APPLIED KINESIOLOGY

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ABSTRACT: A brief discussion of the early history and development of applied kinesiology provides perspective and substance supporting the use of manual muscle testing in diagnosis and treatment.

Applied kinesiology is a system of diagnosis that utilizes the manual muscle testing response as a reflection of the status of the anterior horn motor neuron pool of the muscle being tested. The fundamental objective of this new system of diagnosis is the evaluation and correction of nervous system irritation through the application of "natural therapies" designed to remove noxious irritants and restore normal neurological expression, thereby aiding in the promotion of health and the prevention of disease.[1]

Applied kinesiology finds its roots in observations made in 1964 by Dr. George J. Goodheart, Jr, a chiropractic physician, then practicing in Detroit, Michigan. Goodheart's observations regarding muscle balance, muscle strength and muscle weakness refuted the then held theory that muscle spasm was the primary cause of back pain. According to Goodheart, the primary cause of back pain is muscle weakness. Muscle weakness (as observed by manual testing) was soon to be understood as an inhibition of motor neurons located in the spinal cord's anterior horn motor neuron pool.[2]

Weakness (inhibition) of any muscle, Goodheart observes, causes the contralateral, antagonistic or opposing muscles to contract, thereby causing pain. When a muscle contracts without the normal antagonistic response, it isn't the tight or contracted muscle that needs help, it is the weak (inhibited) muscle that needs to be strengthened (facilitated), thereby restoring muscle balance and relieving secondary muscle spasm. A real case of primary muscle spasm is, in reality, seldom seen. It is, rather, a secondary condition.[3]

Applied kinesiology allows the doctor to diagnose, through the use of the manual muscle testing response, the need for the application of a variety of sensory receptor based therapies that, when appropriately applied, result in improved neurological function. This "new system of diagnosis" confirms that when the need is diagnosed and appropriate therapy is supplied, the results are often remarkable.

The first patient diagnosed and treated with what was subsequently called applied kinesiology was a man who was unable to push anything due to instability in his shoulder. As a result of this condition, he consistently failed pre-employment physical examinations appraising his ability to perform labor-intensive tasks for which he was qualified. This condition, clinically observed as an elevated scapula (shoulder blade), had been present for 15 years. Goodheart began his evaluation by having the patient put his hands on the wall as he proceeded to test the function of the muscle that holds the shoulder blade against the rib cage (anterior serratus). By pushing between the shoulder

blades, Goodheart observed a failure of the normally expected muscle response. The anterior serratus muscle was unable to hold the shoulder blade in position as pressure was applied to the spine. Atrophy of disuse (loss of muscle size), a common concomitant of severe muscle dysfunction, might have been expected, but was not present. Curiously, Goodheart proceeded in his evaluation and identified nodules in the muscles insertion. Common sense and intuition convinced him to apply hard, heavy digital pressure to the area in an effort to "reduce" these fibrous nodules. Upon completion of his therapeutic effort, re-evaluation revealed a miraculous restoration of function! The patient was now able to do that which he had been unable to do for 15 years![3]

With great enthusiasm for this new discovery, Goodheart began to routinely test muscles and found many that responded favorably to vigorous stimulation of the origin and/or insertion correcting what was hypothesized to be a microavulsion (tearing) of tendonous fibers. This microavulsion of the muscles tendon revealed itself as muscle weakness on manual muscle testing "not atrophy of disuse or some magical thing", but rather, a normally expressed physiological phenomenon.[4]

As Goodheart's research proceeded, he observed that there were five factors or systems to consider in the evaluation of body function: the blood vascular system, the lymphatic system, the nervous system, the acupuncture system and cerebrospinal fluid flow. He observed that dysfunction anywhere in the body may be caused by a failure of any of these systems and that the manual muscle testing response provided important clues regarding same. Knowing that the body heals itself, he observed that it also “speaks” through its muscles. That is, through the manual muscle testing response, the body communicates balance or imbalance, function or dysfunction. It became apparent to Goodheart that muscle weakness, as observed by manual muscle testing, is an expression of the needs of a body dissatisfied with anything short of optimum function. As Goodheart often remarked, referring to the use of manual muscle testing as a diagnostic tool, “body language never lies” and “find the need, supply the need, observe the result”.

Goodheart had initially observed that weak muscles could be injured at the point of their origin and/or insertion, but later discovered that weakness on manual muscle testing may also reflect a need more systemic than local. So, what of the "five factors" or systems of the body? How were these five systems evaluated and how would they be incorporated into the body of work soon to be known as applied kinesiology?

In the 1930's, Dr. Frank Chapman, an osteopath, extensively palpated the bodies of patients hospitalized for various ailments and recorded his findings according to hospital diagnoses.[3] He observed discrete, tender, nodules in specific areas of the body that seemed to relate to each specific diagnosis. When vigorous massage was applied to these discrete areas of nodulation, improvement in the presenting condition was often observed. He hypothesized that he had discovered a specific receptor site for each internal organ that apparently acted like a switch to a “sump pump” that drains that organ. This “sump pump”, the lymphatic system, often described as a sewer system, is frequently ignored, though it is the largest fluid-carrying network in the body.

On the basis of these observations, Goodheart, having found a correlation between muscle weakness and organ dysfunction, discovered that particular muscles related to

each of these reflexes identified by Chapman. His findings confirmed that these "lymphatic reflexes" affected a specific weak muscle. That is, the vigorous stimulation of Chapman's "lymphatic reflexes" was accompanied by a strengthening response in a specifically identified weak muscle, as determined by manual muscle testing. Stimulation of these "lymphatic reflexes" often resulted in favorable symptom response suggesting improvement of organic function. A clear connection between structure and viscera (internal organs), a long-held theoretical postulate, now had a visible, easily demonstrated, representation in clinical practice.

As Goodheart's research continued, he became aware of the work of a chiropractic physician (Bennett) who, in the early 1930's, had discovered what was hypothesized to be remnants of embryological pulse centers that exist prior to the development of the fetal heart.[5] When these "vascular reflexes" or "pulse centers" were activated, a stimulation of blood supply to specific areas of the body was apparently achieved and organ function enhanced. Goodheart correlated these reflexes with muscle testing and found that these "vascular receptors" acted like circuit breakers which, when overloaded, interrupted function and must be reset. This "resetting" is accomplished by a light tugging touch over the "receptor" site (mostly located on the skull) activating a palpable pulsation (approximately 72 bpm) felt under the fingertips and apparently indicating active stimulation of blood supply to the target site (organ). Strengthening of a "vascular receptor" specific weak muscle is achieved by adequate stimulation of the "receptor" site.

Continuing his quest, Goodheart became interested in the ancient Chinese art of acupuncture and, in 1966, published an article entitled "Chinese Lessons for Modern Chiropractic." Goodheart had observed that needles were not necessary when using the acupuncture system in treatment. Digital (finger) pressure on acupuncture points was adequate stimulation to observe changes as measured by manual muscle testing. With this observation, the "acupuncture system" was, for the first time, incorporated into and made an integral part of a "western medicine" system of analysis and treatment.

Goodheart, with a now well-developed premise that manual muscle testing responses acted as a language between doctor and patient, continued to test various therapeutic approaches using muscle testing as a clinical parameter for the measurement of physiologic response. With a renewed interest in all aspects of health restoration, Goodheart began correlating information regarding nutrient absorption, utilization and identification. Among many observations suggesting that lingual (tongue) receptors identify nutrients as they enter the mouth and are tasted, Goodheart recalled the unique story of a child whose esophagus had been destroyed after swallowing lye, resulting in the need for surgical replacement. As adequate healing time was necessary prior to using the newly implanted esophagus, the boy was fed directly into the stomach. While on the feeding tube, the child started to develop kidney stones, manifested symptoms of arthritis and was losing weight. It was suggested that the boy, whose mouth was not significantly burned by the lye, chew the food before it was placed in the stomach. In so doing, the symptoms were almost instantly eliminated and the boy went on to complete recovery.[6]

Goodheart was also aware that Fletcher, an author of nutrition-oriented literature, advocated chewing food one hundred times and that evolving neurological concepts demonstrated that neural pathways from the mouth to the brain (taste buds directly

affecting areas in the brain stem) impacted muscle activity. Correlating these and other observations and wondering whether the body was able to identify specific nutrients, Goodheart instructed a patient with a known thyroid problem to chew a thyroid-supporting product. The patient, upon chewing the product, promptly fainted, a response that was totally unexpected. When revived, she commented that she felt "almost euphoric." For the first time since Goodheart began treatment of this patient the muscle related to thyroid function tested "strong", suggesting a favorable response to the insalivated thyroid-supporting product. Soon thereafter, Goodheart began a clinical study determined to isolate muscle-nutrient response. It was observed that some vitamin products would weaken and some strengthen particular muscles. After much trial and error, specific muscles were found to be responsive to specific nutrients.

Another of the systems profoundly impacting proper function finds its roots in the postulate of rhythmic movement of the bones of the skull. Goodheart observed that the commonly held notion that the skull is an "ivory box" did not appear to be realistic clinically. Cerebrospinal fluid flow, directly related to nervous system health, is apparently dependent on cranial bone movement. Many researchers have described a vestigal mechanism of cranial bone movement designed in harmony with respiration and acting as a pumping mechanism for adequate and sustained cerebro-spinal fluid flow. Cottam[8] and Sutherland[9] were among the first to do research based on this premise. Goodheart, in applying the principle of muscle testing to the theory of cranial dysfunction (aberrant cranial bone motion) as a causal factor in health and disease, identified 14 different "cranial faults", each associated with particular types of problems and manifesting specific signs.

By 1968 the "five factors" or major systems were being utilized to re-establish normal body function. It was learned that muscles were each related to specific "receptors" and that these "receptors" were all related to specific organs. Although there was no way to determine the major "factor" involved in any observed weakness, frequently, the stimulation of one "factor" would appear to spontaneously correct another.

Though one might surmise otherwise, the work did not stop here.

Many intriguing questions arose as the language of muscle testing was beginning to be understood. Among those questions was the seemingly baffling observation that bilateral muscle weakness was frequently found not to respond to any of the five factors as previously described. It was eventually discovered that vertebral fixation (restricted movement of groups of vertebral segments) was the cause of many observations of bilateral muscle weakness. As far back as 1954, W.W. Martindale, an osteopath, found that he would occasionally create problems with spinal manipulation while correcting others. He was hard-pressed to identify why some patients responded well and some did not. As time passed he observed that vertebrae were often "lesioned" in units of three. That is, vertebral areas were often fixed so that normal motion essential to spinal health was inhibited. Dr. Ted Vladeff, a doctor of chiropractic, also proposed the concept of fixation of vertebral segments. He tried to relieve these fixations but was not able to accomplish consistently predictable results. Goodheart discovered that for normal motion to be restored, fixations must be unlocked by using two hands in the manipulative procedure, simultaneously contacting two of the segments identified as being fixated.[10] The analysis of the chiropractic adjustment, utilizing the manual muscle testing response, was now beginning to be observed.

In 1972 Goodheart published an article entitled, "Cervical Challenge", which recounted the story of a young lady scheduled for surgery because of repeated incidents of spontaneous dislocation of her right shoulder while sleeping. She had come to Goodheart as a last resort hoping to avoid a seemingly inevitable surgery. After testing all the appropriate muscles associated with shoulder dysfunction and finding no apparent muscle weakness, Goodheart asked the young lady to demonstrate how she slept. She lay face down with her right arm under her head and her head turned to the left. She always found herself in this position when she awakened from the extreme pain associated with the dislocated shoulder. Goodheart, postulating that perhaps the atlas (top vertebra in the neck) was subluxated, proceeded to push the atlas in various directions hoping to observe a response (Truscott correlated leg length change with directional pressure on the atlas vertebra).[11] While applying directional pressure to the atlas with the patient's head and arm in the position previously described, a spontaneous shoulder dislocation occurred. Goodheart immediately manipulated the shoulder back into position relieving the excruciating pain. He then adjusted (manipulated) the atlas in the same direction that he had pushed to precipitate the incident anticipating the repetition of the spontaneous dislocation. However, much to his surprise, it did not occur. In fact, a correction of the subluxation had apparently occurred and the shoulder never dislocated again.

With the discovery of what soon would be called “vertebral challenge” a means to analyze presumed subluxations was providentially provided.[12] If a vertebra is not subluxated, there will be no manual muscle testing response when the “challenge” pressure applied is released. If the vertebra is subluxated, an intrinsic muscle driven segmental “rebound” will produce further nervous system irritation and result in weakness of a previously strong muscle as identified by manual muscle testing. This “rebound” phenomenon, first described by Truscott, results from intrinsic muscles responding with equal force to the clinician's directional pressure causing a vertebral “rebound” when the clinician’s pressure is released.

It is interesting to note that, in the 1940's, osteopathic research had analyzed spinal subluxations with electrodes attached to the intrinsic musculature of the spinal segment. This research registered the degree of response to various electrical stimuli. It was observed that the threshold of response was reduced if the vertebra was subluxated. The "facilitated" segments, as they were called, were hyper-irritable or "hot.”[13] Goodheart had observed that the “rebound” of an unsubluxated vertebra brought it back to its neutral position and produced no alteration in the manual muscle testing response. However, when the subluxated segment was challenged in the appropriate manner and aggravation of the subluxation occurred, resultant muscle weakness on manual testing was observed.

The vertebral challenge allows the doctor to demonstrate the need to make a corrective spinal adjustment or, conversely, demonstrate the absence of that need. Such evaluation provides three useful outcomes: precise analysis, immediate response and a reliability factor, that is, an ability to know with relative certainty that you have corrected the subluxation. This method of analysis does not exclude other analytical methods such as x-rays, etc., but provides an additional measurement of function (or dysfunction) and a means of identifying whether a necessary correction has been achieved.

By 1973 a11 “five factors” or major systems governing bodily function were addressed, though there was not yet a method to determine which “factor” was in primary need of attention. Vertebral subluxation/fixation patterns were evaluated and cranial faults assessed, until all “factors” and structures had been checked and appropriate corrections made. This process, treating the five factors, vertebral subluxations, fixations and cranial faults had become time consuming and clinically cumbersome. In 1974, an extremely important and dramatic observation was made. This serendipitous observation suggested that the therapeutic approach to which the patient might most favorably respond was identifiable. The ability to identify the need for a specific area or “factor” to be addressed was soon to be called “therapy localization”.

As was often the case, Goodheart’s most recent observation came on the heels of a recurring question: “Why?” The inspiration to continually ask this simple question had opened his mind and led to many a discovery. Fortuitously, but by personal tragedy, this question was prompted again. Goodheart's wife had recently died of cancer. He had felt helpless in trying to identify indicators of the disease process through muscle testing. Muscle weakness that he now knew should be present, was not found. It was as if the body was hiding the truth. Through a serendipitous clinical observation, as he pondered this perplexing state of affairs, he discovered that the body itself was able to identify areas in need of therapy and uncover hidden weakness as identified through manual muscle testing. He observed that if the patient were to place his/her own hand over an area in need of therapeutic attention (e.g., vascular reflex, lymphatic reflex, vertebral subluxation, etc.) immediate response as identified by manual muscle testing would occur. The muscle, acting as an indicator, would strengthen, if previously testing weak, or weaken, if previously testing strong, indicating the need for therapy in the area touched by the patient.

In an attempt to explain the fundamental nature of "therapy localization", a number of hypotheses have been considered. Among these is the concept of electromagnetic energy suggested by the work of Karagulla[14] and Davis and Rawls[15] giving credence to the idea of adding energy to, or taking energy away from, an area in need of therapeutic attention. As time passed, Goodheart became familiar with the hypothesis of neurological function as described by Melzack and Wall [16] and suggested a neurologic explanation of the phenomena of "therapy localization". According to this explanation, it is as if, through the nerve fibers associated with touch, the body is being asked, "Is there a problem in the area I touch?" The body's answer is registered by a change in muscle strength, as identified by the manual muscle testing response.

When you touch an area of the body with your hand, neurologically you are not touching once but twice. Your hand is touching your body and your body is touching your hand. In the area of the brain associated with the sense of touch or sensation, there is a disproportionate amount of neurons (nerve cells) assigned to the hand. It is this area that is primarily accessed, supported by the sensory fibers associated with the body area that is touched by the hand, focusing the attention of a vast array of brain cells on the area presumed to be in need of therapeutic attention. The nervous system responds, as it responds to any important sensory input – quickly and efficiently.

When we are struck with an object or injured in any way, one of the first reactions is to place one's hand on the site of injury. This instinctive response neurologically identifies the area of trauma and focuses the body's attention on its immediate needs – an instinctive

"therapy localization".[17] It is important to understand that "therapy localization" tells you where to apply therapy, not what therapy to apply. However, when an appropriate therapy is applied, there will be an immediate response whereby "therapy localization" (the touching of the patient's hand to the area in question) no longer causes a change in muscle strength as observed by manual testing.

With the addition of "therapy localization", the therapeutic arsenal of the physician initiated in the concepts of applied kinesiology (AK) became restricted only by creativity, ingenuity and the development of the science itself.

> *"The body heals itself in a sure, sensible, practical and observable manner. 'The healer within' can be approached from without. Man possesses a potential for recovery through the innate intelligence or the physiological homeostasis of the human structure. This recovery potential with which he is endowed merely waits for the hand and the heart and the mind of a trained individual to bring it into manifestation allowing health to come forth; this is man's natural heritage."*[18]

The International College of Applied Kinesiology (ICAK), a research based organization, consisting of health care practitioner's dedicated to the advancement of AK, was founded on Goodheart's vision in 1973 and is now well established internationally with chapters in the United States, Canada, Europe, Japan, Russia and Australasia.

As Goodheart frequently reminded those dedicated physicians who followed his lead, "the nervous system is King." And AK, the offspring of his inherent genius, has evolved into a system of diagnosis and therapeutics that might best be interpreted in the light of neurological function. In this model, the manual muscle testing response is used as a reflection of the status of the anterior horn motor neuron pool of the muscle being tested.

AK is all about excitation and inhibition of neural pathways. It is a series of sensory receptor based diagnostic challenges followed by the monitoring of manual muscle testing outcomes. All AK techniques are about creating sensory receptor stimulation resulting in excitation and/or inhibition leading to more optimal neurological function.[19]

In common language, it might be said that the fundamental objective of this new system is the evaluation and correction of nervous system irritation through the identification of mechanical, chemical and/or psychic irritants followed by "natural therapies" designed to remove those noxious irritants and restore normal neurological expression, thereby aiding in the promotion of health and the prevention of disease.

Years of clinical research, including the initial observations of Goodheart discussed above, stimulated by the formation of the ICAK, have yielded a plethora of papers on AK, many published in refereed literature, including the neurological framework for its clinical application.[20] A compendium of AK related papers is also available at www.icakusa.com.

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BIBLIOGRAPHY

1. Kerry McCord & Walter Schmitt, "Quintessential Applications: A(K) Clinical Protocol" (St. Petersburg, Florida: HealthWorks!, April 2005).
2. Walter H. Schmitt and Samuel F. Yannuck, "Expanding the Neurological Examination Using Functional Neurological Assessment Part II: Neurologic Basis of Applied Kinesiology." Intern J Neuroscience, 1999, 97, 77-108.
3. George J. Goodheart / Walter Schmitt, Video: Applied Kinesiology, Session 1 (10 Session Syllabus), February 1982
4. George J. Goodheart, Jr., Applied Kinesiology 3rd Edition (Detroit: privately published, 1965)
5. George J. Goodheart, Jr., Applied Kinesiology 4th Edition (Detroit: privately published, 1967)
6. George J. Goodheart/Walter Schmitt, Video: Applied Kinesiology, Session 1 (10 Session Syllabus), February 1982
7. George J. Goodheart/Walter Schmitt, Video: Applied Kinesiology, Session 1 (10 Session Syllabus), February 1982
8. Nephi Cottam, Story of Craniopathy (Los Angeles: privately published, 1936)
9. William G. Sutherland, The Cranial Bowl, (Mankato, MN: privately published 1939). Republished as a second printing by The Osteopathic Cranial Association, 1948
10. George J. Goodheart, Jr., "The Fixation Vertebral Pattern", Digest of Chiropractic Economics, Vol. 16, No. 1 (Detroit: Chiropractic News Publishing Company, Inc., July/August 1973)
11. George J. Goodheart/Walter Schmitt, Video: Applied Kinesiology, Session 1 (10 Session Syllabus), February 1982
12. George J. Goodheart, Jr., "The Cervical Challenge", Digest of Chiropractic Economics 15:2 September/October 1972.
13. J. S. Denslow, "Analysis of Variability of Spinal Reflex Thresholds", Journal of Neurophysiology 7:207-215 (July 1944)
14. Shafica Karagulla, Breakthrough to Creativity (Santa Monica, CA: DeVorss and Co., 1967)
15. Albert Roy Davis and Walter C. Rawls, Jr., Magnetism and Its Effects on the Living System (Hicksville, NY: Exposition Press, 1974)
16. Ronald Melzack, The Puzzle of Pain (New York: Basic Books, Inc. 196~)
17. George J. Goodheart/Walter Schmitt, Video: Applied Kinesiology, Session 1 (10 Session Syllabus), Summer 1982
18. David S. Walther, Applied Kinesiology Volume 1, Introduction by George J. Goodheart, Jr., Systems DC (Pueblo, Colorado, 1981)
19. Walter H. Schmitt, "The Neurological Rationale for a Comprehensive Clinical Protocol Using Applied Kinesiology Techniques", Proceedings of the Annual Meeting of the ICAK, June 2005.
20. Walter H. Schmitt and Samuel F. Yannuck, "Expanding the Neurological Examination Using Functional Neurological Assessment Part II: Neurologic Basis of Applied Kinesiology." Intern J Neuroscience, 1999, 97, 77-108.

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