

A Look into the Muscle/Organ/Gland Relationship

According to Applied Kinesiology

A Literature Review

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Objective: The purpose of this literature review is to compile the research that has been done which demonstrates a relationship between muscles, organs and glands as used in Applied Kinesiology. This review will briefly discuss the history and development of Applied Kinesiology, as well as discussing the clinical trials that have been performed which may or may not support the use of manual muscle testing in the diagnosis of visceral dysfunction.

Background: The use of manual muscle testing as diagnostic indicators for visceral dysfunction has been criticized by many. This literature review was prompted by the author because of his interest in manual muscle testing as used in Applied Kinesiology.

Methods: The resources used in this literature review include journal articles, text and reference books, internet web sites, structured abstracts, and some privately published material available through the Logan College of Chiropractic Learning Resource Center. PubMed, ChiroWeb, EBSCOhost and Mantis were databases used to find journal articles and publications related to this topic.

Results: Seven articles were obtained from the databases used. The remaining articles that came up on the search were not selected because they were not specific to the muscle/organ/gland relationship. The majority of literature was obtained by using the Logan College Learning Resource Center and searching for references obtained from the Applied Kinesiology Synopsis, 2nd Edition.⁶ Other resources were obtained from the

International College of Applied Kinesiology website and The International Journal of Applied Kinesiology and Kinesiologic Medicine.

Conclusion: There seems to be a clinical correlation between the muscles, organs and glands as described using applied kinesiology. Many clinicians have supported the claims made by Goodheart. Some clinical studies have been performed that also demonstrate the muscle/organ/gland relationship, but more of these clinical studies need to be performed which may help further substantiate the claims that these relationships exists.

Key Words: applied kinesiology, Bennett neurovascular reflexes, neurovascular dynamics, Chapman neurolymphatic reflexes, acupuncture, meridian therapy, muscle testing

Introduction:

“Dr. George J. Goodheart, Jr., D.C., a second generation chiropractor, is the founder, developer and foremost authority on the science and art of applied kinesiology (AK), a system of muscle testing used for functional neurological evaluation. Doctors of chiropractic, osteopathy, homeopathy, dentistry and medicine use the methods he developed. The discoveries he initially made in 1964, have spread throughout the world.”¹

“Goodheart was born in Detroit, Michigan in 1918 and completed chiropractic school at the National College of Chiropractic in 1939. As a student of nutrition,

Goodheart learned at the side of Royal Lee, DDS, founder of the Standard Process vitamin company and became a prominent lecturer on nutritional topics in the 1950's and 1960's. Since that time, he has continued to lecture extensively at medical, dental and chiropractic meetings and colleges in North America, Japan, Australia and throughout Europe.”¹

“In 1964, Goodheart became aware of a muscle-testing system developed by two physical therapists, Kendall and Kendall. Through investigation, he made the first clinical observations that inhibited (or "weak") muscles could be facilitated (made strong) by applying specific techniques. From these beginnings, the body of work we currently know as applied kinesiology was developed.”¹

“The earliest signs of organ-muscle relationships recorded were in drawings of therapeutic yoga exercises in India. The positions used in therapeutic yoga applied pressure to or stretched specific muscles for each organic problem. A comparison shows the muscles being affected by the exercises to be similar to the ones related to the same organ as introduced by George Goodheart in the 1960's.”²

Dr. Goodheart first started finding a correlation between muscles and organs/glands when he successfully treated patients using Chapman and Bennett reflexes. These reflexes were thought to be related to organs and glands, and Dr. Goodheart soon noticed that these reflexes would strengthen previously weak muscles when stimulated. Dr. Goodheart also researched acupuncture and found another correlation between muscles and organs.

Those using AK muscle testing claim that it can be used to find neuromuscular problems in the body as well, but this literature review will focus on how muscles were

found to be related to organs and/or glands in the human body. This review will also take a look at what research has been conducted to demonstrate the possible relationships that exist.

Methods:

PubMed, ChiroWeb, EBSCOhost and Mantis databases were used to search under the following terms: *applied kinesiology, muscle testing, neurolymphatic reflexes, Chapman reflexes, neurovascular dynamics, neurovascular reflexes, Bennett, viscerosomatic reflexes, acupuncture and meridian therapy*. The broadest range of dates available on each database was used in order to locate more resources. Seven articles were selected from the database search. The remaining articles that came up on the search were not selected because they were not specific to the muscle/organ/gland relationship. Most other literature was found by using the Logan College Learning Resource Center to search for references listed in the Applied Kinesiology Synopsis, 2nd Edition.⁶ Information was also obtained from the ICAK websites and conference proceedings as well as the Journal of the International College of Applied Kinesiology.

Discussion:

AK began with Dr. George J. Goodheart, Jr., D.C. of Gross Pointe Woods, Michigan. Dr. Goodheart, a second generation chiropractor, graduated from National College of Chiropractic in 1939. In the early 1960's a male patient of Dr. Goodheart's came into his office. He was complaining that he couldn't get a job in any of the factories

in his town because he was unable to pass the physical, due to his inability to press in a forward direction with one of his arms. Upon examination the patient exhibited scapular winging on one side, consistent with a long thoracic nerve injury. Dr. Goodheart had received a book from a chiropractic friend called "Muscle Testing" by Kendall and Kendall. From this book he found that the serratus anterior was the muscle that pulls the shoulder blade forward on the chest wall. He tested the muscle according to the method by Kendall and Kendall and found it to be weak. He then palpated the muscle and found nodules at the attachment site. When he rubbed the nodules, the scapula no longer stuck out and when he tested it, it instantly became strong and remained so indefinitely. He then began to test muscles on every patient by the method of Kendall and Kendall.³ This began the method in AK known as origin insertion technique.

"Sometime later, Dr. Goodheart's friend sent him a patient who had an unusual type of sciatic neuralgia, a painful problem involving the lower limb that caused severe pain if he were to stand, sit or lie down, but disappeared when he walked. Because of the unusual history, Dr. Goodheart felt that this was an involvement of the lymphatic system. He began palpating lymphatic areas around the chief complaint. After palpating for diagnostic information, which he did not find, the patient said he had immediate relief."³

"Dr. Goodheart's secretary had quite a bit of sinus trouble and she consistently showed a head tilt when she had the sinus disturbance. He tested her neck flexor muscles and found a weakness on one side. He thought that it might be associated with some lymphatic circuit breakers postulated by an osteopath named Dr. Frank Chapman, D.O. Dr. Goodheart rubbed the reflex point according to Chapman's claims and found that, not only did her sinus problem go away, but the muscle immediately tested strong."³ Dr.

Chapman discovered these reflexes in the 1930's and he correlated the reflexes with specific organs and glands.³ Chapman reflexes are called neurolymphatic reflexes (NL) in AK. Additional reflexes have been added to those discovered by Chapman. These reflexes were soon found to have a relationship to specific muscles as well as organs and glands. Dr. Goodheart found that when stimulating the reflex strengthened the associated muscle, there was often a change in the associated organ. Evidence of a weak pancreas, stomach, liver, or kidney, which could be measured by x-ray, biochemistry, or some other accepted test, would correspond to a weakened muscle. This relationship became more and more evident as time went on. The use of muscle testing gave a diagnostic ability to determine the need to stimulate the reflex and whether the stimulation was effective as observed by the muscle strength immediately improving.³ This improvement of muscle strength was often accompanied by symptomatic improvement in the visceral problem.

At some later date, an Italian woman came to see Dr. Goodheart complaining of headaches for 30 of her 49 years. He observed that if she took a deep breath while he was muscle testing her, some of the muscles on one side of her body strengthened while muscles on her other side weakened. When doing a visual inspection, he noticed that her ears were level but her eyes were not. He wondered if this could be related to a cranial fault as described by Sutherland. William Garner Sutherland, D.O., postulated that cranial bones moved as a person breathed. Dr. Goodheart attempted to make a cranial correction on the patient as she breathed and she had immediate relief. This began his study of muscle testing during phases of respiration.³

Dr. Goodheart's next discovery in AK was that the Bennett reflexes related to muscles. While he was lecturing in Rochester, NY, Dr. Goodheart treated a young boy

who was having an acute asthma attack. He found upon testing that the boy had a weak sartorius and gracilis muscle which had been shown to be related to the adrenal glands. While the boy was lying on his back, Dr. Goodheart noticed that the boy's one foot was upright while the other was lying to the side. Dr. Goodheart attempted to do cranial work when he noticed some sort of pulse on the boy's head. He thought the pulse was coming from his own fingers so he removed his hands and placed them on the wall and the pulse was gone. When he placed his hands back on the boy's head, the pulse returned. The pulse was beating at about 72 beats per minute while his carotid pulse was beating at 120 beats per minute and his respirations were at least 40. The boy suddenly stopped his labored breathing and began to breathe easily again. At the same time, his foot which was rotated to the side was now straight up, equal to the other one. Dr. Goodheart recognized that the pulsation might relate to reflexes first discovered by Dr. Terence Bennett, D.C.³ Dr. Bennett felt that these reflexes influenced the vascularity of different organs and structures.⁴ Dr. Goodheart found these reflexes to be related to specific muscles. These reflexes became known in AK as neurovascular reflexes (NV). It was observed that a specific muscle responded only to one reflex, but most reflexes influenced more than one muscle. Dr. Goodheart was becoming convinced that there was a relationship between muscles and organs.³

A patient and friend of Dr. Goodheart's gave him a copy of Felix Mann's book, *Acupuncture, Ancient Chinese Art of Healing*, published by Random House. Mann spoke about an organ relationship which included many aspects of acupuncture. This book gave four points to tonify or stimulate the organ and four points to sedate if the

organ was overactive. Dr. Goodheart found these points to consistently affect specific muscles.³

In 1973, therapy localization (TL), which was based on phenomena proposed by L. L. Truscott, D.C., was added to the AK system of analysis.⁵ It was discovered that when a patient would touch a place on their own body (NV, NL, Acupuncture Meridian, Origin-Insertion, Golgi Tendon Organ, Muscle Spindle, Cranial Fault, Subluxation, etc.), that a weak muscle would often become strong or a strong muscle would often become weak. TL indicates where a problem is but not what the problem is. If a patient touches an area on their own body and it changes the strength of a muscle, it could be due to any of the above mentioned reflexes or other causes. It was also discovered that making a chiropractic adjustment or placing a nutritional supplement or food on the tongue could strengthen or weaken a muscle. For example, if a patient touches a NL point on their own body related to the adrenals and a previously strong muscle becomes weak, placing an adrenal supplement on the patients tongue would often negate this weakness. If the patient took that supplement daily, over a period of time, their signs and symptoms of adrenal fatigue may go away.⁶

Another technique used in AK is the temporal sphenoidal (TS) line which was discovered by M.L. Rees, D.C. of Sedan, Kansas. Dr. Rees, an SOT practitioner, claimed that points along the TS line relate with specific organ dysfunction.⁶ Goodheart found that the points described in SOT for organ dysfunction correlated with his muscle-organ/gland associations. For example, if the point described in SOT for the stomach was active, the pectoralis major clavicular division muscle, associated with the stomach in AK, was quite often weak. This association was made relatively early in AK. When

TL was discovered, it enhanced the use of the TS line as a primary investigating tool to find muscle dysfunction.⁶ An active TS line point is a nodular, tender area that shows positive TL (makes a change in muscle strength when touched by the patient). In addition to the organ or gland association, most points are associated with a vertebral level that indicates a possible subluxation in that vicinity. When a subluxation or reflex point, as indicated by the TS line, was corrected, the TS line indicator would often disappear.⁶

Muscle testing has been described as "functional neurology" by some. Walter Schmitt states: "In performing functional neurological evaluation, we are looking for functional "short circuits" in the nervous system which can be readily corrected, rather than "dead" circuits which are the result of pathology."⁷ Muscle testing has also been demonstrated by clinical trials to be reliable and have good inter-examiner reliability. Marcello Caso states: "Just as a deep tendon reflex represents a "snapshot" of a spinal cord reflex loop, a manual muscle test is also a "snapshot." It is a clinical window of the central nervous system which, due to its plasticity, is constantly in flux."⁸ Conable and Hanicke found 78.2% agreement between two trained muscle testers when each was blind to the other's findings. After correcting cranial faults and ocular ~~lick~~^{lock}, there was 100% agreement.⁹ In a double blind study, Jacobs found 81.9% agreement between two testers. There was no control of other factors such as cranial faults and ocular lock as in the Conable/Hanicke study.¹⁰ In a study by Lawson and Calderon, inter-examiner reliability of AK manual muscle testing was found to be statistically significant for muscles that could be well-isolated, such as the pectoralis major and piriformis, but less so for tests of muscle groups, such as the hamstrings and tensor fascia lata.¹¹

There have been a number of studies related to the use of Chapman's neurolymphatic reflexes. In one study, "thirty asymptomatic subjects were treated on four separate occasions using soft tissue technique and Chapman's neurolymphatic reflex stimulation for the diaphragm. Spirometric assessment of respiratory function before and after each treatment was performed. Measurements of forced vital capacity (FVC), forced expiratory volume in one second (FEV1) and FEV1/FVC% over the whole sample showed no significant improvement following the treatment regime. Eight of the thirty subjects had lower than predicted initial FVC and FEV1 values. Five of these subjects reported a past history of asthma or bronchitis. When the results for this group of eight subjects were analyzed separately, it was found that a significant improvement was attained from the first pre-treatment FVC to the last post-treatment FVC. These results suggest that traditional chiropractic soft tissue and reflex techniques may have therapeutic value in the treatment of patients who exhibit below average respiratory function."¹² According to George Goodheart, "Chapman has described abdominal and paraspinal areas of palpatory pain that were found in association with adrenal pathology. Chapman's findings are consistent with the character and behavior of myofascial pain zones and therefore probably represent a focus of hyperirritability in the sympathetic nervous system. An afferent barrage of impulses into the spinal cord from a trigger or tender point is thought to reflexly influence vascular tone in viscera and skeletal muscles. Chapman's reflexes could then be likened to a circuit breaker for the sump pump that drains a particular tissue. Both organs and muscles have a lymphatic drainage which appears to be reflexly impaired by active "Neurolymphatic reflexes."¹³ In an article titled "Is It Sympathetic or Parasympathetic", Schmitt states: "If parasympathetic outflow to

organs remains the same, the net result of treating a neurolymphatic will be an increased relative parasympathetic activity of those organs which are affected. Since parasympathetic activity causes vasodilation to the viscera, increased organ secretion, and in the gut, increased peristalsis, the net affect of treating a neurolymphatic would be to increase the function of the organ(s) which were treated. This is what we see clinically."¹⁴

In a clinical case, a 29 year old man presented with chronic low back pain. The man was treated with oral anti-inflammatory agents, cortisone injections, and chiropractic manipulative therapy, all of which provided no relief. The patient was aware of a congenital intestinal abnormality diagnosed when he was a child. Applied kinesiology indicated a need to treat the large intestine. The diagnosis was made by analysis of Chapman's reflexes coupled with an evaluation of acupuncture meridians. The patient was to stimulate these reflexes at home. This treatment resolved the patient's low back pain and improved bowel function.¹⁵

Bennett reflexes (neurovascular reflexes) have a similar correlation between muscles and organs as the neurolymphatic reflexes. According to Goodheart, he found that he could improve muscle function, as determined by manual muscle testing, by stimulating the Bennett reflexes. A specific muscle responded only to one reflex, but most reflexes influenced more than one muscle.⁶

The meridian system is the fifth of the five factors of the intervertebral foramen. Goodheart found that muscles which tested weak were sometimes associated with imbalance of energy within the meridian system.¹⁶ The meridian-muscle association closely followed the previously developed muscle-organ/gland association. For example,

the subscapularis previously associated with the heart is influenced by the heart meridian. The tensor fascia lata, associated with the large intestine, is influenced by the large intestine meridian. The other muscle-organ/gland associations mostly relate to the expected meridians.⁶

In an article entitled, "An Attempt to Quantify Muscle Testing Using Meridian Therapy/Acupuncture Techniques", Corneal states: "In summary, sedation of the stomach meridian involving the bicep brachii reflected a significant reduction in bicep force production as measured in an isometric elbow flexion. Bicep EMG demonstrated no relationship to the stomach meridian sedation, while the antagonist tricep EMG activity remained stable across both conditions."¹⁷

According to Portelli,¹⁸ "Manual muscle testing is found to be a useful tool to help in the identification of visceral fixations and their correction. The paper demonstrates methods of diagnosis and treatment using viscero-somatic reflexes using the heart and esophagus organs as examples. Pushing or pulling an organ into or out of lesion while the doctor performs a manual muscle test produces a visceral challenge. The author states that a visceral lesion refers to an organ that is in an incorrect anatomical position, has movement aberrations or adhesions, or has its blood or lymph supply compromised by an anatomical neighbor. The author reports that visceral challenge reveals a neurological relationship exists between muscles and organs and that this relationship is muscle and organ specific. This relationship may be useful to determine whether physiologically normal patterns or aberrant biomechanical visceral faults are present in patients."¹⁸

In a pilot study, Schmitt and Leisman attempted to determine whether subjective muscle testing employed by applied kinesiology practitioners, prospectively determine those individuals with specific hyper allergenic responses. Serum tests confirmed 19 of the 21 food allergies (90.5%) suspected, based on the applied kinesiology screening procedures.¹⁹

In an article entitled, "A newly discovered muscle-organ relationship: The Pectoralis Minor and The Parotid Gland", by Gangemi, D.C., the author concludes: Due to the impact of proper parotid function on an individual's health, specifically the immune system and the thyroid gland, the observation of an inhibited pectoralis minor muscle in relationship to this gland enables the doctor to investigate and treat patients with greater success.²⁰

Rogowskey reports that in a case series, six patients from the doctor's practice had bilaterally inhibited psoas minor muscles. Insalivation of homocysteine weakened a previously facilitated muscle. Insalivation of nutrients that combat excess homocysteine levels (methylcobalamine/B-12, 5-methyltetrahydrofolate/MTHF, folic acid, pyridoxyl-5-phosphate/P5P, serine, betaine, and/or arginine) corrected the bilaterally inhibited psoas minor muscles.

Goodheart talks about the relationship of the sartorius and gracilis muscles to the adrenal glands and states: "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. This permits 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."²¹

In 1946, Mogendovich established that irritating the visceral organs of a dog by electric current, changed the force of contraction in certain skeletal muscles. Agonists of main motions were registered with EMG. This regularity was called the visceromotor reflex.²² In a more recent clinical study, eighty patients with stomach dysfunction and pain in the shoulder joint which was provoked by taking meals were treated with visceral therapy. After the visceral therapy, the pain in the shoulder disappeared.²²

Another study was performed with eighty patients who had a dysfunction in the large intestine and a piriformis syndrome was provoked by taking meals. Computer topography, podography and electromyography of the quadratus lumborum were performed. Radiography was also performed before and after visceral therapy. During the examination, ileo-cecal valve dysfunction was observed. With EMG, hypo-excitability of the quadratus lumborum and piriformis muscles was observed on the side of the ileo-cecal valve. After performing visceral therapy, indexes of computer topography and podography as well as EMG were performed. All muscle function was restored to normal.²³

Another Russian study took one hundred patients whose pain muscle syndromes in the neck were combined with chronic bronchitis and pneumonia. Radiography of the lungs and electromyography of the scalene, supraspinatus and deltoid muscles were performed. After performing visceral therapy, indexes of EMG were restored and the cervical pain disappeared.²⁴

In 1977 at the Anglo-European College of Chiropractic, a clinical study was performed entitled: "An Investigation into the Effect of Organ Irritation on Muscle Strength and Spinal Mobility." In this study, four organs were chosen for the experiment in order to give a wide sample of body irritation. The organs chosen were the ear, the eye, the lung and the stomach. These organs were chosen because they could be easily irritated without danger. The irritants selected were as follows: sound at a frequency of 2.000 Hz at a level of 99dB lasting for 30 seconds for the ears; for the eyes, chlorinated water taken from a local swimming pool with a temperature below 30 degrees Celsius was used; for the lungs, subjects were asked to smoke ½ to 1 full cigarette depending on whether they were non-smokers or smokers; for the stomach, the subjects drank 1.14 liters of cold water within two minutes.²⁵

The muscles selected for this trial were the upper trapezius for the eyes and ears, the middle deltoid for the lung and the pectoralis major clavicular for the stomach. In order to test muscle strength, a spring balance was used which was calibrated up to 110 pounds. Different apparatus was set up with an exact angle to allow for proper and precise vectors for muscle testing. Strength of each muscle was tested before and after organ irritation. The conclusion showed a "strong correlation between organ irritation and muscle weakness. The muscles most affected were those associated with the individual organs irritated in accordance with Dr. Goodheart. Other muscles were also weakened, but to a lesser degree. There was also a strong correlation between organ irritation and an increase in vertebral fixations. The levels of fixations corresponded to the greatest degree with Goodheart's associated spinal segments, and also with the Meric system to a high degree."

"In addition, the experiments showed that common environmental irritants, especially cigarette smoke, can cause both muscle weakness and spinal fixations."

All of the above mentioned reactions occurred within several minutes following irritation.

According to the literature reviewed, there seems to be clinical evidence that a relationship exists between muscles, organs and glands as described using applied kinesiology. There have been few clinical studies performed to date. However, those too seem to support these claims. More clinical studies like the one at the Anglo-European College of Chiropractic need to be performed which may further substantiate the claims made by Goodheart and other applied kinesiologists. It would be beneficial to all applied kinesiologists and the healing arts in general if the applied kinesiology clubs at chiropractic colleges would encourage and perform more of these clinical studies.

References

¹ Caso, M., & William Maykel, "A Tribute to the founder of applied kinesiology," Chiropractic Economics, June 2003.

² Logan, Alfred, "Organic Problems and Chiropractic," Dynamic Chiropractic, September 25, 1992, Vol. 10

³ www.icakusa.com; AK Beginning

⁴ Martin, R.J., ed, "Dynamics of Correction of Abnormal Function - Terrence J. Bennett Lectures", Sierras Madre, CA Privately Published, 1972

⁵ Goodheart, George J., "A History of Applied Kinesiology," Journal of Manipulative and Physiological Therapeutics, June 1997; 20(5):331-7.

⁶ Walther, David S., Applied Kinesiology Synopsis, 2nd Edition (Pueblo, Colorado Systems DC).

⁷ Schmitt, Walter, H. Jr., D.C., "Muscle Testing Equals Functional Neurology", ICAK-USA News Update, August 1988

⁸ Caso, M., "AK Manual Muscle Testing: As Reliable As the Deep Tendon Reflex?" Dynamic Chiropractic, June 2003;21(13).

⁹ Conable, K.M., & B.T. Hanicke, "Interexaminer agreement in applied kinesiology manual muscle testing," 1987 Selected Papers of the International College of Applied Kinesiology, ed D.H. Schusterman, Shawnee Mission, KS: ICAK, 1987

¹⁰Jacobs, G.E., "Applied kinesiology: An experimental evaluation by double blind methodology," Journal of Manipulative and Physiological Therapeutics, Volume 4, No3 September 1981

¹¹Lawson A, Calderon L. "Inter-examiner agreement for applied kinesiology manual muscle testing", Percept Mot Skills, 1997 Apr;84(2):539-56

¹² Lines, D., McMillan, A., Spehr, G., "Effects of Soft Tissue Technique and Chapman's Neurolymphatic Reflex Stimulation on Respiratory Function", Journal of the Australian Chiropractic Association, March 20, 1990.

¹³ Goodheart, George J., "The Posterior Ilium and the Neurolymphatic Reflex", The Journal of the International College of Applied Kinesiology, Volume 2, Number 2, Fall 1991

¹⁴ Schmitt, Walter H., Jr., D.C., "Is It Sympathetic or Parasympathetic," International College of Applied Kinesiology - USA, Volume 1, 1997-1998

¹⁵ Caso, Marcello, D.C., "Case History: Chapman's Neurolymphatic Reflexes, Congenital Intestinal Abnormality, and Bowel Evacuation Time", Journal of Manipulative and Physiological Therapeutics, January 27, 2004

¹⁶ Goodheart, G.J., Jr., "The antenna concept in chiropractic meridian therapy," Chiropractic Economics, Vol 17, No 5, March/April 1975

¹⁷ Corneal, J.M. & R. Dick, "An Attempt to Quantify Muscle Testing Using Meridian Therapy/Acupuncture Techniques," Proceedings of Winter Meeting, ICAK, Palm Desert, CA 1987

¹⁸ Portelli, Victor J., D.C., "Viscero-somatic Reflexes: Their Clinical Manifestations Using Muscle Testing To Evaluate The Heart and Esophagus," Collected Papers International College of Applied Kinesiology, 2001-2002;1:155-175

¹⁹ Schmitt, W., Leisman, G. "Correlation of Applied Kinesiology Muscle Testing Findings with Serum Immunoglobulin Levels for Food Allergies", International Journal of Neuroscience. 1998; 96:237-244.

²⁰ Gangemi, Stephen, D.C., "A Newly Discovered Muscle-Organ Relationship: The Pectoralis Minor and the Parotid Gland," Collected Papers International College of Applied Kinesiology, 2005-2006;1:75-77

²¹ Goodheart, George J., "The Posterior Ilium and the Neurolymphatic Reflex," Collected Published Articles, 1969

²² Vasilieva, L., & Mikhailov, A., "Pain Muscle Syndromes Of Visceral Genesis", Moscow, Russia

²³ Zotov, I.D., "Piriformis - Syndrome of Visceral Genesis", Moscow, Russia

²⁴ Shulak, A., "Cervical Pain At Dysfunction in Lungs", Moscow, Russia

²⁵ Carpenter, S.A., Hoffmann, J., & Mendel, R., "An Investigation Into The Effect Of Organ Irritation on Muscle Strength and Spinal Mobility," Anglo-European College of Chiropractic, 1977