stable position for this particular segmental pattern to take place. The patient is asked to literally stand on one foot and then on the other, and then the eyes are closed, and quite frequently in the difficult patient there will be a failure to maintain the upright position when standing on one foot or another. Then the patient is asked to chew a source of ribonucleic acid from yeast, and the R.N.A. is in a relatively low dose form of approximately 180 micrograms. The patient is requested to chew this material and to retain it in the mouth without swallowing any, but is cautioned that this swallowing will not cause any harm. He is then requested to try again, standing on one leg with the eyes open, then the other leg with the eyes open, then the eyes are closed and there should be an increased increment of time during which the patient can remain standing on one foot with the eyes closed.

If this does not occur, the patient is then asked to chew one or more of the R.N.A. tablets until such time that a definite increase in the one-leg-standing-eyes-closed pattern time is observed. If on the ingestion of the single R.N.A. tablet, instead of an increase in the duration of time during which the one-leg-standing-eyes-closed pattern is observed, and if instead of an increase, there is a decrease, this indicates a need for a relatively homeopathic amount of the R.N.A. and a very, very small amount is given. Apparently some people are extremely sensitive to this particular substance and require frequent but very small amounts to reestablish cellular memory. If some evidence for either respiratory or cardiac function is used, or if some evidence is used such as a postural distortion or some other pattern, one should see a definite change in the perimeters which one has used as a guideline.

If you are using a measurement of vital capacity, there should be a change in the increased R.N.A. in these particular patients. If you are using a patient's weight as an index of cardiac function, loss of weight indicating better fluid balance and so forth, there should be a loss in weight concomitant with this.

Some patients remark that there is an increase in memory. It is recognized that Cameron and others have recommended an extremely high level of R.N.A. as opposed to the relatively low unit of dosage which we are discussing, but other researchers do not have the benefit or the advantage of treating the other elements of this particular equation such as the neurolymphatic or neurovascular, cranial, sacral or other patterns.

This particular observation can very well be made with other researchers who have used relatively high levels of a variety of nutritional support. This

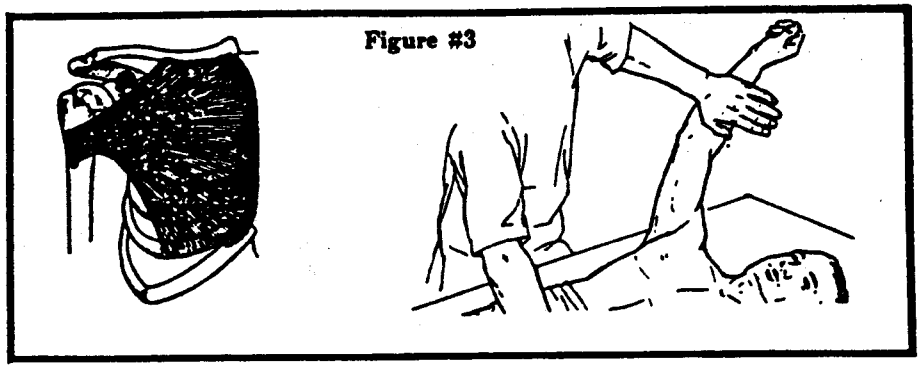


Figure #3

was the only substance used and therefore further effort was made to enlarge one side of the equilateral triangle to make it take the place of any dificient structure or chemical pattern. Sometimes they succeeded and sometimes they failed. It is wiser to pay attention to all three sides rather than maximize on one, and either to forget or minimize the other two.

Sometimes when this test is attempted the patient will increase his ability to stand on one foot, but many times will start to move in an effort to stay stabilized. This still constitutes an adequate response and the patient will actually change his foot position, rapidly moving it in a switching motion, but he continues to stand quite well even though he is going through periodic oscillation, and he continues to stand well with his eyes closed. When there is a definite falling off in one direction or the other, generally there is a disturbance of the righting reflexes and there is an upper cervical fixation which has been neglected or perhaps has failed to respond due to a variety of reasons.

The concept of cellular memory has been thoroughly advanced by Dr. Frank, who discussed it in his book *"Nucleic Acid Therapy and Aging and Degenerative Diseases,"* which is really a metabolic approach with D.N.A. and R.N.A. and related metabolites. This is published by Benjamin S. Frank, Psychological Library Publishers, 175 Fifth Avenue, New York, New York 10010. An earlier book of the basic essentials of Dr. Frank's discoveries is outlined in *"A New Approach to Degenerative Disease and Aging,"* published in 1964 by the same publishers, Psychological Library Publishers.

In this regard it is also wise to be familiar with the fact that there is another system in the body. There is a system of its own structurally as complete as the vascular, the nervous and the lymphatic system. Its discovery is equally as important as that of the others. The presence of this fourth complete system in our body will affect and revise some of our anatomical and histological knowledge, and our physiological considerations.

This system, the acupuncture system, consists as you know of groups of small oval cells surrounding the capillaries in the skin, but not only in the skin. They are also deeper within the body, around internal organs and blood vessels, and can be demonstrated to be a structure just as a nerve ending, lymph node or any other structure can be identified by microscopy, dissection, or by staining and so forth.

The puncture, or acupuncture point, has now been called the Bonghan corpuscle in honor of its discoverer, Dr. Kim Bonghan. With an ingenious system of radioactive phosphorus, he demonstrated that these acupuncture meridians can be differentiated from other structures or tubes such as capillaries, lymph ducts and so forth. They do not contain any cells at all, nor lymphocites, nor blood cells. They do contain a liquid which is free-flowing, noncellular and it has been determined by radioactive tracers using istopic phosphorus 32, to be a slow free-flowing liquid actuated by the heart, and it is unidirectional. It has been shown when a radioactive phosphorus is injected into a Bonghan corpuscle or an acupuncture point in the superficial ducts, that the path traced by this radioactive phosphorus is more or less the path of the meridians and the classical works on acupuncture.

Now this is quite an extensive subject matter, but the reason it is brought to your attention at this time is that Bonghan, in his thesis published in 1962, states that the pale colorless noncellular fluid which circulates in this acupuncture system through the meridians, just as the blood circulates through the vascular system, consists of a large quantity of D.N.A. and R.N.A. Until recently it was known only that the D.N.A. existed in the nucleus and the R.N.A. existed in the cytoplasm and not in the nucleoplasm of the cell body. But now both D.N.A. and R.N.A. are found free flowing in the Bonghan ducts.

Until now it has been taught that the nucleus of the cell with the D.N.A. was in control of heredity and development. This process whereby a single cell which is the start of every human being, splits and differentiates again and again into ten million cells with the various complex tissues and organs of the human body, is supposed to be organized by the genetic material and the nucleus of which D.N.A. is the chief agent.

The discovery of free circulating D.N.A. is going to mean a restudy of the basic assumptions of genetic and cells differentiations. The scientific evidence for acupuncture is by Hans Suyen, from the *Eastern Horizon Volume 2 No. 4* published in April 1964. Those of you who are familiar with the article written by the author entitled *"Chinese Lessons for Modern Chiropractic,"* have an appreciation of the idea, at least, of this fourth system, and it is just recent information that the R.N.A. and the D.N.A. circulates throughout these meridians.

THE RELATIONSHIP OF ACUPUNCTURE TO APPLIED KINESIOLOGY

When testing the muscular balance of a patient either by the T.S. line, by postural observations or by x-ray evidence and a muscle is found weak, the obvious respiratory assistance that can be used, the origin insertion, the neurovascular, neurolymphatic, cranial vascular or sacral contacts, as well as nutritional organization and/or the emotional patterns, certainly are necessary and expedient to perform. In addition to these previously mentioned methods, utilization of so-called fourth system of the body, the acupuncture circuits, is occasionally valuable in certain patients and the article *"Chinese Lessons for Modern Chiropractic"* is well to review.

A copy of it is available on request, but we have found that the utilization of the measurement of the pulse to identify the particular weakness, is rather difficult to teach and difficult to comprehend. As a result we use the idea of basic muscle testing. When a muscle is found weak we generally recommend, along with the other previous N.N., N.L.V. and so forth, that the acupuncture circuits be contacted as well. A diagram of these is included along with the original article *"Chinese Lessons for Modern Chiropractic."*

Once the muscle weakness is found, for example the pectoralis major sternal division is found to be weak (see figure #3) the standard method of testing with a T.S. indicator, for example, prior to the application of any treatment technique, it is wise to ascertain if there is any cranial fault. Be that as it may however, proceed by contacting the acupuncture points for the pectoralis major sternal division, for example, which are the same as those for the liver. These points are located on the drawing that accompanies the article.

The points for the liver are called Liver 8 K 10, Liver 4 L 8 and they are located, as you can see, on the accompanying diagram. Liver 8 is contacted, for example, with the right hand and K 10 is contacted with the left hand, and this is done on the same side of the body as the particular pectoral sternal muscular weakness is found. Wait for a pulsation to occur and hold for perhaps a period of 20 seconds, longer if you wish, but a minimum period of 20 seconds, and then remove your hands and contact the next two remaining points for the liver - liver 4 L 8.

Again, contact them on the same

side as the muscle weakness was found originally. Hold for a pulsation and you will find an extraordinary increase in the relative strength of the previously weak pectoralis major sternal division muscle. The pectoralis major sternal division is your indicator but this does not mean that you have automatically turned on the neurolymphatic, neurovascular cranial or nutritional response, however what it does mean is that there is a fourth system which requires activation as well, in some difficult patients. This, coupled with the provisional use of R.N.A. if needed, if the one-leg-standing test with the eyes closed is positive, should aid in the recovery of certain patients.

For all practical purposes the word acupuncture is poorly used in that it indicates that puncture is necessary, whereas in our opinion, since the acupuncture points can be readily demonstrated as electromagnetic in character, the use of puncture is not needed, although it is sort of a present reproduction in a minor degree of what perhaps originally happened from an accidental injury with an ensuing accidental response.

The original injury, which was perhaps a puncture, was observed by the ancient Chinese and the series of punctures that occurred from trauma or war wounds and so forth was catalogued by the early observers. This is the reason why, in the author's opinion, the present system includes actual puncture, yet the acupuncture meridians and the acupuncture points are clearly and logically magnetic in character.

The electromagnetic character of the acupuncture points can readily be demonstrated by simply taking the pole of a magnet, a common household magnet, then marking one pole and applying it to the previously mentioned acupuncture points. Be careful to apply just the marked pole, for example, to the previously mentioned acupuncture points, and then retest the muscle. If the marked pole augments or maintains the strength of the muscle that you have just previously treated, all is well, but if it happens to be the wrong pole it will immediately neutralize all the effort that you previously put forth. However if you use the opposite or unmarked pole you will then restore the muscle to normal.

This is not a method of therapy and should not be construed as such. It is merely a simple method of demonstrating that the acupuncture points are fundamentally electromagnetic in character and as a result can be influenced by very simple methods of electromagnetism. There are several instruments on the market which are capable of producing ion charges and definite magnetic forces, but it is not necessary to use these instruments unless one cares to do so, because the simple application of the hands is more than sufficient stimuli to these particular circuits for their particular function to begin.

It is our observation that even though there is a response to the electromagnetic stimulation of the acupuncture point of the Bonghan corpuscles by the simple hand-to-hand contact as previously discussed, activation of the neurolymphatic reflexes is necessary to relieve the so-called acupuncture alarm points.

Nerve tracing was an early attempt to trace nerves both to and from the spine and enjoyed a popularity with early chiropractic practitioners that was well deserved. It has faded out of use for a variety of reasons, but there was and is a sound basis for its use.

The well established observation of muscle to organ relationship has allowed the use of muscle testing to allow tracing of meridians of the body for therapeutic muscle balancing. It has been regularly observed that tracing a meridian from its beginning to its end will restore strength in a phenomenal fashion to the muscle found weak on muscle testing. The reverse is true in that tracing the meridian from end to beginning, will release a hypertonicity in that particular muscle. Naturally it is a tenet of applied kinesiology that most muscle spasm simply does not exist but is merely a hypertonicity due to weakness of its opponent or its antagonist.

This observation is true of all the twelve regular meridians. There are differences in functional relationship of some of the eight extra meridians which will be discussed at a later date. The technique is simple. Merely trace the course of the meridian related to the organ or muscle involved. For example, in drawing #2, trace the liver meridian from toe to chest. This activates the liver circuit or meridian. An interesting fact may be observed at the knee point Liver 8 (circled). It will palpate cool if the liver circuit activation is needed. It will palpate warm if this liver circuit or meridian needs to be traced in reverse, that is from liver 14 to liver 1. There are cool and warm spots for all meridians which can be observed. Use two to three pounds of pressure, with both hands. If pain is encountered, hold the painful point and manipulate the point immediately above or below it. This not only relieves pain quickly but also aids in basic muscle balancing at the same time. This meridian tracing is to be used in addition to the regular four acupressure points advised in the original article published in 1966 by the author. The utilization that meridian activation provides is similar to the analogy of a fifth stave of a barrel that already possesses the first four. The addition of the fifth stave allows the therapeutic barrel to now hold water and function as it should. The other four staves of Circulation, Lymphatic drainage, Nerve energy, and Spinal fluid flow are also equally important.

An attempt has been made to relate chiropractic to the ancient art of Chinese healing. An effort has been made to correlate this with the R.N.A. hypothesis. It is well to remember that the founder of our profession was sometimes derisively labeled as a "magnetic healer." Perhaps the appellation was correct, but history and science is now putting the derision show on the other foot. There is a profound electromagnetic quality to the meridians and their therapeutic use. This use is simple, it is done by hand with one's hand and one's mind and one's heart. This violates no law, breaks with no tradition but rather links tradition with modern knowledge adding to the patient's benefit and the doctors ability. Further information and copies of the original article and charts are available from the author without charge. Kindly enclose a self-addressed, stamped envelope.

Dr. George Goodheart on

THE FIXATION VERTEBRAL PATTERN

Many patients, and also many doctors suffer from spinal lesions. Some spinal faults can be visualized or determined by radiological means. The challenge technic described in a recent issue of the Digest of Chiropractic Economics, is a useful technic by allowing a body response to evaluate the subluxation position and determination of correction. Fixations that also occur in the spine, will, too many times, defy detection by radiological or challenge technics.

Identification of fixation patterns in patients has been a difficult if not impossible task, although many hours have been expended in an effort to deal with this particularly difficult phase of our practice. The concept of the vertebral subluxation or cranial or sacral subluxation is easy enough to visualize. In other words, something is out of place and needs correction with a simple concept which is uniquely effective and the basis for much chiropractic success. The concept of a vertebral structure or iliac or cranial or sacral structure, not out of place but locked in place, is a little more difficult concept to achieve.

In many instances in the past we have found fixations in the cervical, dorsal, lumbar and sacral areas as well as in iliac areas. These fail to be identified on X-ray or by palpation, yet a careful analysis will quickly reveal the presence of these fixations.

There is a technic available to quickly relieve these fixations. Lumbar fixations especially, are productive of much symptomatic trouble and especially in cases of resistant sciatica lumbar fixations, are a source cause of these difficult and painful problems which we all have to meet and try to treat. Examination of X-rays will frequently reveal a level pelvis, a level sacrum no-wedge-pattern in any of the lumbar, dorsal or cervical vertebral areas; a level occiput. Yet the patient will have symptoms which are very similar to patients whom we have seen previously, who have evidence of subluxations in the cervical, dorsal, lumbar, sacral or iliac areas.

The method of identification of the fixation vertebral pattern was first described by Martindale, R. E., of Rhode Island, a D.O. who was unaware of the intrinsic muscle pattern, nor of the muscle weakness fixation indications. He first published his observations in 1951 in the A. A. O. Yearbook. It consists basically of attempting to move vertebral segments with the thumb on the spinous process to the left and to the right and attempting to identify the ease or the relative lack of ease of movement. Thus the thumb pressure technique requires a judgment of this movement ease or lack of ease, but this can be very quickly acquired. The fixation concept is based on the fact that the rotatore brevis runs from the transverse process of one vertebra up to the spinous process of the vertebra above, and the rotatore longus which runs from the transverse process of one vertebra up to the vertebra two above it. When these are bilaterally weak or contracted, they are responsible for the unit-of-three fixation pattern.

This unit-of-three pattern exists throughout the spine from cervical to lumbar. Intrinsic spinal muscles become weakened. This weakness allows hypertonicity of the opposite muscle which then jams the structure, even though there is no vertebral malalignment. There is fixation of the segments

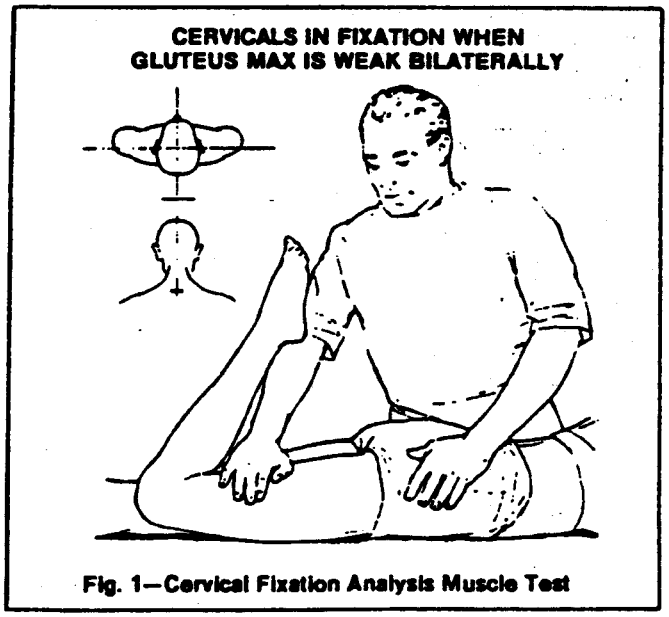
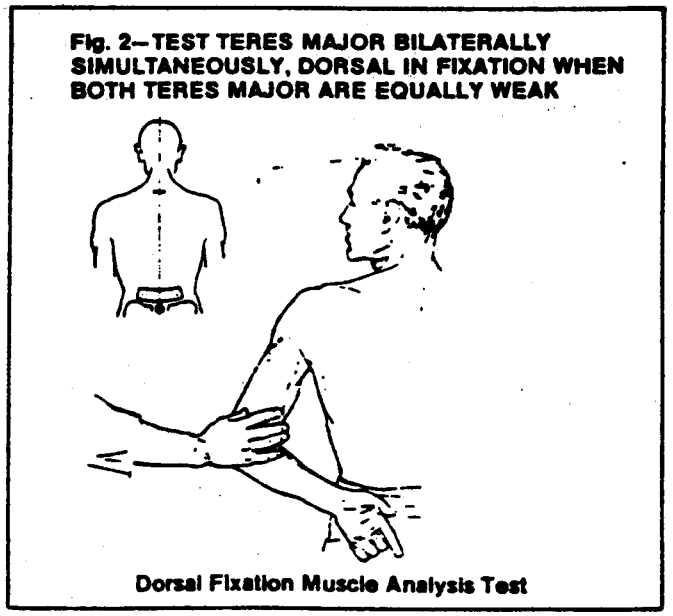


Fig. 1—Cervical Fixation Analysis Muscle Test



Dorsal Fixation Muscle Analysis Test

involved because they resist the effort to push the spinous process in one direction and relatively accept the effort to push it in another. They resist normal movement. For example, they will resist individually the effort to push the spinous process from left to right but will readily move from right to left (or vice versa). They do this in units of three vertebra, for example; lumbar five, lumbar four, lumbar three, and occasionally lumbar two will all resist efforts to move their spinous process from left to right, but they will allow movement of the spinous processes from right to left.

The vertebrae may be locked or fixed in groups of threes, this grouping of three is due to the action of the rotatore brevis and longus attachments. It is wise to correct these muscle patterns first; all spinal muscles, the rotatores, the upper cervical spinal muscles as well as the levator costorum, the small rib elevators which arise from the transverse process of the seventh cervical and the upper eleven thoracic transverse processes, then pass downward and laterally to the outer surface of the rib below. All of these muscles have a common lymphatic center.

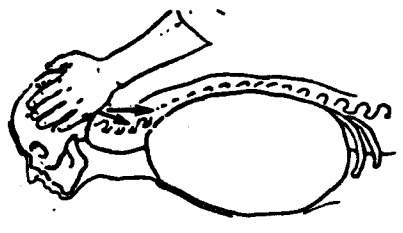
This is the acupuncture K-27 which is located at the junction of the first rib and the proximal end of the clavicle. Activation of this neurolymphatic reflex point begins the approach to correction of fixations of the dorsal, lumbar, and cervical areas. Use heavy hand pressure on origin and insertion of weak rotatores brevis or longus as determined by movement palpations. The spinous process naturally moving towards the tight hypertonic muscle, easily and moving away from it with great difficulty. These vertebral segments which are not subluxated are locked or fixed in position. They may be locked at their posterior facet or they may be locked at their anterior facet, but rarely are they locked at both anterior and posterior facets simultaneously. A spinal fixation of a posterior facet may be unlocked by treating or adjusting the top vertebra of that unit-of-three on the one below it.

Palpation may reveal an obvious subluxation but this subluxation is held *IN* subluxation by the relatively non-palpable fixation pattern above or below. Group spinal fixations of the anterior facet may be unlocked by treating the bottom vertebra or the most inferior vertebra on the one above it. This whole method of determining fixation and facet localization was mentioned in the original neurovascular manual *"Intrinsic Muscles and the Persistent Subluxation,"* but it has been discovered in testing innumerable cases that if there is a fixation in the upper 3 cervical area, there will be a bilateral weakness of the gluteus maximus muscle using the Kendall and Kendall method of testing the gluteus maximus. See accompanying illustration No. 1, and follow correction of the cervical fixation whether it be an anterior or posterior facet fixation, there will be a complete and total response in the muscle strength of the gluteus maximus muscle.

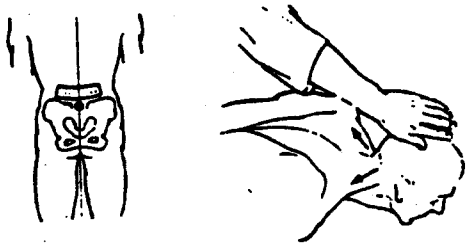
If there is a fixation of the dorsal segments, there will be a bilateral weakness of the teres major muscle and correction of the dorsal fixation will immediately cause the bilateral weakness of the teres major muscle to respond. (See Drawing #2). It has also been found that if there is a fixation of the lumbar area, the splenius capitus muscle will test weak when tested bilaterally. (See Drawing #3). This test is performed by having the prone patient raise his head and attempt to keep it raised against your muscle test direction of replacing his head down to the headpiece of the table.

Following the correction of either anterior or posterior lumbar fixation patterns, the bilateral weakness of the splenius capitis becomes immediately normal. We have found that in the presence of a sacral fixation there is weakness of the splenius capitis muscle when tested singly, left and right, even though the splenius capitis may test bilaterally normally strong. (See Drawing #3). This is the accounting for, so to speak, of the unusual patterns that we occasionally see with the high side of the occiput testing normally weak as we would expect, yet the other side showing a relative weakness as well.

This was something that was difficult to understand at first but understanding the presence of sacral fixations and their relative frequency, allowed an explanation of these unusual muscle testing findings. To reiterate: in the presence of a sacral fixation there will be a weakness of the splenius capitis muscle when the prone patient raises his head and turns his head in one direction while you attempt to press his head downward as he resists. This is repeated on the other side. The patient turns his head in the opposite direction and you again attempt to press his head downward while he resists. (See Drawing #4). There is in the presence of a sacral fixation this bilateral weakness.

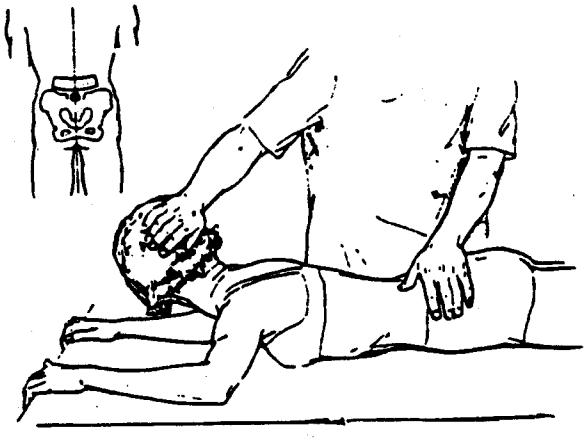


LUMBARS ARE IN FIXATION WHEN BILATERAL NECK EXTENSORS ARE WEAK



3—Lumbar Fixation Muscle Analysis Test

Fig. 4—SACRUM IN FIXATION WHEN LEFT AND RIGHT NECK EXTENSORS TEST INDIVIDUALLY EQUALLY WEAK



Sacral Fixation Muscle Analysis Test

To correct, attempt to move the spine of the sacrum with your thumb first to the left then, to the right. You will receive the sensation that it moves more easily in one direction than the other. The mode or the way that it apparently seems to move most easily is the way it is disposed or oriented, or the direction of lesion. In your mind, imagine that it will move more readily into lesion than out of it. For example, the sacral spine moves easily from right to left yet resists movement from left to right.

You can sssume that the sacrum is in a micro fashion anterior on the left and posterior on the right. Thrust directly downward with the patient prone, thrust or press with your thumb on the left side which we are calling the micro posterior side in a micro mental way, and press on the anterior side or the right side in a micro mental way. Determine which side seems to resist your testing motion, generally speaking the sacrum will show resistance on one side or the other. Treat the side which seems to show the greatest amount of resistance to your testing pressure. If it is a posterior side, adjust the sacrum straight downward to the table. In other words, a thrust on the sacrum from posterior to anterior in the line of the sacroiliac joint contact just medial of the posterior superior iliac spine.

If it is the anterior side that shows resistance, place the patient on the posterior side in a lumbar roll position with the anterior side in the upward position. Attempt to hold the posterior sacral side with one treating hand while you use a very slow and torqued position pressure thrust against the upper shoulder so that you release the anterior sacral fixation. Naturally, immediately following this, retest the splenius capitis left and right. There will be complete recovery in the previously weak testing strength. Further fixation information will be described in future issues of this magazine.

An attempt has been made to demonstrate the body language, which innate intelligence possesses. This body language can be evaluated by muscle testing. Muscle testing reveals the language of the body. Muscle testing allows the innate intelligence of the body to express itself. The use of this language derived from muscle testing is basic therapeutic information and is based on an intervertebral foraminal approach. This allows you to help the patient, allows you to help your profession and allows you to help yourself. Knowledge of the patients' problem based on physiologically demonstrable body language gives you a sureness and a confidence which the patient feels. The patients feel what you feel.

You therefore advance yourself and your profession by the use of these certain and sure physiological responses. Chiropractic succeeds because it gets people better. That is the name of the game. Perform your professional tasks more efficiently and you will be serving your patient more efficiently and they will in turn reward you in direct proportion to your efficiency.

Further information is available without charge from the author at 542 Michigan Bldg., Detroit, Mi. 48226. Kindly enclose a self-addressed and stamped envelope.

NOTES

Dr. George Goodheart on

THE LAW OF THE LIGAMENTS

As mentioned previously, the concept of vertebral segment of an iliac or cranial or sacro structure locked in place, and not literally out of place, is not too difficult a concept to conceive, but these patterns of fixation always produce a bilateral pattern, and it is the bilateral pattern which is the index.

Previous observations have shown that when there is a fixation of the first three cervicals, there is a weakness bilaterally of the gluteous maximus. When there is a bilateral weakness of the popliteus muscle, there is a fixation of the lower three cervicals. Now, as you know, the action of the popliteus internally rotates the lower leg on the femur and it mainly seems to act as a posterior knee joint ligament, and many times when it is weak individually or bilaterally, allows hyperextension of the knee. But occasionally upper cervical adjusting does help knee problems, and it is probably because of this accidental response.

When you test the popliteus you put pressure against the medial aspect of the toe, and you simply have the patient turn the toe inward and try to mechanically rotate the lower leg on the femur as in the illustration. When this is found to be bilaterally weak, it is an indication of fixation of the lower three cervicals, four, five and six. And here again, when we have the fixation, the same procedure is followed.

Efforts are made to contact the anterior portion of the fourth cervical, fifth cervical, and sixth cervical and try to rotate it from right to left, and then by contacting the anterior portion on the left, and the posterior portion on the right, try to rotate it from left to right to determine which way it moves. This is the way the vertebra has its micro fixation. Then, by judging the micro fixation as to whether it is a posterior fix or an anterior fix, we then put pressure on the so-called micro posterior side, or so-called micro anterior side. If it's a micro posterior fix we adjust the fourth segment on the fifth; if it's a micro anterior fix we adjust the sixth on the fifth.

Fixation of the cervical dorsal junction is revealed by testing for a bilateral middle deltoid, as in the illustration. It may be done simultaneously or unilaterally and we have found that it is very practical to test it with the patient prone. Test the middle deltoid to allow analysis of this potential bilateral weakness, which indicates cervical dorsal junction fixation.

This naturally complements and is an addition to the general fixation indicator for dorsal fixations, which is the bilateral teres major, but in the cervical dorsal junction fixation, namely fixation of cervical seven, dorsal one and two, we find a bilateral weakness of the middle deltoid. Occasionally, in a rare instance, this is accompanied by a bilateral serratus weakness, but this is in a very, very small minority. However this is occasionally true in one or two percent of the cases we have seen.

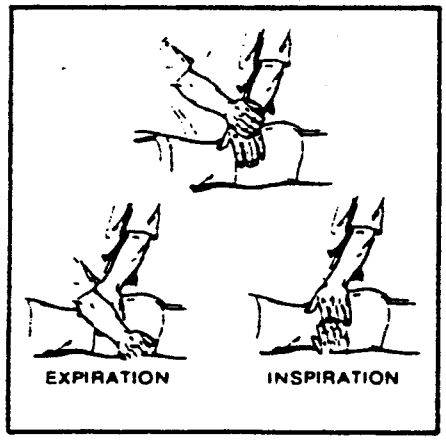
In this regard, in the cervical dorsal fixation, it is wise to call your attention to the levator costalis muscles, which run from the upper surface of the costal border of the rib involved to the spinous process of the vertebra above it. These levator costalis muscles accompany each rib from twelfth to the first and have their insertion on the spinous process of the vertebra above it, the first rib, for example, having its insertion on the seventh cervical.

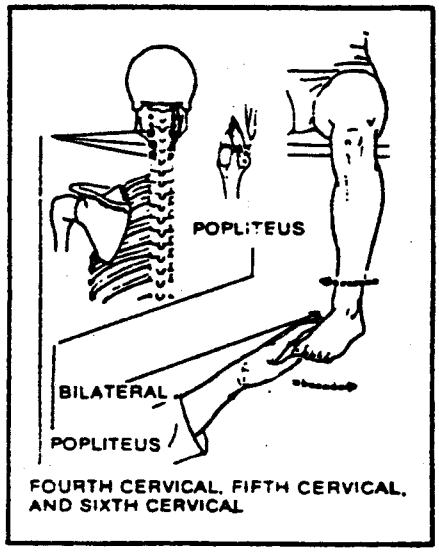
Because of this multi-phasic pattern of levator costalis as well as the rotatory brevis and rotatory longus into transverse and interspinous muscles, the dorsal fixation many times will involve rib elements as well. So, in addition to checking the vertebra movement in the usual fashion for the cervical dorsal fixation (in other words, pressing the spinous process left and right to identify motion, and in identifying the fixation as the direction in which the vertebra will not move) we also apply this same basic principle of movement testing to the rib elements.

But in the case of testing the levator costalis for rib fixation which generally may accompany cervical dorsal fixation, in addition to the previous method of checking for cervical dorsal fixation mentioned, check the first two ribs for potential fixation by pressing simultaneously downward on the first rib, and simultaneously upward on its opposite number. In other words, you press down on the right first rib and press up on the left first rib, then press down on the second rib and press up on the opposite second rib, and repeat this on both right and left ribs, pressing down on one side and up on the other, and then reversing direction of your pressure. (See figure 5)

Generally speaking, the ribs will show greater movement in one direction than in the other. In this instance you have to remember the levator costalis runs from the junction of the rib and the transverse upward to the spinous process above, so in cervical dorsal fixations you generally have corresponding fixations of the first three ribs, which then correspond to their attachments to seven cervical, first and second dorsal.

Despite the fact that the motion of detection is in a vertical fashion, having pressed upward on one side and downward on the other to determine the side of fixation, press on the junction of the rib and its articulation with the transverse process, and this is basically from a P.A. direction. On one side you will feel fixation, lack of movement; on the other side you feel relative ease. If the posterior side is fixed, try adjusting rib one, for example, on the right, on rib





FOURTH CERVICAL, FIFTH CERVICAL, AND SIXTH CERVICAL

two on the left. Whereas if it is the anterior side that seems fixed, adjust rib three, for example, on the left on rib two, on the right or vice versa, depending which side you found anterior.

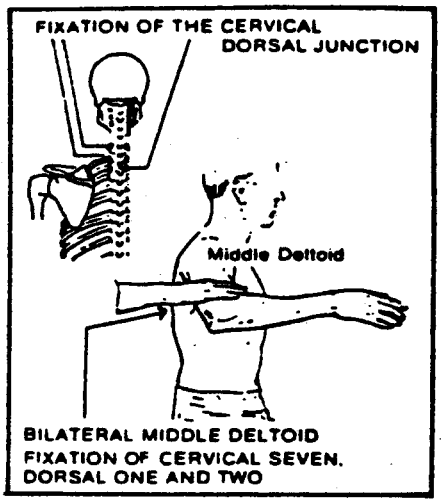
This rib motion pattern seems to be present throughout the thorax; and in general, with cases of asthma and emphysema. The ribs seem to be in an expiration position on one side and inspiration position on the other, leaving a limited amount of movement for the rib cage. In many instances in these situations it is wise to check the abdominal muscles, because occasionally one abdominal will be very, very weak, with a corresponding hypertension in part of the rectus abdominus on the other side, again restricting rib movement on that side.

It's a wise thing if you have a vital capacity meter, to measure the vital capacity or measure the breath holding time before and after your rib adjustments. After a 30 or 40 second period of readjustment that has elapsed between the time of your adjustment and rechecking of your vital capacity or breath holding time, there should be an increase in the vital capacity and/or the breath holding time. The breath holding time, as you know, is 40 seconds, but there should be approximately a 20 to 30 percent increase in the breath holding time in seconds; and there should be an increase of anywhere from 2/10 and 4/10 in the vital capacity, which is a pattern based upon height and weight, since there is no normal average.

Diminished breath holding time due to diaphragm muscle weakness or muscle imbalance is treated by using the anterior aspects of the sternalis muscle, located over the sternum, both over the gladioli, the manubrium and xiphoid process. Those areas that are painful are activated for a period of 30 or 40 seconds, and following this anterior neurolymphatic reflex activation, the posterior reflex is activated, which is located at the junction of the tenth rib, and the tenth dorsal vertebra transverse articulation, on the right side only. Activation here will balance the leaves of the diaphragm and this will also aid in the patient's breath holding time improvement. Disturbances in breath holding time reflect themselves in many patterns, such as the hiatal hernia situation; and also in a variety of other respiratory problems, such as emphysema and asthma. This is part of the total approach to this particular segment of the patient's disturbed physiology.

ILIAC FIXATION

As you will recall in testing the splenius capitis left and right, when weakness was found we would also find evidence of the sacral fixation. Occasionally we should find evidence of a weak splnius capitis on the right or the left, which would persist following the normal activation of the neurolymphatic reflexes to the splenius capitis. The anterior scalene and sternocleidomastoid would respond, but the splenius capitis on the one side would not. After observation it was found that this was evidence of an iliac fixation, which may take three particular patterns.



BILATERAL MIDDLE DELTOID FIXATION OF CERVICAL SEVEN, DORSAL ONE AND TWO

The iliac fixation may be a simple one, in that there is just a lack of movement, or it may be a respiratory pattern in which the ileum assumes an either inspiration or expiration pattern. The bones of the skull move, as you know, with inspiration, and this has been discussed in the cranial sacral respiratory technique, as well as in numerous articles. There is micro movement of the ilium coincident with respiration as well.

The anterosuperior iliac spine moves laterally, while the posterior-superior iliac spine moves medially with inspiration; the opposite being true with expiration. We use the splenius capitis unilateral weakness as the indicator for iliac fixation and the piriformis muscle is the indicator for iliac fixation in terms of respiration. The splenius capitis shows the relative weakness, and then the piriformis shows the movement, if there is a respiratory movement. We test the piriformis in the usual fashion, or with the patient lying prone with the knee flexed at 90°, then move the ankle in a lateral direction against the patient's resistance, as in the illustration, and test against left and right. A left splenius capitis weakness generally indicates a left iliac fixation, although not necessarily so. Test the

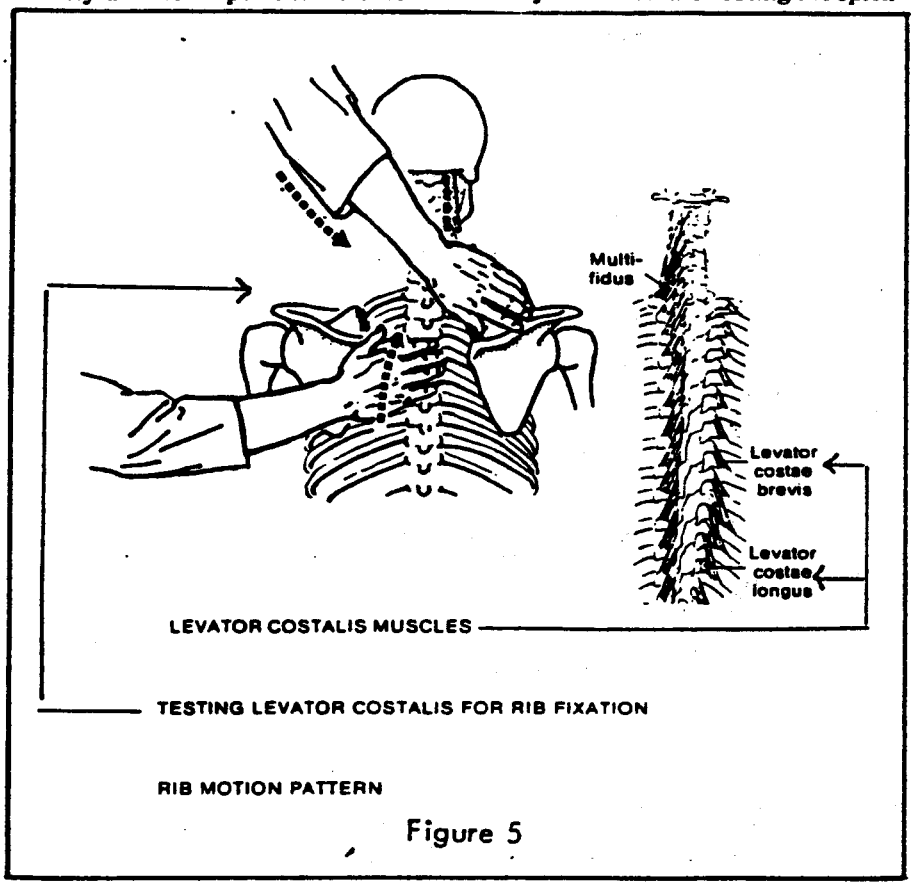


Figure 5

piriformis against inspiration and against expiration. If you find an inspiration fault laterally, it means that the ilium is in an inspiration correction position. This in turn means an expiration fixation position, in that with expiration the ilium moves in such a way, as the anterosuperior iliac spine moves medially, and the posterio-superior iliac spine moves laterally. In this case a deep breath holding causes temporary correction in the piriformis, which is the indicator for respiratory iliac fixation technique.

So in this instance, if inspiration assists it, the patient's ilium is adjusted with inspiration and the adjustment is given in such a way, as to move the anterosuperior iliac spine laterally, and the posterior-superior iliac spine medially. Generally speaking this can be done with the patient lying prone. Reach over the patient and grasp the right iliac spine, for example, and place your pisiform contact on the posterior-superior iliac spine, and give a simultaneous pull laterally, with your anterosuperior iliac spine contact, and a medial thrust with your pisiform contact on the posterior-superior iliac spine.

In the reverse, where the piriformis is helped by expiration, this means that the ilium is in inspiration-correction-position, and in this instance the ilium has to be moved in such a way that the posterior-superior iliac spine moves away from the sacrum and the anterosuperior iliac spine moves toward the medial. This thrust can be given in the same fashion standing on the opposite side of the lesion, making a pisiform thrust on the posterior-superior iliac spine while you put your hand underneath the patient, then grasp the anterosuperior iliac spine from below. Give a medial pull, while you give your lateral thrust with the pisiform contact. Retest the piriformis, retest the splenius capitis, and you should have a good response.

RECAPITULATION

After making the visual plumb line analysis, and the palpatory and x-ray analysis of the patient, the following muscle groups can be used to indicate vertebra micro fixation. (Activation of the acupuncture point K-27 at the junction of the first rib sternum and clavical, is recommended prior to correction of any vertebra fixations.)

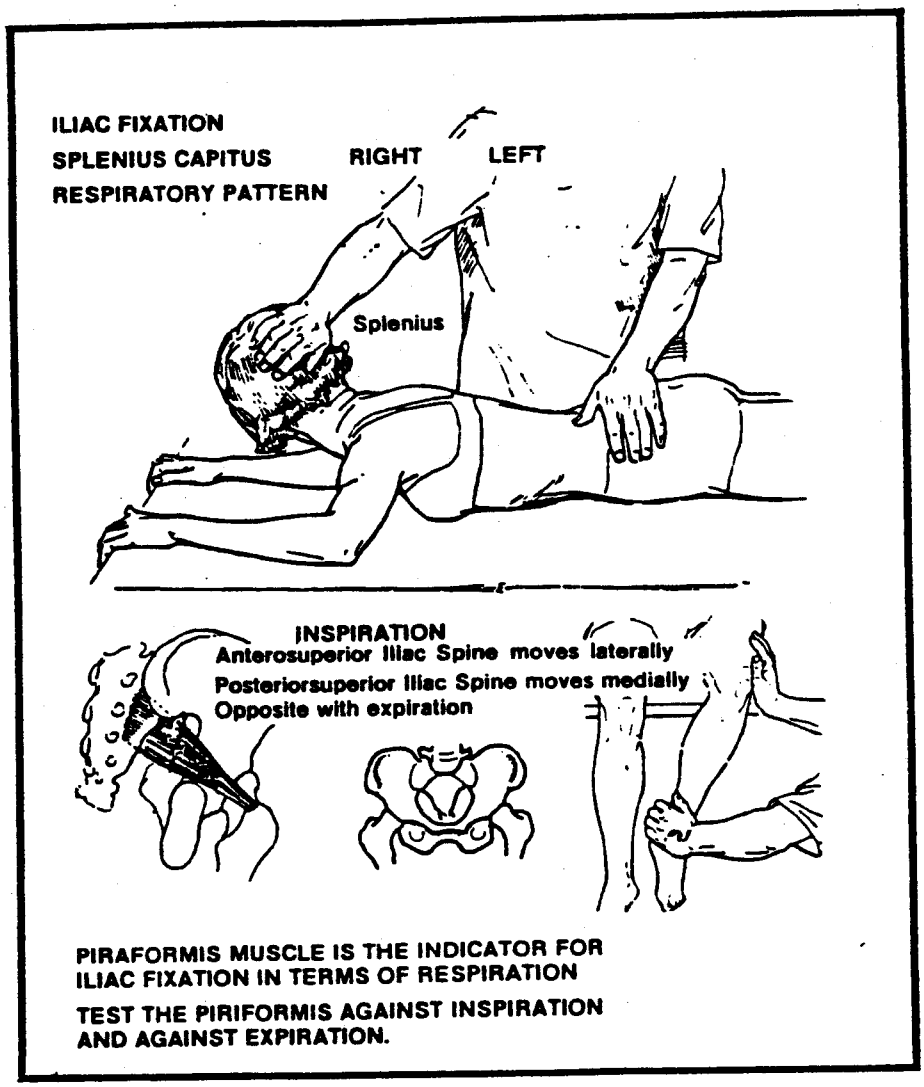
All muscles indicating a micro fixation are weak bilaterally with the exception of the unilateral weakness of the neck extensors for iliac fixations. Therefore, when there is a bilateral weakness of the gluteous "max," there is a fixation of cervicals one, two and three. When there is a weakness bilaterally of the popliteus, there is a fixation of cervical vertebrae four, five and six. When the middle deltoid, and rarely the serratus, are weak bilaterally, there is a fixation of cervical seven, dorsal one and two.

This particular pattern also seems to be true of the first three ribs as well, as discussed previously. When there is a weakness bilaterally of the teres major muscles, there is a general dorsal fixation, dorsal one through dorsal twelve. When there is a weakness bilaterally of the lower trapezius, there is a fixation of the dorsal lumbar junction involving dorsal twelve and lumbar one. When there is a weakness bilaterally of the splenius capitis left and right, there is a fixation of lumbars one through five.

When there is a weakness of the splenius capitus left and right, tested individually, there is a sacral fixation; and when there is a weakness of the splenius capitis left or right, there is a fixation of the ilium. When there is a weakness of the anterior scalene left or right, there is a disturbance in the left or the right parietal bone which jams the temperal bone, and this is literally a cranial fixation as evidenced by muscle weakness. When there is a bilateral weakness of left and right sternocleidomastoid anterior spleen, there is a frontal bone fixation.

Further these vertebral fixations will be discussed in future articles in this magazine. An attempt has been made to show the body language that innate intelligence possesses. This body language can be evaluated by muscle testing. Muscle testing reveals the language of the body. Muscle testing allows the innate intelligence to express itself. The correction is based on an I.V.F. approach. This allows you to help the patient, it allows you to help your profession and it allows you to help yourself.

Further information is available without charge from the author at 542 Michigan Building, Detroit, Mi. 48226. Kindly enclose a self-addressed and stamped envelope.



Dr. George Goodheart on

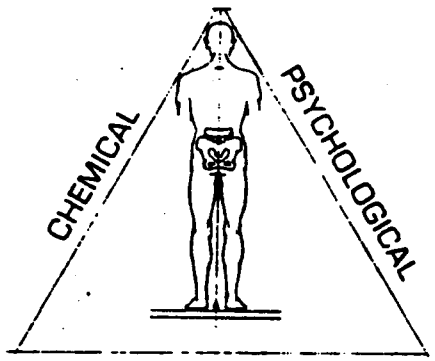
Innate and the Interdependent

TRIANGULARITY of MAN

Man is a structural, chemical, psychological, equilateral triangle. Man's structure is evidenced by one's two thumbs placed together in a lateral fashion, man's chemistry by the index finger of one hand and his psychology by the index finger of the other hand, making a triangle. Your thumbs forming the base, the one index finger forming the other side — this is how we demonstrate it to patients. There is evidence of the primary fault in man's structure, in man's chemistry, in man's psychology, and by the primary fault we mean the primary subluxation. Out of the intervertebral foramen comes a nerve, comes a blood vessel, comes a lymphatic vessel and comes spinal fluid; and in the examination of the patient there will be evidence in the neurological discipline, in the lymphatic discipline, in the vascular discipline and in the spinal fluid discipline, of the primary problem. The primary problem may exist at any segment, but the disturbances in the segment represent the body's effort to compensate to the relative disturbance caused by the primary fault of the primary subluxation.

D. D. Palmer, in his *Chiropracic Adjustor*, taught us to look upon the body as a perfectly working organismic machine; we should look to that integrated brain and nervous system for the basis of health and disease. We should look to the body and the mind for our total well-being, that health comes from within. All that we need to render chiropractic acceptable to the intelligent and unbiased mind is to correlate out founder's concepts with modern neurological discoveries. Dr. Homewood has accomplished this task admirably in terms of neurological correlation and it is our opinion that the correlation of the neurological lymphatic vascular and cerebrospinal fluid disturbances easily show the evidence of what D. D. Palmer tried to show in his early days. Many men in our profession have made the vital error of first having a love affair with bones and second, believing the patient

MAN IS A STRUCTURAL, CHEMICAL, PSYCHOLOGICAL, EQUILATERAL TRIANGLE



literature as the basis for the application of the treatment of chiropractic. D. D. Palmer said "*The activity of these nerves or their fibers may become excited or relayed by impingement, the result being a modification of functioning too much or not enough action, which is disease.*" Time and time again D.D. Palmer wrote that subluxation may produce an increase or decrease in neuro activity, therefore, either an increase or decrease in function, and in exasperation wrote. "*The cause of most disease is an oversupply of nerve force . . . most diseases are because of too much energy, not because nerve force is shut off.*"

Most of the theories avoid that "too much" idea, but in general this is the basis of much of the disturbance that we see, and it's the evidence of further researchers that actually there is a heightened activity, a facilitation so to speak, of the neurological areas which produce over-activity, and which the body then attempts to delimit. When you strike yourself or hurt yourself in some way and your tissue is bruised, a sudden ascending cellulitis does not occur from the injury to the finger because the tearing or bruising of the tissue produces an immediate release of histamine and seratonin and other chemical agents which serve to neutralize and localize the reaction to injury or to accident. As a result, then, the bruised tissues producing the histamine and the seratonin are then met by the histamine and seratonin antagonists and a localization of the original injury takes place unless this is compromised in some way. Also, when there is a primary subluxation with an excitation of the activity, there is a localization of the original problem by a popping out of either a neuro-lymphatic or neuro-vascular circuit breaker and/or a cranial or sacral fault which produces changes in spinal fluid pressure, and these in turn complicate the original problem.

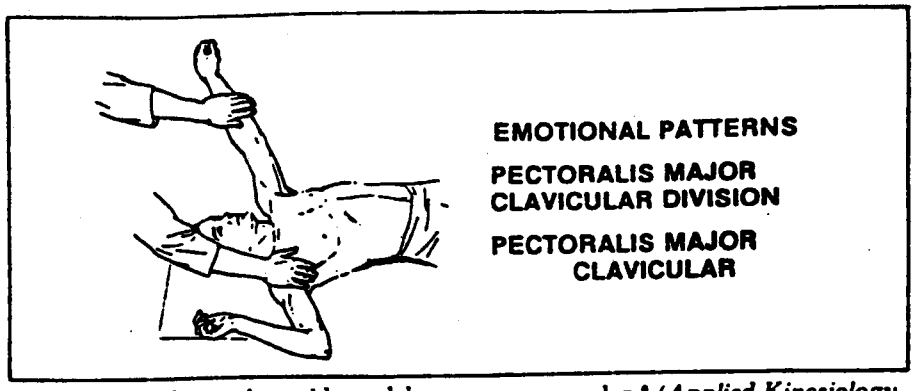
Dr. Daniel David Palmer, to again quote Dr. Homewood, made numerous references throughout his book to the inability of subluxations to "*cause pinched nerves or cause direct pressure upon cranial nerves to produce the adverse symptoms found in patients suffering from subluxation.*" When one reads his text book it is necessary to marvel at how far astray the teaching of chiropractic has progressed from the original principles formulated by the founder.

Many of the ideas propounded in the name of chiropractic are distortion of the truth as taught by D.D., while others were complete fabrications unrelated to any of the founder's teachings. But if one returns to the primary triangular aspect of man's unit integrity, in other words man as a structural, chemical, psychological triangle based mechanically on a structure, he is supported chemically and psychologically. The base of the triangle is structure, one side of the equilateral triangle is chemical and the other side is psychological. Many individuals are too concerned with structure and exclude chemistry. Many individuals in the healing art are too concerned with chemistry and exclude structure. Many of the individuals are so concerned with psychology or psychiatry in terms of the pyschological reaction that they exclude chemistry and structure. But man is a unit, and man's chemical, psychological and structural nature must be integrated —

and it is the unique ability of the applied kinesiology principle to unitize and integrate man's triangular nature in such a way as to allow an interpretation of his disfunctions and to re-relate them back to normality by specific and predictable treatment.

Wilhelm Reich, who was a contemporary of Freud and later broke with him, said that the muscles that go crosswise in the body across the eyes, the mouth and the chest and the solar plexus and the pelvis, tend to become armored or hardened. As they become chronically hardened they interfere with pleasurable up and down head-to-toe straining of what he called organ energy, and it's interesting that in all cultures "Yes" is expressed by shaking the head up and down, and "no" by shaking the head crosswise from side to side. These psychological evidences that Reich discovered of muscle imbalances have been supplemented by the work of Feldencross in Israel, who has found that in every psychological disturbance there is an accompanying postural fault, and before changes in the psychology can occur there must be a correction of the postural fault. This is just one more evidence of the discovery by people of one discipline, basically the psychiatric or psychological side, understanding that there was a structural and a chemical side; and in our approach we should incorporate the structure, which is primary; the chemistry, which is natural; and the psychology, which is the resultant of the operation of the first two discussed units. This triangulation of man is evidence for a whole realistic approach to the many and varied problems of illness in man. This equilateral triangle with its base structure, its one side chemistry and the other side psychology, can be used as a guideline in the analysis of the distrubances that occur in patients we see. By muscle testing a variety of muscles, we can then remember the intervertebral foramen pattern, because out of the intervertebral foramen comes a nerve, blood vessel, lymphatic vessel and spinal fluid; and in the general pattern that accompanies most of the patient's problems we see we will find evidence of a disturbance in the nerve function, lymphatic function, vascular function and spinal fluid function. In the elements as enumerated, paramount is the intelligence that is transmitted by the nerve energy, and this in turn sets up the chemical relationship.

The widely divergent method of hard heavy pressures at the origin or insertion of the muscle in the case of avulsion which can produce this weakness and which can be evidenced by muscle testing, is also paralleled by the relatively lighter but still firm and quite painful pressure that is applied to neuro-lymphatic circuits connected with muscles found weak by testing. Then the very light tugging touch that the neuro-vascular receptors require adds another dimension to the method of producing a more balanced muscular structure, and then the combination of cerebrospinal fluid and the proper nutrition complete the so-called "package deal."

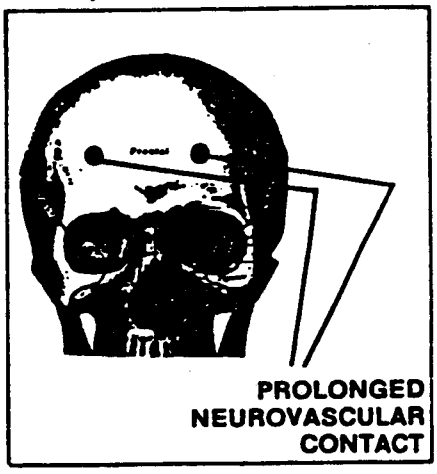


EMOTIONAL PATTERNS

PECTORALIS MAJOR CLAVICULAR DIVISION

PECTORALIS MAJOR CLAVICULAR

In most patients it is necessary to equate the situation with this so-called "package deal," because many times by the time we see the patient, the patient requires treatment in all of these areas, which though widely divergent are related by, first, man's triangular equilateral pattern to structure, chemistry and psychology, and also by the intervertebral foramens contents as previously enumerated. The very evidence of the fixations,* *(Digest of Chiropractic Economics, July-Aug. 1973)* and their relative identification time and time again by the weakness of bilateral muscular structures, would indicate that the body made the effort perhaps to delimit the spread of a disturbance. Here again is evidence of the wisdom or innate intelligence that the body does possess. Once you have accomplished the so-called "package deal" by correcting neuro-lymphatic neuro-vascular,* *(Applied Kinesiology — 1969)* cranial sacral and nutritional patterns,* *(Applied Kinesiology — 1970)* and if necessary correction of microvulsion of the origin and insertion.* *(Applied Kinesiology—1964)* Many times the cross crawl pattern can be added.* *(Applied Kinesiology—1970)* In this instance it is possible for patients to be not only switched at the cerebral level, but also there have been several patients we have seen who have exhibited so-called spinal cord switching where we would find evidence of a persistent muscles hypertonus after all patterns have been reduced, and by cross crawling the patient we would relieve that, only to have it reappear perhaps on the other side some two or three weeks afterwards, but with continued improvement, nevertheless, of the patient.



PROLONGED NEUROVASCULAR CONTACT

Body language never lies and if one examines the structure of the body either by posture or x-ray, but mainly by muscle testing, identification of the language becomes relatively simple and then one can read the language that the body is desperately trying to use to communicate the internal problems. This brief but general philosophical rundown of the ramifications of the principles of applied kinesiology should give you some insight into the body structure and the wisdom with which the body conducts itself, and the unerring ability of the innate intelligence of the structure to first demonstrate the problem and second to show the way out. Body language does not lie, it merely requires you to ascertain what the body is trying to say and to go ahead and try to comply with the body's wishes to get a spectacular response. Therefore, the rule is to first identify the weakened muscle by testing, then strengthen it by the means available to you; and remember, if the thing has been present for some time there is some degree of hypertonicity of the opposite or antagonistic muscle and sometimes this muscle must be cross crawled to relieve the relative hypertonicity which has exist-

ed for some time. In these instances these muscle fibers actually shorten. An adjunct to this particular type of approach is the use of heat, but highly localized specific definitive sources of heat such as infrared or short wave, and only to the relatively hypertonic muscle, and to use perhaps simultaneous cold to any hypotonic or weakened muscle which fails to respond and/or fails to show a corresponding balance in tension following the neuro-lymphatic and neuro-vascular activations release in tension of its opposite hypertonic member.

In this regard, we find for example in the large sacrospinalis muscles, activation of the neuro-lymphatic and neuro-vascular reflexes generally will clear the relative hypertonicity of the opposite side; but sometimes using pressure in the belly, especially of the ilio costalis (and we find a tennis ball or a beer can or a soft drink container or a folded wash cloth applied into the belly of the hypertonic ilio costalis segment of the sacrospinalis) is effective temporary therapy with the patient in both the office and at home. This greatly reduces the shortened fiber pattern which frequently accumulates in the sacrospinalis and also in the quadratus lumborum. In the succeeding paragraphs we will try to deal with the specific new elements that have been found in the ever-broadening scope of applied kinesiology and the new methods of approach to the balancing of muscular structure. We will also discuss how to show and demonstrate to the patient the effect of a psychological pattern, and what effect it has on his own muscular pattern, and then how to neutralize the effect of the wrong type of psychology, but with a definitive physical contact.

EMOTIONAL PATTERNS

Because of the previous organization of man's structure into the equilateral triangle hypothesis with the base being structure, one side being chemical and the other side psychological, it is important to understand the effect of psychology upon both the structure and chemistry. In several well-documented situations in my own practice, I have observed the effect of strong shocking emotion on the patient's psychology. In each instance the patient was a well-organized, integrated individual who received an emotional shock of one form or another which resulted in an immediate and startling reduction in the relative tone of a particular muscle and in each instance it happened to be the pectoralis major clavicular division, although in my opinion it is not always this particular muscle group that is affected. It is most frequently affected, but I am sure that other muscle groups can be affected. So can the sacrospinalis, for example, be affected. In each instance a previous test had indicated a relatively normal and well balanced structure prior to the emotional shock, and following the emotional shock there was an immediate reduction in the tone of one or the other of the pectoralis major clavicular division.

This led to an investigation of these two particular patients. In one patient's situation an ancient but definite source of emotional trauma was there, and in the other patient there was a more immediate source of emotional trauma. In one instance, with a recent source of emotional trauma, we were engaged in testing the pectoralis major clavicular when a telephone call indicated that the governor had failed to sign a piece of professional legislation that this particular individual had worked very hard for. There was an immediate reduction in the tone with an ensuing disturbance in the first stage of digestion. This seemed rather peculiar because the individual is a stable and well organized individual, well known for his stability and his very reasonable temperament. In another instance, a near accident caused severe emotional shock with the near loss of his loved ones due to a series of circumstances involving some dangerous mountain driving; and here, again, the trauma was ancient, but the condition was related directly to the relatively ancient emotional trauma. In both instances there was a weakness of the pectoralis major clavicular division, as well as other neurological symptoms and attention was given to the usual patterns of neurolymphatic and neurovascular cranial and related situations, with a relatively rapid and normal response, yet reviving the memory of the emotional shock would cause an immediate reduction in the tone of the previously treated pectoralis major clavicular muscle division. However, experience showed that when a prolonged neurovascular contact was held for the pectoralis major, *(Drawing #2)* at least a period of three or four minutes, reviving the strong memory of the emotional shock would not cause a corresponding reduction in the tone of the pectoraiis major clavicular and in both instances the patient remarked he felt the difference psychologically when he thought of these particular emotional patterns. It is unreasonable to assume that we can forget emotional trauma, but it is reasonable to assume that emotional trauma should not penetrate into the soma, so to speak. The word psychosomatic, in my opinion, is a semantic reversal. In reality in my opinion, the word should be somatopsychic - in other words, the body affecting the mind. In any case, where there is a history of emotional trauma, either recent or ancient, revived or forgotten, and there is evidence of persistent weakness in muscle pattern, especially the pectoralis major clavicular division, a prolonged neurovascular contact, following appropriate neurolymphatic and neurovascular cranial or nutritional techniques as well as fixation clearing and regular adjusting, is recommended to be held for a period of at least three or four minutes. Prior to holding the neurovascular contact, after you have done your regular activity and treatment, ask the patient to revive the memory of the previous emotional trauma and then retest the Pectoralis major clavicular muscle.

Following the prolonged neurovascular contact, with a definite pulsation felt by the treating physician, why the patient can then revive the same emotional trauma that produced the startling decrease in muscle tone in the beginning and no longer does he find it to produce this particular effect.

In other words, there is a psychological switch. This psychological switch is the switch that connects man's mind with his body and this switch is occasionally turned on by the power of the emotional shock or trauma. It should be just as rapidly turned off, but sometimes the body fails to do it and then this opens the switch between man's body and his mind, and then man's mind starts to influence his body function. This switch, which normally should be closed, is open and then man is left prey to his emotions. This is not always so, and we all know someone who apparently can withstand severe emotional trauma and not have it affect his digestion, whereas someone else who suffers the slightest emotional upset many times has disturbances in digestion or other functions for days. Apparently the dominent hemisphere is shocked by the severity of the emotional trauma, whatever it might be, and it sometimes shunts over some of the function to the equally competent but opposite hemisphere and apparently this causes a confusion in body

structure and some impulses fail to get through and some impulses get through to the muscle twice, whereas it would be expected that the impulse should be divided into a left and right pattern.

The reason for this clinical observation is that, generally speaking, there is a profound and pronounced weakness of one pectoralis major clavicular as opposed to a very rare bilateral pattern. This is not a conjectural pattern or opinion, but these are hard clinical facts that can be demonstrated by anyone to anyone anywhere at any time, and in those patients who have a history of severe emotional trauma, the prolonged emotional contact should be used as well as your other contacts, and a demonstration of this to the patient many times will show in a very graphic way your control over his emotional or psychological side as well as his chemistry and his structure.

An effort has been made to show the total integration of the body. This follows the early ideas of D. D. Palmer in his postulation of "*too much or not enough nerve action which is disease*". Use this method as well as primary structural connection of vertebral patterns to get people well. Get them well faster more surely and without drugs for body or mind. Further information is available from the author without charge. Kindly enclose a stamped self-addressed envelope to Dr. Geo. Goodheart, 542 Michigan Bldg., Detroit, Mich. 48226

NOTES

Dr. George Goodheart on

CRANIAL SACRAL NUTRITIONAL REFLEXES

The bones of the skull move when you breathe. This primitive "gill mechanism" is part of the intricate implementation to the motion of the cerebral spinal fluid. The cerebral spinal fluid is made in the choroid plexus as you know and flows in a very definite pattern through the brain down through the spinal cord until it reaches the sacral water bed. Gray says that small amounts of the cerebral spinal fluid may escape through the perineural spaces of the cranial and spinal nerves and reach the lymphatic capillaries. This is quite important. The cerebral spinal fluid is usually removed for diagnostic purposes from the subarachnoid space surrounding the cauda equina. A needle inserted in the midline between the spines of the third and fourth lumbar vertebra will enter the subarachnoid space. It avoids the spinal cord and will miss the nerves of the cauda equina, occasionally a cysternal puncture is made by inserting a needle between the atlas and the occipital bone. But regardless of the diagnostic entrance, it is obvious the cerebral spinal fluid flows from the choroid plexus down and around the spinal cord and into the sacral water bed for reabsorption.

The presence of the cerebral spinal fluid acts as a buffer for the spinal cord, for the central nervous system which is vital to its metabolism and it also carries secretions of the posterior lobe of the pituitary. The production in the choroid plexus and the four ventricals follows the lateral ventricals, the foramen of Monro, the third ventrical, the cerebral aqueduct, the fourth ventrical, the foramen of Magendie, the foramen of Lushka and the subarachnoid space ot the spinal cord. It escapes by way of the pacchionian bodies into the venous sinuses and, as mentioned before, out along the cranial and spinal perineural spaces and most important through the hollow collagen fibers of the fascia into the lymphatic system. So there is an intimate relationship between the lymphatic system and the cerebral spinal fluid system.

When the brain is observed at surgery, there is observable four definite motions:

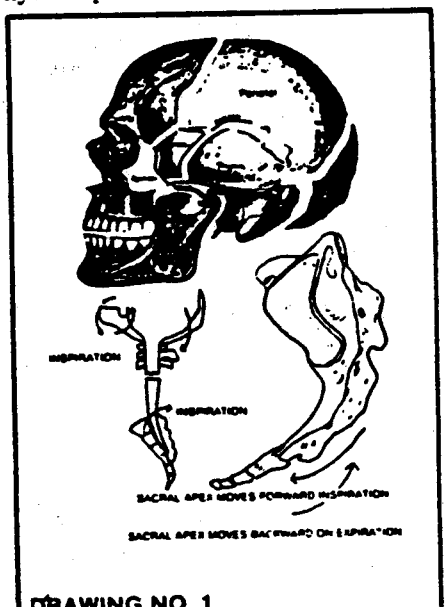
(1) a motion synchronous with cardiac contractions,

(2) another motion coincident with respiratory changes on inspiration and expiration,

(3) there is a third movement wave unrelated to heart or respiration,

(4) a movement which apparently is necessary but as yet its mode of production and its significance is unknown.

Many researchers agree that the cerebral spinal fluid does not circulate in the ordinary sense of the word. Fluctuations can occur and will occur with changes in volume, and there are rhythmic changes which change with changes in heart rate and respiration. It is obvious since the dural envelope is inelastic and nonexpansible the cerebral spinal fluid pressure will vary directly as the venous pressure. The venous pressure changes, as you know, with changes in heart rate and respiration; therefore, changes in cerebral spinal fluid may reflect changes in circulation or vice versa. Much research has been produced on the chemical composition of the spinal fluid but not much attention has been given to its circulation or its relationship to body function and disease, other than in connection with disturbances in the flow of the actual spinal fluid itself, such as in hydrocephalus or in tumors.



DRAWING NO. 1

The skull articular mobility was first observed by Sutherland in his casual observation that the beveled articular surface of the sphenoid had a remarkable resemblance to the gills of a fish with the obvious connection of a human respiratory skull movement. The early efforts aimed at adjusting the skull articular structures that were made were quite crude and the so-called skull molding was ineffective except occasionally in small children. The brain sitting on its trampoline mechanism, the trampoline mechanism resembling a circus tent with its vertical domed division, the falx, separating the two cerebral hemispheres yet cushioned by the horizontal trampoline, the tentorium cerebri. The same is true of the cerebellum and this coupled with the water bed mechanism of the Meninges cushioning provides a unique apparatus to give the brain both protection and functioning ability. The choroid plexus act to provide cerebral spinal fluid just as the parotid glands act to provide salivary fluid and the cerebral spinal fluid moves along the Meninges in the subarachnoid space and is assisted in its movement by the pumping of the respiratory action of the bones of the skull. If there is any interference with this regular though minute but definite articulation of one skull bone with another, many symptoms result.

The patient who has an inability to concentrate on simple written discourse, the patient who is never the same after a skull fracture or a mild concussion, the patient who has a sacroiliac lesion and has cerebral symptoms, these are all cranial patients.

The sacrum has a respiratory function as well, for as the sphenoid bone flexes forward with inspiration there is an accompanying forward movement of the sacrum, which is actually produced by a lifting of the dura since there is no connection of any consequence below the second and third cervical until the body of the second sacral segment. So, therefore, the end effect is a rotation of the sacrum

with the base moving posterior and the sacral apex moving anterior toward the symphysis. During the anterior flexion of the sphenoid, the occiput moves inward at the base of the occiput, and the superior section of the occiput moves posterior. When this system fails to function as it should, it locks, changes the flow of cerebral spinal fluid, and, as is well known, causes a change in the general lymphatic flow with a breakdown in both nerve function as well as lymphatic drainage depending upon the local conditions. The occiput, the sphenoid, the ethmoid, the mandible, the hyoid, the vomer and the sacrum all rotate about the transverse axis and as such flex forward and extend backward with each inspiration and expiration. The rest of the skull bones which are not midline structures, all either externally rotate or internally rotate so the respiratory cycle is a flexion of the midline bones with an associated external rotation of the peripheral bones with a reverse cycle accompanying exhalation. There is extension on exhalation of the midline bones and an inward rotation of the peripheral bones.

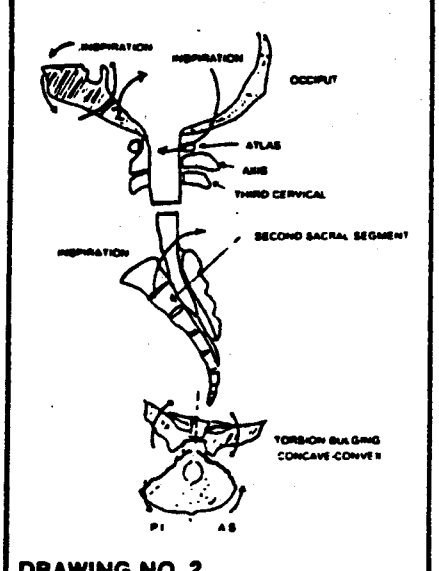
So can you not see the relationship of respiration in the real beginning of life outside the uterus and the initiation of respiration also initiates skull bone movement as well as movements of the sacrum with respiration and any interference with these vital interrelationships can cause great problems. The open fontanels and the relative absence of developed sutures are body insurance to prevent interference with this vital link in our body's physiological and neurological balance in the infant.

The implementation of the respiratory function of the skull is important to the management of many patients, especially hypertension and is a necessary rehabilitation factor in many chronic conditions and requires very little time, is simple to apply, meets with immediate patient acceptance and the technique is gentle, requires no heavy thrusts or pressure, and the response is immediate and readily observable. The skull-sacral respiratory mechanism is the control to the costal or regular respiratory cycle. The regular cycle is controlled by the skull and the sacrum, and although it may not coincide in time with the costal respiration, it can and should do so and most cranial techniques are aided by timing to the respiratory cycle in a general way.

There are clues to the diagnosis of cranial lesions found on inspection of face. The supranasal fold produced by a scowl or a frown moves to the side, for example, that the frontal bone has moved backward with the sphenoid. The prominent eyeball is always on the side of the elevated sphenoid, and the nasal labial crease that extends from the corner of the nose down to the corner of the mouth is always deeper and longer on the side of the externally rotated maxilla. The upper teeth slope more laterally on the side of the externally rotated maxilla as well. The patient who apparently has his forehead moved left or right slightly, especially when viewed from above will show a lateral shift of the sphenoid basal articulation with the sphenoid moving laterally. The lower more prominent ear indicates the externally rotated temporal. A crowded suture is indicated by a ridge, the separated suture is represented by a barely observable groove, tenderness over the sutures with an absence of trauma is an indication for treatment using the required technique. A light touch is essential for both diagnosis and therapy. Visualize the sutures, obtain a skull or a plastic model of the skull and reawaken your interest in cranial vault anatomy.

The relationship of Applied Kinesiology to cranial technique is a fascinating subject. In testing the muscles of many patients using the methods of Applied Kinesiology, it was observed that many patterns seemed to exhibit themselves frequently.

It is important to recognize that cranial bone lesions may occur singly or in multiple combinations. For example, the occiput may be totally posterior or totally anterior, with a corresponding alteration in the position of the sphenoid. When there is a bilateral change, for example, in sphenoid flexion bilaterally which is synchronous with the opposite motion of the occiput. In other words, if the base of the occiput has tipped forward, you will generally see the wide ears. The ears will be flared as will the maxilla. Sometimes this is a familial, racial, or birth induced position, and many times you cannot change the total pattern. But in this particular instance of the wide ears and the flared maxilla, it is wise to try a direct frontal contact with the patient lying on the back and try to press the frontal bone anterior and inferior while you try to pull the occiput posterior and superior. This can be felt more readily by using a very light contact and the rule in this type of cranial lesion is to first try to correct it and if it seems to correct easily, in other words, if there is a "giving" of the frontal bones and occipital bones,



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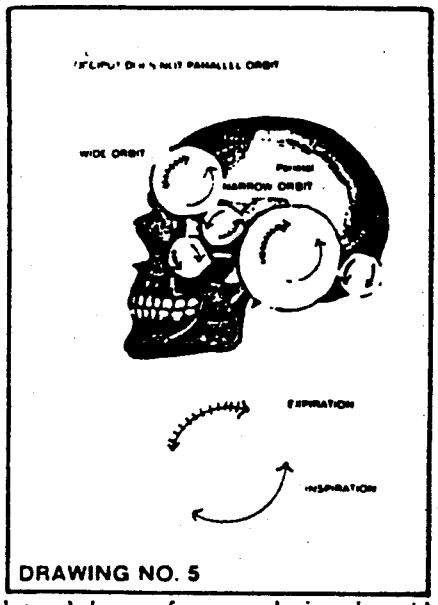

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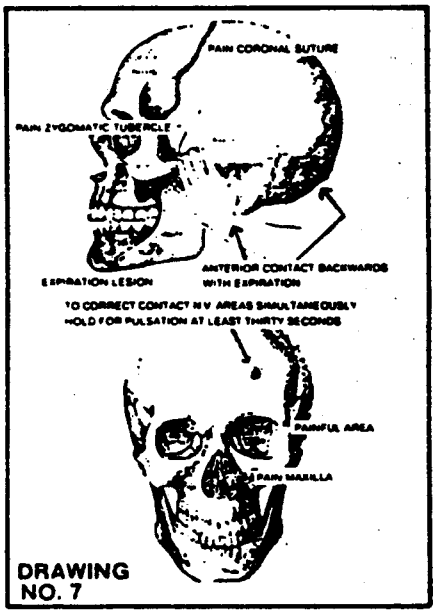
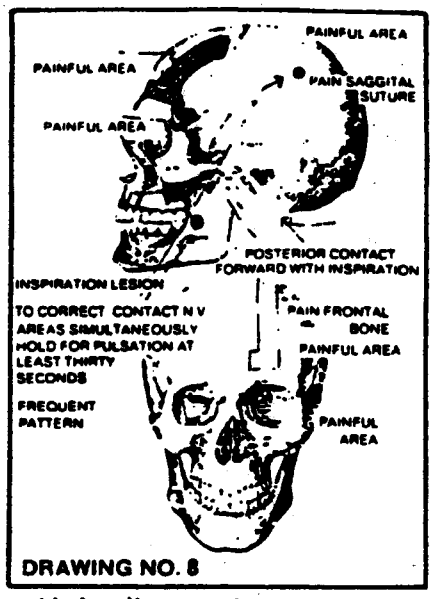


DRAWING NO. 7

maintain these contacts. But if there does not seem to be any "giving" and if the cranial bones seem "fixed" in their position, then try the reverse, just as you exaggerate the position of a rib to allow the natural body "comeback" so also can you exaggerate a lesion such as we do with the bulged temporal bone to allow the body "comeback" power to correct itself. In the opposite situation where the sphenoid is in extension, there is a ridged saggital suture, the eyes are very deep-set with small orbits and the ears are very closely set to the head and the zygomatic tubercles are quite prominent. Correction in an opposite direction to the previous wide ear technique is recommended and, as stated above, if there is a "giving" continue this technique for a few minutes: but if there is a fixation sensation, exaggerate the lesion slightly temporarily for a few minutes, always remember to gently apply the cranial contacts. In a torsion lesion with the occiput tilting one way and the sphenoid tilting the other, on the high side the eyeball protrudes and that ear on that side is closely set to the head. On the low side, the zygomatic tubercle is prominent and the ear is wide on the side of the low occiput. In



DRAWING NO. 8

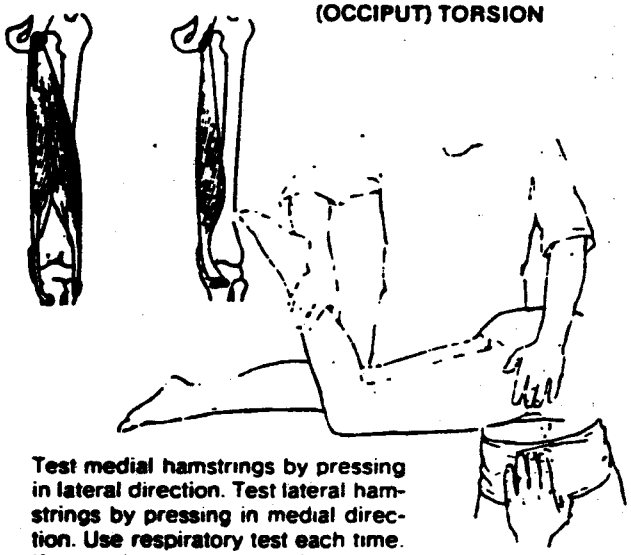
a side bending rotation pattern, there is a convexity and a concavity when looking at the head from a full face view, with the eyeball retracted on the convex side and the ear is "out" on the convex side and the eyeball is extended on the concavity side and the ear is "in" on the concavity side. These are all corrected by exaggeration first, and if there seems to be a fixation or an absolute lock, then try correction: but in general in the adult it is wise to use exaggeration, then to attempt correction first.

SACRAL RESPIRATORY MOVEMENT

The sacrum at its apex moves forward on inspiration, the sacral tip moving forward, the sacral movement occurring just as the forward movement of the occiput takes place on inspiration. The sacral tip moves on expiration posteriorly and superiorly. If the sacral base, for example, is tipped posterior and inferior, the occiput will be low on the same side, sacral torsion is also accompanied by spheno-basilar torsion. In other words, the sacrum and the cranium parallel each other, and it is my opinion that many sacral conditions are caused by cranial conditions rather than vice versa. The sacrum is an important element in the correction of any cranial lesion, for it is the other end of the cerebral spinal fluid flow pattern. If you can visualize the cranial bones acting as a pump of an irrigation ditch, if you can visualize the irrigation fluid flowing along past each spinal nerve with its intervertebral foramen acting as a valve on either side of the irrigation ditch, allowing the fluid to flow down past the "tomato plants," imagine the sacrum being the final destination of the fluid and that fluid which is not used must flow back into the pumping station once again for recirculation: therefore, the "valve" at the terminus of this irrigation pump-ditch combination circuit must be open. Many times sacral position is the impediment to this cerebral spinal fluid outflow for eventual return and when this occurs there is a feedback circuit which automatically shuts down the cerebral spinal fluid pressure or paradoxically increases it immensely, generally it shuts it down. So in addition to cranial bone lesion correction as well as vertebral bone correction and skeletal muscle balancing, there must also be a correction of the sacrum for position. There is a means by which this sacral bone position may be determined without x-ray. This is not to preclude the wise use of x-ray but in the day-to-day changes and for emergency use, this is invaluable. The hamstring muscles are the indicators of disturbances of the rectal neurolymphatic reflexes and they are also indicators of the relative tonus that exists in those muscles relating to the sacrum. Test the hamstrings, left and right, in a general fashion first.

Note any resistance. Note any weakness. Then test the medial hamstrings

SACRAL TORSION SPHENO-BASILAR (OCCIPUT) TORSION



Test medial hamstrings by pressing in lateral direction. Test lateral hamstrings by pressing in medial direction. Use respiratory test each time. If hamstrings improve on forced expiration, use basic contact for approximately one minute.

If hamstrings improve on forced inspiration sacral contact on lower third lateral aspect sacrum thrust given on sharp inspiration, naturally if piriformis is weak allowing sacral malposition, use N.L. and N.V. as well as above technique.

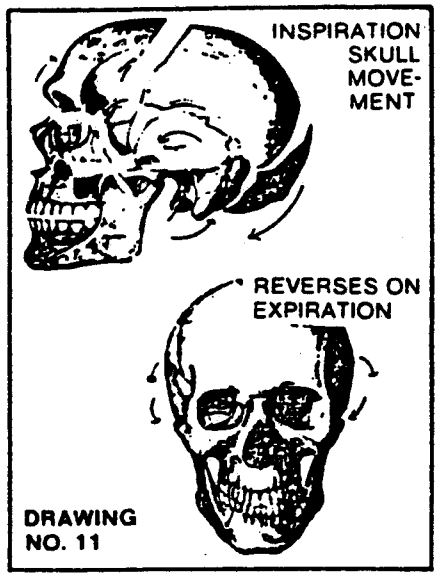
DRAWING NO. 10

by pressing in a lateral direction and test the lateral hamstrings by pressing in a medial direction each time, naturally asking the patient to resist your effort to straighten the leg while you diagonally test the medial and lateral hamstrings. If there is a weakness of either the medial or the lateral hamstrings, or if there is a general weakness of hamstrings, left or right, have the patient take a deep breath and hold breath and retest that hamstring muscle or that section of one hamstring group you found to be weak. See whether or not the patient's held inspiration improves the muscle strength. If no increase in strength is noted on inspiration, have the patient exhale and forcibly hold the exhalation out and retest the hamstring you found to be weak prior. In one position or another there will be a marked increase of the tone of the hamstrings. If the patient improves on inspiration, then the sacral tip must be forced forward by a sharp thrust; whereas, if the hamstring improves on forced expiration, then a "basic" contact on that side is used for a period of about a minute to a minute and a half, allowing the sacrum to come into a more natural position, literally opening the valve so the fluid can flow out more readily. The contacts on the sacrum which are held are to be held naturally on the phase of respiration which assisted the hamstring: therefore, the sharp thrust on the lower third of the lateral aspect of the sacrum is given as the patient takes a sharp inspiration while the prolonged basic contact is held with the thumb on the anterior aspect of the sacrum gently forcing it posteriorly while the patient expires this contact relaxing as the patient inspires and reinforcing as the patient expires.

Retest hamstrings, there should be marked improvement. You will also find that if inspiration or expiration respiratory assistance helped other muscles, the same phase of respiration will help the sacral position.

Use of the De Jarnette block technic is valuable when testing and treating hamstrings.

The tempero-sphenoidal line or the TS line, as we will call it, was first observed by Dr. L. M. Rees of Sedan, Kansas, and he associated different points along the TS line with visceral disturbances. It has been our observation that the different points along the TS line were associated with specific areas of muscle weakness, and the TS line proved to be an invaluable aid; in fact, an infallible aid to the detection of muscle weakness patterns in the body. It was soon found that the



DRAWING NO. 11

multiplicity of serial patterns of muscle weakness showed no particular universal pattern with any particular form of cranial lesion at all times. Although there was a detectable numerical superiority of one group over another as was evidenced by the work previously described. Efforts to categorize and departmentalize the various muscle weakness factors were unsuccessful until finally it was found that there was an infallible guide to muscle weakness; namely, the TS line.

Another infallible guide through lesion diagnosis was also devised and this is known as the respiratory assistance technique. The TS line was palpated for an area and generally two areas of muscle weakness were found on one side, taking the muscle weakness found, for example, the pectoralis major clavicular division as previously described was found to accompany the psoas, the patient was tested, verification of muscle weakness was made and the patient was asked to take a deep breath, the muscle is again tested while the patient holds the deep breath. If taking a deep breath which literally brings the occiput forward and anterior helps the patient's muscle resistance, then this must necessarily improve the rate flow of cerebral spinal fluid, and that cranial application is made on that side of the head in that particular direction of cranial bone movement. If on the other hand, the patient takes a deep breath and there is no assistance in strengthening the muscle found weak, previously found by TS palpation and by actual muscle testing, then the patient is asked to take a deep breath and then exhale, letting all the air out and forcibly holding it out and then the muscle is retested. This aids the patient many times in restoring muscle strength. So the patient's muscle testing is augmented by respiratory assistance, either by holding a deep inspiration, or by holding a deep expiration, and noting which phase of respiration assists the muscle and maintains the greatest amount of strength. Since the occiput moves forward on inspiration and backward on expiration, the same being true of the temporal bone, it is obvious that any assistance that can be gained in muscle strength augmented by taking a deep breath, must of necessity predicate a corrective move on the cranial structure in a forward position. In other words, the occiput and mastoid process of the temporal bone must be moved forward or in an anterior direction. Whereas, if any muscle weakness found is assisted by respiratory expiration, a deep expiration being held while the muscle is being tested and found to be strong, then the conclusion is obvious that the cranial bone structure, namely the occiput and the mastoid portion of the temporal bone must be pressed backward to attain a better rate flow of cerebral spinal fluid. As you know, the occiput and the mastoid portion of the temporal bone move forward on inspiration and backward on expiration. It's just as if the pumping action of the cerebral spinal fluid requires a totally open valve, the valve opening as inspiration increases and slowly closing as expiration takes place. But in many instances the only time the "valve" opens is on a forced inspiration or a forced expiration. In other words, the cranial bones are in "gear" instead of being in "neutral." Normally, all body repair takes place at respiratory zero or respiratory neutrality. In other words, the mid point between an inspiration and an expiration, cranial fluid seems to flow best at this level; but in some cases, forced inspiration is the only time when the rate flow of the cerebral spinal fluid improves, on forced expiration is the only time that the rate flow of cerebral spinal fluid rises to the proper amount. So, it is obvious that any assistance to muscle tone and strength on testing, if gained on inspiration or expiration, should have an augmentation of the normal cranial bone position into the potentially correctable position. And it is this potential movement of the cranial bone structure that will allow a rapid correction of first a muscle weakness and the cranial bone position. This potential movement of the cranial bone structure is now a diagnostic and also a therapeutic tool with forced inspiration or expiration being the guide to its use.

In the case of the bulging of the skull with the concave and convex appearance through the temporal area, quite often this bulging is detected while observing the patient while he is lying face up while you are seated at the head of the table. The patient will detect sharp pain at the most bulged portion of the temporal bone on palpation. Many times in this instance, palpation of the TS line will show a bilateral weakness of a particular muscle, sometimes the pectoralis major clavicular, sometimes the sternal division, occasionally a bilateral psoas weakness will be detected. There is no definite pattern. This type of patient is assisted by half an inspiration. In other words, in one instance previously described, patient was helped by either a deep inspiration or a deep expiration; but in this instance of the concave-convex pattern, the patient is helped by half an inspiration. In other words, have the patient take half a breath, hold this; the muscle weakness which has been found and is usually bilateral is greatly helped by half a held inspiration. This is the sign of the bulged cranial pattern and the technique as previously described is to use a neurovascular bilateral contact simultaneously held and wait for a simultaneous pulsation. These contacts are determined by palpation of the TS line and you must act according to the information you find on TS line palpation and/or actual muscle testing. As mentioned, there is frequently a bilateral muscle weakness of certain muscles. Neurovascular contacts are held to balance these muscles, then use a cranial technique designed to exaggerate the lesion; and, as mentioned, in the case of a rib out of place, exaggerating its position allows the natural comeback principle to operate so also does exaggerating the bulge frequently allows self-correction. In this instance, not only should the bulge be exaggerated but any occipital superior or inferior position should be exaggerated, and as also should any frontal bone superior or inferior position be exaggerated. This should be done as the patient starts to inhale and again as mentioned should be done on the half breath and relaxed on the exhalation. Do this 4 or 5 times, then palpate the bulged cranial bone point previously sore for point pain. This should have disappeared at least 75%. Retest the usual bilaterally muscle weakness. This should be completely restored to normal.

The respiratory assistance that you can use to detect the position and direction of cranial technique is an invaluable aid to the diagnosis and treatment of cranial lesions and with the far-reaching effects of interference with the cerebral spinal fluid flow correction you have a valuable therapeutic tool which is at your ready command to effect great changes in whole body structure. Once you have used the neurovascular contacts to balance cranial structures and if we still find coronal or frontal or saggital suture palpitory pain, depending on which way the cranial bones move. Prove the relationship of cranial bone structure to intrinsic and extrinsic muscle structure to the patient or to yourself. Remember that any muscle when assisted in regaining its tone or strength on inspiration can quickly be brought back to its previously weak position by reversal of the procedure which assisted it. If inspiration helped the muscle to gain strength, reverse this condition by your cranial contacts instead of pressing the mastoid portion of the temporal bone forward, get in front of it and press it backward toward the occiput and you will be able to demonstrate a complete reversal and a loss of all the muscle strength gained. Naturally, you can restore the patient again to normal by reapplying the same contact used originally. In other words, bringing the mastoid process of the temporal bone forward 4 or 5 times. This same is true in any muscle weakness in which respiration assistance is gained by deep expiration. In this instance, you reversed the procedure that gained the therapeutic advantage. In other words, instead of pressing the mastoid process backward you press it forward 4 or 5 times. This will immediately produce all the previously found muscle weakness and the muscle weakness will now be apparent. This can again be reversed and the patient can be brought back to his improved therapeutic position and treatment continued to a later date. This is just another proof of the importance of cranial bone position not only to yourself and to the patient but to the overall normalization of the patient's physiology.

Further information is available from the author without charge. Kindly enclose a stamped self-addressed envelope to Dr. George Goodheart, 542 Michigan Bldg., Detroit, Mich. 48226.

NOTES

Dr. George Goodheart on

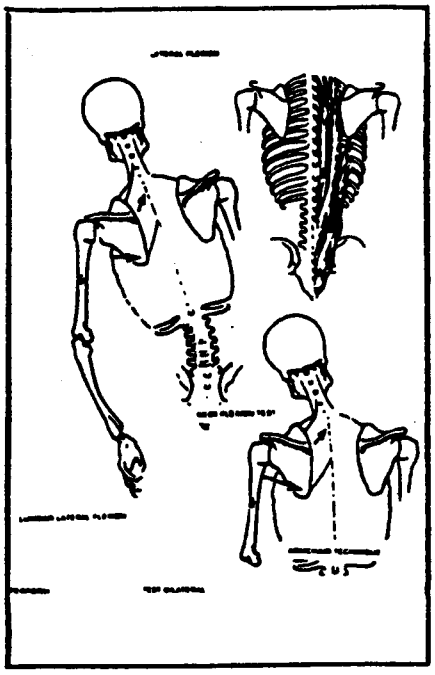
APPLIED KINESIOLOGY

Many patients have multiple spinal problems and multiple structure deviations of the vertebrae related to the structure involved. Because of the extrinsic multiple origin and insertion of spinal muscles, muscle testing of these unitized but differentiated muscles is a complex problem.

SACROSPINALIS MUSCLE TESTING

The sacrospinalis muscle, as you know, is actually a term for a variety or group of muscles which are basically the ilio costalis dorsi, the longissimus dorsi, the spinalis dorsi, the ilio costalis lumborum and the quadratus lumborum. The semispanalis is occasionally listed under this classification, as is the splenius cervicis. This particular muscle group, called the sacrospinalis, has been rather difficult to test because it is a large group of muscles. The patient is instructed to lie face down, place their hands behind the back over the buttocks, and then the doctor raises the patient's chest up off of the table and by placing one hand just below the buttock and one hand on the shoulder over the scapula and pressing downward, the left and right sacrospinalis muscle groups are tested.

Rarely is this sacrospinalis muscle group found to be weak in this fashion, but if one attempts to test this particular muscle group by placing the fingers across the obvious contraction on one side, there is a rope-like pattern which is evident to the palpating fingers but is not present in the other and many, many times this is also visible. This is also a good method of testing the sacrospinalis. Because of the influence of the sacrospinalis on the lateral neck flexers, the patient is often asked to sit in a chair, preferably an arm chair, the elbows being stabilized on the arm rests of the armchair, and then the patient is asked to try to flex the neck laterally, placing the ear on the shoulder, but without elevating the shoulder. He is asked to do this both on the left and the right. Generally speaking, on the hypertonic side he will be able to approximate his ear to his shoulder, but when he attempts to take the opposite side, the weak side, and attempts to approximate that ear to that shoulder, because he is meeting with the resistance of the sacrospinalis on that side, he finds it difficult to do this and generally has to elevate the shoulder to get enough neck flexion to cause ear and shoulder approximation. This is one way of testing, especially if the sacrospinalis pattern of weakness, contraction is in the upper section.



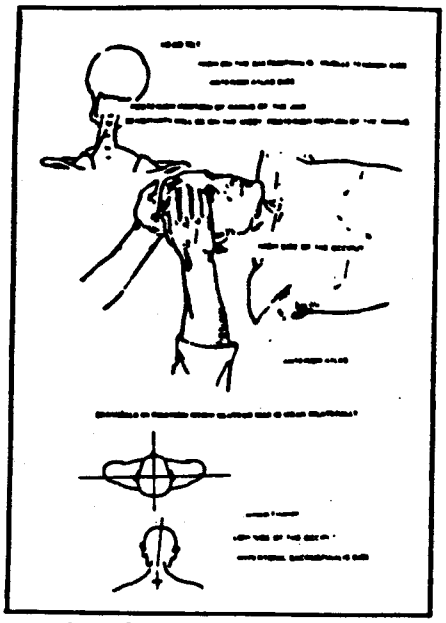
Another method is to have the patient stand and place his feet approximately 30 inches apart; then, without using any anterior or posterior movement, slide his outstretched fingers down the lateral portion of the femur and mark the limit of motion of one arm sliding down one leg as opposed to the other side. Generally speaking, the patient will be able to slide the fingers down the side of the leg much further on the so-called hypertonic side; but as he attempts to go towards the weak side, the hypertonic side limits his function, and therefore does not slide his fingers laterally down the limb. In doing this test, make certain that the patient does not flex the shoulder forward or backward, but merely keeps the spinal flexion in a strict lateral flexion rather than putting any slight degree of torque into this particular movement. This movement, combined with the sitting movement, along with the palpation, and also the standard test for the sacrospinalis muscle test, is the method of choice.

In many cases of articular problems such as a recurrent carpal tunnel, recurrent elbow epicondolitis, recurrent shoulder problems, superspinatus, infraspinatus, tendon bursitis, frozen shoulder, slipped bicipital tendon and even the ubiguitous snapping finger, we have found accompanying this pattern a sacrospinalis imbalance. The sacrospinalis imbalance accompanies many clinical problems and seems to be a hidden factor in the production perpetuation of many clinical syndromes. It might be wise to review the relative origin and insertion of the different portions of the sacrospinalis.

The ilio costalis dorsi has its origin on the upper borders of the angles of the lower six ribs, and then moves upward to insert on the upper borders of the angles of the upper six ribs. Also, it inserts on the transverse processes of the seventh cervical. The longissimus dorsi has an origin on the transverse processes of the lumbars and over the sacrospinalis common tendon, and then it inserts on the transverse processes of all the dorsal vertebra and on the lower nine or ten ribs between the tubricals and the angles, again roughly running from the lumbar transverses in the sacrum up to all the dorsal vertebra. The spinalis dorsi runs from the spinous processes of the first two lumbars and the last two dorsals and then inserts on the spinous processes of the upper four to eight dorsal vertebra. The ilio costalis lumborum starts off at the middle crest of the sacrum, the spinous processes of the lumbar, and the eleventh and twelfth thoraxic dorsal vertebrae and the iliac crest and the lateral crest of the sacrum, and then inserts on the inferior borders of the lower six or seven ribs. Sometimes the quadratus lumborum, which is discussed in a different section, is involved in this sort of thing, but hardly ever does it fall under the sacrospinalis pattern, and in a weak condition all three tests may be positive.

The test discussed originally, where the patient is lying prone with the arms behind and attempting to raise up and the pressure resistance test is given, the neck flexion test, and the lumbar lateral flexion may all be positive, as would be the palpatory test, feeling the deep ropy rigidity on one side of the dorsal and lumbar spine as opposed to the other. When these tests are present, activation of the neurolymphatic reflexes is indicated.

In addition to the activation of the

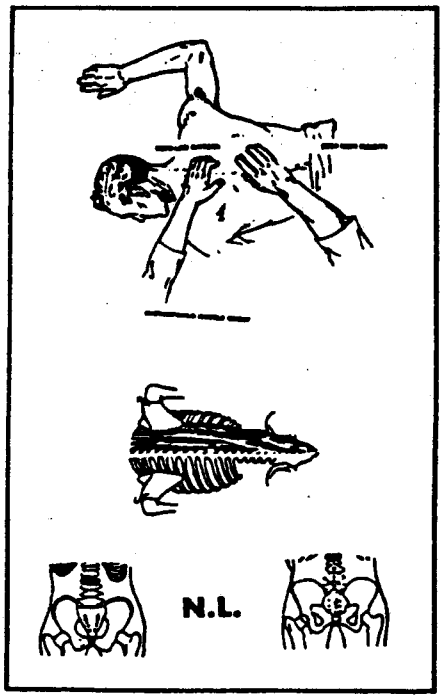


neurolymphatic reflexes, a characteristic pattern has shown in head tilt. Naturally the head tilt must be corrected by way of the unusual patterns of splenius capitus sternocleidomastoid and anterior scalene, but when the head tilt persists following balancing of these structures, it will generally be due to the action of the sacrospinalis, and two distinct patterns have evolved in this particular situation. This was first discovered in its primary form unrelated to sacrospinalis muscle imbalance by Dr. Keck of New York, in that he observed that under some circumstances when the general spinal tension was on the high side of the occiput there was an anterior atlas, and when it was on the low side of the occiput there was an occipo-atlanto fixation. In our observation we have found that each time the occiput is low on the side of sacrospinalis tension we have always, with no exception, an upper cervical fix with a bilaterally weak gluteous max. Whereas when the occiput is high on the sacrospinalis muscle tension side we will always find an anterior atlas there, and under these conditions the most posterior portion of ramus of the jaw is extremely sensitive to pressure on that anterior atlas side. This may be confirmed by x-ray or other palpatory evidence, but this is a highly significant palpatory evidence. Occasionally the ramus may be vaguely, slightly sensitive, but the outstanding sensitivity will be on the most posterior portion of the ramus, just anterior to the transverse process of the atlas on the high occiput side, on the same side as the sacrospinalis muscle tension. Activate the neurolymphatic reflexes to the sacrospinalis, which is on the naturally weak side. This is at the most lateral portion of the umbilicus at the most superior and lateral portion of the semphasespuges and over the top of the transverse process, the tip of the transverse process of the second lumbar vertebra. Naturally this is, again, on the weak side. Activate each point of the three neurolymphatic reflexes. Activate by rotary pressure to patient's tolerance for 30 to 40 seconds. Activate the neurovascular reflexes, which is the frontal reflex, the same as the pecteralis major clavicular, and also the same as the emotional reflex, and having done so re-evaluate head tilt. Activate by light tugging touch, eliciting a slight pulsation, then hold 20 seconds. If the head tilt is low on the sacrospinalis muscle tension side, check for cervical fixation in the first three cervicals by a gluteous maximus test you will find that there is need for correction.

The atlas is generally in a posterior fix, generally the posterior fixation is on the right, but this is by no means a constant rule. But there *is* each time, every time, all the time, under these conditions where the occiput is low on the sacrospinalis muscle tension side, a fixation of the upper cervicals. When the vertical posture test following sacrospinalis, neurolymphatic and neurovascular activation shows the occiput to be high, we then have an anterior atlas situation and the anterior atlas must be cleared. The indication for the anterior atlas under these conditions is extreme sensitivity of the most posterior portion of the ramus of the jaw, just anterior to the transverse process of the atlas on the sacrospinalis muscle tension side, the hypotonic side.

Under these conditions the patient is then asked to assume the supine position and the head is turned so that anterior atlas side is placed uppermost. In other words, the high occiput side is placed uppermost and this is again predicated on the fact that you have balanced the neurolymphatic and neurovascular reflexes to the neck flexors and you still continue to show the high occiput side, and this also includes a potential or possible cranial fault having been corrected. When the high occiput side still persists after your original work with flexors and neck extensors, and also correction of the sacrospinalis imbalance, then the atlas is regarded as anterior on the sore and tender posterior ramus of the jaw side and a contact is made on the mastoid process of the uppermost side and the head is cradled in the hand on the lower side — the uppermost side being the side to be adjusted. Then the mastoid process contact is contacted with your pisiform and the pisiform contact is directly through the bridge of the nose, and as the occiput is thrust towards the bridge of the nose, as the occiput thrust opens the articulation, there is a slight movement of the hand towards the occiput at the most terminal portion of the occipal thrust, gently allowing the atlas to move in a posterior direction. There are many methods of moving the atlas in a posterior direction but we have found this method to be the best. This is one of the methods that Truscott used originally in the release of the anteriorcervical segment in an atlas anteriority and his preeminence in the upper cervical area certainly stands without question, and therefore this method is suggested. Use any method you have found to be valuable in correcting an anterior atlas. The anterior atlas must be corrected.

In many instances the hypertonic sacrospinalis side has grown so short that it affects the level of the shoulder and the occiput, keeping the level of one shoulder and the spine and also the occiput lowered on that side, and we generally recommend that the patient in a seated position place a tennis ball in the belly of the ilio costalis or possibly along the belly of the muscle that is hypertonic and seems to be the source of the difficulty. We have found that asking the patient to rest in a supine position with a tennis ball in the belly of the ilio costalis lumborum to be an adequate method of releasing the long continued hypertonicity in the absence of proper correction. Sometimes the tennis ball may be placed higher along the hypertonic side, but in our observa-



tion lying for 10 or 15 minutes with a tennis ball in the belly of the ilio costalis is effective therapy following activation of the neurolymphatic reflex and following correction of an upper cervical fix and/or anterior atlas previously discussed. Because of the relatively multiple insertions of the ilio costalis and the longissimus dorsi and iliocostalis lumborum, this should always be considered in any respiratory problem as well. We find frequently that this sacrospinalis muscle is so closely adjacent to the spine that it does not have a lateral bending effect except when it is tested and found to be out of balance.

Naturally, it is wise to retest the sacrospinalis muscle both by the actual muscle testing method and/or the use of the armchair technique with lateral flexion of the head to approximate the ear to the shoulder and also the legs widespread and sliding of the hand down the leg in a lateral flexion of the lumbar spine to determine improvement.

We generally mark the position that the hand assumes on the lower limb to show the patient and also to show yourself this differential pattern that occurs with the balancing of the sacrospinalis. The sacrospinalis, because of its multiple insertion and origin, can exert at least 19 different areas of nerve irritation and therefore is responsible many times for the multiple articular faults that occur in many cases of so-called arthritis, rheumatism or fibrocistitis, and in our opinion a comcomitant part of many of the so-called rheumatic, arthritic or fibrositic patterns which are so difficult to free.

The nutritional component of the sacrospinalis in its entirety is a combination of ACP and relatively small levels of A, small levels of C and small levels of P. This is chewed and the muscles show immediate response when tested by any of the three methods. Further information may be obtained without charge. Please include a stamped, self-addressed envelope.

NOTES

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THE ANTENNA CONCEPT IN CHIROPRACTIC MERIDIAN THERAPY

by George Goodheart, D.C.

Many doctors are interested in Meridian Therapy. Many patients are interested in the ancient Chinese technic involving the use of the meridians of energy that exist in the body. The traditional healing practices of the early Chinese physicians now have gained a high degree of respect, a great deal of interest and to some extent, a certain area of scientific lack of credibility here in the Western World. Much has been written about the philosophy of the East, the relationship of man to the world, its effect upon him, and his effect upon it; and this philosophical non-scientific pattern is at odds with the usual approach to any form of healing and its investigation. McGarey spoke of the ideas of old China and the electrically induced analgesia that many biologists, news editors, physicians and President Nixon saw and "suddenly the U.S. was faced with a method of therapy which was alien to all that it had learned and practiced in the scientific world. The East had met the West and the world will not be the same when the reverberations finally cease." (1)

In an article entitled "Chinese Lessons for Modern Chiropractic" in 1966, written by the author, attention was drawn to the thought that "the Chinese operate on a postulate that there are so-called meridians that traverse the body in a definite pattern. These meridians, or lines of intercommunication, are based on embryological associations of organ and structure, and amazingly enough, can be measured thermatically, electronically and by simple touch!" (2)

Much has been written since, and by many authors, yet the energy that is discussed is always discussed in a philosophical concept with an Eastern point of view which requires a "reorientation," to coin a word, towards a concept that is humanistic in its reality but unscientific by our standards of judgment. The flow of energy postulated by the Chinese has been corroborated by many different investigators, Eeman, (3) Karagula (4) and Kholodov in Russia, (5) Wheeler, (6) Barnothy, (7) and many others have contributed much to the knowledge of what the energy is that is discussed by the ancient and present-day Chinese meridian exponents. The knowledge of the effect on the living organism of the electrical, electromagnetic and magnetic forces is being heavily investigated at the present time. "The evidence is overwhelming that we are in the midst of a revolution in thought about the nature of the human being, and it's interesting that the introduction of acupuncture into our culture with its electrical implications came at a time when the scientific world, in a separate, multi-disciplinary approach, has delved deeply into our electrical make-up." Eeman, Karagula, Manaka and Tanney made reference to the fact that there was flow of energy which apparently followed the concept of a figure 8 in its function. Manaka and Tanney used these concepts and connected diagonally opposing quadrants with simple electrical wires with a diode or small transistor to allow only unidirectional flow. They found the "energy of pain" in a severely burned area could be drained and restored more towards normal by connecting the burned part with the opposite quadrant area. They always found if the diode permitted flow in the wrong direction, that is an excess of energy going to the burned area, the burn patient did not complain of any more pain, but there was no change in its nature. But by simply changing the direction of the flow, reversing the hook-up, the patient experienced relief and they've achieved excellent results in the case of severe burns.

McGarey used the same methodology of Manaka and Tanney several times and had excellent results with 1st and 2nd degree burns. Kilner postulated the existence of an energy field in his early book, **The Human Aura**, published by Univ. Books, 1965. Kilner was a reputable member of the Royal College of Physicians. In March of 1922, there was an enthusiastic review in the cautious journal, "The Scientific American." Kilner's work was clearly too unconventional to have much of an impact in his lifetime. The reference to Kilner's work is simply made to signify that there has been some scientific evidence that there is an energy field about the body and the evidence for this is not new, yet its existence has been of not much scientific interest and has been basically more of a curiosity than a practical scientific fact. "The concept that a needle placed into a certain point or contacts made at a certain point could change the flow of body energy, in a therapeutic way, seems a little difficult to conceive, yet experience has proven this empirical observation to be true in most instances." (2)

The concept that the intervertebral foramen contains five factors: the nerve, blood vessels, lymph vessel, cerebrospinal fluid and a Chinese meridian connector seemed a tenable one. Each of the five factors apparently is affected when there is some compromising effect placed on the IVF. D. D. Palmer suggested, in no uncertain way, that most diseases were

because of "too much nerve energy rather than not enough." (8) He also wrote that some diseases "were due to too little nerve energy." (8) Familiarization with different forms of Chinese Meridian Therapy as advocated by different schools of thought leads one inevitably back to the spine. In France, where Chinese Meridian Therapy has been practiced longer than in any other Western country, the practice of vertebral therapy now occupies a prominent portion of the practice of most French physicians who practice acupuncture. This is most natural since there is an associated point on the spine for each organ, but it does not correspond to the neurological hook-up as we know it in the traditional concepts of neurology. With each of the meridians, there is a point along the spine related to each of the organs in the traditional way. A chart is included to show this conceptual relationship. In reality there are 24 points, 12 on either side of the vertebral column. The concept that "East is East and West is West and never the twain shall meet" seems no longer valid in the light of the knowledge we now possess. Yet the knowledge of Chinese Meridian Therapy is basically empirical, and much of it represents a historical reverence for empirically observed facts which may not be in direct agreement with those that can be obtained by a scientific evaluation of these treasured concepts.

One reads of the so-called "Recipe" methods of treatment with needles or pressure points with each individual author's particular recipe for a particular disease problem. Some of these agree and some do not agree with other authors' particular recipes for this particular problem. Some authors recommend use of therapy on the opposite side of the trouble, some on the same side of the trouble. There seems to be a great deal of agreement and a great deal of disagreement on very fundamental premises. It was this genial disagreement of principles that led us to evaluate just exactly what acupuncture energy actually was. A variety of systems involving Chinese Meridian Therapy, including the Ryodoraku, have all been taught for different periods of time. The Ryodoraku system is the introduction of an outer source of electricity into the tissue. They use approximately 200 microamps for a period of 2 to 7 or even more seconds. The word "Ryodoraku" means meridian, and electricity is used to supply a means by which the energy level of that meridian may be corrected. The idea of electrical stimulation of the meridian has been popularized by Nakatani, whose basic fame and reputation come from his successful use of the theory that color-blindness is not incurable and is not a genetic defect, something that deals with genes and chromosomes, and is not something that one should live with. By the use of his Ryodoraku method he consistently restores color vision in the adult and child and he has a reputation which draws color-blind patients to him from all the countries throughout the Orient.

TONIFICATION-SEDATION POINTS

ORGAN	Tonify		Tonify		Sedate		Sedate	
LUNGS	L 9	Sp3	L10	H 8	L 5	K 10	L10	H 8
KIDNEY	K 7	L 8	K 5	Sp3	K 1	Liv1	K 5	Sp3
LIVER	Liv8	K10	Liv4	L 8	L 2	H 8	Liv4	H 8
HEART	H 9	Liv1	H 3	K10	H 7	Sp3	H 3	K10
SPLEEN	Sp2	H 8	Sp1	Liv1	Sp5	L 8	Sp1	Liv1
LARGE INTESTINE	Li1	S36	Li5	Si5	Li2	B66	Li5	Si5
BLADDER	B67	Li1	B54	S36	B65	G41	B54	S36
GALL BLADDER	G43	B66	G44	Li1	G38	Si5	G44	Li1
SMALL INTESTINE	Si3	G41	Si2	B66	Si8	S36	Si2	B66
STOMACH	S41	Si5	S43	G41	S45	Li1	S43	G41
CIRCULATION SEX	Cx9	Liv1	Cx3	K10	Cx7	Sp3	Cx3	K10
TRIPLE WARMER	T3	G41	T2	B66	T10	S36	T2	B66

CHART "A"

McGarey (1) feels that there are four basic methods of practicing Chinese Meridian Therapy: (1) traditional therapy with pulse diagnosis, and observation of all the myriad and complicated laws of acupuncture, (2) the formulary—the recipe or the secret type of practice in which there are favorite points and groups of points for any given condition, (3) the electric Chinese Meridian Therapy as typified by the Nakatani method just described, and (4) a rational approach which utilizes the knowledge of the nervous system, reflex pathways and modern physiology and combines this information with any of the older methods which may be applicable and which seem to be appropriate.

Yet underlying all this approach to the utilization of the knowledge is the lack of knowledge of the kind and quality and character of the energy involved. In an effort to discover the type and quality of the energy involved, a simple experiment was undertaken. The particular point in the ear designated by traditional auricular therapy text for the large bowel was found. This was found in a patient who had a disturbance in the bowel as evidenced by X-Ray and also by a weakness of the fascia lata which kinesiological research has shown to be related to the drainage of the large bowel. Although there are a number of methods by which the weakness of the fascia lata and the appropriate relationsip with the bowel could have been treated, we attempted to use solely the ear point for stimulation. A stimulus was provided by a needle. (For investigational research an acu-aid® or finger pressure would have done just as well.) The muscle was retested and found to be strong. This was not surprising. It had been discussed and had been proven many times. Then a fluroroscopic lead glove was placed over the needle. The therapeutic effect was lost. The fluoroscopic lead glove was removed and the effect of strength in the muscle was then immediately regained. The needle was then removed and the fluoroscopic glove was placed over the ear itself. All the muscles on that side of the body immediately became weak in those patients on whom we attempted this novel form of research. This comprised approximately 95% of the patients who entered my office for approximately three (3) weeks. Application of the lead glove to the opposite ear created the same effect on the opposite side. They then tried placing acu-aids or needles at traditional points of sedation and stimulation, those points that turn a muscle on and those points that turn a muscle off. The effect of the needle or the acu-aid was, as one might expect, effective. On placing small amounts of lead over the acu-aid

or over the needle, the effect was immediately abolished. This led us to believe that the needle or the acu-aid acted as an antenna for both reception and transmission of energy. Apparently, the energy of the earth interacts with the energy of the body to form an equilibrium between the body and the earth's bio-magnetic activity and this produces, when all is well, health in that individual who is in balance.

Earlier research as to the nature and quality of the acupuncture or Chinese meridian energies had led us to believe and to know that magnetic energy could change the effects. A positive magnetic pole applied to the traditional four points to "turn a muscle on" produced one result, whereas a negative magnetic pole applied to the same four points produced the opposite result, indicating that the energy was electromagnetic in character. Yet the energy apparently is blocked by lead, and we have used different forms of high-resistance ceramic to the same effect. But here our purpose was not to decide what would block and what would not, but rather to decide what is the character of the energy, and what is the concept behind the energy, and how can it be used to the advantage of the individual practitioner, therapeutically.

Placement of a single acu-aid on the first point on the chart "A" for the designated muscle-organ hook-up would turn muscle-organ complex "on". In other words, a muscle such as the psoas was tested kinesiologically — and tested weak. An acu-aid was affixed at point K-7. The muscle immediately tested very strong. (See Chart A) Lead or ceramic would block this effect. Removal of lead block would reestablish previous response.

Occasionally in chronic conditions of very long standing and in patients with very low energy levels, acu-aids were placed at all four "Tonify" points for appropriate muscle-organ hook-up. (Chart A)

Muscles and organs that were truly over active could be turned "off" or reduced to normal by an acu-aid placed at the first point on "Sedate" section of chart used to turn "off" various muscle-organ hook up patterns. Here again occasionally all four points were needed in very chronic cases. (Chart A) Here again the effect could be blocked by lead or ceramic.

In cases of weak organ or muscle patterns that did not respond to simple activation, the 24-hour law was used by testing muscle and stimulating its alarm point manually; and if weakened from previous strength position the 24-hour law was used to "back up" energy until a muscle-organ hook-up was found that did not weaken when its alarm point was challenged manually. An acu-aid at the appropriate point again resulted in good response (Chart B). Again the effect could be blocked by lead or ceramic.

The so-called five Elements law was also used to correct difficult problems with equally good results with the "antenna concept." The pulse was palpated, "patient therapy localized," "doctor to patient therapy localized" and muscles tested accordingly. Over-active muscles were tested by "advancing" in Five Elements progression in direction of arrow of energy flow (Chart C), and muscles found weak beyond original pulse point diagnosis were tested against alarm point by patient manual stimulation of original pulse point alarm point. An acu-aid placed at appropriate connecting point was also uniquely successful. (Chart C).

All acupuncture points on the body as well as on the ear showed associated point therapy adjustment requirements on appropriate spinal areas. Acu-aids placed on appropriate spinal areas after adjustment were a good continuing therapy to maintain effects of adjustment.

An effort has been made to demonstrate the so-called antenna effect in Chiropractic Meridian Therapy. An effort has also been made to demonstrate that the needle, or the hand of the doctor, or the placement of the acu aids, all indicate that the energy is picked up from the outside and that the antenna effect is one of both transmission and reception.

"In 1935, Dr. Burr,[9] in association with Drs. C. T. Lane and L. F. Nims, perfected an ultra-sensitive microvoltmeter which could measure currents as feeble as a millionth of a volt between two points on or within a living organism. These instruments revealed that all living things had electrical fields of varying intensity. An extensive research program was launched, involving many types of life and hundreds of human subjects.

It was found that force fields in organisms change in strength and polarity in response to internal (biologic) and external (cosmologic) events. These cycles of bio-rhythms, called "field profiles," were first observed in trees. Then, after plotting more than 30,000 force field profiles from 430 human subjects at Yale, Duke and the University of Pennsylvania Schools of Medicine, as well as at the Roanoke and Downey V.A. Hospitals, similar rhythmic variations were discovered. These

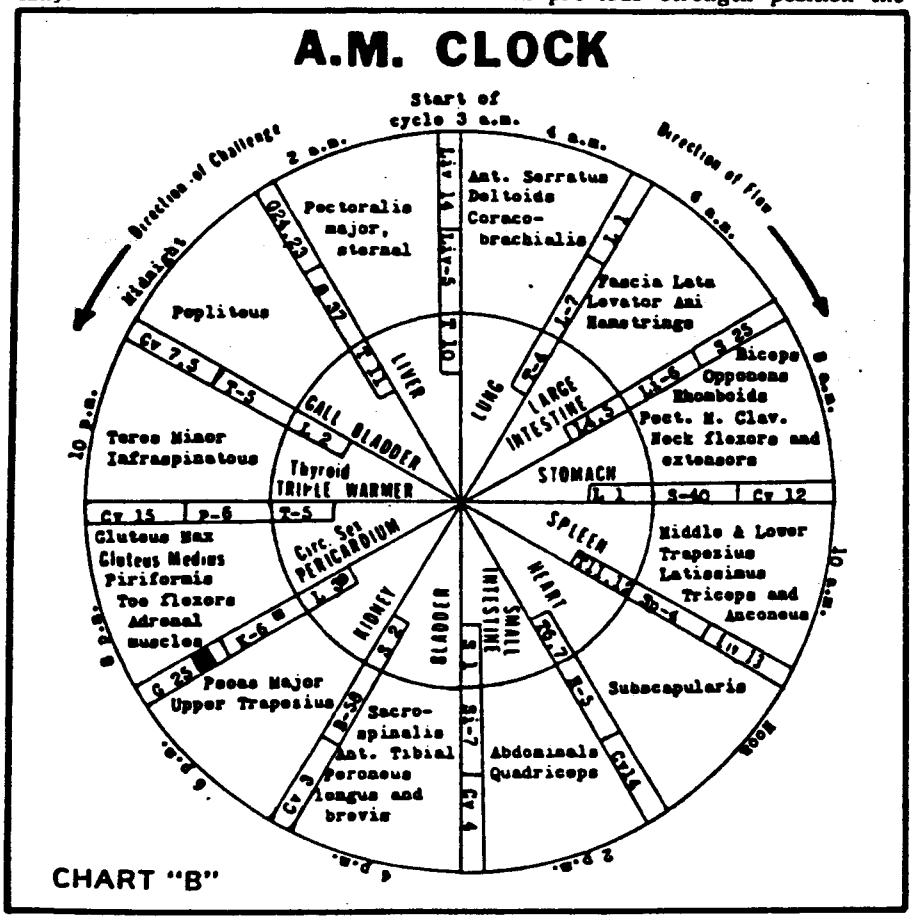

CHART "B"

studies opened the door to long and short-range predictions in time.

We live and move in a pulsating sea of energies in which our organisms serve as receivers, transformers and projectors. The electrodynamic theory of life suggests a universal electric field affecting living matter, while, in turn, all life exerts its own influence upon the field while still responding to it. Each individual is thus related to all life, to the earth's magnetic field, and through it to the changes in the electrical fields of the moon and sun. We are a part of the universal whole, influenced by the ceaseless ebb and flow of the universe." [10]

In 1965, Professor Ralph W. Gerard, of the University of Michigan, and A. A. Geiger, of the Neuro-Psychiatric Institute of Chicago, challenged the theory that the brain and central nervous system obtained their energy from the burning of sugar with oxygen. Their report offered evidence that the brain uses something else for its immediate fuel, although they had not discovered the nature of this source.

Rational use of the electromagnetic meridian therapeutic opportunities simply allows us to remember our D. D. Palmer-based heritage. He has a historic position as the founder of our profession and he was "a magnetic healer." Rational use requires rational investigation. Further information is available without charge. Kindly enclose a stamped self-addressed envelope.

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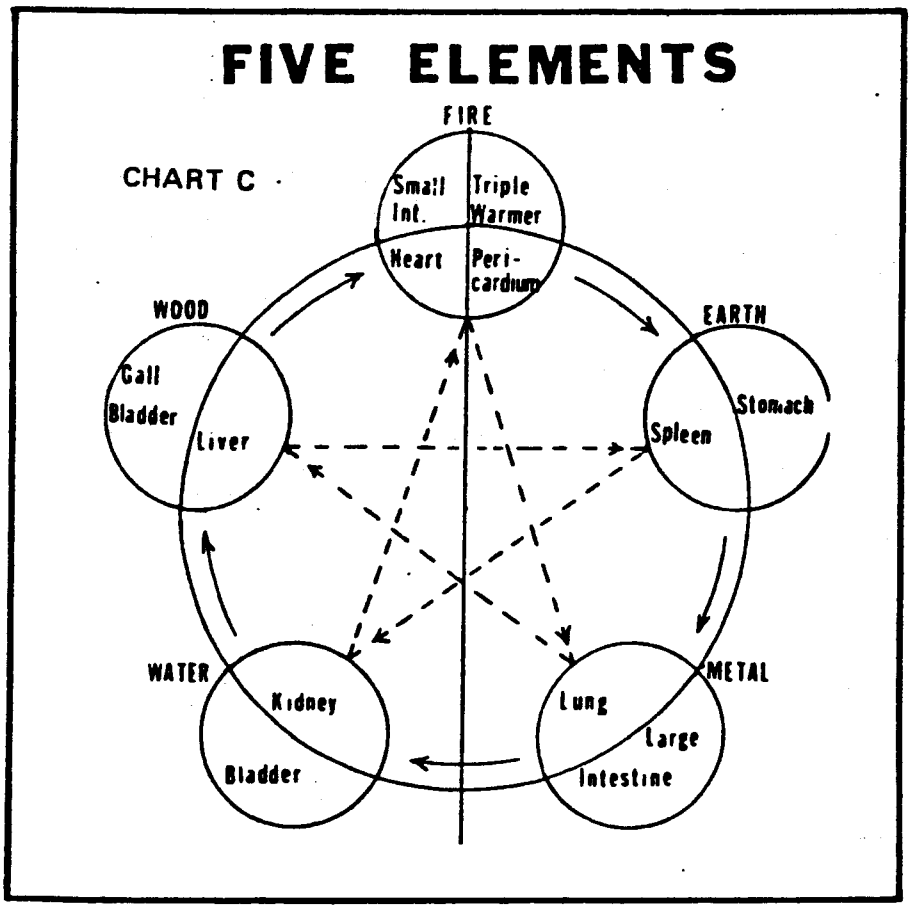

GAIT

AND ASSOCIATED PROBLEMS

BY GEORGE GOODHEART, D.C.
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Many patients have problems associated with gait, many doctors have gait associated problems as well.

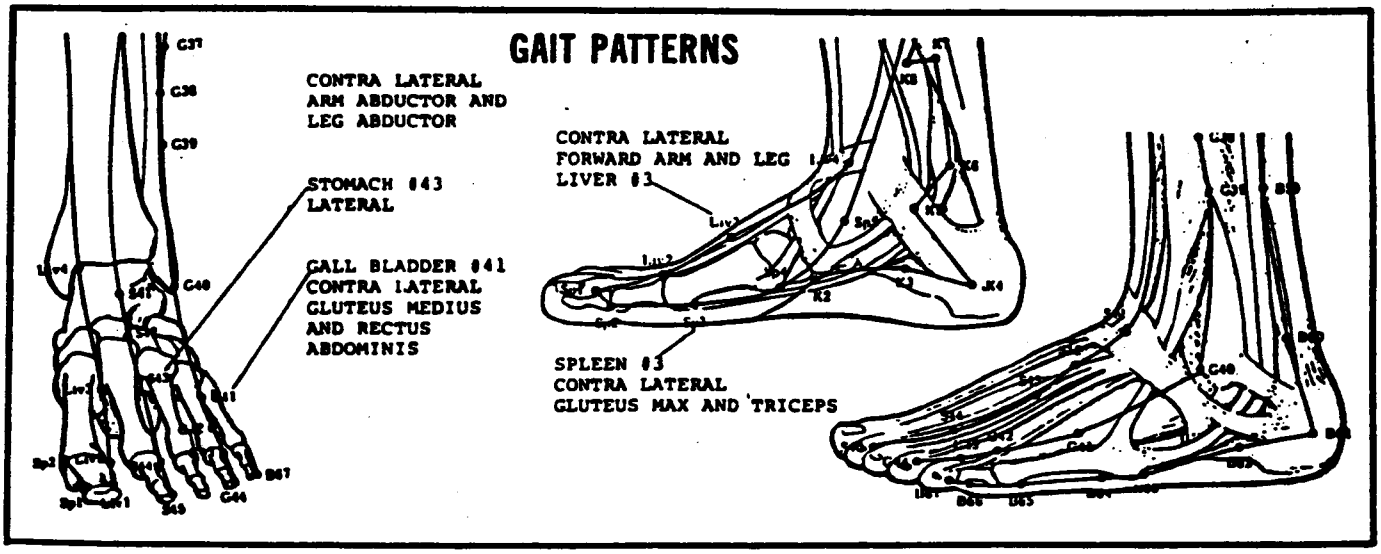
In an excellent book, published by Lippincott, entitled, "Walking and Limping," by DuCrouquet, a variety of gaits are depicted. This is an excellent book to have in your possession or library. But gait, fundamentally is an automatic mechanism, and the facilitation and inhibition which normally takes place in gait is something that should be examined critically in many patients. Most patients in the average practice are part of the ambulant group that the doctor usually treats without direct gait interest.

In other words, most patients walk to the doctor's office and walk back. He may walk directly or he may ride in a car, but fundamentally entrance to, and leaving, the doctor's office involves walking. Therefore, in examination the patient's gait is important. Many patients do not realize, and many doctors do not realize, that there is a tremendous amount of facilitation and inhibition that takes place with the ordinary gait. For example, test the latissimus dorsi on the average patient with level shoulders. The latissimus should be intact. Have the patient continue standing, but advance the left foot as far forward as he ordinarily would when he is walking. Test the latissimus dorsi with the patient bearing weight evenly on both the left foot which has been advanced, and the right foot. The latissimus should test strong. Have the patient put the weight on the left foot, maintaining just a small amount on the right. The latissimus dorsi will test weak, because, when the left leg muscles that bring the left leg forward are facilitated, simultaneously the muscles that bring the right arm forward are facilitated, and those that bring the right arm backward are inhibited. Therefore, the normal inhibitation of the latissimus dorsi that takes place with a left forward weight bearing step represents the usual pattern of facilitation and inhibition.

These facilitatory activities and inhibitory activities take place at a very rapid rate, crossfiring from left to right, crossfiring from right to left. The myriad patterns of facilitation on the left, for example, and inhibitions, represent the multiple choice combination that the body is able to take when the patient walks well.

As the patient walks, the left leg advances, and simultaneously, so does the right arm. Therefore, taking the left step, the muscles that bring the left leg forward are facilitated, and those that bring it back are inhibited. At the same time that this takes place, the muscles that bring the right arm forward are facilitated, and those that bring it backward are inhibited. This, then, quickly reverses as the patient takes a step with the right foot, and as the right foot advances, so does the left arm, and this procedure is then reversed, so there is a rapid facilitation-inhibition taking place with left leg, right arm and right arm, left leg — at the same time this facilitation-inhibitation takes place contralaterally, so also is there contralateral inhibition of the muscles which brings those limbs backward. This inhibition that brings the leg and arm backward allows the facilitation which brings the limb and arm forward, that takes place.

This example of facilitation-inhibition can therefore be likened to a computerization at the end of a day. For example, moving the left leg and right arm forward is called a "zig" and moving the right leg and left arm forward is called a "zag." Then, at the end of the day, one should have an even number of "zigs" and "zags." One should have, for example, 7,966 "zigs" and 7,966 "zags" to quote a figure at random. But if there is a fault in the gait, there will be an unequal pattern of "zigs" as opposed to "zags" or "zags" as opposed to "zigs", and these then produce the combined and added facilitations and inhibitions which then produce the structural distortions we so often see. This is the reason some patients feel well on leaving the office,



but as they continue to move and operate in the usual fashion, deteriorate. So in addition to the usual methods of muscle testing, testing individual muscles, or testing for fixations by testing individual muscles bilaterally, we have now evolved a system of testing gait muscles. These gait tests are not to be confused with the usual muscle tests, but are to be regarded as an individual type of muscle testing called "gait testing."

The leg is brought forward in the usual fashion that the patient walks. In other words, instead of testing in the psoas fashion, with the leg abducted and the toe turned, simply have the patient lie supine, and the limb is brought forward with the knee extended and pressure is placed upon the ankle directly downward toward the table against perhaps a 30 to 40 degree elevation of the table. This combined psoas quadriceps muscle test is performed and evaluation is made of the relative strength of the muscle. Then the muscles that bring the left arm forward in the usual walking position, a 30 degree forward movement of the extended left arm, are then also tested and evaluation made of the relative strength. Then the left arm and right leg are tested simultaneously in a 30 degree forward position, testing one against the other.

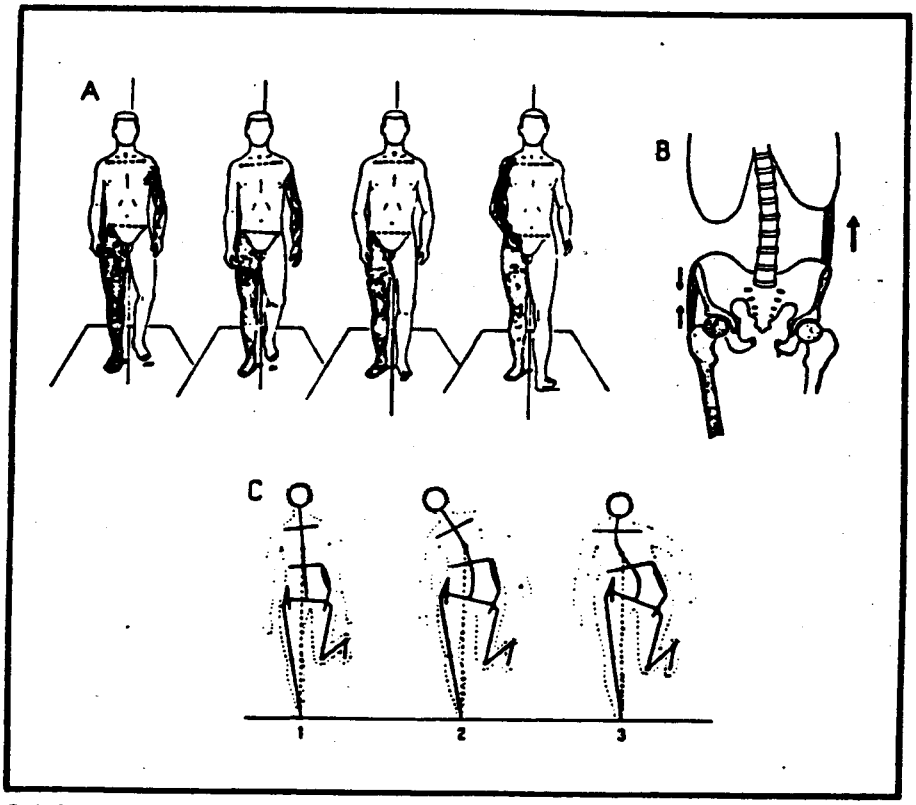
If there is a fault in the gait reflexes, there will be a weakening of the arm or the leg. If the muscle of the arm or the leg is weak to begin with, fix it by the usual pattern of lymphatic, vascular, cranial, acupuncture or Golgi tendon, or turnoff points. These muscle tests are basically gait tests, and are usually employed one against the other.

Generally speaking, one will find individually an intact muscle response, but when tested one against the other there will be weakness. So, the left leg is tested against the right arm, and the right arm is tested against the left leg, having the patient bring the arm forward, and the opposite leg forward, in about the same position as they would when they walk, except that the patient is in this position in a supine pattern. If there is weakness of the left leg and right arm in testing simultaneously, manipulate the acupuncture point on the dorsum of the foot, which is Liver 3. Liver 3 is between the 1st and 2nd metatarsal base, and in this instance if the weakness occurred with the right arm and left leg with the manipulation of Liver 3 at the base of the 1st metatarsal, between the 1st and the 2nd metatarsal, it would be done on the left foot, naturally. This manipulation should be quite vigorous to get past the patient's pain threshold and should be done for approximately 10 to 20 seconds. Naturally, if the gait reflexes showed a weakness of the right leg and left arm, the Liver 3 would be activated on the right foot.

Although not usually observed in walking, there is a lateral gait pattern and it is much more frequently observed in a limping situation, but the muscles that take the arm laterally, such as the supraspinatus the first 20 degrees, and the deltoid, are tested against those muscles which take the opposite leg laterally, the fascia lata and gluteus medius; and the patient again is in a supine position and the arm is abducted with the hand in a neutral position, generally the thumb facing forward, and the elbow extended, and is taken out approximately 30 degrees, and the deltoid and supraspinatus are tested together and then the fascia lata and gluteus medius are tested by abducting the leg approximately 30 degrees.

Generally these tests will show a normal pattern individually, but when the arm is tested against the leg, if there is a gait reflex pattern there will be a combined weakness when the right arm is tested against the left leg or vice versa. If there is weakness on lateral gait testing, this lateral gait weakness is treated by activating on the weak leg side, Stomach 43. Stomach 43 is at the base of the 2nd metatarsal, between the 2nd and 3rd metatarsal, and is manipulated vigorously past the patient's pain threshold for 10 to 20 seconds, then the gait is retested. There should be a good response to simultaneous testing of the lateral movers of the arm and the lateral movers of the opposite leg.

Again reference is made to the excellent book, "Walking and Limping," a study of normal and pathological walking, by DuCrouquet. There are three of these gentlemen, all brothers or related in some way. The French translation apparently was accomplished by two brothers also, Drs. William and Jeff Hunter. This book is published by J. P. Lippincott, both in Philadelphia and Toronto locations. If one observes a patient walking from the front, from the anterior, they have both iliac and scapular markings that they use in their observation. They say, "It is the gluteus medius that maintains the relative horizontality of the pelvis." The lateral abdominal muscles of the opposite side act on the gluteus medius in close synergy. It is the action performed by the two muscular groups that permits the harmonious transfer at the



Gait is a reverse reciprocation that rapidly alternately cross fires at a high rate of speed but with great precision. Failure of some component produces structural faults that persist and perpetuate patient problems.

thoracic center of gravity at the frontal view. This horizontality of the pelvis is essential to both good movement, and also to maintenance of good structural corrections following treatment.

Therefore, we test the gluteus medius against the opposite rectus and transversalis, and this is done with the patient seated, and the patient attempts to press his right knee, for example, against your knee, while you test the opposite, the left, rectus abdominus, by placing your hand on his left knee and your hand on his shoulder, attempting to test the rectus abdominus in the seated position. He exerts pressure against your knee with his right knee, and many times the medius will test out well, as will the left rectus against the right medius when tested individually, but when tested simultaneously many times there will be a complete failure of resistance of either the medius or the rectus abdominus.

Further information is available from me without charge. Kindly enclose a stamped self-addressed envelope.

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Most usually, the rectus abdominus weakens, under these conditions, and this is usually found in the difficult or recurring lower back, which leaves your office quite straight but which returns the following day in a camptocormic or antalgic position. Under these conditions, when there is a weakness of the right gluteus along with the left rectus, one goes to the right Gallbladder 41, which is at the base of the 5th metatarsal, and vigorous manipulation is exerted here. Naturally the reverse is true with left gluteus & right rectus.

A good way to remember this is simply to draw a line across the foot where the metatarsal bends when the patient steps, and these will be the points they approximate — Liver 3, Stomach 43, Gallbladder 41, and SP 3. It is the line which moves diagonally across the foot, starting in a distal fashion at the Spleen 3, moving diagonally backward to Gallbladder 41. Occasionally both left and right G-41 require activity despite the fact only one contralateral pattern of weakness exists.

Turn the patient over and have him lie in a supine position. Then test the gluteus maximus on the right, test the "Triceps" on the left by having the patient flex the elbow and bring it in a posterior direction. There are other muscles, naturally, that do this. Test the backward movement of the flexed elbow against the opposite gluteus max simultaneously. If there is a weakness of either the left "triceps" or the right gluteus max, go to the Spleen 3 on the right and manipulate Spleen 3. Spleen 3 is just posterior and lateral to the head of the 1st metatarsal, and should be manipulated vigorously for 10 to 20 seconds and then the muscles should be retested. Naturally one should test the opposite gluteus max and the opposite "triceps", testing them individually first, then one against the other, and appropriate action should be taken if muscle weakness is found.

These points across the top of the dorsum of the foot represent gait reflexes, and many times one will find evidence of an upper cervical fault along with this pattern, but normalization of these gait reflexes adds much permanency to your mechanical correction, and many times allows the patient to perform longer with less fatigue, within his usual working or recreational pursuits.

An attempt has been made to describe gait patterns and how they relate to structural spinal faults. Naturally structural correction of both foot and spine is also required if indicated by diagnostic kinesiological muscle testing and other diagnostic modes.

NOTES

APPLIED KINESIOLOGY & GOLGI TENDON ORGAN SPINDLE CELL

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Many patients are troubled by problems that involve ligaments. Many doctors also lean to problems that are ligament related. The effects of Golgi tendon organs and spindle cell activity directly affect ligament function. Ligaments maintain vertebral & structural position and importantly as well malposition. Ligaments are a part of an intricately simple & simply intricate biofeedback system that maintains man's functional integrity.

Ligaments are bands of various forms serving to connect together the articular extremities of bones and are composed mainly of bundles of white, fibrous tissue placed parallel with or closely interlaced with one another. The ligament is pliable. It is flexible enough to allow freedom of movement, but it's tough and strong and does not extend too well under the most severely applied force or pull. Therefore, it is well suited to serve as the connecting medium between bones. But by intercrossing and interlacing the different directions of these bands, the ligaments make it possible for any articulation to adequately withstand a strain from any direction. The ligaments are frequently under strain, either temporary, continuous or intermittent, which they may not be able to stand, and this sometimes produces a permanent relaxation of the fibrous bands. These pass in various directions, as mentioned above, to support the articulation from stress coming from any direction when the joint moves through flexion, extension or rotation. Some ligaments are connected with the bone so they pass along its surface, which allows them to have a forward attachment, while the other end necessarily has to be connected with the bone at right angles, which makes the fibro-osseus junction weaker and more susceptible to separation. In other words, there is a susceptibility to separation of the fibrous tissue forming the bone. Embryologically, if you will recall, the mesoderm differentiates into the total structural pattern of bone, periosteum, ligaments, tendons and muscles. However, between these tissues, which are differentiated histologically, there is always maintained a connection by means of the white, inelastic fibrous tissue, so that the fibrous tissue of the ligaments and the tendons have a continuity through the periosteum with the fibrous matrix of the bone. The encroachment on the calcium of the bone on the fibrous tissue at the periosteous junction or the fibrous junction of the ligament can result in a weakening of the tensile strength of the ligament, as well as a relative loss of flexibility, so that the ligament is weaker and capable of more susceptibility to injury at this fibro-osseous point. When the fibrous tissue is weakened at the periosteum or fibro-osseous junction as a result of sprain, or strain, or tearing or degeneration, this produces an instability of the joint due to a relative ligament relaxation.

The ligament relaxation is something about which Hackett discussed extensively in his book, "Ligament and Tendon Relaxation," published by Charles C. Thomas in Springfield, Illinois. George Hackett, who is an Ohio surgeon, made a special reference to occipital, cervical and lower back disabilities, and referred pain and chronic torsion problems with reference to ligamentous relaxation. Hackett states that ligaments may relax and cause overmovement of bone structures. Gillette, a D.C. in Belgium, states that ligaments may become tightened and cause jamming of structural relationships. Obviously, these two observations contradict each other, and therefore the obvious conclusion is that nobody is both right or both wrong. It is our observation that they are both right, because ligament contraction takes place as well as ligament relaxation. Just as in the basic principles of Applied Kinesiology, we have felt that it is demonstrable that the one muscle weakens first, and then the opposite muscle contracts and the last ten years have borne this out fairly well. So also do we find ligamentous relaxation accompanied by ligamentous contraction or tightening, and therefore it is reasonable to assume that both Hackett and Gillette are correct. Hackett says that ligamentous relaxation is a situation where the strength of the ligament fibers becomes impaired so that a stretching of the fibrous bands occurs when the ligaments are subjected to normal or less than normal tension. As a disturbance in muscle tension produces structural alterations, so also can there be a disturbance in the supporting ligamentous and tendon structural associations. Tendons have been developed as the attachment on muscles at both ends to bone or ligament, and act as a cable for muscle action to the particular bone in performance with the special activities of each muscle. It is our observation that tendons may also develop relaxation at their attachment to the bone in precisely the same order that ligaments develop relaxation. The sensory receptors in the ligaments and tendons are particularly numerous, yet the blood supply is relatively poor, and as a result, there is, many times, a failure of repair and a continued activation of the relatively numerous nervous system receptors in specific ligaments and tendons.

Joint ligaments are made up of many

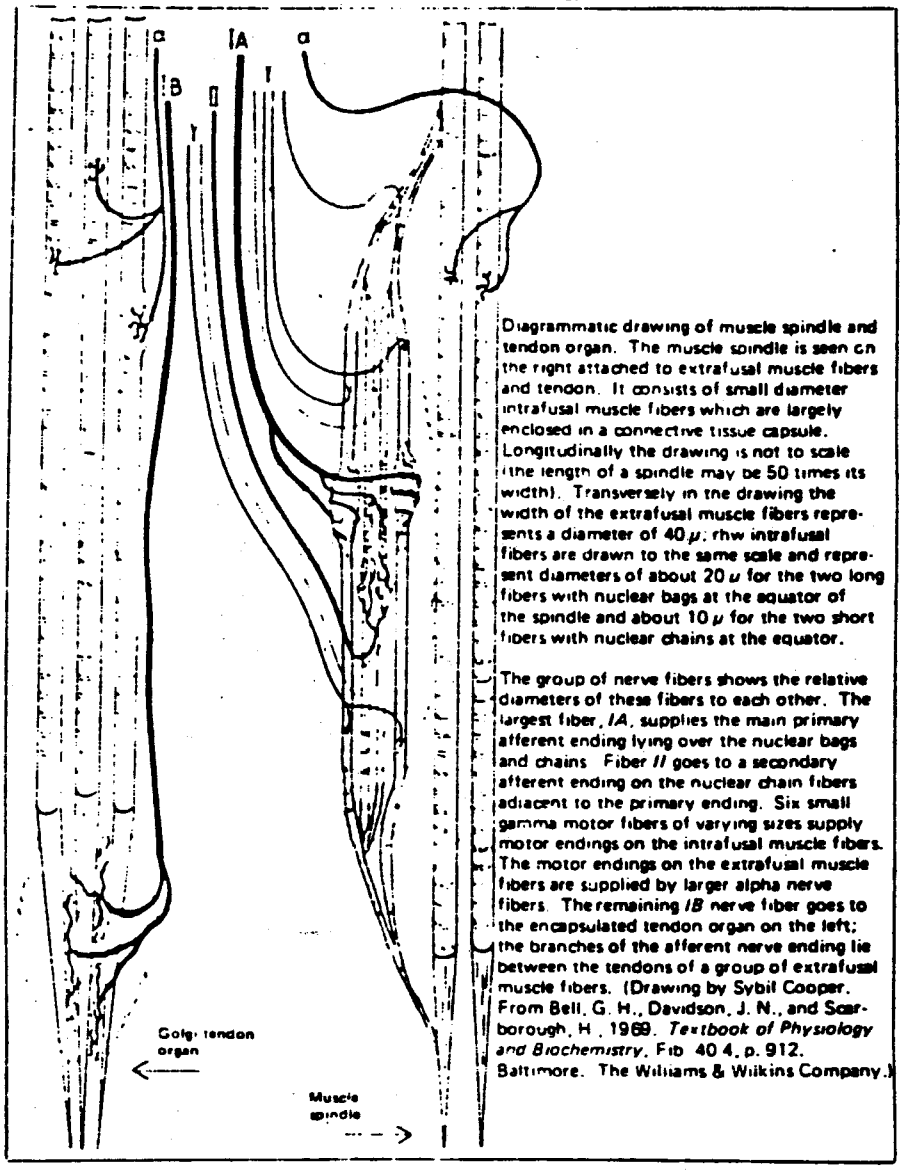
This is the second in a continuing series of articles written by members of the International College of Applied Kinesiology, [I.C.A.K.] and selected by the I.C.A.K. Education Committee for publication. ["Facet Imbrication and Correction" by Dr. Art Holmes in the previous issue was the first article in the series.] Each issue will feature one or more papers which have been presented by I.C.A.K. members at one of their two annual meetings. Correspondence with the authors and/or the Education Committee is invited. The members of the Education Committee are: Dr. Alan Beardall, Lake Oswego, Oregon; Dr. Sheldon Deal, Tucson, Arizona; Dr. Bert Hanicke, St. Louis, Missouri; Dr. John Hughes, Ashland, Kentucky; Dr. Walter Schmitt, [Chairman] Detroit, Michigan.

Dr. George Goodheart, author of this month's article, is the Director of Research of the I.C.A.K.

strands of fibrous tissue which may run parallel or crisscross at dual angles to provide a total potential stabilization at all positions. As early as 1930, Leriche revealed that there was a rich supply of sensory nerve endings in articular ligaments. Leriche was a Frenchman who, having found the sensory rich nerve supply, advocated local anaesthetic infiltration of the ligaments under certain conditions. For those of you who are interested, it is a French publication from the Gazette d'Hopital, and references are 103; 1294, 1930. Gardner, in the Stamford Medical Bulletin of 1953, for November 11; 203, discussed the fact that there was an abundant supply of sensory nerves in the tissues surrounding the joints, particularly in the ligaments, and the most effective stimulus to these nerves was a twisting of the joints. When the joints were operated on under local anaesthesia, the capsule of the ligaments were highly sensitive, whereas the surrounding membrane was relatively insensitive, and the continuous pain, he found, was a great deal of reflex muscle spasm.

"Here," most importantly, and to quote Dr. Gardner, "is the inhibition of the antagonistic muscles that may be so profound as to result in atrophy." And he says, "Joint pain, if mild, may be felt only in the region of the joint, but if intense may be spread and be felt in the entire ligament." Pain is perceived when a well tensioned ligament stretches relaxed fibers. This results in an abnormal tension and stretching of the sensory nerves because those fibers don't stretch. Here again we go back again to the original principles of Palmer. Prolonged overstimulation of the sensory nerve receptors, ligaments, heightens the susceptibility to additional painful stimuli and also heightens the susceptibility of the anterior root ganglion to receive the extra sensory nerve ends of that same ganglion which are then transmitted to the brain and reverberated as referred pain. The body attempts to turn this off, and many times is successful, in eliminating the local disturbance. Since it cannot directly affect the ligamentous relaxation, continued stimulation takes place with continued disability. Muscles are really sort of an internal transverse-expansion hydraulic lift mechanism. And they are influenced by hydro-dynamics. Muscles are really made up of connective tissue in which have been deposited the muscle cells. The connective tissues contain blood vessels, the nerves and lymph channels, and it's the only tissue capable of traction and lifting weight. This connective tissue is continuous from origin to insertion and it differentiates also into the sarco-lemma and the interstitial tissue in the body of the muscle and into the dense tissues that form the tendons. In this vascular connected tissue there are thousands of muscle cells or fibers that are so-called expansion elements. And by hydraulics the fluid moves from the blood vessels into the muscle cells, causing them to expand transversely, thereby causing the connective tissue fibers to shorten longitudinally. This is the so-called contraction that we all know about, which is really transverse expansion and longitudinal shortening.

We are all familiar with the choline-sterace-acetyl-choline cycle of the nerve transmission, as well as the AP-PA pattern involving muscle contraction. And also, the change in solubility of sodium and calcium which occurs at the motor end point. If you can imagine a muscle inflated with air instead of muscle fibers, we would have this continuous piece of connective tissue honeycombed by thousands of minute air cells to replace muscle fibers. And here we have a tissue capable of great traction. Now, connective tissue is the only tissue in the muscle capable of lifting weight. The muscle fibroles inside the muscle fibers are also connective tissue. Most histologists and kinesiologists agree that the muscle fibers do not attach to the fibrous structure at the ends, and there is pretty good evidence that there is no actual continuity between the contractual substance and the tendon. That is pretty good evidence, again, that the expansional elements of the muscle are incapable of pulling at their ends when they shorten longitudinals, so therefore the pull must be made by connective tissue. And when the connective tissue becomes loosened, the muscle becomes weakened.



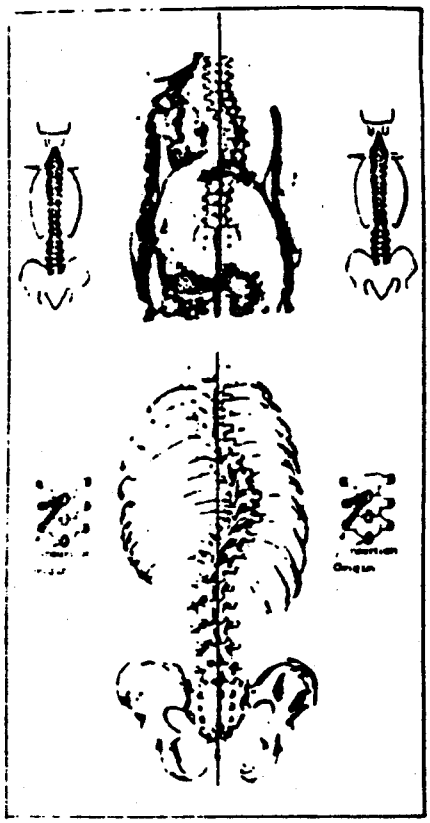
Diagrammatic drawing of muscle spindle and tendon organ. The muscle spindle is seen on the right attached to extrafusal muscle fibers and tendon. It consists of small diameter intrafusal muscle fibers which are largely enclosed in a connective tissue capsule. Longitudinally the drawing is not to scale (the length of a spindle may be 50 times its width). Transversely in the drawing the width of the extrafusal muscle fibers represents a diameter of 40 μ; rhw intrafusal fibers are drawn to the same scale and represent diameters of about 20 μ for the two long fibers with nuclear bags at the equator of the spindle and about 10 μ for the two short fibers with nuclear chains at the equator.

The group of nerve fibers shows the relative diameters of these fibers to each other. The largest fiber, *IA*, supplies the main primary afferent ending lying over the nuclear bags and chains. Fiber *II* goes to a secondary afferent ending on the nuclear chain fibers adjacent to the primary ending. Six small gamma motor fibers of varying sizes supply motor endings on the intrafusal muscle fibers. The motor endings on the extrafusal muscle fibers are supplied by larger alpha nerve fibers. The remaining *IB* nerve fiber goes to the encapsulated tendon organ on the left; the branches of the afferent nerve ending lie between the tendons of a group of extrafusal muscle fibers. (Drawing by Sybil Cooper. From Bell, G. H., Davidson, J. N., and Scarborough, H., 1969. *Textbook of Physiology and Biochemistry*, Fib 40 4, p. 912. Baltimore. The Williams & Wilkins Company.)

We are all familiar with the weakened muscle, and continued research into the principles of applied kinesiology would indicate that in addition to the previous theories about muscle contraction, which are all true, muscular action is in reality a transverse expansion due to an increased intra-muscular pressure, and it's capable of converting an axis shortening into lifting power of great strength. There is pretty good evidence, too, that a muscle is much more powerful at the beginning of this expansion than at the end. When you start to chin yourself and lift your body weight at the beginning, your muscle action is quite powerful, then as your chin approaches the bar, the muscles seem to work harder because the internal transverse expansion loses efficiency at the end of the expansion. Each muscle contains thousands of little expansion elements, each with its own included chemical supply right at hand. This is the reason why the response of the muscle to new stimulation is almost instantaneous and it's the reason why, many times, we get such a quick response with the neurolymphatic, neurovascular, nutritional, spinal fluid or acupuncture meridian activation. Therefore, if you think of a muscle as a hydraulic lifting unit in addition to its previous observations, it's not a bad point of view. To sort of review again, most voluntary muscles are classified into a unit of four, from the point of view of its relationships. The prime mover, which is the muscle that causes the essential movement if contracted; and second, the antagonist which contract against the prime mover; third, the synergists, which assist and collaborate with the prime movers; and fourth, the fixation muscles which fix and stabilize the neighboring joint, to assist the synergists in carrying out a particular movement.

This rather lengthy and rather general preamble is by way of reacquainting you with the general terms of muscle action. It should be helpful in understanding what shall follow.

Early in Applied Kinesiology, hard pressure at the origin of insertion was often valuable in clearing muscles of weakness associated from trauma, either recent or ancient. The number of muscles that responded to this technique apparently exceeded the average that one might expect to find in micro-avulsion, recent or ancient. If you will recall the description of the periosteal connection of ligament or tendon, visualize a series of receptors at the attachment of the muscle, or visualize it as if you had your fingers pointing straight up and the fingers in a relatively neu-



tral position. When the muscle pulls and the opposite muscle reacts, or the antagonistic muscle reacts, the pull of the muscle initiates a pull on the inner fibers within the fibro osseous junction, and literally turns them into the "on position" with the fingers angling in the direction of the muscle pull. This in turn causes the ligament to grasp the attachment more tightly, such as a Chinese finger torture sleeve, or the crisscross ropes that are used to lift the barrels for loading or unloading such barrels on board ship. Visualize the antagonistic muscles relaxing structural receptor fibers, again in a workable neutral position, the fingers being held straight up. And as the muscle relaxes, the fibers move to the right. And here is a schematic, diagrammatic model (Fig. 1) of the ligamentous receptor unit. As the muscle contracts, the receptors are pulled in the direction of the muscle and serve to reinforce the ligamentous attachment of the muscle to the bone. It communicates this, not into the muscle, but to the hypothalamus, so there is an awareness of the hypothalamus, of the action of the muscle in its inter-reaction on its ligamentous attachment. And the same is true on the antagonistic muscles, relaxed side. So, going back to the original principles of Applied Kinesiology, the hard pressure at the origin of insertion, was not only effective in those cases of actual micro-avulsion which we did see,

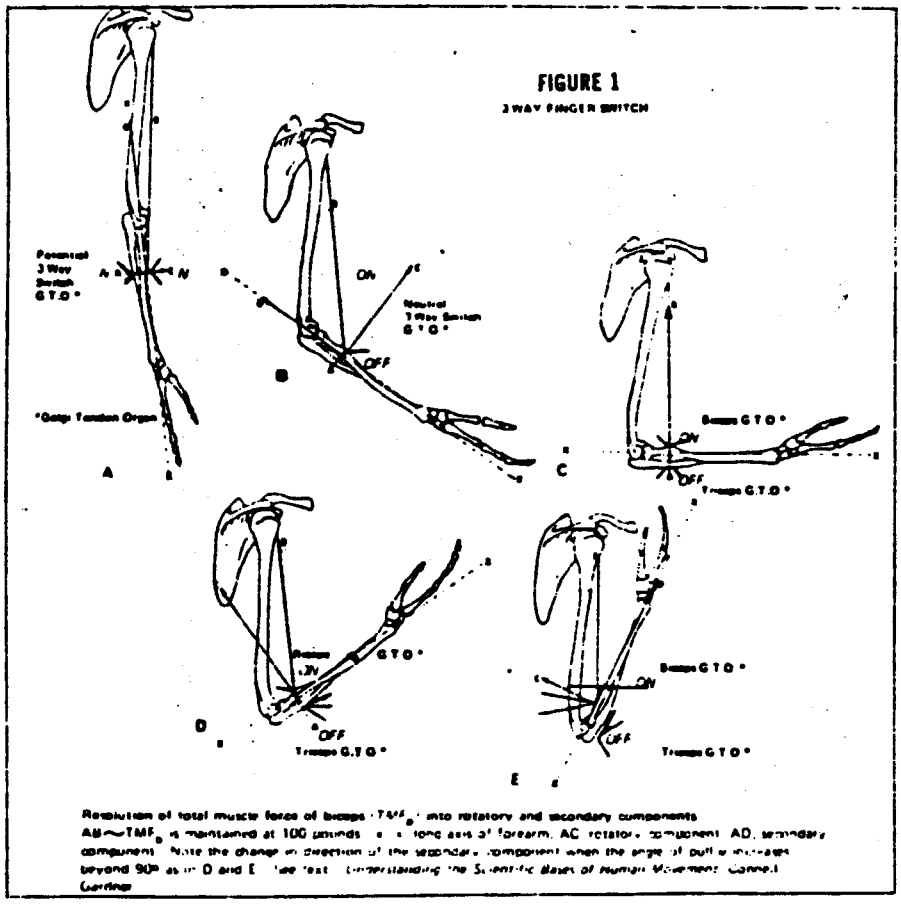


FIGURE 1

3 WAY FINGER SWITCH

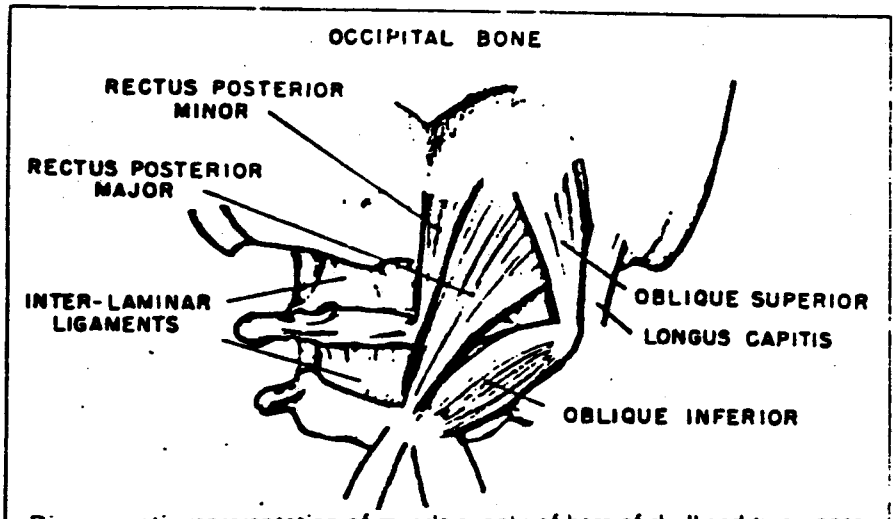
Resolution of total muscle force of biceps (TMF_B) into rotatory and secondary components. AB—TMF_B is maintained at 100 pounds [illegible] long axis of forearm. AC rotatory component. AD, secondary component. Note the change in direction of the secondary component when the angle of pull is increased beyond 90° as in D and E. (See text. Reproduced from *The Scientific Basis of Human Movement*, Cornell Gardiner)

but by accident happened to turn on some of the receptor fibers that were in a state of partial-turnoff or partial turn-on, as the case may be, at the periosteal junction. Now, a carefully calculated directional contact applied to origin of insertion, and with a relatively mild pressure of two or three pounds, directed in the line of muscle pull on both origin and insertion, will prove and has proven remarkably effective in restoring the strength of weakened muscles. We can then contact musculo-tendon attachment at the lesser trochanter when you have a weakened psoas muscle, and push in the direction of muscle pull, and you will turn on the receptors in the periosteal junction, so as to allow a proper pull, and there will cease to occur the slight micro-avulsion which so frequently does occur in recurring muscle weakness. It is not necessary in each instance to use a double contact at origin or insertion, but it is quite necessary to exactly press in the line of muscle pull. The exact linear quality of your pressure is quite important, and therefore you must have a good appreciation of the relative vector or line of pull that the muscle exerts upon the particular tension that you are dealing with. This is most important in the correction of the idiopathic scoliosis that you see so often in young girls at a prepuberty or pubertal age, because in this particular instance, balancing the intrinsic muscles and extrinsic muscles is of value; but the ligamentous disturbance continually realigns the scoliatic pattern into a relative recurrence of the original scoliosis. But once attention is paid to the ligamentous attachment as well as the muscles, good response starts to occur.

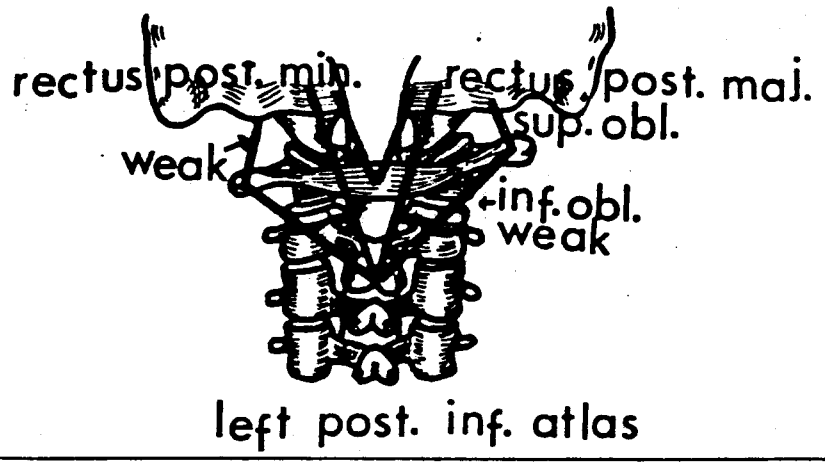
Now the foregoing applies to those muscles which we are able to establish weak by the standard methods of muscle testing. Another situation occurs many times where the weakened muscle over a period of time has caused the opposite antagonistic or contra-lateral muscle to contract. In this instance, the constant pull has caused the opposite muscle, the antagonistic muscle, the contra-lateral muscle, to continue to hold its receptors at its periosteal junction into a tension pattern where it should relax, and in this instance a directional vector contact is applied opposite to the direction of the muscle pull. In other words, if the psoas pulls in a diagonal line, on the lesser trochanter, if it is weak one contacts it in the direction of muscle pull, but if the psoas is hypertonic, one contacts the lesser trochanter and pulls in the exact opposite direction. In other words, away from the line of the muscle pull, by thus contacting a contracted or hypertonic muscle you can release it. Balancing the previously weak muscle does not cause an automatic restoration of strength and balance. In the relatively rare event when both muscles are relatively strong, but one muscle is more hypertonic than the other, one must make a judgment as to what the body is attempting to do. There are two factors involved here: One, the normal body language attempting to correct and balance a structure, and many times a forgotten memory pattern or structure has forgotten to balance itself.

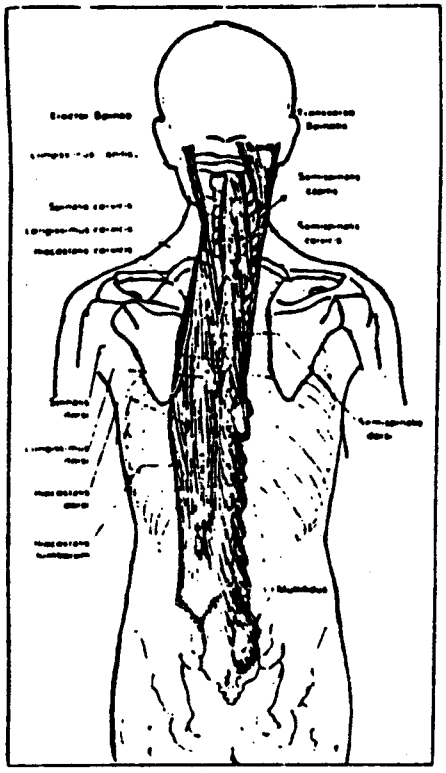
Therefore, in dealing with hypertonic muscles, you have a selective choice. The usual pattern is to use a two or three pound pull opposite to the line of the muscle pull in the usual hypertonic muscle, but occasionally in a normal muscle pattern, where one muscle is apparently more contracted or more hypertonic than the other, use some method of judgment such as flexion, extension, rotation, the ability of the patient to move a joint flexibly, or raise an arm above one's head — any variety of tests, including motion studies for pain production — and then attempt to pull opposite to the direction of the muscle, pull on the origin and insertion or both, and observe the response. If a therapeutic response is not forthcoming, try reversing the direction of the contact in such a way that you press gently in the line of the muscle pull, in the event that the hypertonic muscle is attempting to correct something and has not been able to do so.

The actual visualization that one has of the lumbar, dorsal or cervical spine now becomes extremely valuable, because observing the relative disturb-



Diagrammatic representation of muscle supply of base of skull and two upper cervical vertebrae. The short muscles which connect these structures are shown in the right of the drawing. On the left side, the muscles have been removed to show the modified inter-laminar ligaments in the upper cervical region.





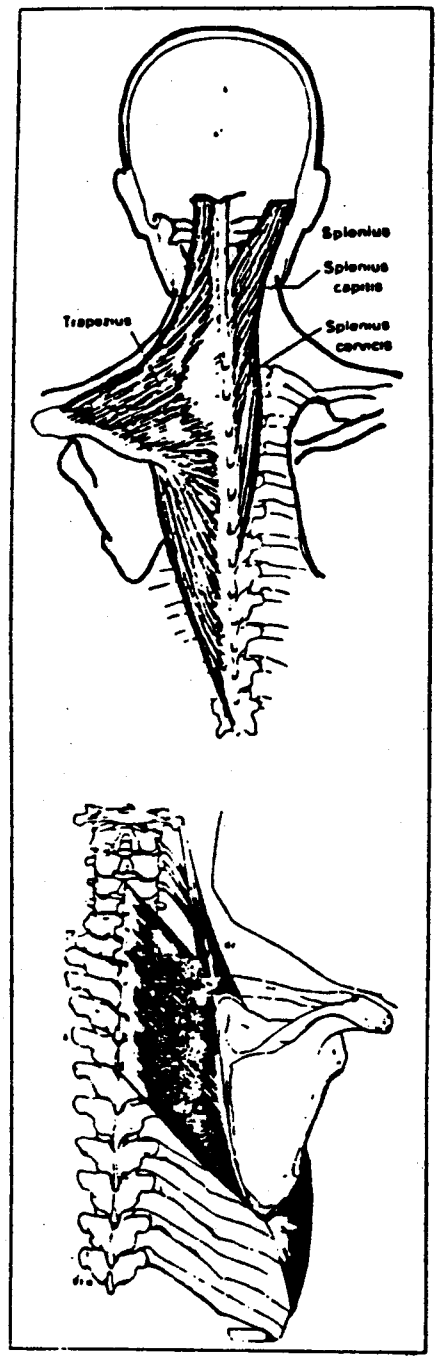
ances that exist in rotation and inferiorities allows one to immediately visualize the ligamentous problems, and indications. For example, in the posteriority of the third lumbar we find that the third lumbar attachment of the rotatory brevis, for example, is from the third lumbar transverse to the spinous process of the second lumbar above it. And when there is rotation, there is a slight movement on the spinous process of the second lumbar towards the side that the third lumbar shows a posteriority transverse. Therefore, an opposite pull, in other words a pull opposite to the direction of the rotatory brevis, would be indicated, on the transverse process of the third lumbar and the spinous process of the second lumbar. Holding this for twenty or thirty seconds, one then goes to the opposite side, the anterior side that is, and exerts a pressure on the spinous process towards the transverse process, and exerts a pressure on the transverse process, towards the spinous process, using two or three pounds with a directional pressure applied for approximately 20 seconds, and then repalpate and if necessary re-x-ray. Many times the ligamentous "tug" is sufficient to realign the structural disrelationship. If not, balance the muscels and ligaments first and then make the usual mechanical adjustment.

Your attention is directed to the fact that the rotatory brevis runs almost horizontally from the transverse process of one vertebra to the spinous process of the vertebra above, and that the rotatory longus runs from the transverse process of one vertebra to the spinous process of the vertebra two spinouses above it. And as you well know, there are inter-transverse and interspinous ligaments, all of which can be "recalibrated" back to normal by examination of the usual film, if one takes an AP-PA, or a lateral view.

This double delta schematic representation from the rotatory brevis-longus relationship to vertebral patterns is reversed in the upper cervical, with the rectus posticus major and minor having their origin on the spinous processes, rectus capitis posticus major attached to the spinous process of the axis and the rectus capitis posticus minor attached to the tubercle on the posterior arch of the atlas. The inferior portion is attached to the spinous process of the axis, and then the rectus capitis posticus major going up to the occiput, on a lateral portion the rectus capitis minor going to the medial portion of the occiput, and the inferior oblique going from the spinous process of the axis to the inferior posterior part of the transverse process of the atlas. Then, again, the superior oblique going from the transverse process of the atlas to the superior and inferior nuchal line of the occiput. So, here we have a reversal of the delta position of the lower lumbars, and we have now a reversed delta with the point of the delta emerging downward as opposed to the double delta pointing upward on the rest of the lumbar rotary, and this is not a bad way to remember it.

In this regard, it might be well to review the sacrospinalis origins and insertions. The iliocostalis dorsi has its origin on the upper borders of the angles of the lower six ribs and then moves upward to insert in the upper borders of the angles of the upper six ribs. The longissimus dorsi has its origin on the transverse processes of the lumbars and over the sacrospinalis common tendon coming up the sacrum, and then it inserts on the transverse processes of all the dorsal vertebrae and on the lower nine or ten ribs between the tubercles and the angles of the ribs; again, roughly running from the lumbar transverses and the sacrum up to all the dorsal vertebrae.

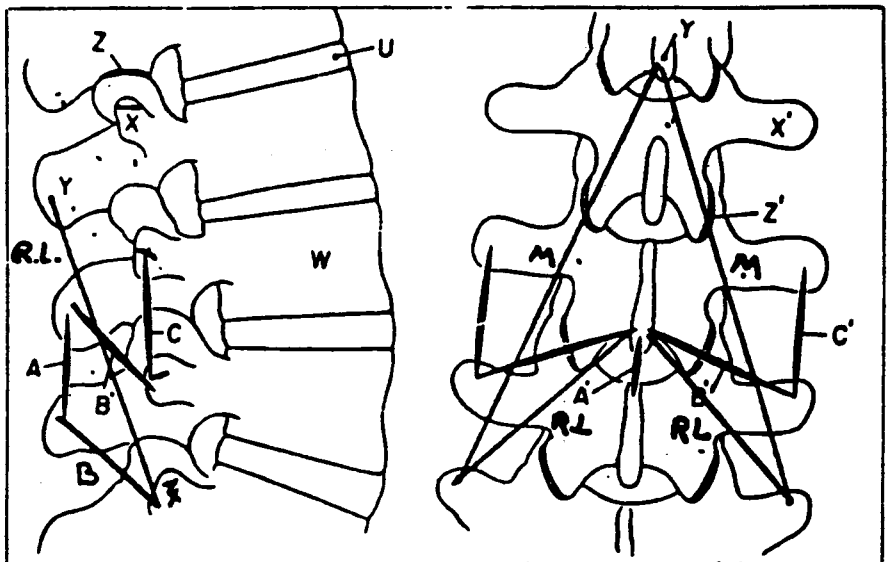
The spinalis dorsi runs from the spinous processes of the first two lumbars and the last two dorsals and inserts on the spinous processes of the upper four to eight dorsal vertebrae. You can see how this would be important in changes in a lateral position in these particular muscles, that would be weak on one side, or possibly both weak or both contracted. The iliocostalis lumborum starts off at the middle crest of the sacrum, the spinous processes of the lumbars and the 11th and 12th dorsal vertebrae and the iliac crest and the lateral crest of the sacrum, and then inserts on the inferior borders of the lower six or seven ribs. Sometimes the quodratus lumborum is involved, but generally it is separate and you can quite often see the evidence of the involvement of the quodratus lumborum when you see that dipped 12th rib, in reference to the other 12th rib, on x-ray.



Now this rather involved muscle origin and insertion resume is designed to allow you to interpret an x-ray, for example, and apply the proper ligament-

posite to the direction of the pull of the muscle, of that particular muscle's periosteal or fibro-osseous attachment, which has its receptors in an activated state. Reverse them by pressing with two or three pounds of force in the direction opposite to the line of the muscle pull in the various muscles that we just discussed, and repalpate. Naturally, it may be necessary to apply the reverse measure to the ligamentous problems on the opposite side, pressing the periosteal attachments of the particular muscle toward each other in the direction of the muscle pull. Naturally, this will cause a review of your basic anatomy to take place, but it is a measure of incalculable value in terms of patient response and in terms of pain relief, and it is a valuable addition to the material we already possess.

Remember that the interspinalis muscles, short muscular fasciculi, are placed in pairs between the spinous processes of contiguous vertebrae, one on either side of the spinal ligament. In the cervical region they consist of six pairs, the first pair being between the axis and the third, and the last between the seventh cervical and the first thoracic. They are small narrow bundles attached below and above to the spinous processes. In the thoracic region they are found between the first and second vertebrae and sometimes between the second and third, and between the 11th and 12th. In the lumbar region, there are four pairs in rows between the five lumbar vertebrae. There is occasionally one between the last thoracic and the first lumbar, and sometimes between the fifth lumbar and the sacrum. Naturally they act to extend the vertebral column. As you know, the inter-transversarii are small muscles placed between the transverse processes of the vertebrae. They are best seen in the cervical region. They are placed in pairs, fastening in pairs between the anterior and posterior tubercles of two adjacent vertebrae transverse processes, and they are separated from one another by the anterior primary division of the cervical nerve, which lies in the groove between them. The muscles connecting the anterior tubercles are called the anterior inter-transversarii and between the posterior tubercles, the posterior inter-transversarii. There are seven pairs of these, the first pair between the atlas and the axis, and the last pair between the seventh cervical and the first thoracic. In the thoracic region, they are present between the transverse processes of the lower three thoracic and between the transverse processes of the last thoracic and the first lumbar. In the lumbar region they are ranged in pairs on either side of the spinal column, one set occupying the entire transverse space between the transverse processes of the lumbar vertebrae. They are quite wide in the lumbar area, and actually they have divided into the inter-transversarii lateralis and inter-transversarii medialis, and it runs from the accessory process of one vertebra to the maxillary process of the vertebra below. It is interesting to note that there are seven pairs in the cervical column and they are only present in the last three thoracic, and also between the last thoracic and the first lumbar. Whereas, in the lumbar area they are between the transverse processes of all the lumbars.



Schematic representation of the stabilization for the vertebral joints. W, vertebral body; U, intervertebral space; Z, Z', facet joints; A, A', interspinales muscle, interspinous ligament; B, B', rotatores spinae muscle; C, C', intertransversarii muscle. The multifidus muscles arise from the transverse process of a vertebrae and ascend to insert two to four spinous processes higher. RL = Rotatores Longus. M = Multifidus. (They stabilize a group of vertebrae.) (From Kopell, H. P. and W A. L. Thompson, Postgrad. Med., 26: 652-658, 1959.)

It is recognized that there are some muscles where either the origin or insertion is inaccessible. For example, the rectus capitis anticus major, or as it's sometimes called, the longus capitis. It comes from the anterior tubercles of the third, fourth, fifth and sixth cervical vertebrae and ascends to be inserted into the inferior surface of the basilar part of the occiput, which makes it quite inaccessible; whereas the rectus capitis anterior, or the rectus capitis anticus minor, runs from the lateral mass of the atlas transverse process into the same inferior surface of the occiput, right in front of foramen magnum; and so, also, the rectus capitis lateralis, which comes from the atlas and inserts into the under surface of the jugular process of the occipital bone. Actually, they are inaccessible, but most of the time, by pressing on their origin, one can help considerably in these unusually situated muscles; and naturally, attention to the other five factors of the IVF that we have so often talked about: the nerve, the blood vessel, the lymphatic vessel, the spinal fluid and the acupuncture meridian connector aid in balancing here — and attention to all five factors and their complete divisions will yield results in these difficult situations. If still ineffective, use a double finger contact to belly of involved muscle, in reverse direction to previous origin and insertion. This allows spindle cell control to be modified to your needs. There is a very fine book by Kopell and Thompson entitled "Peripheral Entrapment Neuropathies", and they cite the interesting relationship of the small muscles stabilization system in the patients who have developed back difficulties as a result of myasthenia gravis. In myasthenia gravis, the chemical treatments involve the use of Prostigmin, which allows some muscles to become stronger even though the patient has back pain and spasm. The spasm and the back pain on the larger muscle masses subsided in the particular patient they cited, and the back disability has been

ous technique to your visualization of the x-ray or to allow it to be interpreted in terms of your muscle palpation, identified by palpation, those muscles which are apparently contracted by palpation, and apply the ligamentous technique. In other words, pressing opmaintained in check on account of properly adjusted doses of Prostigmin, which is not a muscle relaxant but a muscle contractant. And here again is pretty good evidence in the aggravated situation of muscle weakness and MG that the principles work.

Erect posture has been given as a causative factor in many spinal disorders. The presence of a herniated I.V. disc in quadripeds such as dogs would confuse a regressionist. The disc is a passive structure whose position and status is a result of the factors surrounding it, basically the muscles and the ligaments, and the effect of the forces that are operating on a disc can be seen on an x-ray of a patient's chronic back difficulty, and the reactive effects on the attachment of the annulus and other ligaments on the intervertebral edges would cause the characteristic hypercophic changes occurring, as Kopell and Thompson state. Here again we have the evidence for the continued use of the new ligamentous technique and the application of the Law of the Ligament.

Further information and treatment diagrams are available without charge from the author. Kindly enclose a stamped self-addressed envelope.

NOTES

Therapy Localization & Kinesiologic Biofeedback

By George Goodheart, D.C.

Man, as you know, is a structural, chemical, psychological, equilateral triangle and he possesses a potential for recovery through the innate intelligence of the human structure. This recovery potential with which he is endowed merely waits for your hand and your heart and your mind to bring it to potential being and allow the recovery to take place which is man's natural heritage. This benefits man, it benefits you, and it benefits our profession.

The ability of the patient to be the source of the diagnostic information for proper therapy cannot be overemphasized. The ability of the body to diagnose itself is a relatively new arrival. The continued implementation of the Applied Kinesiology technique will provide an effective response and a greater certainty both before and after testing. The new methods that you can now add to your present material will allow a greater response, and coupled with good health care will continue to add to your Chiropractic ability and reputation.

We have talked about body language. The body language is spoken, as you know, through the action of the muscular system. And its interpretation is the key to the innate intelligence of the body. Here we have the key to the application of the principles of chiropractic. The ability of the body to heal itself depends upon the right diagnostic relationship in terms of therapy.

Recently, in several patients who had serious illness, one of the interesting features was that we could never find a basis for the existence of the serious illness. In most instances we have been able to find weak muscles that relate to weak organ function and we were able to establish a relationship either in the "clear" — by simple testing — or by challenging the mechanism in some of the five fingered factors of the IVF concept that you should all be familiar with.

Five elements leave the Intervertebral Foramen: One, the nerve; two, the blood vessel; three, the lymph vessel; four, spinal fluid; and five, the acupuncture meridian connector. We challenge the nerve, we challenge the lymphatic structure, we challenge the vascular structure, we challenge the nutrition, we challenge the spinal fluid, or we challenge the acupuncture-response and get an insight into the cause and thereby the therapy of a particular patient's problem. Recently, several cases of serious illness resulted in the demise of two patients, despite the fact that all activity diagnostically that could be done accurately was done. It was always impressive that one could not find the cause even though we were aware of the clinical diagnosis. We could not find out what organ system had failed to function, to allow the serious illness to take place.

The thought occurred that perhaps "we were asking the wrong person." Instead of asking ourselves, and then using our own ability to diagnose and challenge the mechanism, it was thought it might be wiser, if a serious illness was affecting a patient, to "ask" the patient's body. Now we "ask" the patient's body when we use the challenge mechanism for vertebral faults, a micro subluxation. We "ask" the patient's body when we use the alarm point system of acupuncture. We use the patient's body in judging the muscular testing response to a deep breath in or a deep breath out. This is all familiar work and therefore should not be repeated. But if there is a fault within the body, the body should be aware of it.

D. D. Palmer said, and he said it extremely well: "Too much or not enough nerve energy is disease." And it was literally a harking back to this original concept that developed the new diagnostic concept that allowed us to understand why a patient's body would apparently tolerate and even accept serious illness without reacting. If an area has too much nerve energy, one should be able to determine it. If an area has too little nerve energy one should be able to determine it. Many methods of investigation have been used, but even the most sophisticated instrumentation and most classically designed X-ray interpretations fall short of the mark in terms of the clinical response. If the patient has too little nerve energy in one place or too much in another it should be measurable. Yet obviously, in some cases we find it difficult to ascertain which area has too much or which area has too little.

In testing a particular muscle such as the pectoralis major clavicular, tested in the usual fashion, if one finds it weak, treat it in the usual fashion using any of the five finger concepts: neurolymphatic, neurovascular, nutritional, spinal fluid or acupuncture meridian connector points. Then retest the muscle in the usual fashion. Then ask the patient to place a hand, either hand, behind the occiput. Gently touching the occiput with the palmar surface of the hand, retest the pectoralis major clavicular. If there is a fault at the occiput which could be cranial or mechanical or related to the atlas in a vertebral way, there will be a marked weakening of the pectoralis major clavicular despite the fact that you may have strengthened the muscles by any of the "five finger" concepts we discussed previously. Then have the patient move the hands to the neck, place the hand, or hands, on the neck. If there is over-activity, "facilitation" (increased activity that D.D. Palmer talked about) in the cervical segment touched by the hand, there will be an immediate weakening of the muscle tested. Continue down as far as the hand or hands can reach on the dorsal spine, and this may be done in either supine or prone position, until you reach the pelvic girdle. Then have the patient place first one hand on a sacroiliac joint, then the other hand on a sacroiliac joint, and then both hands simultaneously, and recheck a convenient muscle.

We generally use the hamstring under these conditions, when the patient is in a prone position. The patient places the hands on the lumbar area and the hamstring is tested; the patient places the hands on the sacral area; the patient places the hand on the sacroiliac joint on the left; the patient places the hand on the sacroiliac joint on the right; the patient places the hands together, and if there is over-activity then the muscle will weaken. Having found the over-activity, use your usual techniques such as DeJarnette or any other device, challenging the vertebral direction of therapy and following correction, have the patient place the hand or hands on the lumbar area and retest the appropriate muscle. We use the hamstring as the convenient one. Have

the patient put the hand or hands on the dorsal lumbar junction, retest the muscle. We use the hamstring as an indicator. Most patients will exhibit more than one area which will "blow out" or weaken tested muscles if the patient's hands are placed in contact with the spine at that area. In the event that there is a weak muscle, treat it in the usual fashion, strengthening it.

If there is an area of over-activity at any place in the spine — there will be a marked weakening of that segment. If the muscle is weak and cannot be restored to normal by any of the measures with which we are familiar coming out of the IVF, the nerve, the blood vessel, the lymph vessel, the spinal fluid and the acupuncture meridian connector, then have the patient place the hands first on the occiput then on the cervical column then on the dorsal cervical junction, then on the dorsal column, then on the lumbar dorsal junction, then on the lumbar spine, and last but not least the hand over the pelvis and then over the sacrum and coccyx. It is not necessary to use hard pressure. The patient's hands can be very lightly placed on his own body and then an appropriate muscle may be tested. Use both hands in difficult cases; in both palmar and volar hand positions.

Having established the location (the therapy localizer technique is what we call this) then you may use your challenge mechanism that we are accustomed to using for vertebral localization, and it can be done much more quickly and simply by knowing the critical area. "Fix what you find, but be sure you find it and be sure you fix it!"

Having found the segment which is disturbed, and having then challenged the mechanism until you find a segment, a vertebra, which apparently is related on the basis of your testing the patient's problems, you then have two choices. You can adjust it in the usual fashion, or you can apply one more factor to assist in the body's adjustment. Having established the location, the therapy localization, and having established the challenge direction, challenging the vertebra by a 5 lb. directional pressure in any of the multiple directions in which it can subluxate in a macro or micro fashion, then see if you can abolish the challenge mechanism by an appropriate phase of respiration. Naturally test same muscle before and after the challenge.

Challenge the vertebra in the direction that produces weakness, then ask the patient to breathe in, and re-challenge the vertebra that produced muscle weakness. If this does not make a change, have the patient take a deep breath out. If this does not make a change, have the patient take a half breath in. If this does not make a change, have the patient take a half breath out. Generally speaking, one phase of respiration will neutralize the challenge vertebral pressure direction. To repeat, localize by having the patient place the hands in the appropriate area of the spine. Vertebral challenge to find the muscle weakness.

Localize by having the patient place the hand on the spine and then test the muscle. If there is over-activity at that segment of the spine, the muscle will weaken. If the muscle is weak and there is under-activity of that area of the spine, the muscle will strengthen. Having established the location for therapy, then use the challenge technique, pressing on the vertebra in one direction and then another, then retesting a muscle until you find a direction of pressure which apparently weakens or strengthens a selected muscle. Then you have two choices. You can adjust it in the usual fashion, or you can add one more phase of respiratory challenging. Press on the vertebra in the direction that produced original muscle weakness. Have the patient take a deep breath in, out, half a breath in, half a breath out, and find which phase of respiration apparently abolishes the challenge vertebral direction you established earlier.

Having established that, then simply press in the direction that produced the original muscle weakness but synchronize it with the phase of respiration that abolished it. Do this four or five times, pressing the vertebra in the direction that produced the original muscle weakness, but with the phase of respiration that apparently cancelled it out, and this adjusts the vertebra for you. This is a useful technique in extremely painful problems. It's a useful technique when involving fractures; it's a useful technique when there is a great deal of spasm from vehicular accidents and trauma to tissues; it is a useful technique for a variety of instances where the patient cannot tolerate a structural reorientation of the vertebral segments that normally would be used under these conditions.

Recognize that the patient localization does not give the position of the structural, functional disturbance, but simply gives the location. The actual vertebral position is determined by the regular challenge technique that you should be familiar with, or by X-ray, etc.

This same patient diagnostic technique therapy localization can also be applied in terms of visceral disturbances, adhesion complexes and a variety of faults. Simply have the patient place his hand over the area that is to be critically examined and test an appropriate muscle. If there is a lack of nerve energy at that point, a weak muscle becomes strong. If there is too much energy at that point, a strong muscle will become weak. If there is normal energy at the area touched by the patient's hand there will be no change in the muscular structure tested. No positive change — the muscle will continue to test strong. In difficult cases test using both hands and the psoas or piriformis, etc., as an indicator.

D. D. Palmer said, "Too much or not enough nerve energy is disease." "when there is too much action, of which Palmer spoke, the body kicks out the circuit breakers that we are now so familiar with — the neurolymphatic, the neurovascular, the cerebro-spinal fluid, the acupuncture meridian connectors, and the neurological. The original structural subluxation, at whatever level it may have occurred, causes an increase in function which then produces a facilitation of that level, which then produces in the body an effort to reduce the avalanche of impulses coming from the original subluxation. The body protects that circuitry by cutting out the circuit breakers, reducing the avalanches of impulses coming from that area."

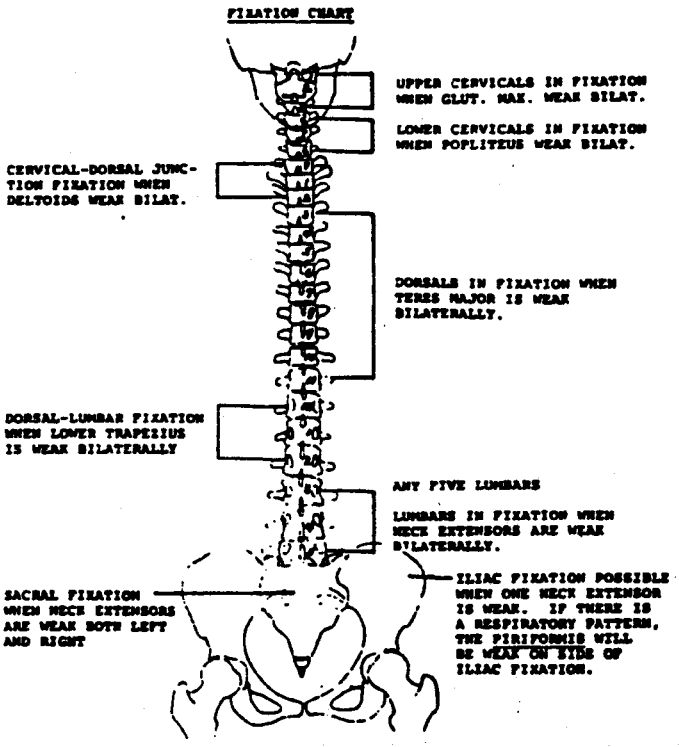
This is the "too much" of which Palmer spoke. Now when there is a fixation of vertebral segments in any area — in the skull or the sacrum or in the iliac structures, or in the vertebrae, there is not enough action, which is a lack of movement. The vertebrae and other structures are meant to touch the nerves, and when there is not enough movement which produces normal touching, there is a lack of function. This statement continues to hold true. "But when the patient's body is aware of the 'too much' or 'not enough' there is a fault which may be fixation, or there is a fault which may be subluxation, or there may be a combination subluxation-fixation pattern. The therapy localization technique simply tells you where it is rather than what it is."

Here, again, Palmer said, "The cause of most disease is an over-supply of nerve force. Most diseases are because of too much nerve energy and not because nerve force is shut off." These statements led us to believe that if there was too much energy, adding more energy by way of the patient's

hand should cause a change. It does. The same statements led us to believe if there was not enough it would cause a change. It does. This same therapy localization can be utilized in any area of the body. We find it very practical in the spine accompanied by vertebral challenging or structural challenging, but it can be used in extremity technique also, and it is extremely valuable in making an accurate diagnosis.

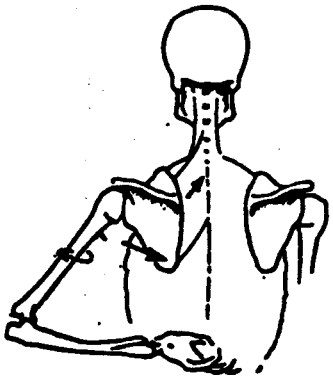
Localization of the patient's energy at the extremity in a carpal tunnel, for example, will produce a weakness or a strengthening of the opponens muscle, depending upon which factor was present first. Generally speaking, in a carpal tunnel, as we have said many times, there will be weakness of the opponens muscle. Have the patient lightly grasp the wrist and test the muscle; if there is no strengthening, have the patient grasp the elbow or the shoulder or the neck, until one finds an area that apparently seems to increase the strength of the weak opponens muscle. Then take appropriate action to localize by challenging the radius or the ulna in particular directions, or by challenging the position of vertebra connected. Then one can make the same therapy decisions we spoke of earlier. One can make a structural correction, remembering that in a structural correction with extremity technique, one always adjusts the extremity in the direction that produces strength. Therefore, if you press on the radius and it weakens an opponens muscle, then you adjust in the opposite direction.

FIXATION CHART



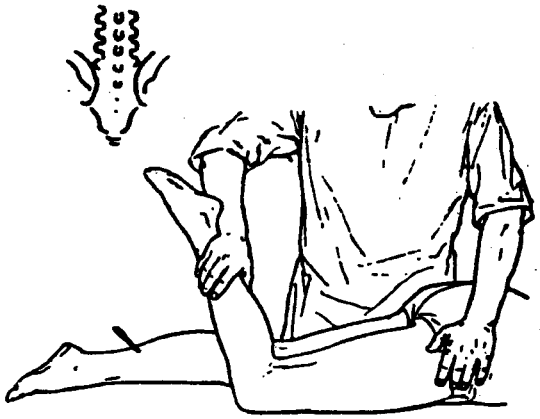
THERAPY LOCALIZE IN FIXATION BY HAVING PATIENT PLACE BOTH HANDS ON NECK. FOR EXAMPLE IN UPPER CERVICAL FIX AND GLUTEUS MAX. WILL STRENGTHEN; OR TO DETECT MICRO-FIX HAVE PATIENT PLACE HANDS ON NECK AND ROTATE HEAD LEFT AND RIGHT. DOUBLE GLUTEUS MAX. WILL WEAKEN; DETECTS TRACE FIXATIONS.

THERAPY LOCALIZATION



THERAPY LOCALIZATION

PATIENT PLACES HAND OR HANDS OVER AREA. DOCTOR TESTS MUSCLE. IF MUSCLE WEAKENS CHALLENGE FOR POSITION AND ADJUST; USE RESPIRATORY RESPONSE IF DESIRED.



TEST APPROPRIATE MUSCLE, HAMSTRING FOR EXAMPLE, WHILE PATIENT PLACES HAND OR HANDS OVER ONE AREA AFTER ANOTHER.

If the opponens muscle is weak and you press on the radius and find it to be causing the opponens muscle to be strong, then you adjust in the direction that produces strength. It is the **OPPOSITE** of the vertebral challenge mechanism where, as you know, you always adjust a vertebra in the direction that produces weakness. Therefore, in extremity technique challenge the extremities, the ends of the long bones and the various and sundry structures of the foot, the hand, and the wrist, in the direction to produce strength, or opposite to the direction that produces weakness. Then adjust in that direction that produced the weakness and have the patient take a deep breath in or out, half a breath in or half a breath out, and find the phase of respiration that apparently reverses the original direction that produced the strength.

It is a wise idea in any extremity technique, or with any testing, to recognize that the body can be tested in a number of positions. We highly recommend in difficult cases that you test, for example, the psoas muscle in the standing position as well as in the

THERAPY LOCALIZE TO N.L. OR N.V. OR ACUPUNCTURE AREAS AND TEST MUSCLE WITH PATIENT'S HAND ON N.L. OR ON N.V. OR A.A. IF MUSCLE WEAKENS ACTIVATE APPROPRIATE N.L. OR N.V. OR A.A. AND RETEST UNDER SAME CONDITIONS.

supine position. We recommend the same change of position for abdominal muscles and lower back problems. We also recommend in extremity technique that you many times try testing certain muscles in different positions of pronation, supination; for example, in carpal tunnel.

Further information may be obtained by sending stamped self addressed envelope to Dr. G. Goodheart, 542 Michigan Blvd., Detroit, Michigan 48226.

This is the fourth in a continuing series of articles, written by members of the International College of Applied Kinesiology, [I.C.A.K.] and selected by the I.C.A.K. Education Committee for publication. ["Nutritional and Psychological Observations of the Ileocecal Valve Patient" by Dr. Nancy McBride in the previous issue was the third article in the series.] Each issue will feature one or more papers which have been presented by I.C.A.K. members at one of their two annual meetings. Correspondence with the authors and/or the Education Committee is invited. The members of the Education Committee are: Dr. Alan Beardall, Lake Osuego, Oregon; Dr. Sheldon Deal, Tucson, Arizona; Dr. Bert Hanicke, St. Louis, Missouri; Dr. John Hughes, Ashland, Kentucky; Dr. Walter Schmitt, [Chairman] Detroit, Michigan.

Dr. George Goodheart, author of this month's article, is the Director of Research of the I.C.A.K.

APPLIED KINESIOLOGY-POSTURAL INDICES

BY GEORGE GOODHEART, D.C.
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Many patients require careful chiropractic examination (C.C.E.). Many patients require examination in the three postural modes, standing, sitting, lying. Evidence of subluxation may be present in one position and absent in another. The patient may complain of symptoms in one position and not another. The postural examination is an essential for effective treatment. Body language does not lie; the "leader within" can be approached from without. The opportunity to use the body as an instrument of laboratory analysis is unparalleled in modern chiropractic because the response of the body is unerring. If one approaches the problem correctly and makes the proper and adequate diagnosis and treatment, the response is adequate and satisfactory both to the doctor and the patient. "Numquam mendacium dictio corporea dicit." "Body language does not lie." Learn to understand the language of the body — speak to it in its language and it will respond to you. Man possesses a potential for recovery through the innate intelligence of the physiological hemeostasis of the human structure. This recovery potential with which he is endowed merely waits for the hand and heart and mind of a trained individual to bring it to a potential being and allow the recovery to take place which is man's natural heritage. This benefits man, it benefits him individually and collectively, it benefits the doctor who has rendered the service and it allows the force that created the structure to operate unimpeded. Careful chiropractic examination (C.C.E.) produces excellent chiropractic care and vice versa.

POSTURAL ANALYSIS

Analyze the patient in a vertical position, checking the level of the shoulders, the hips and the occiput. Checking the rotations of the arms, the scapulae, the buttocks. Checking the knee for flexion or extension bilaterally. Make a notation of any departure from normal of the spine or any other portion of the body which deviates from the norm. Think in terms of what the muscle does, and then think in terms of what the posture looks like if the muscle becomes weak on one side, and with the compensatory hypertonus on the other. For example, if the latissimus dorsi becomes weak on the right — the attachment of the trapezius on the right pulls the shoulder up, while the uninvolved trapezius latissimus dorsi complex on the opposite side may go into a compensatory hypertonus and depending upon the relative strength of the upper trapezius, the latissimus dorsi, the shoulder usually goes down on that side, adding to the tilt of the shoulder girdle. If the right upper trapezius becomes weak, the left upper trapezius goes into compensatory hypertonus, elevating the left shoulder and depressing the left occiput, producing the elevation of the right occiput, and the descent, under the normal pull, of the right latissimus dorsi, giving the 'classic upper trapezius pattern. Naturally, there may be combinations of the trapezius and latissimus producing modifications in this relatively simplified pattern just described.

When the gluteus medius becomes weakened on one side, the right for example, the right ilium elevates, the right shoulder elevates, the right occiput elevates, and the patient walks with a gait reminiscent of going downstairs on one side. As the gait continues, the loss of tone allows the ilium to rise, which then causes the body to compensate by over-swinging to the right, and it looks as if the patient is going downstairs on the right, while moving along at a normal pace on the left. This produces the characteristic gluteus medius gait. Many times, if the gluteus medius is weak, on the right for example, and the left gluteus medius is very strong, it will push or shove the pelvis to the right; at the same time there will be a compensatory movement of the upper thorax to the left, producing the classic situation where the patient going through a narrow doorway will touch the doorway on the right with his hip, and his left shoulder will touch the left side of the door, as he goes through.

You are all familiar with the tilt we find in the weakness of the sternal-cleido-mastoid, for example on the left, causing the occiput to rise on the left and depress on the right, from "righting reflex." This, many times, is complicated by the inter-actions of the upper trapezius and this also may be complicated by actual subluxations of the upper cervical and the occiput, producing unusual structural problems. But body language does not lie, and the subluxation can be identified by challenging, and the muscles can be identified by simple muscle testing. In the presence of a weak teres minor situation, either unilaterally or bilaterally, when the patient stands you will notice that the patient's hands will face forward. In other words, the knuckles will face in a forward direction, as opposed to the diagonal position that the hand generally assumes in a normal balance between the teres minor which extraneously rotates the humerus, and the teres major which internally rotates the humerus.

In the presence of an unbalanced piriformis, the patient will have a tendency to walk with the toes turning in an outward direction on the side of the contracted piriformis, as opposed to the relatively normal gait on the side of the weakened piriformis. The piriformis gait may also be bilateral, in that there may be a slight pigeon-toed walk, the toes turning in; or in the case of a unilateral pattern, one toe will turn out as the patient walks and one toe will face relatively forward in the usual gait pattern.

The psoas, when weak, for example, produces a movement of the spine away from the weakened psoas muscle, but usually produces changes in the femoral head, the femoral head rising and the lumbar spine approaching the raised femoral head, on the hypertonic side. With quadratus lumborum patterns, it deviates to one side or the other with a relatively level pelvic pattern.

Listed are possible deviations with

possible muscle weaknesses, which would give you a clue as to which muscles to test when there are changes in postural patterns which are obvious in the vertical position:

Methods for detecting muscle weakness are basically the methods of muscle testing of Kendal and Kendal, from Muscle Testing, published by Williams & Wilkins, Baltimore, Maryland, 2nd Edition. There are some errors, some deviations from the norm, in the Kendal and Kendal publication, and especially in the case of the rhomboids. We have found that it is very unusual to find a weak rhomboid, yet time and time again T.S. Line indications would lead us to this test only to find it strong, until we finally found out that the rhomboids were recruiting right and left and left and right, and that if we tested the rhomboid in the seated position, or in the standing position, the opposite rhomboid would recruit and reinforce the rhomboid we were testing. We now test the rhomboids in a side line position, with the non-tested rhomboid section being placed in such a way that the shoulder in contact with the table is forward of the lateral body line, and the patient is literally resting on his shoulder blade, so it is very difficult for that particular rhomboid to recruit when the opposite rhomboid is tested in the usual fashion of taking the flexed elbow and pulling it away from the thorax, while the patient attempts to maintain this flexed elbow in contact with his thorax. The same is true of the P.M.C. with the opposite pectoral recruiting; cross non-tested arm across thorax when testing P.M.C. in difficult cases.

THE PELVIS, THE ASSEMBLY, AND THE SUB-ASSEMBLY. The osseous relationship of the ilium to the sacrum is unique in that this is a weight-bearing joint with very little motion, yet there is a respiratory motion on the sacrum, back and forth, in a wobble fashion, between the two ilii. Therefore there is a weight-bearing portion of the ilium and there is a respiratory portion of the ilium, and these basically can be referred to as the iliac boot and the sacral boot, when we discuss the respiratory pattern that exists in sub-assembly subluxation.

Category 1: Torque pattern where there is a disturbance of the respiratory boot on one ilii as opposed to the other.

Category 2: When there is a structural subluxation of one ilium on the sacrum or the sacrum on the ilium; and

Category 3: When the assembly and the sub-assembly of the sacrum and the ilium remains intact and there is a disturbance of the total pelvic unit on the fifth lumbar, or the fifth lumbar on the total pelvic unit.

Inasmuch as we usually examine the patient in a vertical position, both A-P and P-A, and if necessary in a seated position, and then have the patient lie in a supine position, we will deal with Category 2 first: the osseous subluxation of the ilium on the sacrum — since it is most convenient to identify this subluxation in a supine position. Therefore, in a Category 2 situation, one will find a difference in leg length, and since the body is aware of the fact that the ilium has subluxated, for example in a posterior direction — the left ilium, for example, subluxating on the sacrum — the body will be aware of that fact and there will be a therapy localization positive factor present when a patient places his hand on the affected sacroiliac joint, for example the left, and then a muscle such as the pectoralis major clavicular or any other muscle is tested. You must naturally have an intact muscle to use as an indicator, but if the muscle that you use is intact, and if there is an osseous subluxation of the ilium on the sacrum, there will be a marked weakening when the patient's hand is placed over the involved S.I. joint, and the muscle is tested. This is the primary identifying characteristic. If there is a posterior ilium, the sartorius muscle and the gracilis muscle will both be sensitive and painful to palpation at their origin and their insertion. Therefore, there will be pain on palpation at the attachment of the sartorius, at the upper portion of the ilium, there will be pain over the obturator, at the attachment of the gracilis, and there will be pain over the sartorius gracilis complex as it extends down the medial portion of the lower third of the thigh, and all this will be present on the short leg side.

POSTURAL DEVIATION	POSSIBLE MUSCLE WEAKNESS
Ears not level:	Neck muscles, Rhomboids, Sacrospinalis, Psoas, Gluteus Medius, Upper Trapezius
Shoulders not level:	Latissimus Dorsi, Neck Muscles, Gluteus Medius, Upper Trapezius, Deltoids
Hips not level:	Psoas, Adductors, Gluteus Medius
Shoulders rotated:	Levator Scapulae, Lat. Dorsi
Head level but rotated:	Rhomboids, Abdominals, Trapezius, Sacrospinalis
Pelvis twisted: A-P; P-A.:	Psoas, Fascia Lata, Sartorius, Abdominals
Hands rotated medial:	Teres Minor
Hand held away from body:	Gluteus Medius, Psoas
Belly hanging out, lumbar lordosis:	Abdominals, Piriformis, Psoas
Belly curved in, lumbar kyphosis:	Sacrospinalis, Psoas
Bowed legs — Genu Var.;	Adductors, Fascia Lata, Gluteus Medius
Knock knees — Genu Val.:	Gracilis, Sartorius
Knees hyperextended:	Popliteus, Gastrocnemius, Quadriceps
Forward lean:	Soleus
Scoliosis, "C" Curve:	Abdominals, Sacrospinalis, Latissimus Dorsi
Ankle pronated or pes planus:	Psoas, Anterior Tibial
Foot turned in (pigeon toed):	Psoas
Foot turned out:	Adductors, Hamstrings, Peroneus, Psoas, Gracilis
Ankle supinated:	Petoneus
Difficulty placing hands behind back:	Trapezius, Upper Trapezius, Teres Major, Ant. Deltoid
Difficulty raising arm:	Serratus Anterior, Rhomboids, Levator Scapulae, Deltoids, Abdominals, Supraspinatus, Teres Minor, Pectoralis Major Clavicular

Therefore, diagnose by pain at the upper groin, pain at the obturator, pain at the medial thigh on the short leg side, to palpation. And since the body is attempting to use the muscles involved to put it back, and is unsuccessful in this attempt, the leg will appear short, much shorter than is possible for the slight amount of movement of the ilium. Therefore, the body's effort to correct it is the means of identification and diagnosis. There will be pain at the first rib head, at the junction of the first rib with the first thoracic vertebra. This pain on palpation will be significantly present when the ilium is posterior or the ischium is posterior, and can be identified on palpation. Frequently the sartorius gracilis muscles will be weak in the clear, or on therapy localization of the neurolymphatic or the neurovascular or the stress centers, indicating that these should be corrected coincident with the actual osseous correction. If there is a posterior ischium there will be pain at the lateral thigh, lower third vastus lateralis, on the long leg side. Again, this is tested in the supine position, there will be pain at the lower groin attachment of the pectineus. There will be pain on the long leg side over the ischium, biceps femoris, and there will be pain at the first rib head on the side of the posterior ischium.

This again represents the effort of the body, by way of the vastus lateralis, the biceps femoris, as well as the pectineus of the adductor group. These muscles are attempting to replace the posterior ischium in its abnormal position on the sacrum, and will test either weak in the clear or on therapy localization. The first rib head represents the last fixed point where the body can attempt to pull in an effort to restore both posterior ilium or posterior ischium to normal balance. This is the reason we find the first rib head involved in the osseous subluxation of the ilium on the sacrum. Frequently it is the disturbance in the first rib head in its jammed position that brings the patient to the office in the first place, rather than a pelvic problem, although the pelvic problem many times is the primary reason why the patient is visiting you for the correction potential that you can introduce into his structural situation.

The x-ray evidence of the posterior ilium, as you know, is increased vertical height, and the x-ray evidence of the posterior ischium is decreased vertical height, as opposed to the opposite side, but this in no way gives identification as to the side in lesion; whereas with therapy localization and the elicitation of pain on pressure at the various areas mentioned above, gives us definite evidence as to which side is involved, and is a much more accurate approach.

The correction is simple. The patient is placed in a side-lying position, in the lumbar roll position so to speak, and the ilium is thrust forward with the elbow; or the patient may lie in any position that you may find comfortable to adjust the ilium or the ischium. The method of correction varies very little, from one doctor to another. The basic thing is to get the job done, and the best tool you have is therapy localization and the disappearance of the pain that is elicited on pressure of the various areas mentioned above.

Another less traumatic method is to use the DeJarnette wedges or blocks, and barring possession of these, the patient's shoes. Simply place the 4" high and 6" long wedge or block underneath the posterior ilium, for example, if the patient is in a supine position; and place the other block underneath the ischium, and simply take the long leg and flex it and bring it medially, while you take the short leg and flex it and take the knee laterally. This relatively non-traumatic method allows the patient's body weight to replace the ilium on the sacrum and is effective technique if the osseous disturbance is such that the patient cannot be adjusted easily, or for some reason you do not wish to attempt osseous correction. But here again, the muscles concerned, both in the posterior ilium and posterior ischium, must be balanced prior to this maneuver. Otherwise its effect is very short lived. Ask the patient to stabilize block or shoe position with hands during this technique.

Category 1 — or the Torque Pattern, or the Non-Osseous Respiratory Pelvic Fault — is best examined in the prone position. Here again, measurement is made of the leg length. The leg length in itself means nothing, but when coupled with the careful examination of the pelvis, it is highly significant. The first step is to have the patient lying prone, the second is to have him do a double handed therapy localization to the S.I. joint and then use a convenient muscle such as the hamstring or the piriformis, and test it. If there is a category 1, indicating a torque pattern, the left hand on the left sacroiliac joint and the right hand on the right sacroiliac joint will cause a remarkable weakening of the particular muscle you are testing. It is very interesting to observe that if the patient's left hand is placed on the left S.I. joint all by itself, there will be no weakening of the muscle tested. If the patient's right hand is placed on the right S.I. joint and the left hand is removed, there will be no weakening of the muscle tested. But when the patient's two hands are placed on the two S.I. joints, and it makes no difference whether the left is on the right or the right is on the left or the left on the left or the right on the right — if both hands are placed on both S.I. joints, there will be a remarkable weakening of the tested muscle, such as the hamstring, indicating a torque pattern.

Step #1 — Identification by Therapy Localization. The patient is then asked to get up on his hands and knees, with his weight bearing on his knees, with his thighs in a vertical position, supporting himself with his hands on the table. He is naturally in a prone position. Then the piriformis is tested. Interestingly enough, when one tests the piriformis in a flat, prone position, you will generally find no piriformis weakness; but if the piriformis is tested in the knee position, with the weight bearing on the knees, invariably you will find a weakness of the piriformis on one side or the other, and the weakness of the piriformis always coincides with the double hand therapy localization to the S.I. joint. So now we have the presence of a weak piriformis, which can then be tested by respiration assistance, and we usually find in these instances, an inspiration assistance, although this is just an average. Fix what you find, and find what you fix. Under these conditions, simply test the piriformis while the patient is weight bearing on his knees, and see which phase of respiration causes a return to normal, and act accordingly. If inspiration assists it, simply move the sacrum forward at its lower third and use a cranial contact, pressing the mastoid process forward; or if expiration assists it, as it occasionally

does, move the mastoid process backward, toward the occiput, while getting underneath the sacrum and moving it in a posterior direction coincident with expiration. Activate the neurolymphatic reflex and neurovascular to the piriformis and then recheck the piriformis in the weight-bearing position. You should get a good response. Then replace the patient on the blocks, the right block being maintained underneath the femoral head, that is the short leg side, and the left block being placed underneath the anterior superior iliac spine on the long leg side. Naturally, use vitamin E for nutritional support, challenge nutrition following respiratory challenge.

The double hand contact to the S.I. joint will give you the joint in lesion, and is the respiratory boot of the ilium that has disturbed the ilium in its relationship to the sacrum, that causes the double hand contact to the S.I. joint to be a positive indicator.

If piriformis is negative, check for rare gluteous medius or maximus, using standing weight bearing. Activate NI, or NV or cranial or nutritional and proceed to adjust non-involved side of S.I. joint of Category 1.

Step #2. In case of negative piriformis, etc., on weight bearing have patient straighten spine, still supporting himself on knees; test neck flexors. Use a double hand contact on the sacrospinalis, first on the right, placing one hand just above the crest of the ilium, placing the other hand just above the other, with one hand above the other side by side, not superimposed on one another, but with one hand superior and one hand inferior, covering the area basically of the quadratus lumborum and the sacrospinalis. Test the neck flexors. Repeat this on the opposite side and test the neck flexors or other muscle. If there is involvement of the sacrospinalis or quadratus lumborum, the double hand contact to the one side will cause a blowout or a weakening of the muscle. Test again using respiratory assistance.

If one gets a positive sacrospinalis, quadratus lumborum indicator, using the double hand contact to the sacrospinalis, use the neurolymphatic reflex to the involved sacrospinalis. This is to be used on the side that produces the muscle weakening on the double hand contact, and therefore one contacts the neurolymphatic reflex to the sacrospinalis, which is at the umbilicus on the same side as the weakness, just above the symphysis pubis on the same side of the weakness, and at the tip of the 2nd/lumbar transverse process, and at the lateral border of the 12th rib for the quadratus lumborum. Activate by hard heavy pressure at the previously mentioned neurolymphatic reflexes, and recheck after 30 or 40 seconds, using therapy localization, using both hands on the same side; and normally this abolishes the response, except in instances where there is a cranial fault which should be corrected by either inspiration assistance or expiration assistance, as you well know. Use ACP for nutritional support.

It is a wise procedure at this time to initiate a block position, and it may also be introduced prior to activity to the neurolymphatic reflex to the involved sacrospinalis and quadratus lumborum previously described. The patient is placed in the prone position, and the block or the wedge is placed on the short leg side, underneath the acetabulum, on the long leg side underneath the anterior sacroiliac spine. If you do not possess blocks, a pair of patient's ordinary shoes will suffice, but I highly recommend the blocks under these conditions. They can even be made of styrofoam and padded with appropriate padding and then covered, but the blocks are also available from the DeJarnette source, and they are very useful, and I highly recommend them.

Therefore, construct on a non-involved side, two small squares with your marking pencil to represent the respiratory boot of the ilium and the respiratory boot of the sacrum, and these two small squares should be like a couple of matchboxes placed against each other. They should parallel each other. Whereas, on the opposite side, on the involved S.I. joint side, on the respiratory boot involved side, if the ilium is posterior, then the respiratory boot has moved inferior. If the ischium is posterior, then the respiratory boot has moved superior. Therefore, we construct the small matchbox square in the same position on the opposite side as one has on the sacrum, since the sacrum is not involved at this time. It depends on the relative position of, shall we say, the right leg. If the right leg is the short leg that means the posterior ilium condition exists, and therefore the iliac boot has moved inferior. If the right leg should be the long leg, then the iliac boot has moved superior, and therefore construct your little square accordingly. Then adjust the intact respiratory boot side by repeated sharp short thrusts (approximately 10) in such a direction as to normalize the respiratory boot of the ilium on the opposite side; and in the usual pattern, one would be adjusting relatively long leg, which one can call the posterior ischial side (on the block, placed at the anterior superior iliac spine) and using that as the intact joint side, bring the intact S.I. joint side down to match the relatively inferior position of the ilium. The same would be true if it were the opposite situation. The idea is to adjust the intact side to line up with the disturbed side. We have not found it necessary to apply any adjustment to the other side other than as mentioned above. In other words, we do not adjust the involved S.I. joint side at all. We have found by therapy localization that this is not necessary and many times produces a problem. Here we differ with my good friend Dr. DeJarnette.

The same procedure is followed in a "crest" sign. If the quadratus lumborum and the sacrospinalis are involved, one adjusts the uninvolved S.I. joint combination to the involved side, and the procedure for adjusting is exactly the same and the number of slight adjustments given in the proper direction depends entirely upon, first, therapy localization to the S.I. joint disappearing, and second, disappearance of pain on palpation at the first rib head on the involved S.I. joint side.

We have found that in the crest sign we frequently find that correction plus adequate quantities of A.C.P. are valuable, whereas in the piriformis involvement we find adequate quantities of Vitamin E are valuable, and we have found in the osseous subluxation, the use of veal bone calcium is a valuable adjunct to maintenance of the proper correction of the osseous subluxation, of the Category 2. May I repeat that you do not adjust the involved S.I. joint side of Category 1 (torque type) — you do not adjust the S.I. joint side which showed therapy localization on a positive basis. We use the intact side to line up the intact S.I.

joint on the lesioned respiratory boot mechanism on the ilium. This affords a smooth and easy continuity of normalization and seldom needs to be repeated, and gives a good response and balances the pelvis very adequately. Many times this is the primary fault, and a great many of the patients we see fall into this Category 1 procedure.

This primary fault is present in many, many different ailments, and is as important as doing a blood count or a blood sugar in blood chemistry. In structural analysis, the correction of the various disturbances of the pelvis as a unit or sub-assembly are as fundamental as the most basic blood chemistry.

Category 3 involves an intact pelvis, no therapy localization to the S.I. joint, no double hand contact to the S.I. joint or the sacrum, produces a therapy localization indicator. Here again we use the simple therapy localization — now to the fifth lumbar, fourth lumbar, third lumbar, second lumbar, first lumbar areas — and both on a double hand and single hand contact. Attempt to find the area of lumbar involvement and then use vertebral challenging to find the correct direction for the adjustive thrust. This category is a relatively simple one and you have no great problems. One gets a ready response diagnostically on a therapy localization basis and then one can simply vertebrally challenge in the usual fashion to verify the structural position — remembering the cardinal rule that when you challenge vertebrae, you always adjust the vertebrae in the direction that produces weakness.

A brief outline of postural patterns has been presented. A preliminary technic for pelvic analysis and correction has been described with muscular relationships to osseous and respiratory patterns. Further information will be available through future articles in the I.C.A.K. section of this journal.

NOTES

TEMPORAL MANDIBULAR JOINT

The Most Important Joint in the Body

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Disturbances of the temporal mandibular joint cause many problems. This and many other structural problems are related to the temporal mandibular joint, but Harold Gelb, who is the Director of the Temporal Mandibular Joint Clinic of the New York Eye and Ear Infirmary, says that the problem is actually an orthopedic one. To quote: "If one leg is shorter than the other the entire body is unbalanced." The jaws work the same way. If the teeth don't meet properly, the jaw becomes very disturbed in its motion. Problems of non-occlusion and bad bite produce many remote problems.

Dr. Willie May of Albuquerque, New Mexico is widely known for his joint equilibration — a word which literally means "equalizing the muscle forces." Sometimes dentists file teeth to change their slope, or even their surfaces, to correct or restore a muscle balance. Occasionally orthopedic appliances or orthodontics may be needed. Or the so-called night splint might be needed -- the equilibration device which is personally molded for a conjunctive correction in temporal mandibular joint situations.

The brilliant work of Bernard Jenkelson, D.M.D., of Seattle, Washington, from the "Journal of Prosthetic Dentistry," St. Louis, Vol. 30, No. 4, Part 2, pages 550 to 560, in describing the functional positions of occlusion, mentions the use of an instrument called the Mandibular Kinesiograph, which senses a magnetic field and electronically tracks mandibular movements in three planes. It simultaneously provides a write-out of the data on a multi-channel oscillograph or oscilloscope. It records horizontal, vertical and lateral movements, and their velocity. It determines and records mandibular position during chewing and swallowing when voluntarily retruded, when voluntarily closing to the centric occlusion, and when closing under the influences of electronic stimulation to the myocentric position. Dr. Jenkelson uses a device called Myo-Monitor to stimulate the muscles involved in mandibular movement, and to decondition the relaxed muscles which have developed what he calls an amnesic condition to proprioception of what exists in the normal closure.

An article written by Edwin T. Jach, MS, DDS, a brilliant physiologist as well from the Chicago Dental Society publication, CDS Reveiw, January 1974, pages 20-22, describes the action of the Myo-Monitor, and it describes the Jenkelson approach. He observed that in patients whose teeth had been absent for many years, in attempting to do a dental reconstruction, they were able to capture the proper lip support close to what existed in the natural dentition. He mentions that it appears that the muscles retain a "memory" of this position through the years, and when stimulated without voluntary control against minimum resistance, return to the original position.

As he mentions, a question has always existed about centric occlusion and centric relationship, and these technics observe that the temporal mandibular joint expresses a functional position instead of a static one.

Experience has shown that this memory pattern that the muscles maintain will remember what is most comfortable for the muscles of mastication. He has shown that this comfortable, functional position is identical with the position that the mandible and the maxilla take in the swallowing position. Dr. Jenkelson called this point in space where the mandible and maxilla meet for maximum muscle comfort and function, the "innate" position.

Many an orthodontist, in the view of Dr. Jach, has mentioned that the innate position is the goal they work for in their cases. In cases of bruxism and trismus, and to allow the reduction of post surgical swelling following oral surgery, the innate position is the optimum position for the best response.

Jenkelson says, "The ideal relationship of the jaws when the teeth are occluded is that position reached with the mandibular muscles in equilibrium at the resting length, subsequent isotonic contraction of the muscles causing the mandible to rise without interference to the height of the inter-occlusal space. In a physiological occlusion no contact is encountered until closure terminates with solid simultaneous contact of all the opposing teeth. This is known as the myo-centric position.

"Because closure to this position begins with the muscular pattern in a state of relaxation (balanced tonus) and continues with free muscle contraction uninfluenced by proprioception, the resultant myocentric position is most compatible with maintaining a state of relaxation of the musculature."

Because of the sensitivity of proprioception in the mouth, correction of even a small amount may constitute a beneficial relief to the musculature. Relaxation of the musculature is subsequent to alteration of existing non-coinciding centric occlusion to the myocentric position. It has been measured on the mandibular kinesiograph, and when subjected to simultaneous sagittal and frontal plane recording on the kinesiograph, it is apparent that the reaction of the pathway of the mandible to the occlusion is unpredictable from patient to patient. As the mandible retrudes, its characteristics simultaneously deviate to the right or to the left, and it is seldom in a straight antero-postero path. Significant changes also occur in the vertical and lateral planes along the long central pathway.

The concept that it is desirable and relatively simple to arrange the occlusion to be stable at the centric occlusion position, and then to arrange a free anterior pathway to centric occlusion position, would appear to be over simplistic. It ignores the complex changes that are introduced when the mandible is positioned in different locations.

Measurement is the essential criterion

for testing and confirming occlusion relationships. If something can be measured it is a fact; if it cannot be measured it is simply an opinion. In applying the criterion of measurement to occlusion, we are getting the complex physiology of what is called the "stomatognathic" system, consisting of the interplay of muscles, joints and teeth. Physiology of this area is dynamic. Noxious stimuli and occlusion influence mandibular position. Static measurements that isolate a single factor, such as the position where the teeth finally contact, can be more misleading than enlightening, for the final contact often reveals disruptive factors that influence the "navigation" to the contact position.

In dentistry, the basic functions are incision, mastication, deglutition, and formation. The only way to note the relationship of the jaws that actually occurs during these functions is to track the mandible while patients incise, chew, swallow and speak. The only way to know where a dysfunction occurs is to track the mandibular function during flexing or grinding of the teeth. Measurement of mandibular kinesiology has already proven to be an invaluable new tool in everyday occlusive diagnosis. The mandibular kinesiograph is a product of Myotronics Research, Inc., in Seattle, Washington.

A small magnet is affixed to the lower incisors. There are six sensors attached to a 4 oz. frame on a pair of glasses that are worn by the patient, which allow the tracking of the field of the small mandible magnet which is attached to the lower incisors. The most minute mandibular movement is therefore accurately determined, and there is a kinesiographic oscilloscopic which monitors the frontal, anterior-posterior, and horizontal mandibular movement. This, in combination with an oscilloscopic camera, allows an abnormal position to be photographed with the polaroid attachment and provides a permanent patient record for diagnosis and for documentation in case of malpractice claims.

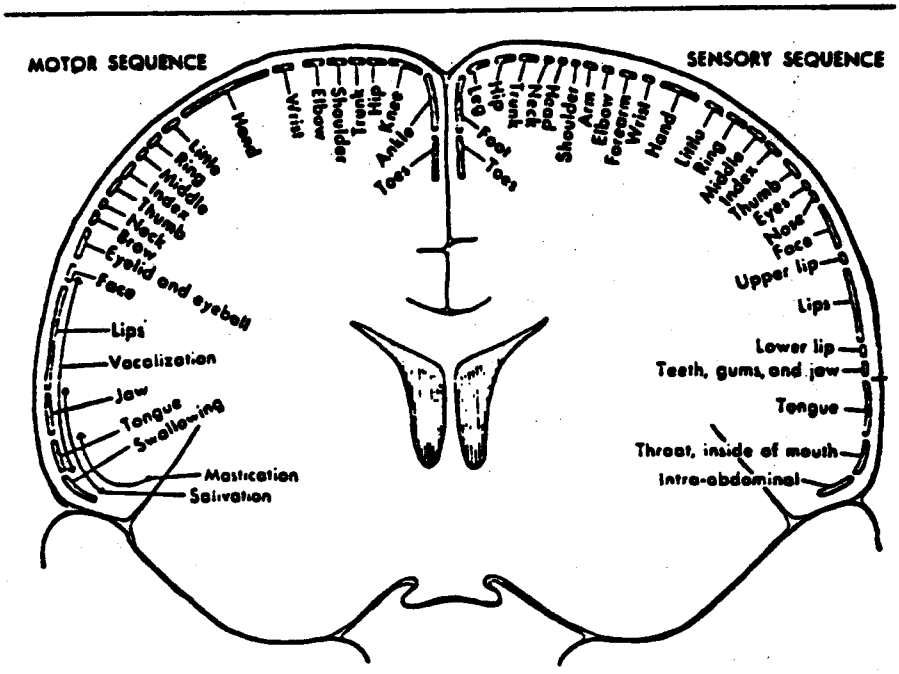
This mention of the mandibular kinesiograph (MKG) by no means constitutes an endorsement on our part of this particular instrument, but it is a valuable one and highly recommended for use by the dental profession, to whom kinesiology is becoming a greater and greater field of investigation and usefulness.

You are all familiar with the homuncular studies of Penfield, who did the original brain mapping; and both motor and sensory sequence will show that a large portion of the brain cortex is devoted to the throat, inside the mouth, the tongue, the teeth, the tempero-mandibular joint, the lips, and the face. In other words, there is a homuncular nucleus which is prodigious in its backup of brain cells devoted to the temporal mandibular joint.

An example might be that there are 3,000 brain cells devoted to the temporal mandibular joint, with 300 for the entire sciatic nerve-leg situation. A homuncular study would show in diagrammatic fashion, a large face, enormous lips and teeth, a large tongue, a minute thorax, trunk and lower leg, but a fairly large hand, to indicate the prodigious profusion of brain cells devoted to the face, and especially the temporal mandibular joint. Dr. Willie May feels that the temporal mandibular joint is a computer of vast proportions, and we certainly agree with this concept.

The activity begins with therapy localization to the temporal mandibular joint by having the patient place his fingers on the left and right side of the temporal mandibular joint. Make certain the patient's fingers are accurately placed on the temporal mandibular joint. The patient is then asked to open and close the jaw rapidly, clicking the teeth so to speak. A muscle is tested, such as the fascia lata. The fascia lata, naturally, must be intact, and therefore the muscle must be strong to begin with. The patient is asked to open and close the mouth. If weakness occurs, the next step takes place. The next step is to simply have the patient open wide, with both hands in position on the left and right mandibular joints. The patient is then tested again, the fascia lata is then tested, or any other muscle for that matter. If no weakness occurs, the patient is then asked to close the jaw and the muscle is then retested. If weakness occurs, the patient is asked to lateralize by moving first one hand and then the other until the side of therapy localization is identified.

If on temporal mandibular joint therapy localization no weakness occurs on opening and closing, the patient is asked to lateralize — move the jaw sideways, so to speak — using the lateral and mandibular muscles in left and right position, both open and closed. The patient is then muscle tested again for weakness. If no weakness occurs in this position, the patient is asked to gently close the mouth, and then asked to swallow, and the fascia lata is held constant in a test position while the patient swallows. Then if weakness occurs, therapy localization will then identify the side and appropriate action can take place. If no weakness occurs the patient is asked to chew an almond first on left — then on right; therapy

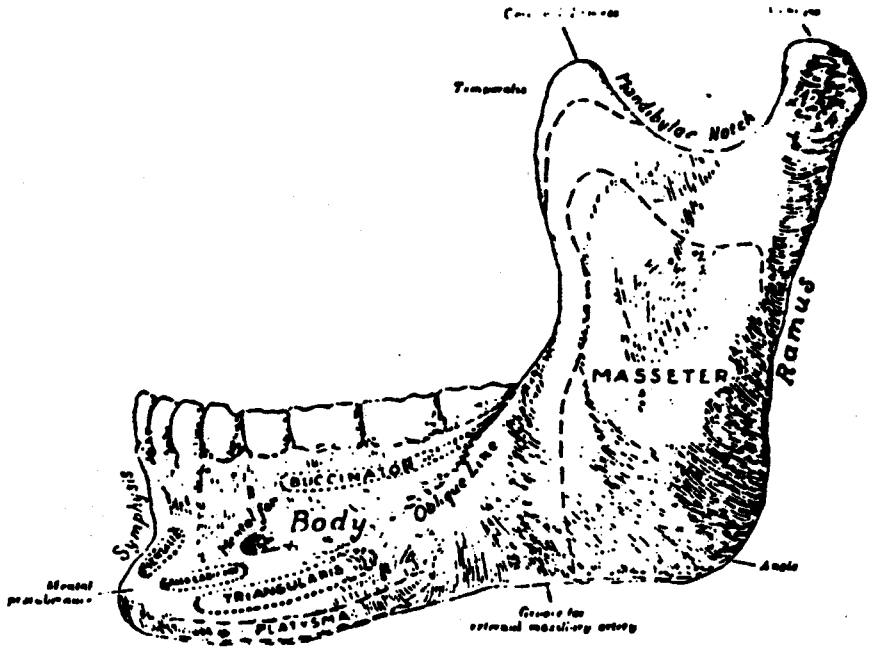


localization and muscle testing are again performed. Experience has shown that most problems occur on closing,* and there are four muscles that are associated with closure of the temporal mandibular joint. The masseter, the buccinator, the temporalis, and the internal pterygoid. Experience has also shown that activity of the masseter and buccinator are usually involved and usually the spindle cells of the masseter and buccinator have been set too high. Therapy localization to one side or to the other of the temporal mandibular joint will reveal the side involvement, and experience has shown that approaching the spindle cell on the masseter slightly above its insertion above the ramus, and approaching the spindle cell on the buccinator slightly below its origin on the maxilla, provide the best method of organization of the spindle cells' aberrated activity.

The thumbs are used in apposition — one thumb placed on the masseter spindle cell, the other thumb placed on the buccinator spindle cell. The masseter's thumb position is on the lower portion of the masseter, and the other thumb position is on the upper portion of the buccinator. The thumbs are separated by perhaps half an inch, the thumbs in a vertical direction in relationship to the patient's head, one thumb pressing in a vertex direction, the other thumb pressing in a caudal direction. The thumbs are a half inch apart on the average patient, and firm hard pressure is directed into the belly of the masseter and the belly of the buccinator, and the thumbs are brought together with a firm 5 to 8 pounds pressure. This is done quite quickly, within a 5 second period. The patient is then re-therapy localized and there should be no weakness on opening or closing. This is naturally being done in the closed position. The patient is asked to close the jaw and the muscle, such as the fascia lata, is retested, and there should be no weakness noted either in closing or in a possible swallowing position associated with closing.

In the relatively rare situation where the jaw therapy localizes to the left or to the right in the open position following therapy localization or a lateralization left or right, the mouth is opened and the finger or thumb is directed to the belly of the external pterygoid. The muscle which opens the jaw, and the

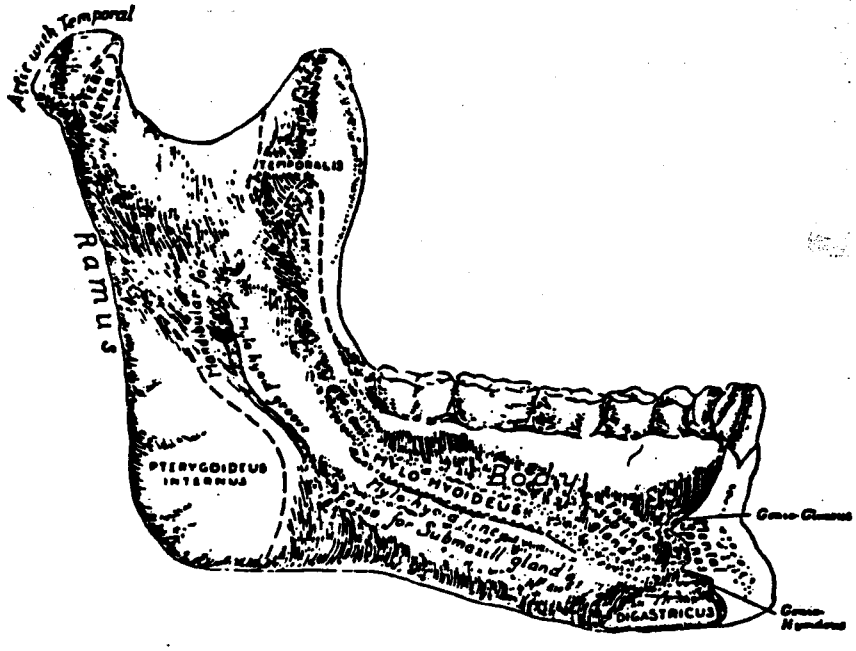
with head in usual position sitting or supine.



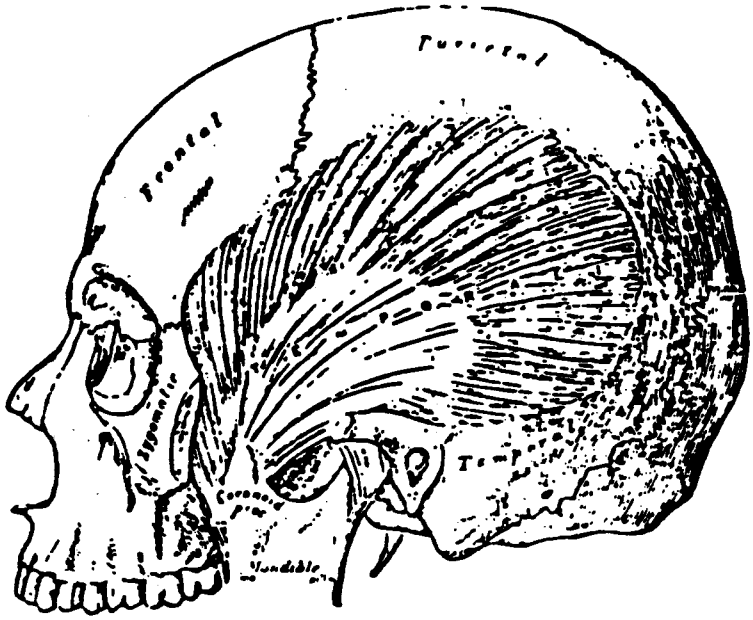
The left half of the mandible Lateral aspect.

spindle cell mechanism of the external pterygoid, is quickly and firmly contacted with the index finger and a hard pressure is applied to the spindle cell, first at its posterior and second at its anterior position. The belly of the external pterygoid is contacted and a rapid anterior and posterior directional force is applied to the spindle cell mechanism in the belly of the external pterygoid. Therapy localization is then reapplied and the mouth is then opened fully. There should be a good response under these conditions.

Therapy localization will reveal the side, patient occlusion or opening will reveal the mode, in which the spindle cell activity should take place. If an occasional lateralization does occur, it usually occurs in an open jaw position, and when the opening of the jaw produces a negative response if there is a muscle testing, the patient is asked to contract only one side of the jaw muscles with the jaw in the open position and the jaw is lateralized to the left and lateralized to the right in open position. If on therapy localization



The left half of the mandible. Medial aspect



The Temporalis; the zygomatic arch and Masseter have been removed.

weakness occurs, the external pterygoid is again approached in the same fashion as it would be for the open jaw, and appropriate spindle cell activity takes place.

Previous postural research reports have indicated that opening of the jaw is accomplished with great difficulty by many patients, as opposed to closure. This affects the posture. Many patients, when asked to open the jaw will simply open their head, retracting the occiput in an effort to allow the mandible to drop. One of the most frequent methods of identifying poor posture is simply to ask the patient to open the mouth. Most patients when asked to open the mouth, open their head. Therefore be sure to test difficult patients in neck extended position.

The inference here is obvious — that there is a difference in spindle cell activity and reactivity of muscle. The masseter and buccinator react to the external pterygoid. The external pterygoid reacts to the masseter and buccinator. It is rare to find an involvement of the internal pterygoid or the temporalis. When this occurs, naturally one would approach the spindle cell of the internal pterygoid and the temporalis as well as that of the masseter and the buccinator.

It is wise to remember that gentle slight occlusion is necessary for swallowing and to therapy localize during swallowing. It is also wise to therapy localize in the rare case during phonation. Have the patient speak, and to make sure that the pathway is normal. The treatment remains the same — activation of the spindle cell of the reactive muscle with pressure in the belly. It follows the principle of reactivity.

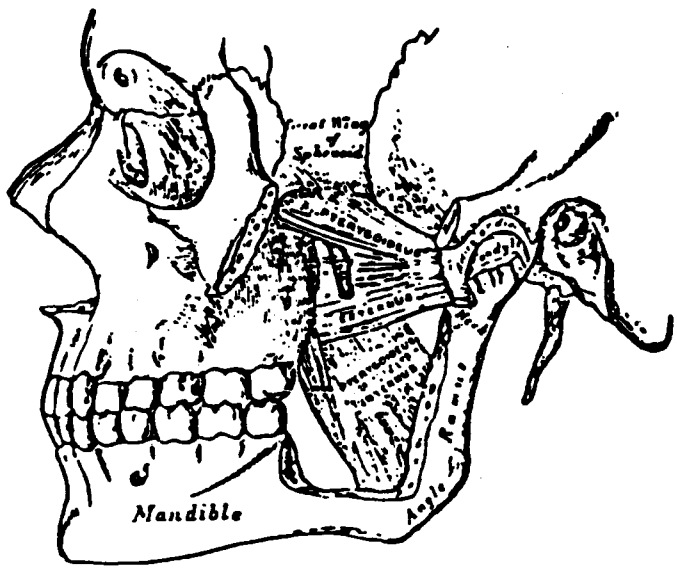
The value of the use of MKG, and also the value of all types of TMJ activity, is the homuncular nucleus representation.

First, the TMJ, and second, its computerization effect. Many, many times you will find subluxations or alterations of structure which are compensatory and when, for example, posterior ilium or posterior ischium is found, if it is a compensatory problem normalization of the temporal mandibular joint will quickly restore the sacroiliac joint to normal, by the normal body forces which usually operate to maintain the physiological homeostasis of the structure.

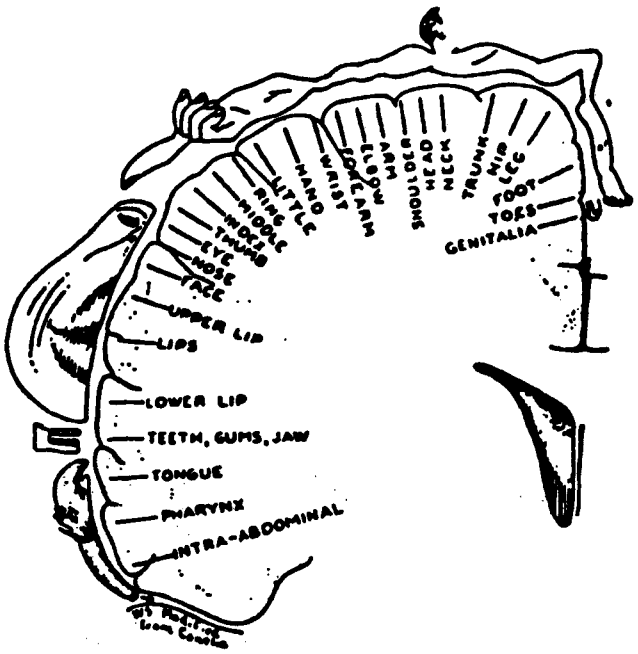
The influence of the TMJ on structural alterations is phenomenal and prodigious; yet, if the TMJ does not provide a normal response, the structural alteration must be adjusted in the usual fashion. Most compensatory subluxations respond to temporal mandibular joint activity; primary subluxations do not. We routinely screen patients for temporal mandibular joint activity as part of our original diagnostic input, and therefore this technic is most useful not only for its local implications, but also for the structural implications that exist via the TM joints' homuncular activity.

Like all other reactive muscular activity, we recommend the use of the raw veal bone source, such as Osteotrophic extract provided by Nutri-dyn, or Ostogen supplied by Standard Process. Three a day should be the input and should be maintained for a period of a couple of weeks, and then the muscle is allowed to resume its normal function. Then reassessment of activity should take place.

Naturally, the patient should be advised to chew them if at all possible, although results occur if the patient



The Pterygoids, the zygomatic arch and a portion of the ramus of the mandible have been removed.



Sensory homunculus showing representation in the sensory cortex (after Penfield and Rasmussen, *Cerebral Cortex of Man*, Macmillan Co.).

swallows the material without chewing it.

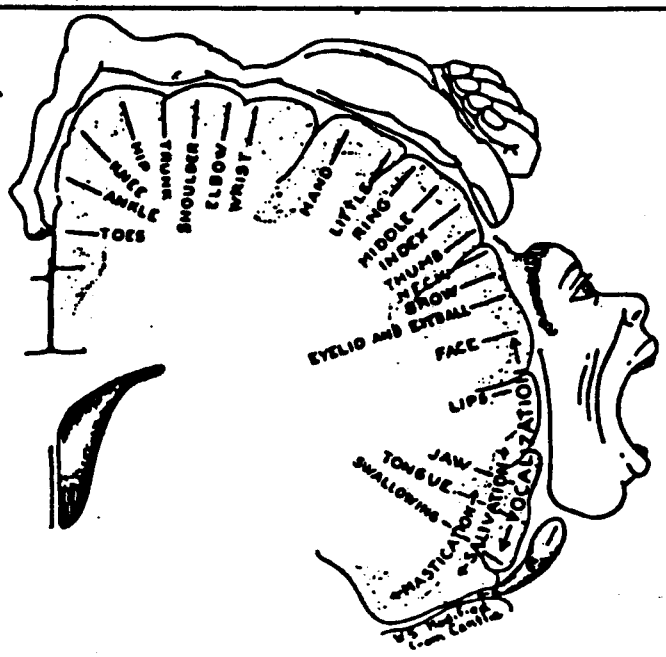
Be certain that you challenge the TMJ both in the supine, prone, standing as well as sitting, position. Make certain that you therapy localize the TMJ on the involved side to the acupuncture circuit involved, which is the stomach meridian. Placing one hand on the involved TMJ after it has been treated, and placing the other hand on the alarm point for the stomach, which is approximately an inch and a half superior to the umbilicus, therapy localize once more. If you get a muscle weakness on therapy localization simultaneously in the TMJ and the acupuncture alarm points in the stomach, then the acupuncture alarm points for the stomach must be activated in the usual fashion.

In other words, contact with one hand S 41, and with the other hand contact SI 5, and hold momentarily for 20 or 30 seconds. Remove your hands and then contact S 43 simultaneously with G 41, holding momentarily for 20 or 30 seconds. Then remove the hands and reapply therapy localization technics to simultaneously test the temporal mandibular joint and the acupuncture alarm point for the stomach.

It is important that you also challenge the TMJ during normal jaw closure position, with the patient swallowing, and under rare conditions as was mentioned earlier, with the patient speaking or in the process of active phonation. These are treated in the usual fashion, and it usually will be on the jaw closure, the masseter, or buccinator — although occasionally the internal pterygoid may be involved.

It is occasionally necessary to apply the spindle cell mechanism in rare instances during phonation, or during swallowing. When therapy localization occurs, it is occasionally necessary to do the spindle cell activity during that particular physiological process — that is, phonation or deglutition. This technic is by no means a substitute for proper dental care, and consultation with a dentist whose interest in the TMJ is the same as yours is paramount to the production of a well satisfied and well functioning patient.

Further information on the TMJ is available from the author and ICAK. Kindly inclose a stamped self-addressed envelope. The principles of reactivity in muscle testing has been validated by J. Triano, M.D. D.C. and B.D. Davis Ph.D. of Logan College in their paper "Reactive Muscles, Reciprocal and Crossed Reciprocal Innervation Phenomenon." (1976 Collected Papers of Diplomates of ICAK.)



Motor homunculus illustrating motor representation in Area 4 (anterior central gyrus). (After Penfield and Rasmussen, *Cerebral Cortex of Man*, The Macmillan Co.)

CRANIAL TECHNIQUE: A CLARIFICATION OF CERTAIN PRINCIPLES

by George J. Goodheart, D.C. & Walter H. Schmitt, Jr., D.C.
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ABSTRACT

Normal cranial bone movement with respiration is reviewed. The frontal bone halves rotate internally at the metopic suture on inspiration and externally on expiration. The temporal bone and innominate bones have similar but not identical respiratory movements. The mastoid process moves posteriorly and medially on inspiration, the opposite on expiration. Correction of "inspiration — and expiration — assisted" cranial faults is therefore based on exaggeration of the fault and "rebound" response of the dura mater.

During the inhalation period the sphenoid bone circumducts, or revolves like a wheel, anteriorly. The L-shaped articular surfaces of the greater wings, converging anteriorly and diverging posteriorly in their functioning, turn the inferior angles of the frontal bone laterally. The middle area of the frontal bone recedes posteriorly, while the ethmoid notch widens at its posterior area. The pterygoid processes of the sphenoid bone, in articular contact with the little palate bones by double grooves, diverging posteriorly and converging anteriorly, rotate posteriorly and thus turn the palate bones and the maxillae laterally at the posterior borders. The incisor teeth recede posteriorly and the anterior borders of the nasal processes rotate internally and the posterior borders laterally. The sella turcica of the sphenoid, in conjunction with the basilar process of the occipital bone, elevates into the flexion position. The occipital bone circumducts or revolves like a wheel posteriorly and the basilar process, in conjunction with the sella turcica, elevates in a flexion position. The petrous portions of the temporal bones rotate laterally or externally and the sacrum moves into the flexion position between the ilia.

During the exhalation period of respiration the opposite takes place.[1]

William Garner Sutherland

INTRODUCTION

The concept of cranial bone movement and cranial technique was introduced by William Garner Sutherland in 1939.[2] Since that time, and more recently since the popularization of cranial technique which has taken place during the last ten years with the advent of applied kinesiology procedures for identifying cranial faults and verifying their correction,[3] there has been controversy regarding terminology and understanding of cranial bone functions. This paper deals with several of these controversial and misunderstood concepts in an effort to standardize terminology and teaching procedure. Obviously, the time-proven applied kinesiology methods of diagnosing and treating cranial faults remain constant, but the actual function behind these corrections can stand some clarification. All of the models presented herein are oversimplifications of actual cranial

NORMAL CRANIAL RESPIRATORY MOVEMENTS

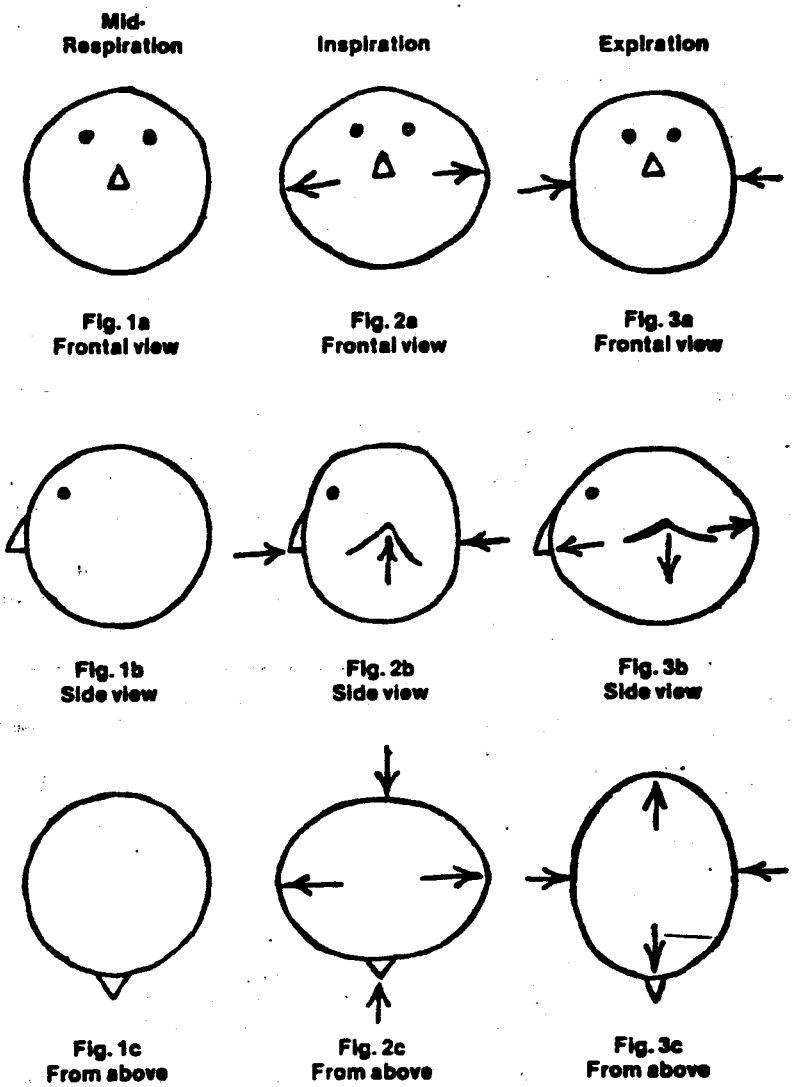

Fig. 1a Frontal view
Fig. 2a Frontal view
Fig. 3a Frontal view

Fig. 1b Side view
Fig. 2b Side view
Fig. 3b Side view

Fig. 1c From above
Fig. 2c From above
Fig. 3c From above

bone function, but they are accurate descriptions of function as far as they go.

Normal Cranial Bone Respiratory Movement

Normal cranial bone excursion during respiration involves two basic types of movement: the centerline bones flex and extend, and the paired peripheral bones rotate internally and externally. The fundamental centerline movement occurs at the sphenobasilar symphysis which flexes or elevates on inspiration and extends or lowers on expiration. (See Figures 2b & 3b.) To better visualize this, let your left hand represent the sphenoid and your right hand represent the occiput. Put the fingertips of both hands together so the palms are facing the floor and the fingers are pointing toward the ceiling.

You are looking at a side view of the skull; where your fingertips touch is the sphenobasilar symphysis. As you breathe in, bring your palms closer together and observe how the sphenobasilar symphysis (fingertips) extends and lowers. This model, although oversimplified, represents the basic flexion and extension of the centerline cranial bones.

Sacral Respiratory Movement

Sacral respiratory movement parallels that of the occipital squama. The sacrum, which is suspended between the ilii, rocks anterior to posterior on transverse axis through the level of S-2. During inspiration, as the sphenobasilar symphysis elevates, the sacral apex is pulled anteriorly through dural tension, while the sacral base moves posteriorly. The opposite is true of sacral expiratory movement.

Peripheral Cranial Bone Movement

The peripheral bones rotate in a complex fashion during respiration. For the purposes of this paper we shall only discuss the specific movements of the frontals and the temporals. But peripheral bone movement can be summed up by observing Figures 1a, 1b, and 1c; 2a, 2b, 2c; and 3a, 3b, and 3c. On inspiration (figures 2a, b, c,) as the sphenobasilar symphysis elevates, the A-P dimension of the skull shortens, the glabella moves closer to the external occipital protuberance (EOP) (Figures 2b, 2c). At the same time the lateral dimension of the skull widens to accommodate the enclosed structures; the right and left pterions (where the sphenoid, parietal and temporal bones meet) move apart. (Figures 2a, 2c)

On expiration, the reverse is true. As the sphenobasilar symphysis extends or lowers, the glabella and EOP move apart, increasing the A-P dimension of the skull (Figures 3b, 3c). The lateral dimension of the skull narrows as the pterions move closer together (Figures 3a, 3c).

The vertical dimensions of the skull remain about the same during respiration, for as the sphenobasilar symphysis elevates on inspiration, the peripheral vault bones are expanding laterally, which detracts from their vertical dimension. The opposite is true on expiration.

Internal and External Frontal Bone Rotation

Much controversy has existed on the meaning of the expressions internal frontal rotation and external frontal rotation. Frontal bone rotation during normal respiratory movement can be easily understood. Lay your fingers of both hands on your forehead with your fingertips of the right and left hands touching in the middle. Where the fingertips touch represents the metopic suture between the right and left frontal bones. (Although this suture usually fuses in adult life, cranial technique always treats the frontal bone as being split into right and left halves along this suture.) Your right and left hands represent your right and left frontal bones respectively. As you breathe in, keep your fingertips in contact with each other and your forehead, but let your palms move away from your forehead in a forward direction. As you breathe out, keep your fingertips in the same position, but bring your palms back in contact with your forehead. This is the normal rotation movement of the frontal bone, almost like a pair of wings flapping forward and back on inspiration and expiration.

The rotation of the frontal bone half is named by how the bone moves at the metopic suture area. (See Figures 4 a,b,c.) In other words, on inspiration, both frontals move internally (toward the center of the skull) at the metopic suture area as the lateral portions of the bones flare out. (Figure 4a) Therefore, a cranial fault where the right frontal bone has moved internally at the metopic suture (and has flared out laterally) is known as a "right internal frontal fault."[4] (See Figure 5a.)

[NOTE: The reason we see a narrowed orbit in an internal frontal fault is because during inspiration, the entire inferior border of the frontal is moving posteriorly while the metopic suture area rotates internally. Even though there is a relative flaring out of the lateral portions of the frontal bone, this combined with the posterior movement of the entire inferior edge of the frontal and the movement of the other bones of the orbit causes the orbit to narrow on the side of internal rotation at the metopic suture.]

Conversely, during the expiration, the frontal bone halves move externally (away from the center of the skull) at the metopic suture. (Figure 4c) The lateral portions of the frontals flare back on expiration, but we are not concerned with this part of the bone when we name the cranial faults. Therefore, a cranial fault where the right frontal has moved externally at the metopic suture area is termed a "right external frontal fault." (Figure 5b) To repeat, cranial frontal faults are listed by the position of the involved frontal bone at the metopic suture area.

Please note that the frontal bone rotations have been described during normal respiration. This is not to imply that internal frontal or external frontal

FRONTAL BONE RESPIRATORY MOVEMENT
(Viewed from above)

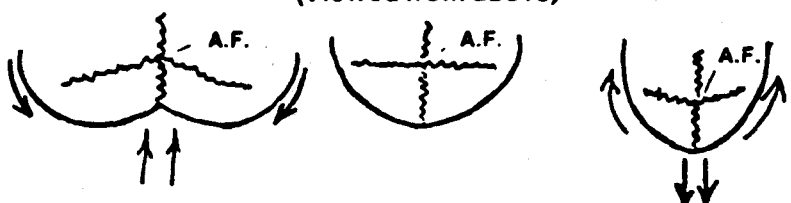

Fig. 4a
Inspiration:
Frontals move internally at metopic suture (from above)

Fig. 4b
Mid-respiration (from above)

Fig. 4c
Expiration:
Frontals move externally at metopic suture (from above)

faults are respiratory faults. On the contrary, they are usually traumatic in origin. The position of the bone in lesion however, is an exaggeration of its normal respiratory excursion.

Temporal Bone Movement

The movement of the temporal bone is highly complex. In actuality, the temporal "wobbles" around an axis which also "wobbles" and runs obliquely through the petrous portion of the bone. In order to grasp the basic movements of the temporal bone, we can relate its function to that of the ipsilateral innominate since the normal respiratory movement of these two bones parallels each other. This does not imply, however, that any temporal lesion will be accompanied by an innominate lesion or vice versa. On occasion, a cranial temporal fault and an innominate subluxation may be present together, and occasionally correction of one of these will cause correction of the other. But by no means is this a general rule.

Before discussing the similarities of temporal and innominate respiratory movement, it is necessary to point out the significant differences between the two. The sacroiliac joints are major weight-bearing joints of the body and have a specific pattern of movement with locomotion. The temporal bone has no such function. during respiration, both innominates move as a unit with the sacrum suspended between them and moving independently of the innominates. However, each temporal bone moves independently of the other, but each temporal is intimately dependent on occipital bone movement. Nevertheless, there is enough similarity in the movements of the temporal and the innominate that discussing them together is a valuable learning device.

During inspiration, as the diaphragm contracts, all of the abdominal muscles relax. Relaxation of the abdominal muscles allows the pelvis to display a relative movement in the following manner: the symphysis pubis moves inferiorly and posteriorly; the anterior superior iliac spines (ASIS's) move laterally (flare out) and inferiorly; the ischii move posteriorly and medially. (Fig. 6a)

During expiration, the diaphragm relaxes and all of the abdominals contract. This causes a relative movement of the pelvis in the opposite directions: the symphysis pubis moves superiorly and anteriorly; the ASIS's move medially (flare in) and superiorly; and the ischii move anteriorly and laterally. (Fig. 6b)

Translating the movement of the innominate to the temporal bone requires that we observe the analogous parts of the two bones. The most important analogs are the temporal squamosal suture and the iliac crest, and the mastoid process and the ischium.

We can now see that the mastoid process moves posteriorly (and medially) during inspiration. This has always been a very controversial point. In one of Sutherland's explanations, he refers to the temporal bones as rotating "anterolaterally" on inspiration.[5] What has created the controversy is that Sutherland did not clarify that he meant that the squamosal portion of the temporal bone moved anterolaterally on inspiration (analogous to the ASIS movement) and not the mastoid process, as so many have erroneously assumed. Likewise, since the mastoid process moves posteriorly (and medially) on inspiration, the mastoid process moves anteriorly (and laterally) on expiration. (see Figs. 6a and 6b)

Applied kinesiology procedures indicate that the mastoid process should be pushed anteriorly with inspiration for correction of an "inspiration-assisted" cranial fault. This is correct procedure because the mastoid process which would normally be moving posteriorly on inspiration is stuck and unable to do so in light of the fault. Pushing anteriorly on the mastoid process on inspiration exaggerates the fault, causing the reciprocal tension membranes to be alerted and make the correction (rebound phenomenon).

The same is true for the "expiration-assisted" cranial fault. It is as if the mastoid is stuck posteriorly and cannot move anteriorly during expiration as is its function. Correction of the fault involves pressing the mastoid process posteriorly during expiration, exaggerating the fault, and alerting the reciprocal tension membranes to normalize the cranial structure (through the rebound phenomenon).

INTERNAL AND EXTERNAL FRONTAL FAULTS
(Viewed from above)

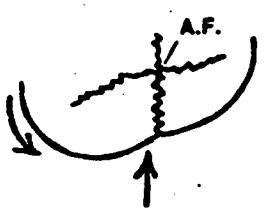

Fig. 5a
Right Internal Frontal
(from above)

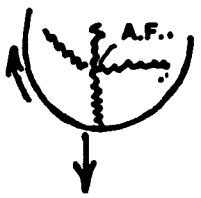

Fig. 5b
Right External Frontal
(from above)

A.F. = Anterior Fontanel

Conclusion

It is hoped that this explanation will help to develop a common understanding and to standardize teaching procedures of applied kinesiology cranial technique. Obviously, only a few cranial functions were discussed in this paper, and certain principles were oversimplified almost to the point of introducing erroneous concepts. But it is hoped that the purpose of this paper, which is to clarify certain misunderstood concepts in cranial technique, will have been served by its presentation.

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5. Magoun, H.I., op. cit., p. 38.

NORMAL COINCIDENTAL RESPIRATORY MOVEMENTS OF TEMPORAL AND INNOMINATE BONES

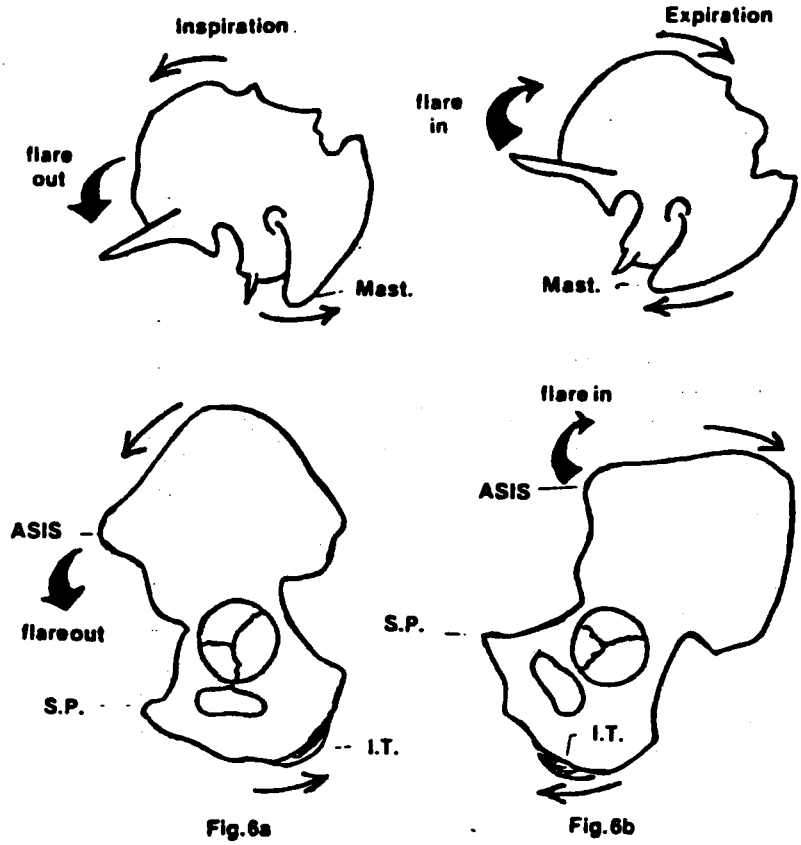

Fig.6a Fig.6b

Mast. = Mastoid process
ASIS = Anterior superior iliac spine
S.P. = Symphysis pubis
I.T. = Ischial tuberosity

NOTES

DR. GEORGE GOODHEART ON "Reviewed and Approved by I.C.A.K."

HYPOTHYROIDISM AND MYOFASCIAL RELATIONSHIPS

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Two studies — one of 77 cases and the other of 100 cases of hypothyroidism revealed a variety of symptoms. In study A weakness, dry-skin, coarse skin, lethargy, slow speed, edema and swelling of the eyelids, as well as sensations of cold, were present in 90% of the 77 cases studied. These 77 cases had various degrees of incidence which had similar percentage positions in study B. *(*J. H. Means, L. J. DeGroot, S. T. B. Stanbury, "The Thyroid and Its Diseases," McGraw Hill, 1963, p. 321 and 322).*

A complete percentile list and the symptoms of hypothyroid are included on the chart A accompanying this article.

A variety of tests have been advocated for the measurement of thyroid function beginning with the Basal Metabolism Test of 30 years ago, which measures rate of O_2 consumption. This was followed by the Protein Bound Iodine (P.B.I.) Test, which was a useful test but had many errors. PBI was followed by the T_4, which was specific for Thyroxin, but after another iodine containing material was isolated from thyroid protein which proved to be four times more active than thyroxin, since it contained 3 atoms of iodine, it was called Triiodo Thyronine or T_3. The T_3 Test became the test in vogue. Unfortunately, all of these tests measured only the transport system and did not measure the active function of the material at the level of the cell.

The August 1942 issue of JAMA reported a study of 1,000 college students whose Basal Temps were taken. They also received basal metabolic tests. The study indicated subnormal body temperature was a better test for hypothyroidism than the BMR. Basal temperatures were interesting and occasionally infections would alter the temperature of the mouth and rectal temperature would average a degree higher than oral temperatures. Therefore, axillary temperature was thought to be more useful as a simple guide to the presence or absence of hypothyroidism. It has been established that the normal values of axillary temperatures are in the range of 97.8 degrees F. - 98.2 degrees F. Any temperature below 97.8 degrees F. indicates hypothyroidism, and above 98.2 degrees F is indicative of hyperthyroidism. Basal temperature is not 100% specific but it is most successful in uncovering hypothyroidism and it fits in well with clinical observations of the patient's symptoms. The Basal temperature can be taken on a man at any time. But, with a woman, there are variations with the menstrual cycle, it being highest shortly before the start of the menstrual flow and lowest at the time of ovulation. *(*Hypothyroidism: The Unsuspected Illness, Barnes & Galton, T. Y. Crowell & Co.)*

In the past, many patients were given basal temperature tests with directions that the thermometer was to be kept under the arm pit for 10 minutes and the patient was to record the temperature for the physician's perusal. Recent sophisticated production of biofeedback instrumentation has allowed our clinical group to evaluate the temperature of each new patient that enters our office. The thermistor attached to the biofeedback instrument is placed in the Axillary area, and left in situ for a period of 10 minutes while other simple tests are being performed. If the patient is perspiring excessively, a small plastic sleeve is placed over the thermistor to prevent direct contact with perspiration and the recording section of the thermistor of the biofeedback thermometer. Over a period of 10 months, measuring only new patient output, approximately 70% of all new patients showed a subnormal temperature, measuring by the biofeedback method described above.

The physical examination of many of the patients with lowered basal temperature measured electronically showed an unusual characteristic in that the hand and arm, when standing, are in the "knuckle forward-palm back" position. (See figure 1.) This was both unilateral and bilateral on a high percentage of patients that showed subnormal temperature.

Evaluation of this postural abnormality by muscle testing, (see figure 2) using the method of Kendall and Kendall, showed 30% with a weak teres minor muscle on a unilateral or bilateral basis. This is consistent with the observations in Applied Kinesiology of the muscle and visceral relationship brought out by Mendel, et al, in the Anglo-European Chiropractic College study on the relationship of muscle testing to visceral function. This was monitored with strain gauges to test the muscle pull function and there was no operator performing muscle testing, only the subject. The disparity between the 30% weak teres minor findings and the 70% lower temperatures posed a question which was difficult to answer. Using the technique of therapy localization in Applied Kinesiology methods as advocated by Eversaul *(*George A. Eversaul, "Applied Kinesiology and the Treatment of Temporo Mandibular Joint Dis-function," from "Clinical Management of Head, Neck and T.M.J. Pain and Dis-function," by Harold Belb, DDS, DMD, W. B. Saunders and Company, 197?),* and originated by Goodheart, therapy localization was attempted at the appropriate neurolymphatic and neurovascular stress receptor areas, and this yielded another 10%, producing a 40% total of the patients who showed a below normal axillary temperature, leaving a 30% disparity unexplained.

The ingenious strain-gauge development used to show the relationship between visceral function and muscle testing was accomplished at the European College of Chiropractic by Mendel, Carpenter and Hoffman, with the assistance of the Bournemouth College of Engineering.

Pectoralis major clavicular muscle tension tests were performed by the subject a series of times and strain-gauge averages were accomplished. Other muscles were also tested. A measured amount of ice water in a measured amount of time was ingested by the subject and the identical procedure of testing the pectoralis major clavicular was

accomplished for the second time following the ingestion of the ice water, and there was a rapid and marked reduction in testing strength of the pectoralis major clavicular, with no appreciable change in strength of other muscles.

The series of other tests were used to demonstrate the relationship of visceral function and the particular muscles as advocated by Goodheart, et al, in Applied Kinesiological Technics.

In the light of experience and the previously mentioned musculovisceral relationship, the failure to attain any valid muscle weakness test of the teres minor in the remaining 30% of the people with lowered basal temperature remained an enigma.

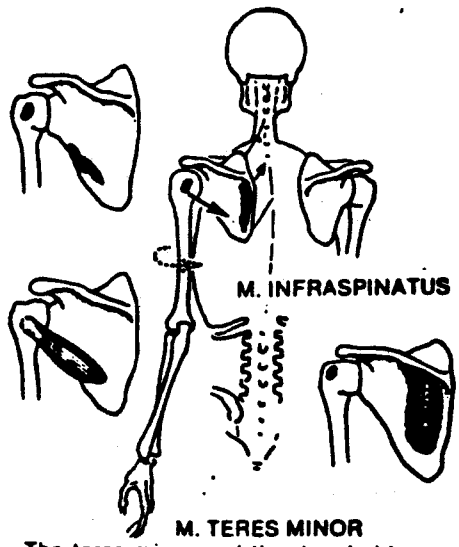
The concept that the fascia of a muscle could shorten causing postural integration problems was first advocated by Rolf. *(*"Rolfing-Integration of Human Structures" by Ida P. Rolf, Ph.D., Den-*

Incidence of Symptoms and Signs of Hypothyroidism *

	Study A % of 77 cases	Study B % of 100 cases
Weakness	99	98
Dry skin	97	79
Coarse skin	97	70
Lethargy	91	85
Slow speech	91	56
Edema (swelling) of eyelids	90	86
Sensation of cold	89	95
Decreased sweating	89	68
Cold skin	83	80
Thick tongue	82	60
Edema of face	79	95
Coarseness of hair	76	75
Heart enlargement	68	—**
Pallor of skin	67	50
Impaired memory	66	65
Constipation	61	54
Gain in weight	59	76
Loss of hair	57	41
Pallor of lips	57	50
Labored or difficult breathing	55	72
Swelling of feet	55	57
Hoarseness	52	74
Loss of appetite	45	40
Nervousness	35	51
Excessive menstruation	32	33
Deafness	30	40
Palpitations	31	23
Poor heart sounds	30	—
Pain over the heart	25	16
Poor vision	24	—
Changes in back of eye	20	—
Painful menstruation	18	—
Loss of weight	13	9
Emotional instability	11	—
Choking sensation	9	—
Fineness of hair	9	—
Cyanosis (bluish discoloration of skin)	9	—
Difficulty in swallowing	3	—
Brittle nails	—	41
Depression	—	60
Muscle weakness	—	61
Muscle pain	—	36
Joint pain	—	29
Burning or tingling sensations	—	56
Heat intolerance	—	2
Slowing of mental activity	—	49
Slow movements	—	73

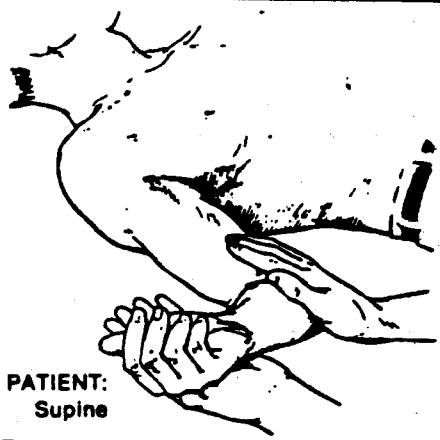
* From J. H. Means, L. J. DeGroot, and J. B. Stanbury, *The Thyroid and Its Diseases*, McGraw-Hill, 1963, pgs. 321-22.

** *Dash means not reported found.*



The teres minor and the rhomboids are mutually active and should be checked carefully.

FIGURE 1



PATIENT:
Supine

Teres Minor and Infraspinatus

PRESSURE TESTING

Using the forearm as a lever, pressure is applied in the direction of internally rotating the humerus.

PRESSURE TREATMENT

Equally against the origin and insertion. Areas marked in black on muscle drawing.

FIGURE 2

nis Zundhumin Pub., Santa Monica, Calif.)

She advocated the investigation of the possibility that the fascia that covers muscle is shorter than the muscle, thus producing changes in posture and body integration. Extensive trial and clinical experience has revealed much information about the concepts of Rolfing and it is in current use by a variety of therapists. The clinical responses have been sporadic and require some interpretation.

The observations made many years by Ranvier, that there were two types of muscles in the structure of the rabbit, was noted by Ellis L. O'Connell, Ph.D. and Elizabeth B. Gardner, Ph.D., in their text "Understanding the Scientific Bases of Human Movement." *(Williams and Wocolms Book, Baltimore 1972.)*

Almost 100 years ago Ranvier observed that some muscles in the rabbit were redder in color, and that these muscles contracted in a slower and more sustained manner than did the paler muscles in the same animal. Since then the designation of red and white muscles has become synonymous with slow and fast contractions.

In addition to slower contraction/relaxation cycles, red muscles have lower thresholds to tetanize, lower frequencies, fatigue less rapidly, and are more sensitive to stress than the faster white muscles. As might be expected, the individual muscle fibers reflect these differences in contractile behavior. Investigation by a number of workers both here and abroad have revealed histological and biochemical differences which distinguish between the two types of muscle fibers and correlate with the physiological differences between fast (white) and slow (red) muscles. To quote O'Connell and Gardner: "A stretched muscle contracts more forcibly than when it is unstretched at the time of activation. This is true whether the contraction is isometric, or isotonic, or eccentric. Within physiological limits the greater the initial length the greater will be the muscle's tension capability."

Following a series of teres minor problems with athletic injuries, it was thought that another method of testing might be accomplished by stretching a muscle prior to testing it. When this was accomplished on a normal muscle, the muscle tested as strong or stronger than previously observed, but when this same test was applied to the teres minor muscle involved with the thyroid patients chosen because of their lower basal temperature, the teres minor muscle showed marked weakening when the muscle was stretched. This corresponded in our minds with the concept of the fascia being shortened that Ida Rolf had postulated. Extensive efforts were made to use Rolfing technics on a teres minor muscle to produce muscle strength and efforts were made to correlate on increased muscle strength with changes in biofeedback thermography.

There was a parallel and marked relationship between the hard heavy pressure applied to the muscle fibers themselves, which was nondirectional, and the relative increase in the temperature while the patient was being tested. Attempts were made to use the fascial flushing technic on areas unrelated to the teres minor location and there was no alternative in the axillary temperature. Attempts to use a fascial flush release on a teres minor muscle in these patients that showed a lower temperature, resulted in an increased strength to a stretch response and a marked increase in the axillary temperature, approaching normal in most patients. This unexpected development of temperature change while the patient was still in the office yielded excellent clinical response, some of which was long lasting and some of which required repetition of the technic.

Efforts were made to discover the reason for failure in those patients who did not hold their response — and it was found there was a need for a nutritional component to produce continued response. Nutritional (non-drug) extracts of thyroid and iodine (*Tritrophic 40— supplied by Nutridyne Corp.)* administered in patients who showed a rise in temperature following teres minor fascial flushing, but who did not yet approach the normal of 97.8 degrees F. There was a consistent rise in this series of patients of approximately 9/10ths of a degree, allowing the patient to achieve the low level normal of 97.8 degrees F. in the axillary area. Patients who "plateaued" in their temperature response in the low normal were also given the nutritional extract of iodine and thyroid with a corresponding increase in their temperature as well.

Experience has shown that structural adjustment and activation of the neurolymphatic reflexes and the neurovascular reflexes are necessary in the maintenance of the correction and the patient is put on a maintenance intake of the Tritrophic 40 (iodine thyroid preparation). Experience has shown that the Tritrophic material will abolish the teres minor stretch response for 5-10 minutes with a recurrence following that period of time; but following proper activation of the fascia and activation of the neuro reflexes, along with nutritional support and appropriate structural manipulations, maintenance of the proper temperature was assured.

A series of 130 patients were observed who exhibited a lower temperature and approximately ⅓ of these patients required additional nutritional support. The patient, after having been tested and treated using the stretch technic, who failed to ascend to a normal temperature level, was given the nutrient on the tongue, chewing, but temporarily not swallowing, using the lingual receptor activation method reported in ACA Journal by Schmitt, and also reported by Grossman and Roth in Science of Feb. 1968.

Many patients showed a therapy localization to the lower cervical area, with the sixth cervical being the most usual site of the structural subluxation found in the lowered temperature pattern activity. When challenging and proper structural correction was accomplished, the response yield was in the area of 95%. A relatively small percentage(5%) required continued structural and nutritional maintenance support, without which they failed to show a holding of the normal temperature in the methods described above.

SUMMARY: Teres minor muscle testing revealed a significant relationship between weakness of the teres minor and thyroid dysfunction as measured by basal temperature. Further investigations into refinements of methods of muscle testing revealed a correlation between teres minor muscle weakness and lowered basal temperatures. Attempts to normalize teres minor muscle weakness by nutritional and structural adjustment and manipulative measures yield a high percentage of results as evidenced by changes in basal temperature, as evidenced by biofeedback thermometers.

When writing the author for further information, please include a stamped, self-addressed envelope.

Tritrophic supplied by Nutridyne Corporation, Chicago, Illinois.

REACTIVE MUSCLE TESTING

by Dr. George J. Goodheart
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Reviewed and Approved by I.C.A.K.

Man, as you know, is a structural-chemical-psychological equilateral triangle, and he possesses the potential for recovery through the innate intelligence of the human structure. This recovery potential with which he is endowed merely waits for your hand and your heart and your mind to bring to potential being and allow the recovery to take place which is man's natural heritage. This benefits man, and it benefits you, and it benefits our profession."

The research material on Reactive Muscle Testing allows a new approach to old problems, and is another piece of the jigsaw puzzle which nicely fits in place, to quote the words of my good friend Dr. Sheldon Deal in Arizona.

Frequently we would see a patient who would exhibit a symptom pattern or a disease syndrome which would reflect itself in an acute or chronic situation which did not yield much information on ordinary muscle testing. The patient with the recurring knee problem, with the recurring elbow or shoulder problem, with the recurring lower back problem, many times defied proper analysis and frequently defied proper correction.

Every muscle has, as you know, a reciprocal muscle or an antagonist — the biceps and triceps, for example — and then, on a kinetic basis, there are many muscles which act in a mutually beneficial, antagonistic, reciprocal manner. The laws of balance of one muscle to another allows an almost endless array of possibilities.

A good example is the activity of the quadriceps, which is a hip flexor in relation to the abdominal muscles, which are hip extensors. In other words, the quadriceps muscles pull down on the anterior superior spine, and the abdominal muscles pull up. The hamstrings pull down on the ischia, the sacrospinalis and the gluteus max pull up on the ischia.

The normal spindle cell and golgi tendon apparatus allows for a nicely balanced tone to exist between those muscles which, for example, pull down; and those muscles which, for example, pull up. But if there has been an injury, an accident, or a trauma, recent or ancient, remembered or forgotten, occasionally there may be an error in the muscle memory, and the spindle cell of the quadriceps, for example, will be set too high. If we gave, for example, a value of 4 to the maximum tone of the muscle, this means that the quadriceps muscle should be set to a spindle cell value of 4. When you test the quadriceps muscle, it tests strong, but there's no way of telling how strong. When you test the abdominal muscle it tests strong, but there's no way of telling how strong.

Therefore, if we can assume that each has the equivalency of 100% strength, it is with a setting of 4 in terms of strength. But if, for example, the quadriceps were to be set to a unit of 6, we would test the muscle and cause it to activate with the setting of 6, on the spindle cell mechanism which should be 4 at the time. If the abdominal muscle is quickly tested within 20 or 30 seconds after testing the quadriceps, the over-function on the quadriceps "6" setting will only weaken the rectus abdominis and will provide the basis for the postural disturbance that occurs on a kinetic basis when the patient walks or uses the muscle, as opposed to the static position when the muscle is not being used.

Muscles should be tested both in motion and against each other on a reactive basis. When this occurs, many times you will find that one muscle, or its opponent, or its antagonist, or its reciprocal muscle, has been set too high. As a result, the opposite muscle — it should be a reciprocal muscle — will "blow" so to speak, when the first muscle is put into action. So in the case of the quadriceps, testing the quadriceps yields strength, testing the rectus abdominis, for example, yields strength.

But if one tests the quadriceps and then very quickly tests the rectus, if the spindle cell of the quadriceps is set too high, then it weakens the abdominal muscle — and attempts to activate the abdominal muscle by way of the 3-finger concept of neurolymphatic, neurovascular, neurological, cerebrospinal fluid, or acupuncture meridian connector do not suffice. But if the spindle cell mechanism is supposed to be set too high, and if the spindle cells in the belly of the muscle are pressed on by the two thumbs placed opposite to each other in the belly of the muscle, and if the spindle cell is now pressed together (if the two thumbs are pressed together), reducing the tension of the spindle, if a setting of, say, 6 down to 4 — then when the quadriceps is tested it does not blow. But the components in a patient's posture are helped, especially on a kinetic basis.

This is most useful in shoulder problems, when a patient complains of pain on certain motions. The patient many times will say he cannot lift his shoulder, and those of you who are familiar with the frozen shoulder technic know that the subclavian muscle must be activated to free the clavicle on the approaching acromial process. In the absence of surgical adhesions, there is no reason why the shoulder should not come up if the deltoid tests strong.

Many times the deltoid tests strong, but the patient's arm will not come up past the horizontal. One can assume that there is no hypertonus of some of the tied down muscles, such as the teres minor or supraspinatus. Yet if one tests the deltoid in the standard fashion, with the arm flexed at the elbow and pressure applied on the elbow to bring the elbow down toward the rib cage, and the patient resists, the arm being horizontal at the beginning of the test, the strength is present in the deltoid.

Quickly test the rhomboid on the same side by having the patient approximate the elbow to the rib cage and test by pulling the elbow away from the rib cage, and then quickly test the deltoid. If the deltoid is the muscle that is weakened by the hypertonic or over-reactive rhomboid, the deltoid will really weaken.

Going to the spindle cell of the rhomboid and using the double thumbs contact, pressing the thumbs toward each other at the belly of the muscle will neutralize the high spindle cell setting on the rhomboid and allow a better func-

tion of the deltoid — and the arm will go up, all things being considered.

Just as in the occasional error, like forgetting a person's name or forgetting a person's telephone number, so also can the body forget the right tone setting of the spindle cell mechanism and set the tone too high following trauma or injury. Trauma is the only random activity that takes place in the body. As has been said before, there is no random activity in the body. Body language never lies. But if trauma is interfering with the fine tuning that the body normally possesses, then too high a spindle cell setting will cause the particular muscle with too high a spindle cell setting to pull too hard, and thereby overstretch its opponent or its reciprocal muscle, and cause that muscle to function in a weak fashion when tested in the proper fashion; namely, for example, following testing the first muscle.

The muscle proprioceptors are the neuromuscular spindles in golgi tendon elements, and both of these are incorporated, as you know, into the gross structure of the muscle itself. The neuromuscular spindles are highly specialized servo-mechanisms which are distributed along the belly of the muscles. They are found throughout the mass of the muscle, but in general they tend to be more concentrated in the central portion. There are more muscle spindles, for example, in man's phasic muscles than in his tonic muscles — his postural muscles. You might expect this, because the former require more precise control. The neuromuscular spindle is probably the most important, and certainly the most complex, of all these proprioceptive receptors.

With this structural complexity we generally find functional complexity. The muscle spindle is sensitive to length, and when it is stressed it responds to both constant length as in the maintenance of a postural position, and changing length as in the movement. This firing of the sensory neurons of the spindle reflects both a change in length, which is called the phasic response, and the ultimate length which is finally achieved and maintained, which is called the tonic response.

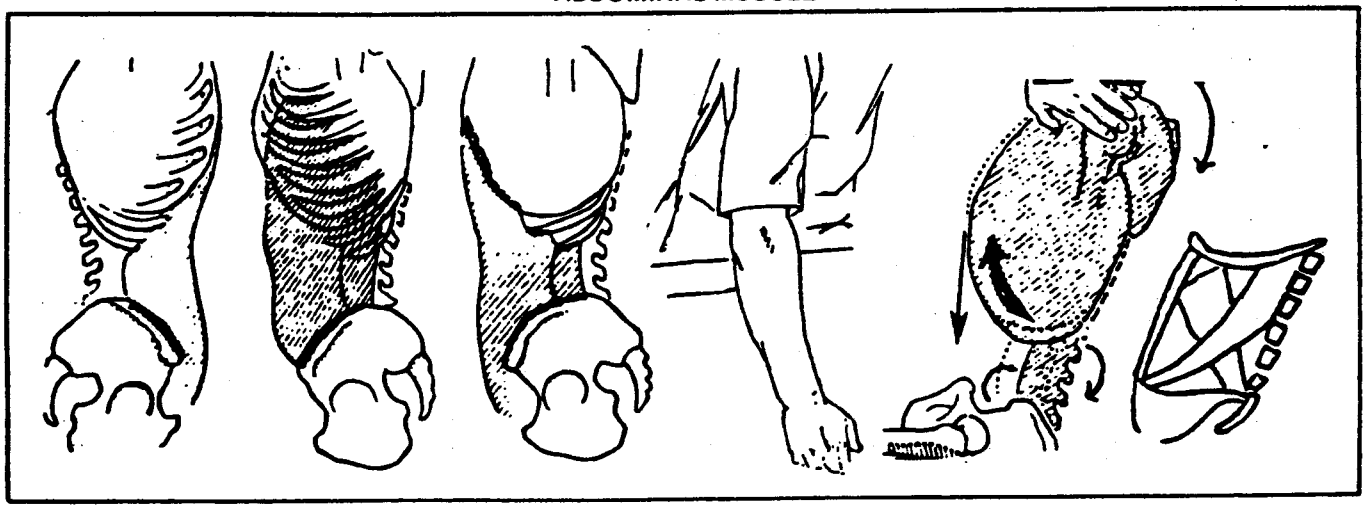
If both of these aspects of muscle length are considered in variations in the firing frequency, we can understand the muscle proprioceptors. A very fine book called, "Understanding the Scientific Basis of Human Movement," by O'Connell and Gardner, was published in 1972 by Williams & Wilkins Company in Baltimore. The section you just read is paraphrased from their discussion on muscle proprioceptors. And to quote O'Connell and Gardner: Muscle proprioceptors are those we know which are stimulated by the action of the body itself. The nervous system uses these sensory receptors to modify and adjust muscle function so that peripheral automatic (subconscious) regulation will dominate in most of our so-called voluntary operational movements. The proprioceptors are stimulated by movement or position. Impulses traverse neuro chains to act upon muscles and alter their effective length, by exciting the various proprioceptors contractionally or subcutaneously to all those other muscles.

In the jargon of the electronics engineer, these reflexes operate as negative feedback loops by means of which motor activity becomes in large measure self regulating. In other words, an expected muscle movement process such as muscle tension, absolute muscle length, phasic change in muscle length, joint position, joint movement, head position, and contact with surface — will all act as stimuli to allow the body to deal will problems which present a challenge to the neural system.

There are proprioceptors that can be classified from the primary muscle proprioceptors. Proprioceptors are also present in the skin and in tendons proprioceptors. These proprioceptors are a finely tuned set of functioning nervous system mechanisms, which allow fine and sensitive muscle movement. Then, if the body has made a mistake and set a spindle cell mechanism too high, the body has had incorrect information and there is a continual war between the muscles that are set too high and the normal muscle. The principle of Applied Kinesiology rests on the simple premise that the weak muscle causes the hypertonic muscle. And experience has shown this to be eminently true and valid.

In the case of trauma, many times the body sets a spindle cell mechanism too high, and this too-high setting on the tone of the muscle, by way of the erroneous spindle cell setting, does not cause that muscle or the opposite muscle to become weak *per se*, but only allows the weakness to take place when the overactiveness pulls against a normal muscle. The normal muscle weakens because its apposition is above normal. A muscle that is 100% will weaken because it is being fired against a muscle which is firing at 120%. It is this error that results from trauma that produces much of the muscle weakness which we see on testing in a kinetic fashion.

ABDOMINAL MUSCLE



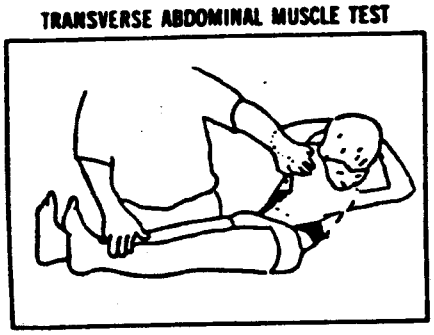
Since trauma is the only abnormal random activity that takes place in the body, the relative frequency of one reactive muscle causing a problem to another muscle is multiple and diverse, but the law of averages does yield a certain pattern of activity. The quadriceps being set too high weakens the ipsilateral, rectus and transversalis abdominis. If it is set too high, a double thumb pressure pressed towards each other on the belly of the muscle will not weaken the muscle as one might normally find in a normal muscle, but reduces the quadriceps from a setting of 6, shall we say, to a setting of 4. Then when the quadriceps is tested, it no longer weakens the rectus abdominis.

There are laws of average, as mentioned, that allow reactive muscle testing to be followed on a certain line of principle. The quadriceps weakens the ipsilateral, rectus abdominis or transversalis. The quadriceps weakens the ipsilateral sartorius, the sartorius and gracilis are weakened as mentioned by the quadriceps, and frequently sartorius and gracilis will weaken the ipsilateral peroneus tertius.

The adductor muscles when tested in the usual fashion, or a more simple technic for this purpose — simply have the patient hold his ankles together and pull one apart from the other. The adductor muscles weaken the psoas ipsilaterally. The psoas muscle weakens the contralateral neck flexors. The neck extensors weaken the contralateral piriformis. The hamstring weakens the contralateral latissimus dorsi. The latissimus dorsi weakens the upper trapezius. The upper trapezius frequently weakens the opposite upper trapezius. The levator scapula on one side frequently weakens the opposite levator scapula. The hamstring will, on occasion, weaken the quadriceps and *vice versa.*

The list of reactive muscles is endless and nonpredictable, and follows no pattern. There is no set sequence, beyond the law of averages frequency factors

TRANSVERSE ABDOMINAL MUSCLE TEST



REACTIVE MUSCLES

MUSCLE	SPINDLE CELLS
QUADRICEPS	Rectus Abdominis Sartorius
RHOMBOIDS	Deltoid Serratus Anterior Supraspinatus
GASTROCNEMIUS (lat. head)	Popliteus
GASTROCNEMIUS	Quadriceps
HAMSTRING (lat. head)	Popliteus
HAMSTRING	Opp. Latissimus Dorsi Quadriceps
SACROSPINALIS	Hamstring
UPPER RECTUS ABDOMINIS	Lower Rectus Abdominis
RECTUS ABDOMINIS	Opp. Glueus Medius
RECTUS ABDOMINIS	Neck Flexors, Neck Extensors
SPLENIUS CAPITUS	Opp. Piriformis
ADDUCTORS	Psoas Tensor Fascia Lata
GLUTEUS MAXIMUS	Pectoralis Major Clavicular
LATISSIMUS DORSI	Upper Trapezius
SARTORIUS	Anterior Tibial
TENSOR FASCIA LATA	Peroneus Tertius Adductors
PSOAS	Opp. Anterior Neck Flexor Diaphragm
UPPER TRAPEZIUS	Contralateral Upper Trapezius
BICEPS	Triceps
BICEPS	Upper Trapezius
TRANSVERSALIS	Sacrospinalis
SACROSPINALIS	Gluteus Maximus
PECTORALIS MINOR	Serratus Anterior Supraspinatus Deltoid
RECTUS ABDOMINIS	Quadriceps
LOWER RECTUS	Upper Rectus
DELTOID	Rhomboid,, Pectoralis Minor
POPLITEUS	Gastrocnemius, Hamstring (lat. heads)
LATISSIMUS DORSI	Opp. Hamstring
GLUTEUS MEDIUS	Opp. Rectus Abdominis
PIRIFORMIS	Opp. Splenius Capitus
PSOAS	Adductors
PECTORALIS MAJOR CLAVICULAR	Gluteus Maximus
UPPER TRAPEZIUS	Lattissimus Dorsi, Biceps, opp. Upper Trapezius
ANTERIOR TIBIAL	Sartorius
PERONEUS TERTIUS	Tensor Fascia Lata
QUADRICEPS	Gastrocnemius, Hamstring
ANTERIOR NECK FLEXOR	Opp. Psoas
SARTORIUS	Quadriceps
TRICEPS	Biceps
SACROSPINALIS	Transversalis, Hamstrings
GLUTEUS MAXIMUS	Sacrospinalis
SERRATUS ANTERIOR	Rhomboid, Pectoralis Minor
SUPRASPINATUS	Rhomboid, Pectoralis Minor
ADDUCTORS	Tensor Fascia Lata
TENSOR FASCIA LATA	Adductors
DIAPHRAGM	Psoas
(HAMSTRING	Sacrospinalis)

Since reactive muscle may be in either sequence, following is a combined list of possibilities. Muscle on left may respond to spindle cell sedation on any on right.

RECTUS ABDOMINIS	Quadriceps. opp. Gluteus Medius
UPPER RECTUS	Lower Rectus
LOWER RECTUS	Upper Rectus
DELTOID	Rhomboid, Pectoralis Minor
POPLITEUS	Gastrocnemius, Hamstring, Upper Trapezius
LATISSIMUS DORSI	Opp. Hamstring, Upper Trapezius
GLUTEUS MEDIUS	Opp. Rectus Abdominis

(Continued on next page)

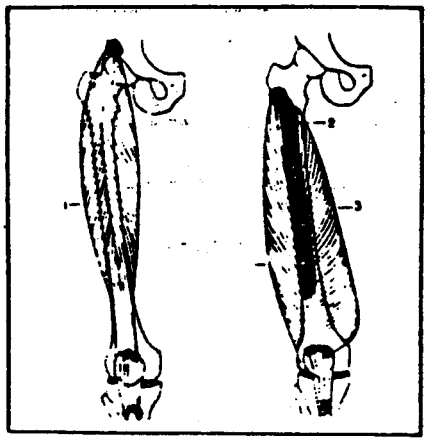
that have just been cited.

The approach is simple. Test a muscle; test a related muscle; see if testing the first muscle weakens the second muscle, which is related to it in posture or reciprocation.

If this obtains, in other words, if testing one arm muscle weakens another, then go to the original muscle, contact the belly of the muscle, put a double thumb contact on the belly of the muscle, press the thumbs toward each other using about 4-6 pounds of pressure.

Do it two or three times; retest the original muscle to make certain you haven't weakened it; and then test that muscle against the muscle which previously weakened. You should get a good response, and it is especially useful in the case of trauma.

It is occasionally necessary to use golgi tendon organ stretch patterns as well, and in the case where the muscle continues to produce weakness in its reciprocal opponent or antagonist, in addition to measures applied to the belly of the primary muscle to affect the primary spindle cells, you may have to affect the secondary spindle cells as well as the golgi tendons organs.



QUADRICEPS MUSCLE

This can be done by pressing, as was mentioned, using two fingers pressing towards each other on the spindle cells in the belly and then pressing at either end of the muscle, away from the belly of the muscle.

Take a firm contact on the origin and insertion muscle and pull the thumbs away from each other, following the spindle cell activation in the belly of the muscle.

This may be necessary, especially, in the case of very short muscles such as those in the Temporal Mandibular Joint.

NOTES

REACTIVE MUSCLES CHART *(Continued from preceding page)*

PIRIFORMIS	Opp. Splenius Capitus
PSOAS	Adductors, opp. Anterior Neck Flexor, Diaphragm
PECTORALIS MAJOR CLAVICULAR	Gluteus Maximus
UPPER TRAPEZIUS	Latissimus Dorsi, Biceps, opp. Upper Trapezius
ANTERIOR TIBIAL	Sartorius
PERONEUS TERTIUS	Tensor Fascia Lata
QUADRICEPS	Gastrocnemius, Hamstring, Rectus Abdominis, Sartorius
TRICEPS	Biceps
SACROSPINALIS	Transversalis, Gluteus Maximus, Hamstring
GLUTEUS MAXIMUS	Sacrospinalis, Pectoralis Major Clavicular
SERRATUS ANTERIOR	Rhomboid, Pectoralis Minor
SUPRASPINATUS	Rhomboid, Pectoralis Minor
ADDUCTORS	Tensor Fascia Lata, Psoas
TENSOR FASCIA LATA	Adductors, Peroneus Tertius
DIAPHRAGM	Psoas
HAMSTRING	Sacrospinalis, opp. Latissimus Dorsi, Quadriceps, Popliteus
RHOMBOID	Deltoid, Serratus Anterior, Supraspinatus
GASTROCNEMIUS	Popliteus, Quadriceps
SPLENIUS CAPITUS	Opp. Piriformis
SARTORIUS	Anterior Tibial, Quadriceps
ANTERIOR NECK FLEXOR	Opp. Psoas
BICEPS	Triceps, Upper Trapezius
TRANSVERSALIS	Sacrospinalis
PECTORALIS MINOR	Serratus Anterior, Supraspinatus, Deltoid

Pitch, Roll and Yaw Technic and Limbic Technic

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LABYRINTH AND RIGHTING REFLEXES

The fact that the head exerts important influences upon movements of the rest of the body, the trunk and limbs, can not be overlooked by anyone who has to deal with muscular problems professionally. These orienting and reinforcing effects are mediated by two primary groups of proprioceptors, the labyrinth and neck receptors. Fundamentally, the cloacal reflexes and the proprioception from labyrinth and visual righting reflexes have been discussed under the heading of "CLOACAL ACTIVITY" previously, as has been the initial portion of the penetration of the concepts of the "pitch, roll and yaw" patterns by the so-called ocular basic circuits, first discussed in the 1979 Research Manual.

The labyrinth receptors are specialized proprioceptors located in the inner ear. They consist of cells that are a very complex arrangement with little projecting hairs whose orientation is displaced by the pull of the stony concretions within the endolymph or by the motion of the endolymph. They include the semicircular canals which are stimulated by angular acceleration and the utricular and saccular portions of the semicircular canals which are stimulated by linear acceleration and by changes in the orientation of the head in relationship to gravity. These semicircular canals help maintain equilibrium during movement, while the utricular portion appears to be primarily concerned with the postural reflexes and the distribution of muscle tonus.

The bony labyrinth contains the utricular and saccular portions, and the semicircular portions contain the membranous labyrinth, which although much smaller than the bony cavity, is filled with a fluid unique in composition called endolymph. In its walls the branches of the vestibular and cochlear nerves are distributed. The membranous labyrinth is fastened at certain points to the walls of the bony labyrinth, but is separated from the greater part of the bony labyrinth by something called the perilymphatic space.

The utricular, saccular and semicircular ducts are held in position by multicellular bands which stretch across the perilymphatic space to the bony walls.

Physiologists differ on the basis of understanding how some of the labyrinth activities take place. But it is pretty well agreed that the majority of the vestibular nerve fibers have a steady continuous basal discharge of afferent nerve impulses when the hair cells within the labyrinth are receiving no mechanical stimulation.

Bending of the cilia in one direction, called stereocilia, raises the frequency of nerve impulses, while bending in the opposite direction lowers the frequency.

There is a type of hair cell a little different than the stereocilia, and this is a single long kinocilia which is attached to one border of the cell. The kinocilia is different than the stereocilia. On the border opposite to the kinocilia the stereocilia are short, but those progressively near the kinocilia increase in length, running from a single micron to a hundred microns in the vicinity of a kinocilium.

Therefore, as stated, bending of the stereocilia towards the kinocilia raises the frequency of nerve impulses, while bending in the opposite lowers the frequency. Thus, the position of the head, or its state of linear or angular acceleration, is reflected

[1] Presented at IAPM National Conference, Las Vegas, NV, Fall, 1981. Updated 1983.

by the state of balance or relative imbalance in the impulse discharge patterns from mutually cooperative pairs of receptor sites in the right and left labyrinths.

For example, a horizontal swing of the head to the right results in an increased discharge of impulses from the anterior right lateral semicircular duct and a decreased discharge from the left. This occurs because the inertia of the endolymph causes a relative movement of the cilia to the left of both of these canals. The positioning of the kinocilia and the stereocilia in the ampulla was such that it results in their compression on the right and their decompression on the left.

These cilia resemble in some respects the inner hair cells of the organ of cochlea. Given the case of the auditory pattern there is no kinocilia present, but regardless of whether we are dealing with the displacement of the semicircular canals, or angle acceleration, or the utricular or saccular changes by linear acceleration, or changes in the orientation of the head in relationship to gravity, they all relate to the position of the head upon the trunk and the limbs.

In the early life of a child, the reflexes arising from the utricular receptors have a fairly primitive and highly predictable form known as TLRs, or Tonic Labyrinth Reflexes. Stimulation induced by body position or head inclination produces certain predictable effects. The supine position, lying on the back, or a corresponding position of the head with gravity facilitates extension of our limbs and inhibits flexion; while the prone position or corresponding position of the head produces flexion and inhibits extension. Side lying or its equivalent head position induces extension facilitation of the under limbs and flexor facilitation of the upper limbs, with reciprocal inhibition of the antagonists.

This is certainly evident in observing the sleeping habits of both humans and animals. As growth and development proceed, the tonic labyrinth reflexes are supplanted by more complex reflexes, the so-called labyrinth righting reflexes, which we have previously discussed, whose purpose seem to be to orient the head and to maintain a center of gravity. This is accomplished basically by the muscular system, especially the muscles of the neck.

These basically utricular reflexes cooperate with other reflexes from skin and neck and vision, and they constitute as a group the "righting reflexes" whose normal operation is essential to the achievement of vertical posture. These have been discussed before, but there are also "labyrinth righting reflexes," and physiological stimulation of the labyrinth receptors will produce contraction of the neck muscles to orient the head to gravitational force.

Asymmetrical stimulation of skin receptors from lying on your back or your side results in the activity of the trunk or limb muscles which raise the head into an upright position. If you try equalizing the skin stimulation by placing a board on the upper side of an animal which is lying on its side, no righting reflex takes place. These are called "body and head" reflexes.

There are also "neck righting reflexes," and these arise from joint receptors in the neck which produce contractions of limb and body muscles to align the body with the head. In other words, there is one to align the head with the body and there is another one to align the body with the head. Here we become more cognizant of the interrelationship that exists that forms the basis for the so-called "PRY" technic.

Then there are "body on body righting reflexes" where asymmetrical stimulation of skin receptors cause the contraction of trunk muscles which raise the body towards an upright position.

Besides these there are the well known "visual righting reflexes" where visual feedback is used to orient the head and body correctly with the environment. This is very important when other sensory input is missing or deficient.

Many of these righting reflexes are later dominated by the so-called equilibration reflexes.

So, to repeat, the semicircular canals of the labyrinth apparatus are stimulated by angular acceleration about any axis in any direction. Stimulation is not limited to any particular pair of canals, but all can be concerned in an angular movement which is then determined by the relative component of which planes are involved in acceleration. Acceleration of the head in movement usually also stimulates both utricular and saccular activity, evoking attitudinal or postural reflexes at the same time. This is a relatively complicated set of situations which can be described by some simple examples.

The so-called "neck reflexes" arise as a result of stimulation of the joint receptors in the cervical spine, especially at the atlanto-occipital and the atlanto-axial joints. When the head is bent backward or forward or sideward, or rotated, these reflexes are stimulated. These neck reflexes, like the tonic labyrinth reflexes (TLRs) are also present at birth, and the TNRs or tonic neck reflexes which also persist postnatally for a short period of time, and are eventually supplanted by the labyrinth righting reflexes. For example, forward flexion of the neck produces facilitation of the front limbs with inhibition of the extensors, while extension of the neck produces extensory

facilitation of the front limbs with inhibition of the flexors — just the opposite response.

Rotation of the head favors extension and abduction of the limbs on the rotated side and flexion and abduction of the contralateral limbs — more or less like a fencer's on-guard position, with the reciprocal inhibition on the antagonistic muscles.

These reflexes become less apparent as motor development proceeds and are no longer compulsive by the sixth or eighth week. In the older child, they finally assume their mature role as neck or righting reflexes, which by evoking suitable body activity in body or limb muscles, assure that the body follows the head. This is the important part to remember: that the "body follows the head." Remember: "from above downwards, from inside out."

An example of how these things persist in the adult is to stand in a doorway and press the back of one's hands first against the door jamb by shoulder abduction for about a minute. In other words, push hard with the back of your hands against the doorway jamb and then step forward out of the doorway. In those subjects who can relax, the arms will spontaneously rise to about 90° of their abduction. Then, if the head is turned to one side, a clearly defined tonic neck reflex can be seen. This produces, on the face side, extension straightening and further abduction, and on the other side, it produces flexion and adduction. So what happens, the arms go up simultaneously when you push, and then when you turn your head, say, to the right, the right one keeps going up and straight, whereas, the left one goes down and bends. This is a very dramatic demonstration of that relationship.

Another common example: if you're trying to put a water-filled ice cube tray into a refrigerator, the tonic neck reflexes may cause you to spill the water when your head is turned away from handling the ice tray to open the freezer door. When you turn your head away, your arm will involuntarily bend, causing it to spill the water down the arm, whereas, if you had turned your head towards the side that's holding the tray, you will spill the water on the floor — a common situation when attempting to do this relatively simple task.

OCULAR-BASIC TECHNIC

Most of you are familiar with the book by Moshe Feldenkrais called *"Awareness Through Movement,"* by Harper and Row, published in 1972. Moshe Feldenkrais is an Israeli physicist who is interested in movement and uses much of the Alexander Technic, although it is questionable whether he gives him any credit. He says that the eyes are not only for seeing. As you well know, the eyes play an important part in coordinating the musculature of the body, especially that of the neck muscles — the so-called "righting reflexes" with which we are familiar.

Many of the special senses of the body have two functions. The mouth serves for eating and also for speaking; the nose for olfaction and all that entails, and breathing with the ionization and all that entails. The inner ear is instrumental in balancing the body in both slow and rapid movement, in addition to its role in hearing by way of the auditory and vestibular branches of the acoustic nerve. Similarly, the muscles of the eyes and the neck have an influence on the manner in which the neck muscles contract. As Feldenkrais says, "It is sufficient to recall climbing up or down stairs when the eyes do not see a floor at the end of the stairs to realize how big a part the eyes play in directing the muscles of the body."

A simple exercise will show this relationship. Have the patient or yourself stand and take your right arm and place it in front of you, straight ahead, and turn as far as you can to the right and mark the place on the wall of the room you are in, to measure the degree of turn. Do not move your feet. Return your arm to your original position and repeat the same movement with the left arm in front and turning left, but when you have the patient or yourself turn to the left, constantly move the eyes to the right. The head may turn to the left, but the eyes should be turned only to the right, counter to the direction of the turn.

Then repeat the turn to the right once more in the usual fashion. In a high percentage of patients and subjects, they will show a greatly increased range of motion on turning, indicating the influence that the eyes have on the rotatory musculature.

Another interesting exercise is to have the patient place both arms out in front, raise the right and lower the left, then bring them back together again to a level position. Most people can do this easily. But have the patient and yourself attempt to perform this function, raising the right and lowering the left, with the eyes closed, and then bring them back to a level position with the eyes still closed. Many people fail to do this. Some can level the right to the left but cannot level the left to the right, some have difficulty with both sides — but most do not have difficulty with the eyes open. The difference is when the eyes are closed. This is basically, as you know, proprioception. The body instinctively wants to be level. The head wishes to be level, as does the sacrum.

Cloacal and righting reflexes are all evidences of this need, but the head must be level by level signal, and if the sacrum is off level, there is a failure of synchronization of the head level to the sacral level

and vice versa. Small alternations in sacral level can be identified by a simple procedure. With the patient in a supine position, have him flex the knee of the right or the left leg and test a convenient muscle or muscle group; we use the double pectoralis major clavicular, because of the recruitment factor reducing the percentage of error. The muscles will test strong. Then have the patient bring the flexed knee across the center of the body with no other change of position, stretching the piriformis on the involved side. There will be a marked weakening in a high percentage of patients who have alterations of sacral level. This synchronizes into the visual righting reflexes, as one can easily determine.

With the muscles weakened by the flexed knee and medial position of the leg stretching the piriformis, the relationship to the eyes becomes obvious if one asks the patient to lateralize the eyes to the left or to the right and then retests the musculature. There is a marked strengthening with lateralization of the eyes in one direction or another, indicating this "synch relationship" of the righting reflexes to the sacral position.

Implementation of this concept can be obtained by placing the patient in a prone position with the pelvis slightly elevated in the so-called Logan-Basic position, and sacral challenging is attempted. Usually, all other things being equal, sacral challenge is negative with this type of patient, but becomes immediately positive when pressure is applied to the sacrum on the left or the right in a cephal direction, and the eyes are lateralized left and/or right. The direction is not significant other than it acts as a screening process.

Having discovered which side, being given pressure, weakens when the eyes are lateralized left or right, a simple respiratory challenge is then attempted. With pressure exerted on the sacrum, with the eyes in the lateralized position that produced the weakness, the patient is asked to take a deep breath and hold it and the muscles are tested, and then the patient is asked to let the breath out, and the muscles are tested.

Find the phase of respiration which abolishes the oculo-sacral challenge. Use the direction based on sacral position — i.e., if inspiration abolished the lateralized eye-sacral pattern, then press the sacrum in a cephal, floorward direction to reproduce the sacral inspiratory motion of respiration four or five times with the patient's respiratory inspiratory assistance. If expiration abolished the oculo-sacral pattern, then get underneath the sacrum, press it in a cephal direction but towards the ceiling, with the patient in a prone position, for four or five respirations of an expiration phase. Retest against eye lateralization and the patient will show no weakening, and there will be a much finer coordination of the ocular, righting reflex and the sacral basic reflexes.

This is just as if a tanker aircraft were attempting to refuel a fighter aircraft in flight. The fighter aircraft flies up to the boom which carries the fuel, and once the fighter aircraft locks on to the boom nozzle, both aircraft attempt to fly a similar pattern, and the fuel flows into the fighter aircraft's tanks to enable it to remain aloft. The sacrum is the fighter aircraft; the righting reflexes of the inner ear and head are the tanker aircraft. The fuel line is in the spine connecting the flight of the tanker aircraft and the fighter aircraft, which allows the fuel line to find its own direction without any effort. The spine aligns itself once the structure above and the structure below is in grouped geometric relationship.

This ocular basic technic has a high percentage of incidence on both new and chronic patients and we find it to be a very practical and useful method of improving spinal function and spinal muscle balancing, especially in cases of scoliosis, recurring torticollis and recurring muscular imbalances of the entire body.

FURTHER ELABORATIONS OF THE PITCH-ROLL-YAW CONCEPT

As was discussed in the previous paragraphs, when a tanker aircraft attempts to refuel a fighter aircraft in flight and the fighter aircraft flies up to the boom which carries the fuel, once the fighter aircraft locks onto the boom and both aircraft attempt to fly a similar pattern, the fuel flow enters the fighter aircraft tanks in a three or four minute pattern. The sacrum, as I mentioned, is the fighter aircraft with the cloacal reflexes and the righting reflexes of the inner ear and the head, along with the labyrinth reflexes, tonic neck reflexes, and the rest, head on body—body on head, are the interconnections between the two aircraft. As stated before, the fuel line is the spine connecting the tanker aircraft and the fighter aircraft and the fuel line will therefore find its own direction without any effort, since the spine aligns itself once the structure above and below are grouped geometrically. This "roll" pattern (discussed in the ocular-basic section) is present in a high percentage of patients.

There is another deviation called the "pitch" pattern. Here the knees are placed into a flex position and the head is placed into a flex position (the patient is lying on the back with the knees flexed, putting the pelvis into flexion and putting the head into flexion, raising the head off the table with the chin on the chest). Then the muscles are tested, such as the bilateral pectoralis major

clavicular, and if the pitch pattern is present, there will be a marked weakening of the muscles tested. It is just as if the pelvis and the head are flying independently but not in an interconnected fashion such as would be necessary for refueling of a fighter aircraft from a tanker aircraft. If you check the limitation of motion or flexion of the femur, for example, or more readily sometimes, the limitation of motion on femur abduction — and simply record it mentally or with the goniometer and have the patient observe it as well — you can establish a certain range of motion of the pelvis assembly. This really represents a lack of motion of the femoral head on motion such as walking, even though if you check the range of motion in the supine position or the prone position, non-weight bearing, the range of motion of the femoral head will be relatively normal.

The cause of the problem is a limitation of motion of the occiput on the atlas or the atlas on the occiput, which produces a suppression of the normal neck reflexes, which normally are stimulated at the joint receptors in the cervical spine, especially at the atlanto-occipital and atlanto-axial joints, as mentioned before.

The therapy is relatively simple. With the patient in a supine position, spread your fingers on either side of the patient's head so that you have a firm grasp of the head, two fingers in front of the ear and two fingers behind the ear, and contact the head firmly. Ask the patient to put his chin down on his chest, and as he does, resist it with as much force as you can muster. Then, as he is asked to raise his head up and raise his chin up, resist that. As he puts his chin down you try to push it up, and as he puts his chin up you try to push it down. After four or five efforts on the part of the patient to elevate and depress his chin, and your resistance, reassess the patient's pattern. Have the patient flex his knees once more as he did in the previous fashion and flex the chin on the chest. Reassess the strength of the pectoralis major clavicular or any other muscle you tested. The muscles should now test strong. Then reassess the previously tested range of motion such as the adductor range — simply take the leg out sideways and see how much further it will go — or if you do the Leseague test, see how much further it will go. You will be surprised. In some instances the increased range of motion is as high as 30°.

This is what we call the "pitch" pattern, and it represents an observation that the atlas angle when observed on a cervical film should not exceed 25° of an inclination, either tipping forward or tipping backward. Any excess in atlas angle inclination would be an indication for this particular type of treatment.

This is the type of patient who doesn't like to sit, for example, at the front of a theater; this is the type of patient who doesn't want to sit in a bar and look up at a television; this is also the type of patient who dislikes sitting at a desk and looking down at his work. This is the type of patient who has habit patterns which indicate a failure of flexion or extension. The analogy of the fighter aircraft and the tanker aircraft is a well taken one because as the tanker aircraft continues to refuel the fighter aircraft it becomes lighter and has a tendency to rise, and the pilot must compensate by flying a slightly different pattern. The fighter aircraft as it regains its previously full fuel status becomes heavier and has a tendency to follow a different flight pattern. Each must compensate. It is the unique compensation of the tanker aircraft to the fighter aircraft that allows the refueling capacity to take place.

So, also, must there be a unique relationship between the occiput, the head, and the pelvis. This is all part of the so-called "PRY" pattern (the pitch-roll-yaw pattern) which we are going to continue to discuss.

YAW PATTERNS

There are two basic yaw patterns, labeled appropriately "Yaw No. 1" and "Yaw No. 2." "Yaw" can be defined as a slipping sideways. It's just as if you have an aircraft flying straight into the wind and then when the wind changes it shoves the aircraft slightly off course, for example, slightly to the right. In an effort to combat this and stay on the same compass setting, the aircraft has to fly a pattern somewhat to the left to compensate for the wind force to the right. The aircraft is flying straight ahead, but with the nose slightly to the left. This is a "yaw" pattern, and the "yaw pattern" is what many times occurs with either the head or the pelvis in combination or in contracombinations that produce defects in postural adaptation and affect both ordinary and athletic performance. A posterior pelvis or a posterior occiput, for example. The patient is lying on the back, again in a supine position with the knees flexed as they were in the initial roll pattern, but in this instance the flexed knees are then moved to the right just as we did in the roll pattern, but the head is turned in an opposite direction, to the left, and the muscles are tested, and the evaluation is made. Then the knees are moved to the left and the head is turned to the right and evaluation is made. If the "yaw" pattern is present the muscles will weaken.

Eye rotation will again neutralize any weakening of this "Yaw No. 1" pattern, showing again to the patient and also to yourself the relationship of the visual righting reflexes that exist in this particular

type of situation. It will also respond nutritionally to chelated trace minerals.

Here, the "Yaw No. 1" pattern represents a subluxation fixation of the occiput upon the atlas. There is an actual subluxation fixation of the occiput upon the atlas, producing a lack of motion and a proprioceptive awareness which then produces, for example, the ability of an individual skier to turn better in one direction than another — or the ability of a tennis player to have a better forehand than backhand — or the ability of a running back to cut better to his left than to his right — or innumerable examples of rotatory motion being better in one direction than another.

Correction is made by identifying the subluxation fixation. Usually, the subluxation fixation is on the side that is up — in other words, if the head is turned from right to left, the right side of the head is up, and usually this is the side, and it must be challenged to identify.

The challenging is somewhat unique in that you simply hold the atlas and challenge the occiput in a forward direction. If you simultaneously challenge the atlas against the occiput, you do not generally get the response, and this is a highly technical point. Simply HOLD the atlas and press the occiput in a forward direction and you will find that this produces a marked weakness, and this is a sign of the so-called subluxation fixation.

This is adjusted by contacting the sorest portion of the occiput on the side of the subluxation fixation and then making a quick thrust with the metacarpal contact directly to the base of the nose without any head rotation. If head rotation is placed into this technic configuration, it many times simply adjusts an atlas or an axis or another member of the cervical spine, and although there may be articular signs of movement, the occiput remains subluxated and fixed upon the structure of the cervicals, and nothing is accomplished.

Rechecking the patient, the flexed knee rotated right and head rotated left and vice versa, should yield an improved response. This is very dramatic in producing increases in the ability of the patient to flex forward, and for those who had difficulty in doing this, it produces improvement in this flexion sign. To those that have a limited motion, it improves the range of motion of the back muscles, and also improves the range of motion of the hamstrings, and aids greatly in body balance and locomotion. This is the "Yaw No. 1" pattern, and is part of the Pitch-Roll-Yaw technic.

The "Yaw No. 2" pattern is identified by similar difficulties on the part of the patient — flexion-extension-rotation disabilities or difficulties — but diagnosis here is made in the prone position. The patient is lying prone, and the use of a padded block 4" high and 6" long, such as the so-called DeJarnette blocks, or the patient's shoes may be used. Place a block or shoe underneath the anterior superior iliac spine, of the right side, for example, and place a similar block or shoe underneath the left shoulder so as to elevate the shoulder on the one side and to elevate the pelvis on the contralateral side. Test the hamstring muscle, granted that it is intact and previously strong. Observe the response. Then reverse the placement of the blocks, placing the block underneath the left anterior superior iliac spine, underneath the right shoulder. Retest.

In our experience we frequently find, with a block under the left anterior superior iliac spine and underneath the right shoulder, marked weakness occurs. Have the patient therapy localize, taking both hands palms down and placing them on the sacrum. Retest the hamstring or appropriate muscle. Usually this produces a strengthening. This then must be organized as to the side of the sacrum that is involved. Have the patient remove the left hand, for example, and retest. Frequently the muscle will weaken with blocks still in place. Have the patient replace the left hand and remove the right and the muscle will usually strengthen. This means there is again a subluxation fixation of the sacrum. This is unique in that it is only identified by this method of diagnosis and analysis and does not challenge or show up on ordinary x-ray except if one uses motion studies.

The adjustment is given by having the side of involvement up. The patient is side lying. For example, on the left subluxation fixation of the sacrum, the patient is lying on the right in the side lying position. The shoulders are straight up and down with the vertical line of the body. There is no rotation of the pelvis. The upper limb is flexed. You stand between the patient's legs, allowing the patient's thigh to rest on your thigh so that the patient's thigh is parallel to the floor. The knee on the patient's leg is bent and you make a contact with the left hand on the patient's axilla, hooking your thumb into the axilla. The right hand is placed upon the sacrum, and I usually use the metacarpal contact of my index finger. The patient is then asked to resist your leg pressure. If you push headward against his thigh he presses footward and as you press outward against his flexed knee he presses inward, thus forming a solid block. Then a definite thrust is given in an anterior direction on the side of the sacrum involvement — in this instance on the left. Occasionally you will hear articular crepitus. There is no rotation, and in fact it is strongly discouraged to have any element of rotation. The patient is then reassessed. The block is placed underneath the left anterior superior iliac spine and underneath the right shoulder and

the patient is then reassessed. Here again increased ranges of motion of flexion or extension or rotation are generally seen and the patient is measurably aided in his motion patterns either in ordinary daily life or athletic activity. If you have difficulty in this adjustment, try it with adjusting side "down," rather than "up."

The normalization of PRY functions yields many physiological and also many exercise potential benefits. Many structural problems that we find, by challenging, therapy localization, are eliminated by this technic. Many reactive muscle patterns that previously required time and effort are eliminated by this technic. Not all the circuits are eliminated by the utilization of PRY technics, but between 60% and 70% are eliminated by the proper use of PRY technics. Naturally, those that remain require attention and analysis and correction.

In the case of athletes, Olympic or otherwise, the fact that the head exerts an effect on performance can hardly be avoided when one considers the activity that many athletes employ.

We already have found that the myotactic reflect in fascial flush patterns (in other words, stretching the muscle) should improve the strength, and therefore we have a fascial flush requirement along with the diagnosing of reverse stretch patterns. We also have here another pattern with the exceptions previously stated of the spindle reflexes, the neck reflexes—probably the most important single reflex mechanism involved in sports skills. These reflexes provide the proprioceptive influences that affect both performance and function.

The position and movements of the head are used to reinforce contractions of the arm muscles by the invoking of the tonic neck and labyrinth reflexes. When the head is flexed upon the neck it favors bilateral elbow flexion, and a dorsi flexed head favors extension. In other words, when a patient puts his chin on his chest it favors the biceps and brachioradialis—those muscles involved in flexion; whereas if he raises his head and brings the occiput closer to the back it favors the extensors such as the triceps and the anconeus. This symmetrical bilateral influence of the neck reflexes would be obvious in such a thing as weight lifting. You can see the chin going down as the arm flexion section of the lift takes place and then as the shoulder and elbow extend putting the barbell up, you see the head going backwards into dorsi flexion. Flexion of the chin combined with contralateral rotation of the head favors an ipsilateral flexion, or dorsi flexion combined with ipsilateral rotation favors ipsilateral extension.

F. A. Hellebrandt and his coworkers discussed, in 1962 the methods of evoking the tonic neck reflexes in normal individuals, in the AMERICAN JOURNAL OF PHYSICAL MEDICINE 41;90. They showed that a lowered position of the head, neck flexion, amplifies the effect of tonic neck reflexes; and in a handstand, therefore, dorsi flexion of the head contributes to the maintenance of arm extension as well as balance—a simple use of head postion to improve function .

A good example might be a standing long jump in Olympic competition. When the performer prepares to take off and he starts to run, the head becomes more and more dorsi flexed and you can see cervical extensions. Then as the hips and knees are flexing and the ankles are dorsi flexing, they are evoking the stretch reflexes in the anti gravity muscles which facilitate their contraction on takeoff. The movement of the upper extremities as they go from hyperextension to flexion facilitates the lower limbs by the so-called irradiation of neural impulses arising from the resulting stimulation of shoulder joint receptors.

It is well known that clenching of the teeth or making a fist many times will increase the ability of a performer to function. Strong contraction in another part of the body has been shown to increase the impulse outflow over subconscious channels of motor synapses of prime mover muscles.

Hellebrandt and Waterland, who studied the phenomenon of "irradiation" extensively, said, "Irradiation is probably a normal concomitant of pushing original effort in our familiar zones of activity, and probably the excessive irradiation is just as necessary for the development of motor skill as overloading is for the development of strength." — Hellebrandt, F.A. and Waterland, J., 1962, *"Motor Patterning in Stress,"* from the AMERICAN JOURNAL OF PHYSICAL MEDICINE 41;56.

The analogy of the tanker aircraft refueling the fighter aircraft again is well taken, because both the head and the pelvis must maintain a level pattern of activity, and neither flexion nor extension nor rotation nor twisting—in other words: pitching, rolling and yawing should be allowed to interfere with this vital refueling pattern.

The spinal outflow, the cerebrospinal fluid flow and the entire nervous system's balance depends upon the accurate relationship between the head and the pelvis. And many activities within Chriopractic have been based upon one area or another, with the emphasis on the upper cervical (dubbed the H.I.O. mehtod) and the emphasis on the pelvis with the Logan-Basic Technic method, and others on the pelvis, testify to the validity of at least a partial approach to this necessarily complex but integrated situation.

A combination of the PRY Technic plus the Limbic Technic which will be discussed later,

allows a rapid resolution of many secondary adaptive problems that exist in muscular skeletal problems and allows the nervous system to function in a more efficient unimpeded fashion.

THE LIMBIC TECHNIC — HOW YOUR OLD RIGHT BRAIN AND YOUR NEW LEFT BRAIN COOPERATE SO THAT YOU CAN FUNCTION

By now most of you should be familiar with the book entitled, *"The Brain,"* subtitled *"The Last Frontier,"* by Richard M. Restak, published by Doubleday & Company, Garden City, New York in 1979. As I understand, the first printing is already out of print, which is remarkable for a book of this type. Quoting: "Two former Nobel Prize laureates in physics were recently asked to guess what area of research would win the Nobel Prize for Physics in the year 2000. Both of them without prior consultation and hardly any hesitation said 'brain research'. The human brain, they concluded, is our ultimate intellectual challenge in the last quarter of the 20th century."

Quoting again, "Think of an infant lying quietly contented after finishing its bottle. In the few minutes before it lapses into sleep the infant gurgles, babbles in its primitive speech pattern, while turning its head and eyes toward the sound with quick movement. The infant starts by turning its head sideways and eyes sideways and stretching its arms to the same side as the stimulus. At a later age it may point or look at the object, and by age two it may even name it. In any case, naming it is preceded by babbling and a primitive motor response which in 80% of the cases is to the right."

From this Marcel Kinsbourne speculates that the motor pattern responsible for early language, a rightward turning movement controlled by left hemisphere, may be responsible for the development of the langugage in the left side of the brain. In other words, language is an expression of motor behavior and the two of them can be expected to be closely allied or linked.

Dr. Marcel Kinsbourne is a Viennese meurologist trained in England and now at the Children's Hospital in Toronto, Canada.

From their work with split brain patients, patients who have had a section of the connections between the left and right brain, psychobiologists have learned a great deal about the isolated capacities of each hemisphere. Although it is very helpful, split brain research does not totally explain or help us understand the cerebral function of the 99.99% who have not had a surgical section, where the two hemispheres inhabit a single skull. As Restak says, "What are the normal relationships between these two hemispheres? Are they like the harmonious and affectionate interplay of two newlyweds or are they like the more formalized mutual respect exchange of people who are long on marriage but short on love, or even worse a festering enmity between two roommates grimly determined to outlast each other in a rent controlled apartment?"

One of the most striking things about the human brain basically is its symmetry. If you look at it, the two perfectly formed shells, half shells, are completely undistinguishable to the naked eye. Since one assumes that each hemisphere is the same, there is nothing in their outward appearance that would hint at the profound functional differences that lie within. How much is known of how the two hemispheres respond, separately or even antagonistically, is a subject which we will now discuss.

"In 1844 an English physician, A. L. Wigan, published an account of illness, death and post mortem examination on a friend and patient he had known for many years. At the autopsy Wigan made the startling discovery that his patient, who had been normal in every respect, was the possessor of only one cerebral hemisphere."

Normally the left side of the brain controls the right side of the body. 85% of the fibers cross over or decussate at the pyramidal decussation. 15% do not, but cross lower down. Some authorities say only 7% cross eventually; some authorities say all remaining 15% cross. But fundamentally, the left side controls the right and the right side controls the left. If a person is injured in battle with a bullet entering the left brain, there is usually right sided paralysis. If the individual is injured in the right brain there is usually left sided paralysis. But the left side is basically the motor side, functional, and the right brain is the sensory side. Therefore, despite the fact that paralysis might occur from wounds on either side, return of *function* due to injuries on the left side would be slower, whereas return of *normal sensation* would be slower if it was to the right side. There are many other such differences which are well known to students of neuro-anatomy and physiology.

The brain does not work like a printed circuit. It is more like a symphony orchestra. To understand brain function it is not important to know what one isolated portion is doing, but for what one isolated part is doing we need to see how ALL the parts contribute to the unity that determines how we sense and think and act.

E. Roy John and a large research team he heads in New York's American College's Brain Research Laboratory, have applied their knowledge of the brain to invent a revolutionary test of brain functions. This test, called the QB, measures the

brain quantitative electro physiological response by a battery of tests. The person wears a forest of electrodes wired to a computer terminal and the QB measures his brain waves during the session, that can last from 15 to 50 minutes. From a fantastically complex computer analysis of his brain waves, QB extracts the most detailed profile of brain function available anywhere.

QB is both quick and sensitive. The data taken from the first two minutes give as accurate a picture of learning disabilities as physiological test patterns which take hours to administrate, and to score and interpret. The standard test of brain function requires the services of a skilled psychologist or neurologist, whereas the QB evaluation is automatic and can be done by any trained technician.

This information, from "PSYCHOLOGY TODAY," May 1975: "QB provides many measures of brain activity never before used for routine diagnosis. Most of the special items extracted by the QB's computer depend upon the evoked potential. A measure which describes the detailed response of the brain to messages sent from the senses. Many people who suffer learning disabilities from various brain diseases, senile deterioration, and certain forms of psychosis and mental retardation display unusual features of the evoked potential."

An integral QB measurement is based on the Delta Range of the EEG. The electroencephalograph is the method that is used to monitor the thirty aspects of the brain's activity to garner a total of 85,000 test items, and Delta is the term for the smallest brain waves normally seen only during sleep, deep sleep. Young children have a high percentage of Delta in their EG while awake, but as they mature the percentage of Delta drops to practically nothing.

The QB assesses the percentage of Delta in each part of the brain, using a measure called the Delta Quotient. This quotient can detect damage due to tumors, strokes, epilepsy, traumatic injury to the brain, or oxygen deprivation. The Delta Quotient also identifies many children with learning disabilities. When a normal child closes his eyes the Delta Quotient goes up considerably, whereas there is no change in the learning disabled child.

The cost of an individual examination, now available only at the Neurophysiology Clinic of the New York Medical College is $150. Dr. John estimates the eventual break-even cost for QB examination would be about $15 per examination.

This would mean, for example, if a man on his way to work with a nagging headache — or a family with a newborn baby coming home from the hospital — or a mother bringing her child to kindergarten for the first time — could stop in for a quick QB examination, by the time each of them reach their destinations the computerized diagnosis would be done. The man would know his headache was a sign of a more serious disorder requiring attention from his physician, the parents of the baby would know that a difficult delivery had created no problems, and the mother would know that her kindergartner needed a hearing test.

What the QB may mean for brain diagnosis comes from the history of investigation. While the thermometer told physicians the intensity of the fever, the microscope made it possible to identify the bacteria associated with it; if the electroencephalogram is the brain's thermometer, the QB is its microscope.

John says that modern theories of brain function relate specific physical and mental activities to certain places in the brain. This is something we had long been led to believe, yet the work done by Wigan, mentioned earlier, shows that this is only partially right. E. Roy John's research leads us to believe that vast regions of the brain are involved in every thought process, although some parts are more involved than others. He says that no one part of the brain by itself holds a particular memory or bit of knowledge. The average activity of the neurons throughout the brain causes us to see, move a finger, or even remember our first bicycle ride.

A great deal of research has been done to show that when brain damage that would normally cause a certain loss of certain capacities is inflicted in stages, there is little or no loss. For example, when both sides of the visual system of a rat's brain are destroyed in the same operation, the rat loses its ability to recognize visual patterns, as you might imagine. But, if the second side is destroyed two weeks after the first, the rat can still recognize patterns. Apparently, during the two weeks the rat learned to use other parts of the brain for recognition.

The localization theory that is extant now provides no explanation of this whatsoever, nor can it explain why some people with severe brain damage sometimes recover lost functions completely. Since destroyed brain cells and nerve tissue do not regenerate, such recovery should be impossible, yet medical literature is sprinkled with many such cases.

In a case that E. Roy John cites, a five-year-old Portuguese girl received a severe blow on the right side of the head that left her half paralyzed and her field of vision shrank. She could only see poorly on the left side of her visual field. When she was nine she began having epileptic seizures. At twenty they were so severe that drugs could no longer control them. She also suffered outbursts of rage and aggression. As a last resort her doctors turned to a

rare radical treatment. They surgically removed the entire right half of her brain. The seizures stopped entirely and within months her paralysis disappeared and she was able to walk. Fourteen years after the surgery she does housework and looks after a three-year-old child. Her behavior is normal and she needs no drugs.

It is not that her recovery from epilepsy is remarkable, the remaining half of her brain is performing much better than neurologists can explain. They are puzzled because each half of the brain is commonly thought to control the opposite side. With the right hemisphere of her brain gone, the left side of her body should be in great trouble and in paralysis — but it is not.

For a variety of reasons, and from many studies, some psychobiologists have formulated a theory that brain lateralization begins at the time that language concentrates in a single specialized hemisphere. The trigger for this specialization was thought to be developed in language. There have been some observations which have cast doubt on this development or model of localization of hemispheres.

Anatomical studies carried out at Harvard and reported in February 1978 reveal structural differences between the two hemispheres. The left hemisphere, even in the fetus, is specialized for language. In the vast majority of subjects, the left hemisphere's speech area was larger than the corresponding area on the right and where, naturally, the child had not even begun to speak.

The tendency for speech is to lateralize into the left hemisphere, therefore it seems preset and genetically programmed. Recall again what Marcel Kinsbourne found: That the motor response in 80% of the cases was to the right, head turning and eye movement. Sometimes these inborn behavior tendencies can be put together and interesting conclusions can be drawn.

Dr. Gerald Turkewitz, a psychologist in the Albert Einstein School of Medicine, studied head position in newborns ranging in age from minutes to over a hundred hours. Turkewitz was curious to see whether the anatomical differences in the brain cited above would coincide with some of the observations of Kinsbourne. If the left hemisphere is highly developed at an earlier age, for example, this might bias the infant toward head and eye turning to the right.

Turkewitz's hunch and observations were correct. When lying quietly on their backs, newborn infants had their heads turned to the right 88% of the time. In fact, Turkewitz failed to discover even one infant with his head turned to the left more than the right. Even after the child's head is turned to a midline position, 75% of the children will turn their heads back to the right again. Also, children, it is well known, respond more quickly to food stimulation on the right side of the mouth rather than the left. They will also turn towards sounds originating from the right side rather than the left.

In the case of heard speech, infants as young as 24 hours old demonstrate the evoked response that E. Roy John talked about, that can be measured from the speech processing areas in the left hemisphere. With non-language sounds it goes to the right hemisphere. This speaks strongly for a genetic and preset program; and here again, earlier conclusions can be put together and tailored to come up with some very interesting conclusions.

I myself am a recent grandfather. My oldest daughter delivered a child the 15th of October, a lovely baby boy, "Teddy." Recalling the observations of Marcel Kinsbourne and also the observations of Turkewitz, I observed the head position of the infants in the nursery, and again a large proportion, almost 95%, had their heads turned to the right. Since our practice is a general one, many mothers will sometimes ask me: "I notice that my new little baby keeps his head turned to the right. Won't his skull get flat?" or "will he get a curvature of his neck if he keeps his head turned to the right? I notice when he sleeps he always turns his head to the right." My response is, "Just wait two or three months and he'll start to turn his head either way." Certainly this is a common comment among mothers in response to observations of their children.

Now another interesting observation: About 98% of right-handed children, and adults for that matter, will respond to a question requiring verbal thought by eye movements to the right. Asking a question that would be suitable for the age of a subject: "What is your favorite television program?" Who is Ronald Reagan?" — ask these questions and you will see a quick movement of both eyes to the right. Remembering Marcel Kinsbourne's ideas, this lateral eye movement is a remnant of what the infant used to do by turning his whole body in one direction — which if you will recall was to the right.

Kinsbourne suggested language, which has been thought to originate in the left hemisphere of 98% of right handers and about 60% of left handers, may be related to the bias which causes infants to turn to the right about 88% of the time. This also makes some sense since 80% is about the average of 98% right handers and 60% left handers.

I have been lecturing for some time now, and I have found that seating arrangements will sometimes show who is activated on a right or left hemisphere basis. For left hemisphere subjects which are technical and difficult, most students

proferred sitting on the left so their eyes moved to the right brought about by the activation of the left hemisphere and correlated, due to the complexity of the new material I was trying to present to them.

Yet, to those who responded to the emotional and psychological portions of the lecture independent of the rather technical aspects, I noticed that all of these individuals had a tendency to sit on the right.

Quoting from, *"The Brain: The Last Frontier,"* Kinsbourne tried to have one of his experimental subjects balance a small metal rod on the index finger of his right or left hand. After the subject had become a little accustomed to this, he challenged him to continue balancing after repetition of a series of test phrases. If the subject balanced the rod on the left hand it wasn't affected by so speaking, but the balancing performance on the right hand deteriorated dramatically by speaking. Since both speaking and right hand performance use the same hemisphere, the left, Kinsbourne reasoned that the activity of the one interefered with the other.

He then repeated the experiment with some very small children, three or four years of age, and the results were the same. In other words, we can do two things at once sometimes but not all the time, depending on what they are.

This type of research has already found application in a NASA space craft control panel. Space scientists have been trying to work out programs for astronauts to carry on several different types of activity at the same time. The astronauts can do one task with their right hand and another with their left foot. Since their diagonally crossed limbs are farthest apart in the functional space model, they have the least interference with each other. This is an example of the ideas that have grown out of the work of Kinsbourne.

There are many factors that influence the right and left lateralization, particularly the person's previous experience. For example, people who are musically inexperienced have a tendency to hear and recognize melodies better with their left ear, which is right hemisphere, using the evoked potential method, while most concert loving musicians have a distinct right ear, left hemisphere advantage. This would indicate that the right hemisphere processes relatively unfamiliar material, and as the material becomes more familiar it is taken over by the left hemisphere.

Another factor which yields some interesting questions is the situation involving left handers. 60% of left-handed people have normal cerebral specialization while the other 40% have it reversed. In other words, the left hemisphere is oriented for spatial tasks and the right hemisphere for language — opposite to what is found for right-handed individuals, and for the 60% of the left-handed people who have normal cerebral specialization.

All of the foregoing indicates that neurological organization has taken place, but fundamentally the progression of neurological organization proceeds vertically to the cortex as myelinization takes place. The progression begins during gestation and is normally concluded by about eight years of age. On an embryological basis these progressive organizational stages are predictable chronologically. The orderly and sequential myelinization by the myelin sheath, a sort of insulating cover, takes place by way of organized tissue change and the organization of the subcortal areas, below the cortex, is prerequisite to subsequent proper organization at the labyrinth cortex. Both the subcortex and cortical levels are necessary for the establishment of hemispheric dominance.

During the time the baby is in the uterus and up to the time of birth, the spinal cord and the medulla oblongata are the upper reaches of neurological organizations. At this time all the ancient and instinctive reflexes are located in the spinal cord and in the medulla oblongata. Their basic contribution is the maintenance of muscle tone, reflex movement, and the general preservation of life by proper respiratory and cardiac activity.

These medullary functions continue to be of prime importance since they reflexly control such vital and life preserving functions as cardiovascular activity, gastrointestinal activity, and breathing reflexes. And as the newborn makes the transition from a fluid medium to a gaseous environment, proper medullary function is vital to the child's survival as it leaves the undulating fishlike existence for a different existence. The infant at this level has movement but no mobility, and these crude trunk or other actions are basically not organized toward any objective and are just reflex actions. His visual reactions, sucking reactions, crying reactions are purely involuntary. These require very short and relatively uncomplicated neural pathways. All of the reactions are of a survival nature.

The infant lives at this level until he is about 16 weeks, at which time he leaves that fishlike type existence and goes on to the next level of neurological organization. The next level is the amphibian life which is the responsibility of the pons, which lies just about the medulla oblongata. In other words, as the child improves in his neurological organizational activity the myelinization starts growing upward.

The brain centers that control the eye muscles extend from the mid brain down to the floor of the

fourth ventricle, which is a hollow space just in the upport portion of the pons, which as we mentioned is just above the medulla oblongata. The hearing pathways cross the midline and decussate, as we said before, as do the visual pathways. The decussation or the crossing over for the auditory or hearing pathways take place at a lower level than those for the visual pathways, and that is the reason that the hearing is generally developed earlier than the visual patterns. Children hear better than they see at first, a common observation.

Here again it is wise to remember that all the rest of the cortex, both the visual and auditory pathways, cross but this crossing is only partial for there are some fibers which stay on the same side for both hearing and vision.

The pons, or the bridge, as its name really implies, is the physiological seat of the tonic neck reflex, and this is even partially established prior to birth, and usually its reflex function, as we mentioned earlier, tends to cease to function at about 20 weeks of age.

This can be observed in utero — when the head turns the arms flexes on the side to which the head is turning, as does the leg, allowing the fetus some serialized movement. An intact tonic neck reflex is usually necessary for non-interventive or normal birth, because if you can simply rotate the baby's head you will get flexion of the arm and the leg, which greatly helps during the birth process.

This tonic neck reflex, if absent, produces neurological trauma, but this neurological trauma is not the result of birth trauma, but is really the result of faulty prebirth neurological development. Simple examples of the tonic neck reflex can be readily observed when the child is placed on its back. You can flex or extend either side of the body by just turning its head. Since more and more we are laying babies on their tummies, the proper expression of the tonic neck reflex is interfered with by gravity. When you put the child on its stomach for sleep, laying the arms and legs on the bed, the friction makes it difficult for the arm and leg toward which the head is turned to flex, and the opposite arm and leg to extend. Therefore, we can preserve the integrity of the tonic neck reflex by placing the limbs in the proper posturization when we have our children sleep on their stomachs. In other words, the arm and leg should be up on the side to which the head is turned and the other arm and leg should be extended.

This tonic neck reflex is really used functionally to start the child crawling. The body remains in contact with the floor at this stage of mobility and propulsive movements are made on the lateral — the arm and leg on the same side of the body are flexed, and the arm and leg on the opposite side are extended, and babies begin to crawl pretty early in life.

The infant begins to hear himself and hear sounds but he uses his ears independent of each other, and the same is true of vision. Vision at this level is biocular; that is, the eyes are used alternately and rarely in concert.

At this point the child cannot follow a stimulus in space, but he is bringing it in front of his own hand visually, and he does this by alternating his eyes as he uses his hand, and this is the most efficient visual act he can do — pursue his own hand — and it becomes a very interesting thing to see. As you can well imagine, here lies the basis for the cross crawl pattern originally advanced by Damon and DeLocato, who wrote, *"The Diagnosis and Treatment of Speech and Reading Problems,"* published by the Thomas Company.

At about six months of age the infantile starts to move into the stage of midbrain development. As you know, the fibers relating to the eye end in something called the lateral geniculate body which is part of the optic tract, and in the superior colliculus which is part of the midbrain, for reflex control of the ocular muscles. These fibers that run to the midbrain are relatively important on a primitive basis. They are associated fundamentally in an infant with light and posture, interestingly enough.

The extraordinary abundance of the sensory nerve supply of the ocular muscles and their connections with the postural centers are strong indications of the interrelationship of posture, mobility and vision at the midbrain level. There is, therefore, as we can observe, a close relationship between eye movements and postural changes, and this is why the PRY Technic is so interesting. The labyrinths and the extraocular nerves have connections with both hearing and the muscles of the neck and trunk.

The child starts to creep at a certain level and he does it with a great deal of efficiency and smoothness, and as DeLocato says, "At the midbrain level the child truly becomes a land animal." This creeping is a form of neurological development that is a preparatory phase for getting the infant ready to assume his vertical position when he has achieved all the function of the midbrain level. As the midbrain child creeps, he has achieved the third dimensional movement. He now moves in a cross pattern, fashioned with the midbrain as the prime level of organization neurologically. He no longer uses the pons method of creeping — the homolateral. He now uses the midbrain level of contralateral.

Midbrain activity really allows us to be bilateral and to be bilateral efficiently, and diseases like

Parkinson's and athetosis often have their disturbances in the midbrain. They therefore have effects on a bilateral basis and it disturbs the ability to move in a smooth, serialized, contralateral pattern because of a lack of activation.

About one year of age, the child moves from midbrain pattern of noncortical function to cortical function. As you know, the cortex is responsible for many things, including speech and walking. The elementary sensations of touch, pressure, heat and cold are now beginning afferent input directly into the postcentral gyrus and stimulation between stimuli and the recognition of objects that are placed in the hand are now utilized by way of the posterior portion of the parietal lobe at the side of the head, and these are increasingly functional in the ability to develop stereognosis.

The child shows a lot of improvement in bilateral control, and then he starts to experiment in becoming paralateral. He starts to use his hands and his arms independently of his legs and feet, and begins to pull himself up on furniture as he begins to attempt the biped walking that is his birthright, with either arm. He must establish a crosspattern, and sometimes the crosspattern will appear independently of the arms. He will hold them by his head or at the side while he attempts to walk contralaterally. And now as he improves his walking, he becomes more bilateral and the arms and legs will start to move in the fashion that we see in adulthood.

When he begins to be normally bi-aural, but also stereophonic, and the sound receptors fuse the sounds at the level of the cortex, it is the beginning of the preparation for symbolic speech. The child begins to learn various sign components which are the word names given to things and ideas, and then he finally learns to speak the language or languages of the people around him.

Another thing that happens in the stereophonic experience is the child's increasing fondness for music, and on an evoked potential basis this is a first bilateral. Then later on as the laterality and hemispheric dominance become established, music and tones in general are regulated to the subdominant hemisphere, basically the right in most people, and the areas of language that are associated with sound reception and reproduction become the province of the left hemisphere.

In "*The Split Brain of Man,*" by Michael S. Gazzaniga, from the SCIENTIFIC AMERICAN of August, 1967, Vol. 217, No. 2, pages 24-29, and the SCIENTIFIC AMERICAN off-print No. 508, he speaks of the brain as a double organ consisting of a left and right hemisphere connected by the corpus callosum and several other smaller commissura.

Experimental examinations of patients having some of the commisura sectioned, have revealed much about the functions of the brain. In general, it has been found that following split brain surgery each hemisphere functions independely as if it were a complete brain with its own capacities and capabilities.

It is just as though the left brain is logical, rational, reasonable, sensible, practical, predictable, linear, verbal and masculine; and the right brain is non-logical, non-sensible, non-practical, non-predictable, non-linear, and non-verbal — but it is imaginative, intuitive, spatially oriented and under certain conditions is clairvoyant, clairaudient, clairsensient and tonal. This is perhaps the reason by Mel Tillis, the popular country music singer, doesn't stutter when he sings but does stutter when he talks.

Robert E. Ornstein, of the Langley Porter Neuropsychiatric Institute in San Francisco, in his "*The Psychology of Consciousness,*" which is published by the W. H. Freeman Company, 660 Market Street, San Francisco, California 94104, also discusses the two sides of the brain, and in Chapter 3 of his book is a good exposition of the two brain concept.

Julian James, an anthropoligist from Rutgers University in New Jersey, when speaking at the University of California's Extension Series titled "Transition 21," discussed his concepts of the brain. He feels, as an anthropoligist, that man's right brain is perhaps five million years old, and he feels that perhaps man's left brain is perhaps three thousand years old.

The recent description of Dr. Leake's work on "*The Footprints of Early Man,*" published in NATIONAL GEOGRAPHIC, indicates that man like us was walking the earth five million years ago. Language and other facilities of communication are only three or four thousand years old at the most. Therefore the right brain, which is the seat of the inner you, is really the seat of the so-called innate intelligence that B. J. Palmer talked about. The physiological homeostatus that many of us speak of appears to reside in the right brain. The left brain is logical, rational, reasonable, sensible, practical, predictable — whereas the right brain is none of those.

The right brain really knows how to run the body, it is obvious. Man has existed since the time of saber-toothed tigers and there are no more saber-toothed tigers and there are lots of us, and something must have happened that allowed man to survive these times of saber-toothed tigers and dinosaurs. The preceding material on the myelinization upward, it is believed eventually allows the right brain to be the seat of the reflexes

and instincts which have taken five million years to develop, as Dr. Julian James says.

The split brain surgery of Bogan and Sperry that Gazzaniga spoke about in the reference cited earlier, affords an intriguing insight into how our mind actually functions. Dr. Richard Restak in his text, *"The Brain,"* discusses *the activity of Dr. Paul MacLean, a brain scientist who is the director of The Laboratory of Brain Evolution and Behavior at the National Institutes of Mental Health. He says, "In its evolution the human brain expanded in a hierarchical fashion along the lines of three basic patterns. These three divisions are markedly different in chemistry, structure, and in an evolutionary sense are eons apart."*

The brain, MacLean says, is somewhat like an archeological site with the upper and outer layer composed of the most recent developments of brain structure, the cerebral cortex, which is highly developed and reaches its greatest level of activity and complexity in humans. Deeper layers contain structures of our earlier evolutionary forebears — the reptiles and mammals, if you wish to follow evolutionary theory. The same facts would be true if one followed creationistic theory.

The first of these three brain structures that MacLean discusses is the "R" Complex. There is a type of computer deeply placed in the set of structures that make up the entire mass of brains of lizards and reptiles. At the basis of some of the research is the assumption that speculation on structures of animals, particularly reptiles and subhuman mammals, are valuable to understanding human behavior. He says each of these three brains, so to speak, amounts to three interconnected biological computers, each having its own intelligence, its own subjectivity, its own sense of time and space, and its own memory and other functions.

The "R" Complex, "R" for reptilian, perhaps can best be remembered for its being the site of the globus pallidus, a well known brain stem structure, and occasionally treated surgically with liquid frozen nitrogen in Parkinsonism.

MacLean has an obvious firm background in the principles of scientific proof. His interests extend beyond those of just being a chronicler of lizard behavior, much of which he has shown to be very ritualistic. He says, "It is traditional to belittle the role of instinct in human behavior, but how should we characterize those actions that stem from predisposition to compusive ritualistic behavior. We have a proclivity to prejudice and deception, a propensity to seek and follow precedent as in legal and other matters, and a natural tendency to imitate."

It is a defect in the "R" Complex that is at the basis of Parkinson's Disease which, as you know, is the site of the disturbance that produces the so-called "reptilian stare" described by 19th century neurologists about Parkinson's Disease, and it consists of a deficiency of the neurochemical, dopamine, usually found in the part of the "R" Complex called the substantia nigra.

Again, quoting MacLean, "The reptilian brain is filled with unnecessary lore and ancestral memories and is preprogrammed for doing what its ancestors said, but it is now a very good brain for facing up to new situations," It's as though it were bound to an ancestral super ego.

Surrounding the reptilian brain is the next step in brain development — the mammalian or limbic brain — both of which are concerned primarily with self and species preservation. The limbic system is a series of brain structures surrounding a reptilian "R" Complex. It forms a cap or limbus around the brain stem.

So we have those three areas: The reptilian; the old mammalian, the limbic' and the new mammalian, the hemo cortex.

The reptilian complex is basically the repository for unlearned preprogrammed sets of behavior, basically instincts, but as we proceed to the old mammalian and new mammalian brains, the older parts of the cortex fold into two concentric rings which are eventually covered in humans by the now expanded cerebral cortex.

Returning to the archeological model, the oldest brain structure is the deepest beneath the surface, and if this is looked at from the side, for example, the so-called folding-in process that occurred, you will see a sort of an incomplete ring that looks like a doughnut that someone has taken a small bite out of, and the Latin for forming a ring around is "lumbus," hence the name "the limbic lobe."

The limbic lobe surrounds the brain stem and has connections with the cerebral hemispheres. The limbic system, first named by MacLean in 1952, was thought to be important in emotions. Its older name, the one I remembered it as, was "Rhin" Encephalon, or nose brain, which referred to the extensive connections it had with the olfactory structures, and it was thought to be connected basically with that.

But later work on the limbic system suggested a much larger role in valuing behavioral changes and states of excitement, rage or fear. Fundamentally, in humans, the limbic system is the area of the brain most concerned with emotions, and this is where the monoamine oxidase inhibitor chemicals, the so-called tranquilizers, seem to have the majority of their action and function.

Although the limbic system occupies only about one-fifth of the brain structure, its influence on behavior is unbelievably extensive, with many of

its parts bi-directionally tied to the hypothalamus. Think of the limbic system as a wheel with the cortex marking the tire around it; and the hypothalamus with its two outposts, the septal areas in the front and the amygdala in the back, marking the hub and its spokes. This interconnecting route arrangement allows connections with hormones, various drives, temperature control, reward and punishment centers, and one part of it, the hippocampal function, allows for memory formation.

Then a lot of dimly remembered brain structures start to come to the fore such as the hippocampus, the mammalary body, the anterior thalamus, singulate cortex, and the hypothalamus. So here again, if you remember what MacLean said, "The reptilian "R" Complex, and the old and the new mammalian brains might be the human brain biological computers, each with its own set of functions."

To continue to quote MacLean, he says, "It would seem thus, that the raw stuff of emotion is built into the circuitry of the limbic brain. Instead of explaining experience in terms of compulsion, as was implied, in considering the reptilian brain, the "R" Complex — or in terms of abstract thoughts, as was presumed in the case of the cerebral hemispheres — the mentation of the limbic system would appear to involve a process whereby information is encoded in terms of EMOTIONAL feelings that influence its decision and course of action."

When Woodrow Wilson was a professor of zoology at the Museum of Comparative Zoology in Harvard University, he was a specialist in insects. He was also the author of a book called, *"Socio Biology."* He talks about brain evolution and he talks about the hypothalamic-limbic complex. in *"Socio Biology"* he says, "The hypothalamic-limbic complex takes the conscious mind with ambivalence whenever the organism encounters stressful situations: love, joy, hate, aggression, fear, expansiveness, withdrawal."

Now all of this seems awfully complicated in leading up to what is in reality very simple. Fundamentally it is just as if your left brain's son is going to marry your right brain's daughter and the left brain's family has lived in the neighborhood for three years and the right brain's family has lived in the neighborhood for fifty years, and they can only invite one hundred people to the wedding, and the right brain's family has five hundred Italian cousins they would like to invite to the wedding. Somebody has to act as an arbitrator between the two families to confine the wedding party to a reasonable and pre-agreed size. The limbic system is the arbitrator between the left and the right brain.

Some time ago I was attempting to demonstrate the fact that therapy localization to a certain area would produce a particular type of weakness, and no other therapy to any other area except this specific area would produce any change in the weakness. In attempting to follow a principle of reducing something to an absurdity to prove it true, I had the patient placing his hands on different portions of his body, and by sheer accident he happened to place his one hand on his nose while holding the other hand over the Houston Transverse Fold area on the left lower quadrant of the abdomen, and there was a sudden change in the muscle response. His eyes changed expression and he turned his head to me, and the condition changed again. No one else in the audience noted this, but I did.

Therapy localization to the nose, if there is an imbalance between the left and right sides of the brain, will cause a marked weakening. This is then neutralized by head turning to the left or the right. This indicates a fixation of the 7th cervical 1st rib area, and a potential fixation of the 1st lumbar and 12th rib area, on a Lovett Reactor basis.

Because of the overwhelming neurological complexity of the right brain as opposed to the left, it is just as if the right brain has neurons ten to the 8th power, whereas the left brain has neurons only ten to the 3rd power. Something has to bias the left brain towards itself, and this is the reason why the little babies in the nursery turn their heads to the right. This is the reason why all the previous evidence indicates the bias of the brain towards the left, and this is the reason why we all come out right handed.

So what we have in reality with life situations, is a rather precarious balance between the over instinctive reflexive behavior and the logical, rational, reasonable, learned behavior coupled with emotional overtones. This is a rather precarious balance which may or may not accrue to the individuals benefit.

If the patient is put in a prone position and therapy localization is attempted with either the palms down or up on the junction of the 7th cervical and the 1st thoracic area, usually no reaction of a muscle takes place in a tested muscle unless there is a subluxation. But if there is a positive therapy localization to the nose which is neutralized by head turning, when the patient then turns his head to the left or the right with the hands in the previously therapy localization position over the 7th cervical 1st rib, a marked change in strength occurs in the previously strong muscle. The head turned to the left produces a weak muscle, or the head turned to the right may produce it — sometimes both. This indicates a fixation of the 7th cervical to the 1st rib, by way of

the levator costalis, and this must be adjusted in a very vigorous fashion.

This may be challenged by pressure applied to the 7th cervical from side to side, the pressure applied to the 1st rib in a downward direction, reproducing the action of the levator costalis which runs from the 7th cervical to the 1st rib. A vigorous adjustment to the 7th cervical spinous process, the so-called vertebral prominens, with one motion, and then a vigorous adjustment of the rib downward breaks the fixation of the 1st rib to the 7th cervical, allowing free motion and allowing better limbic function.

When an animal comes out of the woods the first thing he does is turn his head from left to right in a sniffing motion. We have observed this sniffing motion and head turning for some time, and we now understand it is a vestigial limbic situation. The same is true if a woman enters a house and smells something burning. She lifts her nose up and then turns her head rapidly from side to side. The limbic system is a head-turning system and a smelling system, and it is basically connected with the rhin encephalon — "rhin" for rhinoceros nose brain — and here we have a simple explanation of a rather complicated and detailed preliminary explanation of man's evolutionary development of his brain. Why do you think there is a double nerve supply to the upper trapezius and the SCM by way of the spinal nerves and the cranial nerve, the spinal accessory?

The beautiful thing about the limbic technic, as we have called it, is that once you have cleared the limbic system and also established a better control of the so-called "PRY" system, many incidental problems that one can find by investigation and diagnosis disappear as if by magic, and it allows you to practice more efficiently and not be concerned with the multiple complex details that sometimes occur in some patients' problems.

In a practical way, it is not necessary to therapy localize the nose, nor is it necessary to have the patient negate that by head turning, nor is it necessary fundamentally to therapy localize the 7th cervical, 1st rib, or 1st lumbar 12th rib, and attempt head turning. Basically the simple procedure is to simply challenge for 7th cervical 1st rib head fixation by pressure on the 7th cervical and the 1st rib, pushing in opposite directions, first on the left and right, and testing muscles. The same is true on the lumbar, pushing from side to side while pushing upward against the 12th rib, checking for fixations, by way of the action of the muscle fibers of the inferior posterior serratus.

Many patients appreciate the explanation; and the ability to show them how the brain stem, limbic system, and cerebral cortex are interconnected makes a very fascinating observation for many patients and allows them to understand the complex inter functions of their nervous system more fully, and advances the practitioner who explains it to them, in their estimation.

We have found that no single trace element seems to be the critical nutritional factor in this limbic system fixation complex, and yet all the trace minerals seem to be a factor in the nutritional support for recurrence. We suggest a minimal dose such as a single tablet of chelated material daily, unless there is some reason for increased amount supplementation. Naturally this material should be chewed, and should be continued for at least a month.

Applied Kinesiology Nutrient Summary Chart
George Goodheart, D.C. & David Leaf, D.C.

Name	Clinical Signs	Symptoms	A. K. Findings Other
A	TEST: Urinalysis - Albuminuria, many epithelial cells, specific gravity below 1.010 Signs: hypertension, palpable lymph nodes, dry skin, lumpy skin Check for acquired color blindness - will take months to reverse	Cystitis, nephritis, lumpy skin, night blindness, periarteritis, liver disease, hyperthyroidism, hypertension, kidney stones gastritis Toxemia results in tachycardia. Primarily responsible for epithelial integrity.	Pectoralis sternal weakness. Possible upper trapezius especially after eye strain. Infraspinatus or deltoid weakness. Intake decreases chances of skin, colon and liver cancer. Decreased levels found with poor bone formation. Dec. by intake of DDT, PCB & BHT
Vasoconstrictors of the B complex especially thiamine	Test: poor breath holding time (normal 40 seconds) hypotension Endocardiograph: split sounds, fibrillation and other deviations corrected a few minutes after taking vasoconstrictors. If diastolic rest period is short, give vasodilators before as the vasoconstrictors would aggravate the symptoms. Hypotension - below 110/74 Poor balance, sleep disturbances & poor learning with folate deficiency.	Lack of appetite, weak legs, muscular weakness, lack of stamina, drowsiness after eating, tachycardia, fibrillations, edema, decreased urination, feeling of band around head, calf tenderness, irritibility, meloncholia Patient likes to ingest high carbohydrate foods. Promotes motor nerve conductivity Essential in coenzyme systems Opposes vasodilation	Unilateral pectoralis clavicular weakness. Possible Anterior tibial weakness if patient suffers from "leaky bladder". After chewing the tablet breath holding time will increase at least 50% Check balance with eyes open & closed (possible RNA - protein imbalance)
Riboflavin + niacin - cholinesterase precursors Vasodilators of the B-Complex	Blood: hypoproteinemia - decreased serum albumin Endocardiograph: shortened diastolic rest period (Tic-Tac rhythm) Redness on palms, veins on chest + abdomen - venous congestion Hypertension (diastolic), night sweats, burning sensations on soles of feet, crawling sensations, redness of palms, redness of soles, loss of muscular control, numbness, angina like pains, ptosis, ascites, venous congestion, hemorrhoids, blurred vision, loss of appetite, nervous indigestion, gastritis	Enzymatic tranquilizer, influences cell proliferation, acts as coronary relaxant, liberates free choline to tissues, normalizes liver function benefits autonomic N.S., vasodilation, aids digestive process Hypertension above 146/90	Subscapularis weakness also possible unilateral pectoralis clavicular - check blood pressure to determine whether vasoconstrictors or vasodilators are needed Oral contraceptives dec. levels of B2 & B6 Alcohol decreases B1, B2 and C Cataracts caused in B2 deficiency
Niacinamide, Niacin	Magenta color of the tongue. A bound form is found in corn, greens and seeds making it partially unavailable	Dermatitis, depression, melancholia, paresthesia - burning prickly skin, photophobia, anorexia, diarrhea B6 is necessary for the conversion of tryptophan to niacinamide (also B1 & 2)	Sternocleidomastoid weakness. Possible weakness of gluteus maximus, medius and adductors as niacin is necessary for the conversion of cholesterol to progesterone. Niacin above 75mg/KG of food decreases intake of alcohol

Name	Clinical Signs	Symptoms	A. K. Findings
Pyridoxine B-6	Presence of oxylates in the urine. B-6 helps prevent oxylate stone formation Decreased B-12 levels - B-6 deficiency results in decreased absorption of B-12 B-6 is necessary to transform tryptophan to niacin.	Cutaneous lesions, anemia, fatigue, poor prostaglandin formation, Carpal Tunnel syndrome, poor production of tyrosine based hormones Depression with fatigue	Weak neck flexors, oponens pollicus or opponens digiti minimi. Weakness of both acrobic and anaerobic muscles coupled with teres minor and sartorius weakness
B-12	Decreased R.B.C.'s Pernicious anemia Macrocytic anemia Inflammation of the tongue Decreased blood lipids RBC's are larger than normal - megaloblasts	Decreased growth, fatigue, poor nerve conduction Neurological disorders, gait imbalances, decreased tendon reflexes, psychosis Depression, apathy	Fascial imbalances Weaknesses of both arms and legs
Folic Acid	Anemias (megaloblastic, macrocytic and pernicoius) Decreased white blood cells Needed for niacin utilization Cofactor for testosterone, cortisol & epinephrine production	Intestinal symptoms, leucopenia, glossitis, lethargy, fatigue Necessary for the conversion of serine to glycine. Suspect in chronic muscle tenderness. Poor immune function Slow learner	Multiple strain-counter strain problems. Right/left brain imbalances where both sides are involved. Possible infraspinatus/mid-lower trapezius involvement
Pantothenic Acid	Increased blood cholesterol due to decreased bile production Increased liver enzymes due to liver degeneration Slow reaction times - decreased reflexes due to decreased phospholipid and acetylcholine synthesis	Neuromotor disturbances, Cardiovascular and digestive disorders, decreased immune competency Burning skin sensations & dermatitis Weakness and depression CoA and CoQ decreased. Slow wound healing	Weakness on anaerobic testing of multiple muscles. Precursor of CoA. Necessary for steroid synthesis, aids cholesterol breakdown Lower the level the more intense the symptoms of arthritis.

Name	Clinical Signs	Symptoms	A. K. Findings
Beet leaves Black Radish Kale	Tests: Hypercholesterolemia, glucose tolerance curve deviations, gall stones on xrays, abnormal liver function tests, palpable tenderness of the liver	Gall bladder - intolerance to fats or gas forming foods, nausea, flatulence, jaundice, venous congestion as evidenced by veins showing on the chest, abdomen or back, craving for sweets, constipation, acholic stool.	Weakness of the popliteus and the pectoralis sternal with tenderness of the gall bladder to palpation
Lipotrophic Factors	Tests: urine for presence of Bile Salts Enlarged liver or spleen elevated diastolic - blood pressure Palpable tenderness of the liver and possibly the gall bladder	History of jaundice, hepatitis or chronic kidney disease Venous congestion, arthritis - joint pains due to failure of detoxification, burning - itchy skin sensations, red skin on extremities, indigestion, constipation, gas, edema, ascites, swollen ankles, headaches, pasty skin - pallor-capillary breakdown, kidney disease	Check popliteus & PMS Cycle the dose.
Essential fatty acids	Test: Blood- Increased protein bound iodine decreased total protein due to decreased ionized calcium Tachycardia, enlarged prostate, loss of hair, poor skin integrity hypercholesterolemia Endocardiograph: diminished 2nd sound at mitral valve	Decreased metabolism- hypothyroidism, bradycardia, tremors, weight gain Skin-fever blisters, dry skin, acne, wrinkles, Hair - falling, alopecia, graying, course, thin Prostate - night urination, dribbling, back pain, GI- pyloric spasms, digestive complaints, nervous stomach, Amenorrhea, scanty menses calcium diffuser, Iodine synergist B6 synergist, skin integrity, antioxidant, aids prostate	Test for weakness of both aerobic and anaerobic muscles. Check for specific oils as well as B-6 and zinc. Piriformis weakness. Proper levels of prostaglandins are needed to regulate zinc transport
Bioflavonoids	Increased capillary fragility Some signs of edema.	Migraine headaches gingivitis, ulcerative colitis and aids in radiation exposure General muscle tenderness Patient muscular symptoms increase as day goes on.	Test for antrograde lymphatic problem 1

Name	Clinical Signs	Symptoms	A. K. Findings
C	Test: lingual absorption	Symptoms:lowered resistance to bacterial infections, hypoadrenia, disturbances in potassium/sodium/chloride levels, inflammations (- itis), gum problems (pink toothbrush)	Weakness of the deltoids, serratus anterior, coracobrachialis, sartorius, mid trapezius or infraspinatus Test for Right/Left brain imbalances. Megadoses have only a short term increase in immune function.
D	Test:Blood- Serum Calcium + plasma protein calcium varies directly with protein content of the blood and inversely with the phosphorus levels. Urine: Sulkowitch Reagent - decreased excretion indicates serum calcium less than 8.5 mg./100 ml.	Irritability, insomnia, restlessness, tachycardia, cramps, muscle spasms, osteoporosis, bronchitis, lowered resistance, hypotension, nosebleeds, slow healing	Weakness of the quadriceps or abdominals. Suspect in some eye conditions D levels increase with age to 600 - 800 IU
E	Tests: ability of calf to withstand sphyg. pressure - below 200 mm. signs of muscular atrophy, increased reflex tests E is an anticoagulant, enhances immune function, aids glycogen storage in the liver, is required in prostaglandin synthesis, an antioxidant, is essential for CNS function.	Muscular weakness (hernia) and atrophy, weakness of tendons, ligaments; aids in viral infections - herpes, eczema, acne, neuromuscular disorders - endocrine imbalances Glutathione levels decrease in selenium and/or E deficiency	Weakness of the gluteus maximus, medius, adductors or piriformis muscles. Check for right/left brain imbalances. Aspirin doubles the amount of E needed to reverse myopathy E deficiency causes increased oxidative damage to PMN & decreases bacterial killing.
K	Increased clotting time	Excess bleeding, excessive clots during menses, nose bleeds Hypoactivity, malaise &"no exploratory behavior"	
	Decreased in irradiated foods	Chlorophyll is the main source of K. It is also a sex hormone precursor and is the exact same chemical compound as hemoglobin except for the mineral in the center of the structure.	Lack of K will cause abnormal intestinal flora

Name	Clinical Signs	Symptoms	A. K. Findings
organic minerals - Potassium	Test: blood -sodium-potassium ratio potassium decreased hypertension with a drop on changing position (orthostatic hypotension) acidosis - frequent sighing, breathlessness, dislike closed rooms, irregular respiration irritability - tachycardia, photophobia, insomnia, voice affected under stress, dysphagia, goose flesh	Dryness of mouth, dry mucous membranes, dry stool, decreased perspiration esophageal cramps, sphincter spasms (esophagus) spasm	Sometimes indicated if all muscles are found weak. Possible teres major weakness.
Orthophoshoric acid-phosphorus	Tests: blood - phosphorus decreased or increased serum calcium (inverse relationship Endocardiograph - bradycardia Reflex tests are diminished Blood clotting time less than 2 minutes Urine-Sulkowitz - increased turbidity shows calcium loss - phosphorus excess	Morning stiffness nausea - butterfly stomach, stiff legs - cramps if extremity kept in one position, slow metabolism - slow starters, sensitive to cold weather, some types of edema, arteriosclerosis night symptoms - insomnia, restlessness, coughing, drooling excess secretions Thick blood (leg cramps, tight chest, dull heart pain, headaches) Acid rebound symptoms immediately after eating	Test the ability of the calf to resist pressure from a sphyg.. Extremely low levels may respond to phosphorus
Selenium	Check for RBC fragility.	Decreased immunity to infections	Latissimus dorsi weakness as selenium is a cofactor in pancreatic enzyme production. Infraspinatus and/or mid-lower trapezius weakness - associated with immune imbalances.
Iodine	Increased or decreasedbasal metabolic rate low cholesterol	Tachycardia, hyperactive reflexes, tremor of tongue on protrusion Tachycardia, tremors, weight loss, irritability, cry easily, decreased secretions of the eye, nasal and salivary glands, decreased sweat gland activity	Check for weakness of teres minor. May be indicated in chronic sinus problems.

Name	Clinical Signs	Symptoms	A. K. Findings
Raw veal bone - Phosphatase	Check serum calcium. Check for reabsorption of the gums. Check nail integrity.	Bone & joint - arthritis, ligaments dental problems osteoporosis headaches, varicoses, hemorrhoids bleeding, spongy, enlarged gums, venous congestion	Multiple reactive muscles - proprioceptor (spindle cell / GTO) imbalances
Magnesium	Blood: Leukocytosis - small lymphocytes, Band cells, increased eosinophils Red blood cells of varying shapes & Target cells Direct correlation between hematocrit levels and Magnesium and serum potassium and magnesium levels	Dysphagia, vertical nystagmus Alcohol decreases brain magnesium - Magnesium deficiency symptoms same as alcohol withdrawal	Chronic switching Weakness of subclavius with extreme tenderness of muscle. Deficiency can result in coronary artery spasm.
Manganese	Abnormal glucose tolerance curve Increased flexibility of joints (abnormally increased)	Joint pains, bursitis, disc lesions, chronic subluxations, fallen arches, carpal tunnel syndrome	Shock absorber test. Along with chromium is found in abnormal glucose metabolism
Iron	Test: Blood - Anemia - hemoglobin	Anemia - pallor of nails, mucous membranes, weakness hypochlorhydria can cause can cause loss of libido or neuralgia hypotension, tinnitus, glossitis, gingivitis, nephritis	Bilateral Tensor fascia lata weakness. Test for aerobic weakness.

Name	Clinical Signs	Symptoms	A. K. Findings
Heat labile amino acids	Tests: Urine creatine - increased levels are found in muscular wasting conditions Muscular weakness, flabbiness, wasting - atrophy Test skin elasticity	Emaciation, weight loss, hanging flesh, chronic fatigue, loss of taste for meat, ascites, swollen ankles edema lysine deficiency causes fatigability (fatigue) and irritability. Along with tryptophane, the deficiency will cause corneal vascularization similar to a 'G' deficiency. This obviously does not respond to B (vasodilator) supplementation.	Test balance time and other memory tests. Check diet for intake of only cooked foods. Weakness of supraspinatus.
Unsaturated Fatty acids derived from animal fats and flax (linseed)	Tests - urinary creatine tachycardia above 90 beats/ minute Tachycardia - will decrease within 20 minutes of taking	Nausea allergic reactions, myositis inflammations slow healing. Increases the availability of phosphorus to form phosphagen and adenosine triphosphate ATP	Test for weakness of aerobic and anaerobic muscles. Test piriformis if prostate suspected. Test flaxseed - linseed oil for reduction of pain in arthritis
Choline	Urine: test for presence of bile dilated veins on chest Blood: dec. serum albumin	Nausea, fat intolerance, constipation, poor memory, hemorrhoids, morning headaches, atherosclerosis, frequent bowel movements, sphincter spasms, tachycardia	Check if all major muscles related to organs supplied by the vagus nerve are found weak.
Zinc	Test using lingual challenge to a zinc sulfate solution. White spots on the finger nails. Decreased sperm count.	Weight loss, retarded growth, acne, dermatitis, immune deficiencies, alopecia, diarrhea	Found many times to be deficient when prostaglandin imbalances are suspected. Zinc is also required for carbonic anhydrase - and is necesary for HCl production.

Applied Kinesiology: Temporomandibular Joint Syndrome and Pain Control

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In 1965, Melzack of McGill in Montreal, and Wall of the University College of London in England, proposed a theory of pain mechanics that was called "The Gate Control Theory." It suggested that there was a spinal cord mechanism which influences the amount of sensory input transmitted from peripheral nerves. The amount of input is dictated by the ratio of the activity of large and small peripheral nerve fibers. The small fibers conduct pain, while the large fibers conduct sensation, or simply touch.

According to the "gate" theory, stimulating the large fibers can overload the system at the first spinal synapse and thus inhibit the activity of the smaller pain-conducting fibers. In other words, the innocuous sensation carried by large fibers will cause the brain or cord to close the "gate" against the pain being transmitted by the small fibers. The idea here is that clinically the possibility of pain may be relieved or inhibited by stimulating the large fibers.

It is just as if, on the large fibers side, 300 nerve impulses come in to the substantia gelatinosa, but only 30 get out. In other words, it effectively closes the "gate." On the small fibers side are the survival factors concerned with our relative adaptation to our environment (Example: To temperature - if it is cold we shiver, if it is hot we perspire) - the feeling of pressure, of atmospheric pressure - a variety of survival impulses coming in. These are transmitted at par - in other words, if 300 come in, 300 go out. As a result, they have a tendency to open the "gate." The substantia gelatinosa is a computer that can decide whether the "gate" opens or closes.

It has often been a source of conjecture why, when we hurt ourselves by falling or injuring ourselves, we rub the area. Rubbing it is the means of putting the large fiber activity into being, and this in turn closes the "gate" on the pain. Yet, from experience we know that rubbing a burn does not help it, and therefore the act of rubbing somehow must use some part of the nervous system which allows us to close the "gate" effectively - but only under certain conditions.

The incidental mention of tapping, by Melzack and Wall, evoked a search of patient responses to similar tapping related to the Melzack and Wall concept. This investigation did not yield a positive result. However, an observation of several patients with severe pain, a fractured clavicle, severe gout, or a separated clavicular joint, revealed that on Therapy Localization there were one or two pulse areas that showed a Therapy Localization as well as corroboration by consequent Therapy Localization to the alarm point of the meridian, or meridians, involved.

Attempts were made to tap the first point at the first identification point of the meridian involved. Usually there is only one meridian involved, even though the patient may have pain in both the left and right side of the body, and usually only one meridian is used on one side of the body. In one particular instance, where there was a fractured clavicle which had not united despite efforts to maintain union, the patient had much pain on direct pressure, and tapping at Liver 8 on the medial aspect of the right knee completely reduced the pain syndrome in a matter of 60 seconds. This was then immediately reversed by efforts to tap the sedation point at Liver 2. Normally acupuncture points do not respond to single hand contacts.

It is understood, naturally, that this is a method which provides a technic for pain relief, and therefore it is not a method for the control of gout, or it is not a total treatment for the separation of an acromio-clavicular joint. It is a means and mode of pain relief, and therefore an adequate diagnosis as well as adequate therapy should be provided.

KINESIOLOGY and DENTISTRY

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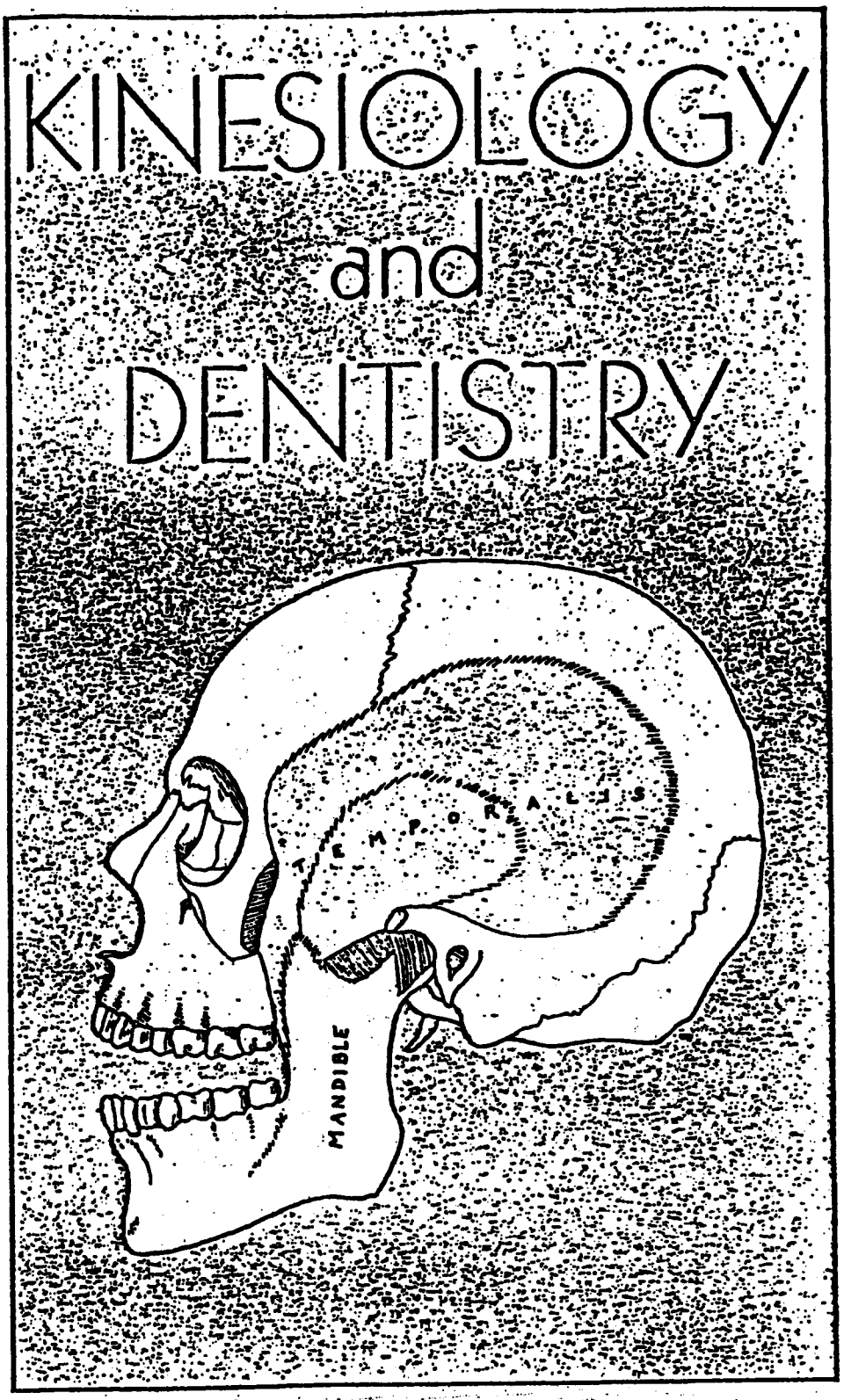
Dr. George J. Goodhart has given numerous lectures and demonstrations throughout the United States. He is the founder of the International College of Applied Kinesiology, and is currently engaged in clinical research and private practice.

Kinesiology is concerned with the dynamics of muscle function and the impact of muscular tonicity upon structural components of the body. Kinesiology applied to dentistry offers a study of the motions, structures, functions of the jaw and tongue muscles and the impact that these dynamics have on both dental and systemic health. This paper will review the physiological dynamics of kinesiology as well as review ways of applying kinesiology to dentistry.

Physiological Considerations: In general, striated muscles can be divided into two groups on the basis of function, the anti-gravity of postural muscles, and the rapidly contracting phasing muscles that are used in motor skills. There was a recent classification of muscles on the basis of the magnitude of their stabilizing and rotary components.[1] Those muscles with attachments further from the joint axis will have larger stabilizing components and are called shunt muscles, while those which attach closer to the joint axis will have larger rotary components and are called spurt muscles.

The sequence of events in muscle action may be summarized as stimulus, muscle action, potential, short delay, contraction and then relaxation. In brief, a muscle causes a movement by shortening. It functions as a mover or as an agonist. The muscle whose action is opposite to the prime mover is called an antagonist with a reciprocal relationship between the agonist and the antagonist, allowing smooth function.

The muscles that act together can be classified as con-joint, such as the action of the tibialis anterior and the extensor digitorum longus. The tibialis anterior acting alone would provide a combination of dorsi-flexion and inversion, while shortening of the extensor digitorum longus would produce a movement of pure dorsi flexion. In addition, there are both neutralizing and counteracting synergists, as well as stabilizing synergists, in muscle function.



Voluntary movement required a foundation of automatic responses which assure a proper combination of mobility and stability of body parts. Since activity occurs in many muscles simultaneously or sequentially, precise regulation is essential. Fortunately, neural control of muscles, whether the activity is unconscious or deliberate, is mostly involuntary. Muscles are smoothly regulated by reflex mechanisms. Muscle to muscle integration is accomplished by basic reflex

...ctions which are initiated by receptors strategically located to feedback information to the central nervous system. Information must be received continuously regarding body position, muscle length and tensions, speed, range, angle of movement, acceleration of the body and its parts, balance and equilibrium.

This information must then be integrated by brain centers and converted into suitable modification of the impulse outflow to produce an immediate adjustment of each muscle concerned. As the status of the muscle changes, the information output will also change evoking remodifications in nerve ending succession. Much of the information also becomes available in the conscious center of the brain and must be sorted, analyzed, interpreted and then converted into an outflow of signals of appropriately modified voluntary body movements as the occasion demands.

The automatic (subconscious regulation of muscle function is accomplished by proprioceptors within the muscle's spindle cells and golgi tendons. When the proprioceptors are stimulated by movement or position, impulses traverse neural changes to act upon the museles. By exciting various proprioceptors, contraction of any muscle tends to organize other muscles to cooperate. In the parlance of the electronic engineer, these reflexes operate as negative feedback loops by which most motor activity becomes in a large measure self-regulating.

The muscle proprioceptors are the neuromuscular spindles and the golgi tendon organs, both of which are incorporated in the gross structure of the muscle itself. The neuromuscular spindles are highly specialized sensors which are distributed among the contractile fibers of the muscles. They are found throughout the mass of the muscle but tend to be more concentrated in the central position, the belly of the muscle. The muscle spindle is sensitive to length, and when stretched responds to both constant length, as in maintenance or posture, and changing length, as during movement.

Generally speaking, the spindle cell organs have a stimulating effect, or a facilitation of the muscle conctraction. The spindles serve to coordinate the activity of muscles throughout the entire course of movement. As the movement progresses, feedback from the spindles changes in precise relationship to the changing lengths of the musculature. Thus, contration of any muscle is always appropriate to the condition of the movement. In other words, spindles enhance muscle contraction.

A second type of proprioceptor intimately incorporated in the gross muscle structure is the golgi tendon organ. Unlike the spindle, their effect on its own muscle is inhibitory. It is an encapsulation of tendon fibers located at the musculotendinous junction, and hence lying in series with the contractile muscle fibers. They are located at the ends of the muscles, and may be excited by strong passive stretching, but are much less sensitive than spindle cells. They are, however, highly sensitive to the stretch imposed on them by the contraction of the muscle in which they lie. Contraction of its own muscle tends to relieve the stretch on the spindle and results in a decrease or a cessation of its discharge. The golgi tendon organ, because if its location in series with the contractile muscle fibers, is increasingly stimulated. Manipulative measures directed to the golgi tendon organs or the spindle cells cause specific responses. For example, if a muscle is tonically contracted and causing a problem, pressure at the ends of the muscle, pressing away from the muscle, will produce a relaxation, as pressure directed to the belly of the muscle on the spincle sides will also cause relaxation.

Following trauma or injury, the body may "forget" the proper "setting" on a spindle cell mechanism. For example, if trauma causes a particular muscle to have an inappropriate spindle cell setting and thereby overstretch its opponent, antagonist, or reciprocal muscle, and then cause *that* muscle to function "weak" when tested in a proper fashion. Therefore, if the body has made a mistake and set a spindle cell mechanism too high, the body has incorrect information and there is a continual war between the muscles that are set too high and the normal muscle. The principle of kinesiology rests on a simple premise that the weak muscle causes the hypertonic muscle. Experience has shown this to be a valid conclusion.

Muscle Testing: One technique for determining the effeciveness of muscle function is by the muscle testing procedures developed by Kendall and Kendall.[3] In a simple and direct manner, such testing provides the clinician with the capability to both grade and record the relative strength of specific muscle groups. However, muscle testing requires careful attention to detail. Findings are useful only if they are accurate, and inaccurate testing will only confuse instead of enlighten. Muscle testing is a procedure which requires not only knowledge by the examiner, but also experience to develop clinical competency.

Muscle testing has become a diagnostic tool of extreme inportance since one can correlate and coordinate postural patterns with signs of muscle weakness. For example, when tested in the usual and standard fashion, a weak latissimus dorsi will usually contribute to a high shoulder, or a weakness of the sternocleidomastoideus, anterior scalene, splenius capitus, will usually contribute to a tilted head.

The correlation of muscle weakness and postural patterns, observed by Goodheart,[2] has been greatly extended and now encompasses many complex and interrelated factors. In brief summary, these observations suggested that most muscle spasm was not primary, but secondary, in muscle fatigue. In general, muscle weakness resulted from the blockage of lymphatic drainage, the blockage of the arterio-venous bloodflow, the interference of spinal fluid flow, an imbalance of a muscle's acupuncture circuitry, and/or improper nutrition.

Once muscle weakness has been ascertained, a variety of therapeutic options are available. For example, muscles are capable of being micro-avulsed, via a treatment of hard, heavy pressure being applied to the origin and insertion of the muscle. Such treatment frequently results in a relative normalization of strength and function of both muscular and structural components. Because of these theraputic impacts, the preventive dentist may find kinesiology to be of benefit in the treatment and prevention of temporal mandibular joint disorders.

Dental Implications: Harold Gelb, DMD, and Jeffrey Tart, DDS, reporting in the J.A.D.A. (1975), discussed

Continued . . .

the procedures of diagnosis and treatment of temporal mandibular joint dysfunction. Their view was that, "The temporal mandibular joint is perhaps the most active joint in the body .....

It is well documented that occlusal interferences or premature contacts may initiate "spasm." and 'muscle spasm' can and does create occlusal interferences." ....."Occlusal analysis of the temporal mandicular joint radiographs reveal that posterior and superior displacement of the condyles and their fossae is frequently associated with a case of dysfunctional temporal mandibular joint arthropathy with palpable muscle 'spasm'..... Generally speaking, clicking on opening indicates the habit of opening into a protrusive position—the same effect as 'popping a knuckle'. This is readily remedied with proper exercises. Joint clicking on closing is associated with loss of vertical dimension on that particular side. This is easily corrected by restoring the lost vertical dimension."[1]

From a kinesiological perspective, the clicking on opening would represent a weakness of the temporalis unilaterally or bilaterally, and therefore pressure into the posterior portion of the temporalis towards the condylar attachment, and reciprocating pressure on the condyle, would result in increased tonus of the temporalis and the reduction of the relatively protrusive position. Similarily, joint clicking on closing would represent a hypertonicity of the buccinator and masseter. This dysfunction could be facilitated by the origin and insertion of the masseter, internal pterygoid, and buccinator being spread apart, stimulating golgi tendon activity. This effectively restores the lost vertical dimension.

Muscles have golgi tendons at their ends and spindle cells in their bellies. The muscle can be judged to be weak by muscle testing, or can be judged to be in muscle spasm by inspection and palpation. A muscle that is weak can be strengthened by directional pressure applied to the golgi tendons at the ends of the muscle and directional pressure applied to the belly of the muscle so as to increase its strength. Muscles that are in spasm can be treated by putting pressure at the ends of the muscles where the golgi tendons are, and putting pressure in the belly of the muscle so as to increase the strength. This allows normalization of the temporal mandibular joint and the tongue. In particular, normalization may require golgi tendon or spindle cell activity, and it also may require the utilization of the principle of RE activity which is the balance between, for example, the muscles that open the jaw and the muscles that close the jaw.

Because of the homuncular relationship of the temporal mandibular joint, the great majority of temporal mandibular joint problems are not usually associated with that particular joint by the patient. For example, many cases of headache, cervical myalgia, tinnitus, and vertigo are all patterns of activity which can be referred to the temporal mandibal joint.

Disturbances of the temporal mandibular joint may cause many other problems.. For example, Dr. Harold Gelb, Director of the Temporal Mandibular Joint Clinic of the New York Eye and Ear Infirmary, says the problem is actually an orthopedic one.[1] He continues, "If one leg is shorter than the other the entire body is unbalanced. The jaw works the same way. If the teeth can not meet properly, the jaw becomes very distrubed in its motion. Problems of non-occlusion and bad bite may produce many more problems."

Another idea to consider in the explanation of temporal mandibular joint relationships to other body dysfunctions is the homuncular concepts of Penfield.[6] Homuncular means "little Man" and the concept is derived from the fact that if a figure is drawn in proportion to the number of brain cells devoted to a particular organ's function, the resulting image has a relatively small thorax and body, while having an enormous face, teeth, tongue lips and oral cavity. To quote Dr. Willie May in further explanation of this concept, "One half the sensory portion of the brain is directly connected with the oral cavity. This means there is never a busy circuit in relaying messages sent from the most responsive muscles in our skeletal system to the central nervous system. Dentistry will accept the challenge and the responsibility of reducing the pathological impulses even though they may never be expressed as an acute temporal mandibular joint. They will most surely be expressed as chronic symptoms throughout the body."[5]

To further understand the importance of temporal mandibular joint musculature function and its relationship to health, it is necessary to consider the comments of Dr. Nathan Shore, "Pain symptoms from improper occlusion are so varied that they often appear in the head or the neck or the body. The patient tends to visit his physician, the radiologist, the neurologist, the otologist and the psychologist, in that order, seeking relief. Careful examination will make evident a diagnosis of dental origin. Muscle 'spasm' and referred pain from an improper masticating organ are responsible for these symptoms in a high percentage of cases."

To quote Dr. May once again, "When the occlusal malfunction is corrected, stopping injury to the involved part of the body, there is a chance for healing to begin."[5]

Because of the sensitive proprioception in the mouth, and because of the homuncular relationship, correction of even a small amount of temporal mandibular joint dysfunction may result in systemic benefit. Proper diagnosis and treatment, including activation of the spindle cell and golgi tendon activity, constitutes a desirable adjunct to regular dental measures. ◇

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Applied Kinesiology in Dysfunction of the Temporomandibular Joint

*George Goodheart, D.C.**

Kinesiology is concerned with the dynamics of muscle function and the impact of muscular tonicity upon the structural components of the body. Dental kinesiology offers a study of the motions, structures, and functions of the jaw, tongue, and hyoid muscles and the impact that these dynamics have on both systemic and dental health. The physiologic dynamics of kinesiology as well as the application of kinesiology to dentistry is reviewed.

PHYSIOLOGIC CONSIDERATIONS

In general, striated muscles can be divided into two groups on the basis of function: the antigravity, or postural, muscles and the rapidly contracting phasing muscles that are used in motor skills. Postural muscles are in general aerobic, fat burning. Rapidly contracting muscles are in general anaerobic, glycogen burning. There was a recent classification of muscles on the basis of the magnitude of their stabilizing and rotary components.[5]

Those muscles with attachments further from the joint axis will have larger stabilizing components, and these are called "shunt" muscles, while those that attach closer to the joint axis will have larger rotary components and are called "spurt" muscles. The external pterygoid "spurts" to the "shunt" action of the digastric pair during wide opening.

John V. Basmajian says that the biceps and brachial exemplify spurt muscles at the elbow, whereas the brachioradial is an excellent shunt muscle.[1] In other words, except on complete extension, the biceps or the brachial act as spurt muscles mainly along the long axis of the forearm, providing acceleration along the curve of motion. Action is mainly along the long axis of the forearm to provide the cen-

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tripedal or shunt force and the required stabilization at the elbow joint. Many examples of spurt and shunt activity are found in the body. The external pterygoid is a spurt muscle compared with the temporal, which is a shunt muscle.

The sequence of events in muscle motion may be summarized as stimulus, muscle action, potential, short delay, contraction, and then relaxation. In brief, a muscle causes a movement by shortening. It functions as a mover or as an agonist.

The muscle whose action is opposite to the prime mover is called an antagonist with a reciprocal relationship between the agonist and the antagonist, allowing smooth function.

The muscles that act together can be classified as conjoint, such as the action of the anterior tibial muscle and the long extensor muscle of digits. The anterior tibial acting alone would provide a combination of dorsoflexion and inversion, whereas shortening of the long extensor muscle of digits would produce a movement of pure dorsoflexion. In addition, there are both neutralizing and counteracting synergists, as well as stabilizing synergists, in muscle function. There is marked posterior fiber temporal muscle activity during jaw retraction, but none in protraction, which is lateral or external pterygoid in action.[11] During incisor bite, the anterior and middle portions of the temporal muscle are active, as are the masseters. During molar occlusion all temporal fibers are active.

Voluntary movement requires a foundation of automatic responses that assure a proper combination of mobility and stabilization. Since activity occurs in many muscles simultaneously or sequentially, precise regulation is essential. Fortunately, neural control of muscles, whether the action is unconscious or deliberate, is mostly involuntary.

Muscles are smoothly regulated by reflex mechanisms. Muscle-to-muscle integration is accomplished by basic reflex reactions that are initiated by receptors strategically located to feedback information to the central nervous system. Information must be received continuously regarding body position, muscle length and tensions, speed, range, angle of movement, acceleration of the body and its parts, balance, and equilibrium. This information must then be integrated by brain centers and converted into suitable motivation of the impulse outflow to produce an immediate adjustment of each muscle concerned. As the status of the muscle changes, the information output will also change, evoking remodifications in the succession of nerve endings. Much of the information also becomes available in the conscious center of the brain and must be sorted, analyzed, interpreted, and then converted into an outflow of signals of appropriately modified voluntary body movements as the occasion demands.

The automatic (subconscious) regulation of muscle function is accomplished by proprioceptors within the muscle's spindle cells and Golgi tendons. When the proprioceptors are stimulated by movement or position, impulses traverse neural changes to act upon the muscles. By exciting various proprioceptors, contraction of any muscle tends to organize other muscles to cooperate. In the parlance of the elec-

tronic engineer, these reflexes operate as negative feedback loops by which most motor activity becomes in a large measure self-regulating.

The muscle proprioceptors are the neuromuscular spindles and the Golgi tendon organs, both of which are incorporated in the gross structure of the muscle itself. The neuromuscular spindles are highly specialized sensors that are distributed among the contractile fibers of the muscles. They are found throughout the mass of the muscle but tend to be more concentrated in the central position, the belly of the muscle. The muscle spindle is sensitive to length, and when stretched responds to both constant length, as in maintenance of posture, and changing length, as during movement.

Generally speaking, the spindle-cell organs have a stimulating effect, or a facilitation of the muscle contraction. The spindles serve to coordinate the activity of muscles throughout the entire course of movement. As the movement progresses, feedback from the spindles changes in precise relationship to the changing lengths of the musculature. Thus contraction of any muscle is always appropriate to the condition of the movement. In other words, spindles enhance movement contraction.

A second type of proprioceptor intimately incorporated in the gross muscle structure is the Golgi tendon organ. Unlike the spindle, its effect on its own muscle is inhibitory. The Golgi tendon organ is an encapsulation of tendon fibers located at the musculotendinous junction, and hence lies in series with the contractile muscle fibers. They are located at the ends of the muscles and may be excited by strong, passive stretching but are much less sensitive than spindle cells. They are, however, highly sensitive to the stretch imposed on them by the contraction of the muscle in which they lie. Contraction of the Golgi tendon organ's own muscle tends to relieve the stretch on the spindle and results in a decrease or a cessation of its discharge.

The Golgi tendon organ, because of its location in series with the contractile muscle fibers, is increasingly stimulated. Manipulative measures directed to the Golgi tendon organs or the spindle cells cause specific responses. For example, if a muscle is tonically contracted and causing a problem, pressure at the ends of the muscle, pressing away from the muscle, will produce a relaxation, as pressure directed to the belly of the muscle on the spindle sides will also cause relaxation.

Following trauma or injury, the body may "forget" the proper "setting" on a spindle-cell mechanism. For example, if trauma causes a particular muscle to have an inappropriate spindle-cell setting and thereby overstretch its opponent, antagonist, or reciprocal muscle, it then causes *that* muscle to function "weak" when tested in a proper fashion. Therefore, if the body has made a mistake and set a spindle-cell mechanism too high, the body has incorrect information, and there is a continual war between the muscles that are set too high and the normal muscle. The principle of kinesiology rests on a simple premise that the weak muscle causes the hypertonic muscle. Experience has shown this to be a valid conclusion.[6]

MUSCLE TESTING

One technique for determining the effectiveness of muscle function is by the muscle-testing procedures developed by Kendall and Kendall.[7] In a simple and direct manner, such testing provides the clinician with the capability to both grade and record the relative strength of specific muscle groups. However, muscle testing requires careful attention to detail. Findings are useful only if they are accurate, and inaccurate testing will only confuse instead of enlighten. Muscle testing is a procedure that requires not only knowledge by the examiner but also experience to develop clinical competency.

Muscle testing has become a diagnostic tool of extreme importance, since one can correlate and coordinate postural patterns with signs of muscle weakness. For example, when tested in the usual and standard fashion, a weak latissimus dorsi will usually contribute to a high shoulder. Or a weakness of the sternocleidomastoid, anterior scalene, or splenius muscle of the head will usually contribute to a tilted head. The correlation of muscle weakness and postural patterns has been greatly extended and now encompasses many complex and interrelated factors.

In brief summary, these observations suggest that most muscle spasm is not primary but secondary in muscle fatigue. In general, muscle weakness results from the blockage of lymphatic drainage, the blockage of the arteriovenous blood flow, the interference of spinal fluid flow, an imbalance of a muscle's acupuncture circuitry, or improper nutrition.

Once muscle weakness has been ascertained, a variety of therapeutic options are available. For example, muscles are capable of being micro-avulsed. Treatment consists of hard, heavy pressure applied to the origin and insertion of the muscle. Such treatment frequently results in a relative normalization of strength and function of both muscular and structural components. Because of these therapeutic impacts, the preventive dentist may find kinesiology to be of benefit in the treatment and prevention of temporomandibular joint (TMJ) disorders.

DENTAL IMPLICATIONS

Harold Gelb and Jeffrey Tart discussed the procedures of diagnosis and treatment of TMJ dysfunction.[5] Their view was that

> "the temporomandibular joint is perhaps the most active joint in the body. . . . It is well documented that occlusal interferences or premature contacts may initiate 'spasm,' and 'muscle spasm' can and does create occlusal interferences. . . . Occlusal analysis of the temporomandibular joint radiographs reveals that posterior and superior displacement of the condyles in their fossae is frequently associated with a case of dysfunctional temporomandibular joint arthropathy with palpable muscle 'spasm.' . . . Generally speaking, clicking on opening indicates the habit of opening into a protrusive position — the

same effect as 'popping a knuckle.' This is readily remedied with proper exercises. Joint clicking on closing is associated with loss of vertical dimension on that particular side. This is easily corrected by restoring the lost vertical dimension."[5]

From a kinesiologic perspective, the clicking on opening would represent a weakness of the temporal muscle unilaterally or bilaterally, and therefore pressure into the posterior portion of the temporal muscle toward the condylar attachment, and reciprocating pressure on the condyle, would result in increased tonus of the temporal muscle and the reduction of the relatively protrusive position. Similarly, joint clicking on closing would represent a hypertonicity of the buccinator and masseter muscles. This dysfunction could be facilitated by the origin and insertion of the masseter, internal pterygoid, and buccinator muscles that are being spread apart, stimulating Golgi tendon activity and thus inhibiting the hypertonus. This effectively restores the lost vertical dimension. Splint therapy may be needed to maintain lost vertical dimension.

Muscles have Golgi tendons at their ends and spindle cells in their bellies. The muscle can be judged to be weak by muscle testing or can be judged to be in muscle spasm by inspection and palpation. A muscle that is weak can be strengthened by directional pressure applied to the Golgi tendons at the ends of the muscle and directional pressure applied to the belly of the muscle so as to increase its strength.

Muscles that are in spasm can be treated by putting pressure at the ends of the muscles where the Golgi tendons are and by putting pressure in the belly of the muscle so as to increase the strength. This allows normalization of the TMJ and the tongue. In particular, normalization may require Golgi-tendon or spindle-cell activity, and it also may require the utilization of the principle of reciprocal-effect activity, which is the balance between, for example, the muscles that open the jaw and the muscles that close the jaw.

Because of the homuncular relationship of the TMJ, the great majority of TMJ problems are not usually associated with that particular joint by the patient. For example, many cases of headache, cervical myalgia, tinnitus, and vertigo are all patterns of activity that can be referred to the TMJ.

Disturbances of the TMJ may cause many other problems. For example, Harold Gelb, former Director of the Temporomandibular Joint Clinic of the New York Eye and Ear Infirmary, says the problem is actually an orthopedic one. He continues, "If one leg is shorter than the other the entire body is unbalanced. The jaw works the same way. If the teeth cannot meet properly, the jaw becomes very disturbed in its motion. Problems of non-occlusion and bad bite may produce many more problems."

Another idea to consider in the explanation of TMJ relationships to other body dysfunctions is the homuncular concepts of Penfield. Homuncular means "little man," and the concept is derived from the fact that if a figure is drawn in proportion to the number of brain cells

devoted to a particular organ's function, the resulting image has a relatively small thorax and body, while having an enormous face, teeth, tongue, lips, and oral cavity.

To quote Willie May in further explanation of this concept:

"One half the sensory portion of the brain is directly connected with the oral cavity. This means there is never a busy circuit in relaying messages sent from the most responsible muscles in our skeletal system to the central nervous system. Dentistry will accept the challenge and the responsibility of reducing the pathological impulses even though they may never be expressed as an acute temporomandibular joint. They will most surely be expressed as chronic symptoms throughout the body."[8]

To further understand the importance of TMJ musculature function and its relationship to health, it is necessary to consider the comments of Nathan Shore:

"Pain symptoms from improper occlusion are so varied that they often appear in the head or the neck or the body. The patient tends to visit his physician, the radiologist, the neurologist, the otologist and the psychologist, in that order, seeking relief. Careful examination will make evident a diagnosis of dental origin. Muscle 'spasm' and referred pain from an improper masticating organ are responsible for these symptoms in a high percentage of cases."[10]

To quote Dr. May once again, "When the occlusal malfunction is corrected, stopping injury to the involved party of the body, there is a chance for healing to begin."[8]

Because of the sensitive proprioception in the mouth, and because of the homuncular relationship, correction of even a small amount of TMJ dysfunction may result in systemic benefit. Proper diagnosis and treatment, including activation of the spindle cell and Golgi tendon activity, constitutes a desirable adjunct to regular dental measures.

TMJ

Because of the sensitivity of proprioception in the mouth, correction of even a small amount may constitute a beneficial relief to the musculature. Relaxation of the musculature is subsequent to alteration of existing noncoinciding centric occlusion to the myocentric position. It has been measured on the mandibular kinesiograph, and when subjected to simultaneous recording of the sagittal and frontal planes on the kinesiograph, it is apparent that the reaction of the pathway of the mandible to the occlusion is unpredictable from patient to patient. As the mandible retrudes, its characteristics simultaneously deviate to the right or to the left, and it is seldom in a straight anteroposterior path. Significant changes also occur in the vertical and lateral planes along the long central pathway.

The concept that it is desirable and relatively simple to arrange the occlusion to be stable at the centric occlusion position and then to arrange a free anterior pathway to centric occlusion position appears

to be too simple. It ignores the complex changes that are introduced when the mandible is positioned in different locations.

Measurement is the essential criterion for testing and confirming occlusal relationships. If something can be measured, it is a fact; if it cannot be measured, it is simply an opinion. In applying the criterion of measurement to occlusion, we are getting the complex physiology of what is called the "stomatognathic" system, consisting of the interplay of muscles, joints, and teeth. Physiology of this area is dynamic. Noxious stimuli and occlusion influence mandibular position. Static measurements that isolate a single factor, such as the position where the teeth finally contact, can be more misleading than enlightening, for the final contact often reveals disruptive factors that influence the "navigation" to the contact position.

In dentistry, the basic functions are incision, mastication, deglutition, and formation. The only way to note the relationship of the jaws that actually occurs during these functions is to track the mandible while patients incise, chew, swallow, and speak. The only way to know where a dysfunction occurs is to track the mandibular function during flexing or grinding of the teeth. Measurement of mandibular kinesiology has already proven to be an invaluable new tool in everyday occlusive diagnosis.

We are all familiar with the homuncular studies of Penfield, who did the original brain mapping, and both motor and sensory sequence will show that a large portion of the brain's cortex is devoted to the throat, inside the mouth, the tongue, the teeth, the TMJ, the lips, and the face. In other words, there is a homuncular nucleus that is prodigious in its back-up of brain cells devoted to the TMJ. As an example, there are 3000 brain cells devoted to the TMJ, with 300 for the entire sciatic nerve–leg situation. A homuncular study would show, in diagrammatic fashion, a large face, enormous lips and teeth, a large tongue, a minute thorax, trunk, and lower leg, but a fairly large hand to indicate the prodigious profusion of brain cells devoted to the face, and especially the TMJ. Willie May believed that the TMJ is a computer of vast proportions, a concept certainly agreed with.

The activity begins with therapy localization to the TMJ by having the patient place his fingers on the left and right side of the TMJ.

"Therapy localization is a technique by which dysfunctioning musculature seems to be quickly identified. Although the physiological mechanisms which account for the dynamics of therapy localization are not understood, the physiological consequences of therapy localization may be replicated with remarkable consistency. In brief, the fundamental observation made by therapy localization is that any strong, normally functioning muscle group will become relatively weak when the individual places his fingers on any dysfunctioning musculature. For example, let us assume that via standardized muscle testing an individual has the ability to resist 300 millimeters of pressure to the quadricep muscles for a period of 30 seconds. If that same person then placed his fingers on some dysfunctioning muscle group, the masseter for example, and the quadriceps were retested while the person maintained digital contact to the masseter, those quadricep muscles may be able to resist only 200 millimeters of pressure for only 10 seconds.

"For reasons which are not fully understood, the weakness of strong muscles induced via therapy localization dynamics is relative from individual to individual; that is, some persons demonstrate an ability to resist less pressure for the same amount of time, while others demonstrate an ability to resist the same pressure for lesser periods, and still others demonstrate combinations of being able to resist lesser amounts of pressure in shorter periods. Because of this relative response, muscle testing, like any other skill, requires practice of precise execution in order to develop clinical competency. In addition, the consequences of this relative response are unknown, but they seem to relate to the severity of dysfunction, although not always."[4]

Make certain the patient's fingers are accurately placed on the TMJ. The patient is then asked to open and close the jaw rapidly, clicking the teeth. A muscle is tested, such as the fascia lata. The fascia lata, naturally, must be intact, and therefore the muscle must be strong to begin with. The patient is asked to open and close the mouth. If weakness occurs, the next step takes place: simply have the patient open wide, with both hands in position on the left and right mandibular joints. The patient is then tested again and the fascia lata — or any other muscle — is tested. If no weakness occurs, the patient is then asked to close the jaw and the muscle is retested. If weakness occurs, the patient is asked to lateralize by moving first one hand and then the other until the side of therapy localization is identified.

If on TMJ therapy localization no weakness occurs on opening and closing, the patient is asked to lateralize — move the jaw sideways — using the lateral and mandibular muscles in left and right position, both open and closed. The patient is then muscle-tested again for weakness. If no weakness occurs in this position, the patient is asked to gently close the mouth and then asked to swallow; the fascia lata is held constant in a test position while the patient swallows.

"In man the external pterygoid muscle is difficult to study. In an effort to determine the activity of the two divisions, McNamara ('73) studied the muscle in the Rhesus monkey, which has an anatomical arrangement similar to man. He found the inferior head (the larger head) acted in opening movements of the mandible; no activity was noted in closing movements or in swallowing. On the other hand, the superior head was not active during opening movements but was during closing movements of chewing and clenching the teeth, and during deglutition. He theorized the superior head positioned or stabilized the condylar head and disc against the articular eminence during closing movements of the mandible, while the inferior head assisted in the translation of the condylar head downward anteriorly and contralaterally during opening movements. This is supported by Grant ('73), who studied the movement arms of both muscle heads which are collectively called the external pterygoid in man and in the Rhesus monkey. Particularly in the rest position the superior head has the effect of closing the jaws while the inferior head has the effect of opening them. The two heads are antagonists; thus the external pterygoid must be considered as two muscles."[12]

Then if weakness occurs, therapy localization will identify the side, and appropriate action can take place. If no weakness occurs, the patient is asked to chew an almond first on the left side, then on the

right side; therapy localization and muscle testing are again performed. Experience has shown that most problems occur on closing (with head in usual position, sitting or supine), and there are four muscles that are associated with closure of the TMJ: the masseter, the buccinator, the temporal, and the internal pterygoid. Experience has also shown that activity of the masseter and buccinator muscles is usually involved and usually the spindle cells of the masseter and buccinator have been set too high. Therapy localization to one side or to the other of the TMJ will reveal the side's involvement, and experience has shown that approaching the spindle cell on the masseter slightly above its insertion above the ramus and approaching the spindle cell on the buccinator slightly below its origin on the maxilla provide the best method of organization of the spindle cells' aberrated activity.

The thumbs are used in apposition — one thumb placed on the masseter spindle cell, the other thumb placed on the buccinator spindle cell. One thumb is on the lower portion of the masseter, and the other thumb is on the upper portion of the buccinator. The thumbs are separated by perhaps half an inch, positioned in a vertical direction in relationship to the patient's head, with one thumb pressing in a vertex direction, the other thumb pressing in a caudal direction. The thumbs are a half inch apart on the average patient; firm, hard pressure is directed into the belly of the masseter and the belly of the buccinator; and the thumbs are brought together with a firm 5 to 8 pounds of pressure. This is done quickly, within a 5-second period.

The patient is then re–therapy localized, and there should be no weakness on opening or closing. This is naturally being done in the closed position. The patient is asked to close the jaw, and the muscle, such as the fascia lata, is retested. There should be no weakness noted either in closing or in a possible swallowing position associated with closing.

In the rare situation in which the jaw therapy localizes to the left or to the right in the open position following therapy localization or a left or right lateralization, the mouth is opened and the finger or thumb is directed to the belly of the external pterygoid muscle, the muscle that opens the jaw. The spindle-cell mechanism of the external pterygoid muscle is quickly and firmly contacted with the index finger, and a hard pressure is applied to the spindle cell, first at its posterior and second at its anterior position. The belly of the external pterygoid muscle is contacted and a rapid anterior and posterior directional force is applied to the spindle-cell mechanism in the belly of the external pterygoid muscle. Therapy localization is then reapplied, and the mouth is then opened fully. There should be a good response under these conditions.

Therapy localization will reveal the side and patient occlusion or opening will reveal the mode in which the spindle-cell activity should take place. If an occasional lateralization does occur, it usually occurs in an open-jaw position. When the opening of the jaw produces a normal response if there is muscle testing, the patient is asked to

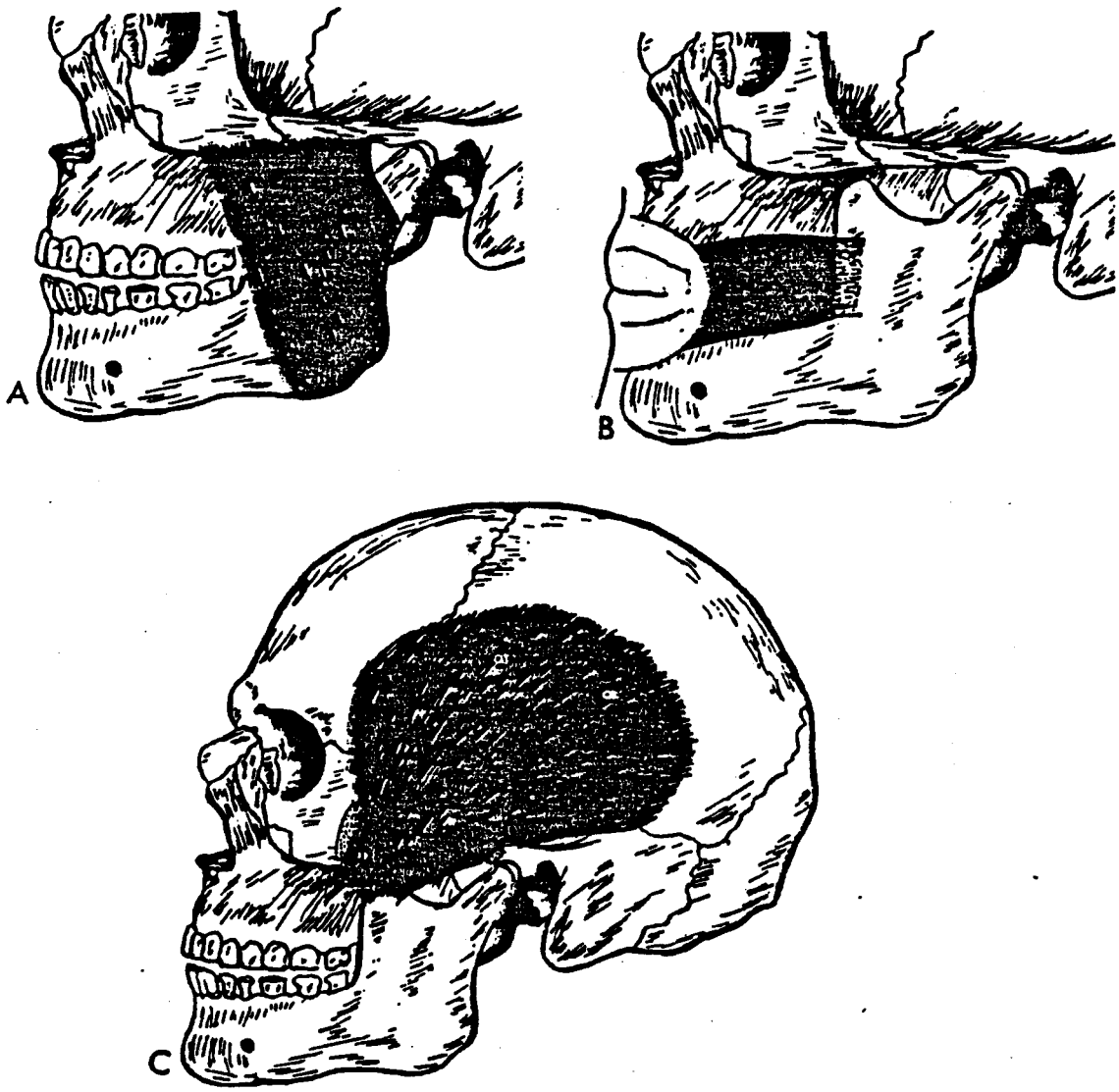

Figure 1. TMJ muscles. *A*, Masseter. Origin: anterior two thirds of zygomatic arch and zygomatic process of maxillary. Insertion: angle of mandible and ramus of mandible, lateral surface. Action: elevates jaw and clenches teeth. *B*, Buccinator. Origin: outer surface of alveolar processes of maxilla and mandible and anterior border of pterygomandibular tendinous band. Insertion: angle of orbicularis oris. Action: compresses cheeks, aids in mastication. *C*, Temporalis. Origin: temporal fossa and fascia. Insertion: coronoid process and anterior border of ramus of mandible. Action: elevates jaw, retracts mandible, and clenches teeth. *D*, Internal pterygoid. Origin: lateral pterygoid plate, medial surface; pyramidal process of palatine bone; and tuberosity of maxilla. Insertion: angle of mandible and inferior and posterior part of medial surface of ramus. Action: protracts and elevates lower jaw, assists in rotary motion of chewing. *E*, External pterygoid. Origin: upper head — infratemporal surface of greater wing of sphenoid; lower head — from lateral surface of lateral pterygoid plate. Insertion: mandibular condyle and capsule of mandibular joint. Action: protrudes mandible, assists in rotary motion of chewing, and is a jaw-opening muscle. For all temporal mandibular muscles: *F*, Neurolymphatic: anterior—between 1-2, 2-3, and 3-4 ribs adjacent to sternum; posterior — at laminae D2, D3, and D4; *G*, Stress receptor; *H*, Neurovascular: ramus of jaw below zygoma; Meridian: stomach (not shown). (*From* Walther, David S.: Applied Kinesiology — The Advanced Approach in Chiropractic. Pueblo, Colorado, Systems DC, 1976, pp. 128–129.)

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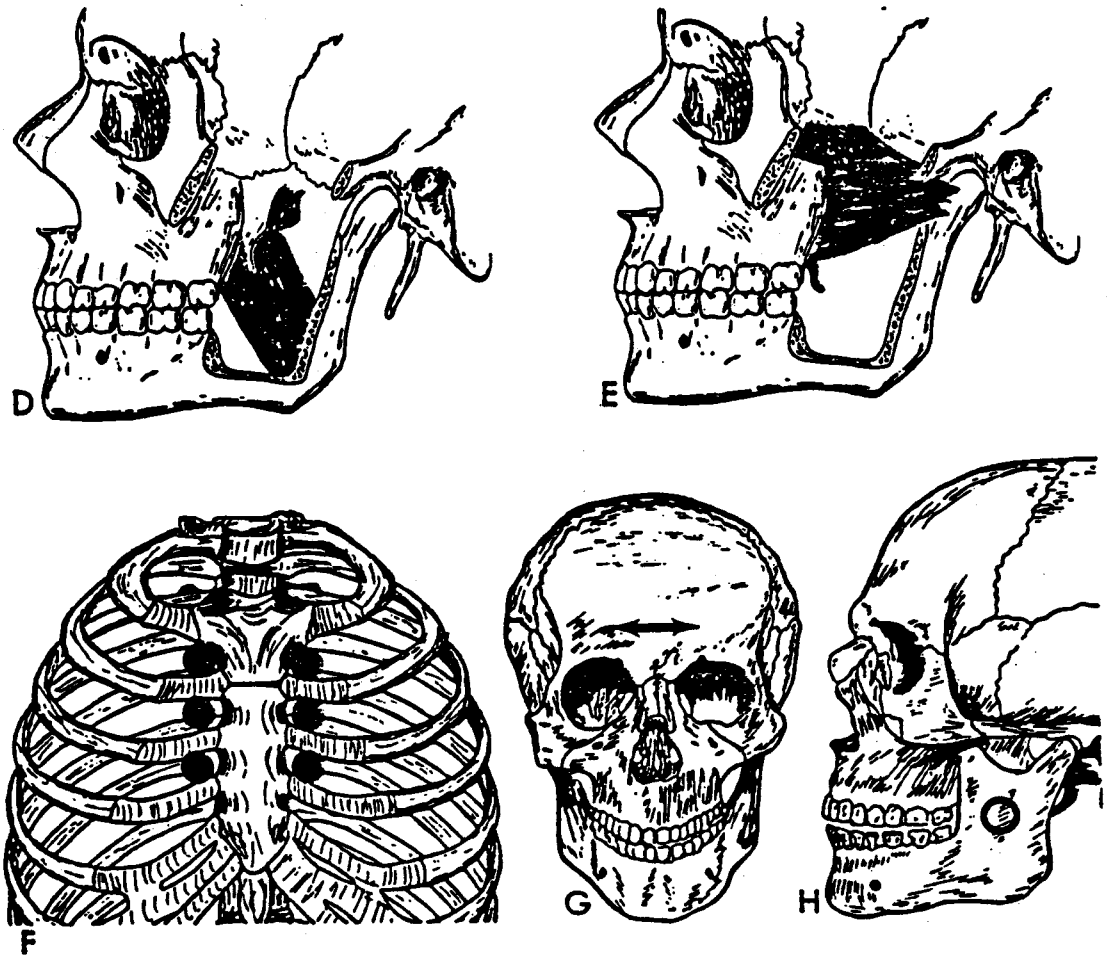

Figure 1. ***(Continued).***
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contract only one side of the jaw muscles with the jaw in the open position, and the jaw is lateralized to the left and lateralized to the right in the open position. If on therapy localization weakness occurs, the external pterygoid is again approached in the same fashion as it would be for the open jaw, and appropriate spindle-cell activity takes place.

Ask the patient to perform aerobic testing: 20 or more rapid occlusions during therapy localizations with fingers touching the TMJ; muscle testing should be performed before and after the occlusions. Twenty occlusions within 20 seconds shows aerobic weakness due to deficient lymph flow. If the test muscle weakens, activation of neurolymphatic reflexes (between 1-2, 2-3, 3-4 ribs adjacent to the sternum and posteriorly between the laminae of D2, D3, and D4; see Fig. 1, A-I) by firm rotary pressure, total elapsed time of one minute, is the treatment of choice. Recheck under these same conditions. Chelated iron (18 mgs., oral form) for a minimum of two weeks provides good nutritional support.

Cranial bone movement of a vestigial gill type of activity has been postulated to exist and be a determinant factor in TMJ problems. Cranial bone movement activity has been documented and requires expert technical application.[4]

Therapy localization during opening and closing or lateralization, protrusion, or retrusion may be affected by respiration activity. A deep inspiration may abolish or, conversely, produce a weakness of a tested muscle. Weakness of a tested muscle may require cranial therapy, but a trial of five respirations with the tongue in the so-called relay reset position may spontaneously resolve many cranial lesions. The attachment of the pharyngeal muscles to the median raphe of the base of the occiput may be the modus operandi of correction. Simply have the patient place the tongue firmly behind the upper teeth and breathe in deeply; then have the patient place the tongue behind the lower teeth and breathe out deeply. Repeat both the inspiration and the expiration sequence five times and retest TMJ against therapy localization and respiratory challenge. The method described frequently resolves cranial bone movement problems. If persistent, use appropriate cranial techniques if so skilled or refer to a competent cranial specialist in the chiropractic, osteopathic, or dental profession.

Previous postural research reports have indicated that opening of the jaw is accomplished with great difficulty by many patients, as opposed to closure. This affects the posture. Many patients, when asked to open the jaw will simply move the head back, retracting the occiput in an effort to allow the mandible to drop. Asking the patient to open the mouth is one of the most frequent methods of identifying poor posture. Therefore be sure to test difficult patients in a neck-extended position.

The inference here is obvious: that there is a difference in spindle-cell activity and reactivity of muscle. The masseter and buccinator muscles react to the external pterygoid muscles. The external pterygoid reacts to the masseter and buccinator. It is less frequent to find reactivity involvement of the internal pterygoid or the temporal muscles. When this occurs, naturally one would approach the spindle cell of the internal pterygoid and the temporal muscles as well as that of the masseter and the buccinator muscles.

It is wise to remember that gentle, slight occlusion is necessary for swallowing and to therapy localize during swallowing.[12] It is also wise to therapy localize in the rare case during phonation. Have the patient speak, and make sure that the pathway is normal. The treatment remains the same: activation of the spindle cell of the reactive muscle with pressure in the belly. It follows the principle of reactivity.

The value of all types of TMJ activity is the homunculus nucleus representation.

First, the TMJ will be discussed and second, its computerization effect. Frequently, one finds subluxations or alterations of structure that are compensatory and when, for example, posterior subluxation of the ilium or posterior subluxation of the ischium is found, if it is a compensatory problem, normalization of the TMJ will quickly restore

the sacroiliac joint to normal by using the normal body forces that usually operate to maintain the physiologic homeostasis of the structure.

The influence of the TMJ on structural alterations is phenomenal and prodigious; yet, if the TMJ does not provide a normal response, the structural alteration must be adjusted in the usual fashion. Most compensatory subluxations respond to TMJ activity; primary subluxations do not. We routinely screen patients for TMJ activity as part of our original diagnostic input, and therefore this technique is most useful not only for its local implications but also for the structural implications that exist through the TMJ's homuncular activity.

As is all other instances of reactive muscular activity, we recommend the use of the raw veal bone source.* Three tablets a day should be the input and should be maintained for a period of two weeks. Then the muscle is allowed to resume its normal function. Reassessment of activity should then take place. Naturally, the patient should be advised to chew the tablets if at all possible, although results do occur if the patient swallows the material without chewing it.

Be certain the TMJ is challenged in the supine, standing, and sitting positions. Make certain the TMJ is therapy localized on the involved side to the acupuncture circuit involved, which is the meridian of the stomach. Placing one hand on the involved TMJ after it has been treated, and placing the other hand on the alarm point for the stomach, which is approximately an inch and a half superior to the umbilicus, therapy localize once more. If there is a muscle weakness on therapy localization simultaneously in the TMJ and the acupuncture alarm points (Fig. 2) in the stomach, then the acupuncture alarm points (stimulation-sedation points) for the stomach must be activated in the usual fashion (Fig. 3).

In other words, contact with one hand S41 and with the other hand contact SI5, and hold momentarily for 20 or 30 seconds. Remove the hands and then contact S43 simultaneously with G41, holding momentarily for 20 or 30 seconds. Then remove the hands and reapply therapy localization techniques to simultaneously test the TMJ and the acupuncture alarm point for the stomach.

It is important that the TMJ be challenged during normal jaw-closure position, with the patient swallowing, and under the rare conditions mentioned earlier, with the patient speaking or in the process of active phonation. These are treated in the usual fashion, and dysfunction usually will be on the jaw closure, involving the masseter or buccinator muscles, although occasionally the internal pterygoid muscles may be involved.

It is occasionally necessary to apply the spindle-cell mechanism in rare instances during phonation or during swallowing. When therapy localization occurs, it is occasionally necessary to perform the spindle-cell activity during that particular physiologic process, that is,

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* Osteotrophic extract by Nutri-dyn, Ostogen by Standard Process Laboratories, or Osteoglan by V. M. Nutrifood.

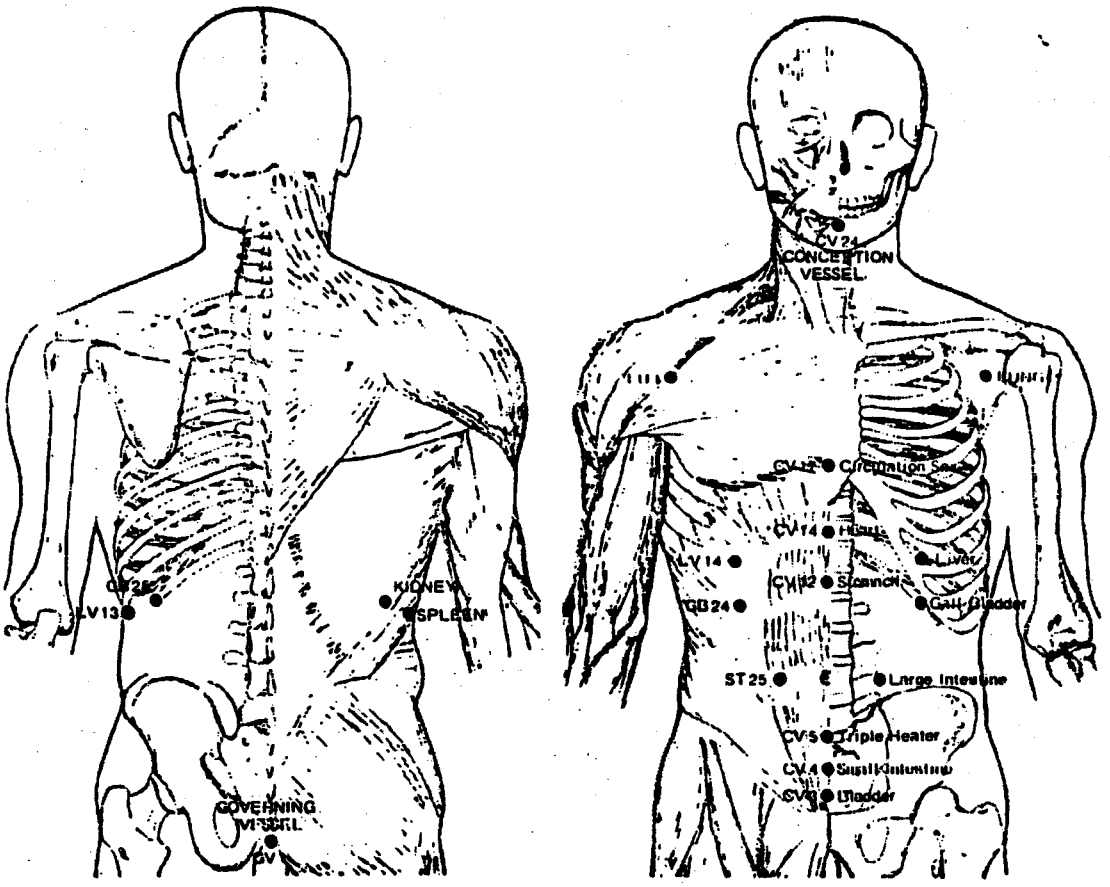

Figure 2. Alarm points. (*From* Walther, David S.: Applied Kinesiology — The Advanced Approach in Chiropractic. Pueblo, Colorado, Systems DC, 1976, p. 175.)

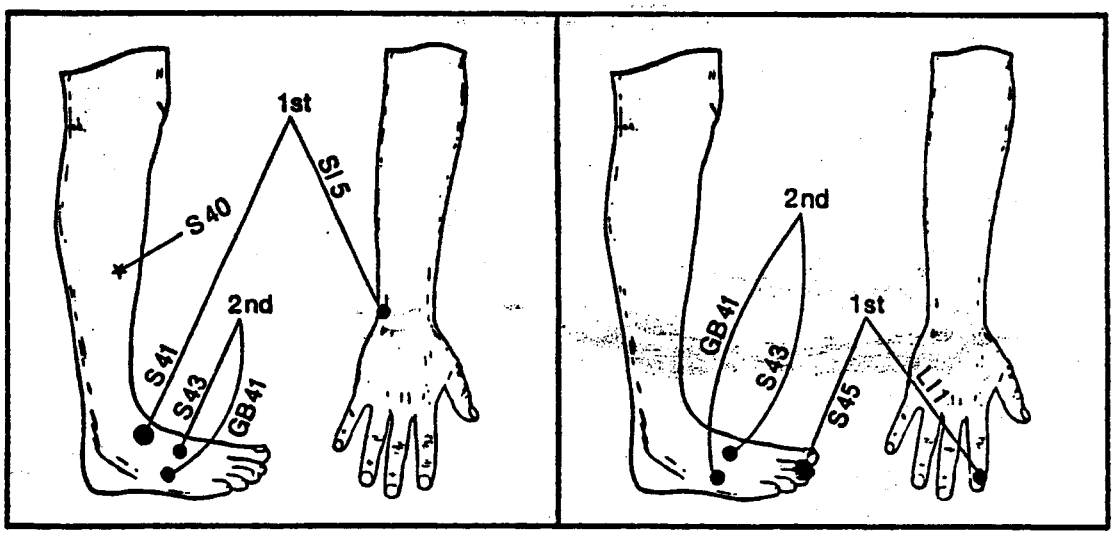

Figure 3. Stimulation-sedation points: stomach, 7–9 a.m. (*From* Walther, David S.: Applied Kinesiology — The Advanced Approach in Chiropractic. Pueblo, Colorado, Systems DC, 1976, p. 180.)

during phonation or deglutition. This technique is by no means a substitute for proper dental care, and consultation with a dentist whose interest in the TMJ is the same as yours is paramount to the production of a well-satisfied and well-functioning patient.

Ligaments generally play a much greater part in the support of loads than is generally thought. Many normal postures do not recruit muscular activity even though there is a great deal of heavy transarticular loading. During suspensory activity by apes, muscles in the upper limb that might be expected to act against the force of gravity remain silent and simply quiescent to electromyographic activity.[11]

POSTURE AND MASTICATORY ACTIVITY

The ideal normal erect posture is one when the line of gravity drops in the midline between the following bilateral points: (1) the mastoid process; (2) the point just in front of the shoulder joints; (3) the hip joints or just behind them; (4) the point just in front of the center of the knee joint; and (5) a point just in front of the ankle joint. Muscular activity is called upon to approximate this posture; if the body is pulled out of the line of gravity — left or right, forward or back — muscular activity brings it back into line.

The knowledge of mastication is the first element to study in the dynamics of the masticatory system. The masticatory apparatus is controlled and powered by nerves and muscles, and they are a little more difficult to study than the bone and tooth relationships upon which many dentists are accustomed to focusing their attentions.

With most postural conditions, there are naturally muscles whose function is to maintain the body in correct posture. This is done primarily by the stretch or the myotatic reflex. The slightest relaxation of a muscle or part of a muscle naturally increases its length. This stretch, though minute, stimulates proprioceptors found abundantly in all the antigravity muscles and their tendons. The resulting nerve impulse from the stimulated proprioceptors reaches the spinal cord by way of a sensory fiber that synapses with a motoneuron. The axons of the motoneuron in turn transfer the impulse back to the muscle originally stretched, causing the muscle to contract just enough to regain its former length. This gravity continuity causes a constant shower of nonsequestral reflex motor discharges to the muscles, resulting in a mild state of tonus at all times. This is known as the postural tonus or postural contraction, and the position of a bone being maintained against gravity is spoken of as the postural component.

The mandible is moved and is supported by a group of muscles basically deriving their innervation from the fifth cranial nerve. The postural reflexes that control the position of the mandible against gravity have connections in the brain stem, just as those reflexes of the limb and the back muscles have connections in the spinal cord. The proprioceptors, the muscle spindles found in the bellies of the muscles of mastication, are joined by afferent fibers that run through the root

of the trigeminal nerve. The cells of the origin of the sensory fibers of the trigeminal nerve are able to synapse with motoneurons of the trigeminal nerve, forming a simple stretch reflex like that seen in the spinal cord.

A state of equilibrium is maintained when there is balanced position against gravity, and the dentist has a tendency to call this the "physiologic rest position of the mandible." The physiologist would call it the "postural position of the mandible." The term "physiologic rest position" is inappropriate because the postural position is no more physiologic than any other mandibular position, and the muscles are usually not at rest because those muscles that are capable of moving the mandible are contracting, but just enough to hold the mandible in a balance position against gravity.

There is a mandibular postural reflex that is fully developed quite early because many of the reflex movements of the mandible that are necessary during sucking, swallowing, coughing, and so forth must be learned very early on. All those reflexes involve the use of the muscles innervated by the fifth nerve to share with the postural position of the mandible to act as the starting point. It is the only position that is observed prior to the eruption of teeth.

Primary tooth occlusion sets up afferent impulses of both tooth and pressure that are then transmitted through the root of the fifth cranial nerve to the brain, where they then alter and affect the muscles that control the position of the mandible. After the teeth have fully erupted, the muscles literally learn one position of occlusion, which provides the maximal occlusal contact, and this is the beginning of what dentists call the "centric relationship."

The intercuspation allows the brain to learn a better mandibular position. In general, the centric relationship and centric occlusion are identical, and when the teeth are in occlusion there is activity not only in the stretch receptors of the spindles and the muscles of mastication but also in the periodontal membranes, namely, the dental ligament.

The mandible is a single midline bone, and any imbalance of contraction of the muscles on one side must necessarily produce a compensating reflex in the corresponding muscles of the other side. There are no single muscular components for mandibular movement, so that if there is an alteration or an interference with the functioning of the muscles on one side, there will be a disturbance in the contralateral muscles as well. These reflex patterns occur almost continuously as childhood goes on. As each primary tooth is lost it is followed by its permanent successor that is somewhat different in size and shape from its predecessor. As a result, occlusal interference is a highly variable thing, and the muscles are continually learning new patterns of mandibular equilibrium to avoid interfering with teeth. This process is then more or less viewed in reverse in the adult as he loses one or more teeth and disturbs his primary occlusal base, requiring, therefore, muscular adaptation to its limit.

Naturally, the memory vested in the periodontal membranes goes quickly when the teeth are extracted, but the muscles may rely on

memory for a while. During that period of time it would seem important that the best thing to do would be to maintain occlusal freedom in immediate dentures, both anteroposterior and mediolateral adjustments. There is good evidence to support the concept of immediate dentures with cuspless posterior teeth.[9]

Mandibular and maxillary equilibration is necessary and should form a natural part of the treatment program. The rest position may be controlled actively by a low degree of muscular activity or passively by muscular or tissue visco-elasticity. The frequency of the jaw tremor at rest was studied to see if it could be useful as a study of the rest position. Jaw tremors were recorded in three different head positions of normal subjects by two accelerometers fixed to the upper and lower premolars. Electromyograms of the right and left anterior temporal and masseter muscles and an electrocardiogram were recorded with surface electrodes, and the data correlated with jaw tremor. The lower jaw oscillated at the same frequency as the head, and the tremor was a low-frequency narrow-band process. Head deflection produced changes in the power spectral density of the tremor. Head deflection mainly affected the suprahyoid and infrahyoid muscle groups.

This study was done at the Stomatognathic Laboratory, Department of Occlusion, Dental Research Institute, School of Dentistry, University of Michigan, Ann Arbor, Michigan.[9]

"The people conducting the study stated that it may be important to patients with low adaptive potential who exhibit occlusal disease, since it is this type of patient who should have less of an enforced need for modifying mandibular posture and adapting occlusal contacts to the changing head position. Thus, patients with pathology may need this area freedom to lessen their adaptive needs during the constantly changing posture requirements. In order to achieve this it may be necessary for occlusal adjustment techniques to be performed and checked with the patient in a recumbent or semirecumbent upright position, using both guided and unguided mandibular closures. Performing an occlusal adjustment in this manner should logically produce area freedom in centric at the end of the procedure."[9]

Masaya Funakoshi and Niichiro Amono studied the effects of the tonic neck reflex on jaw muscles in rats with both ear labyrinths destroyed immediately after decerebration.[3] Electrical activities of the jaw muscles increased or decreased in response to rotation, tilting, and flexion of the head. The electromyographic responses to head position were abolished after the first three cervical nerves were cut. We concluded that the tonic neck reflex has an influence on the jaw muscles.[3] Interdisciplinary treatment to balance cervical musculature and other muscle skeletal imbalances is thus necessary, expedient, and important.[2]

A musculoskeletal system was investigated by John V. Basmajian, who is also one of the founders of the International Society for the Study of the Electromyographic Kinesiology. His observations are that there is an observable difference in the swallowing patterns of individuals and among individual swallowings in a single subject. A longer period of electrical activity takes place during the presence of saliva

than water, for example. The type of bolus seems to affect the pattern. The geniohyoid muscles do not begin their activity with the genioglossus, but rather lag behind. Both are active during and after the time the bolus has passed the laryngopharynx.[1]

Therapy localization frequently will be normal until swallowing or even phonation is attempted. Evaluation of treatment response must perforce include the observation cited that the two heads of the external pterygoid muscles have antagonistic functional patterns.[12]

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