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Estimating the prevalence of use of kinesiology-style manual muscle testing: A survey of educators

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ABSTRACT

Background: Manual muscle testing (MMT) is a non-invasive assessment method used by a variety of manual therapists to evaluate neuromusculoskeletal integrity. Goodheart developed a technique, Applied Kinesiology, where muscles are tested, not to evaluate muscular strength, but neural control. Following Goodheart's work, a third type of MMT emerged, often referred to colloquially as "muscle testing" or "kinesiology." This type of muscle testing, kinesiology-style MMT (kMMT) typically only uses one muscle, tested repeatedly, to scan for the presence of target conditions, such as stress or food allergies. While AK-MMT has been found to be used by approximately 40% of American chiropractors, little is known about the prevalence of use of kMMT. The aim of this study was to investigate the prevalence of use of kinesiology-style manual muscle testing (kMMT).
Methods: First, a search of Internet databases, textbooks, and expert opinion were used to compile a list of known technique systems that use kMMT. Direct contact was attempted to representatives of each kMMT technique system. Once contacted, the representative was asked to provide a conservative estimate of the number trained in their form of kMMT. For those organisations unable to provide an estimate, expert opinion was sought to approximate the numbers trained. From this data, an estimation of the prevalence of use of kMMT was made.
Results: Seventy-nine kMMT technique systems were identified, 46 of which provided an estimate and 33 did not (for various reasons). From information provided, kMMT was then estimated to be used by over 1 million people worldwide.
Summary: With the prevalence of use at over 1 million people worldwide, kMMT merits further consideration and investigation into its usefulness in clinical settings. This estimation might be amplified due to the possibility of redundancies or attrition. Likewise, it might be low due to misclassification or too narrow search methods.

What this paper adds:

- This is the first study published to estimate of the prevalence of use of kinesiology-style manual muscle testing (kMMT).
- Establishes the widespread use of kMMT.
- A comprehensive listing of technique systems that use kMMT.
- A comprehensive listing of professional kMMT organisations.

1. Background

Manual muscle testing (MMT) is a non-invasive assessment method used to evaluate neuromusculoskeletal integrity [1], and is a fundamental component of physical examinations performed by physiotherapists, chiropractors, osteopaths and some medical specialists [2]. Different health professionals use MMT in different ways, and as a result, there exists some confusion surrounding the term itself, and how the tests are performed and interpreted.

Abbreviations: AK, applied Kinesiology (technique); AK-MMT, Applied-Kinesiology-style manual muscle testing; CRA, Contact Reflex Analysis (technique); EFT, Emotional Freedom Technique; MMT, manual muscle testing; NET, Neuro Emotional Technique; SOT, Sacro Occipital Technique; TBM, Total Body Modification (technique); UK, United Kingdom.

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Consequently, research efforts to assess the validity and clinical utility of MMT have been difficult to design, to conduct and even to understand; and as a result, its usefulness as an assessment method has been called into question [3–7].

2. The evolution of MMT

First described in the literature in 1915 by Lovett and Martin, MMT was originally used to assess muscular weakness in polio patients [8,9]. The tests were crude and generalised, and little was known about their validity.

In 1949, in their benchmark textbook, *Muscles: Testing and Function*, Kendall and Kendall outlined specific methodologies to isolate and test individual muscles or muscle groups [1,10,11]. Currently, it is this type of MMT that is used in orthopaedic, neurology and physical medicine settings to assess neuromusculoskeletal integrity. This form of MMT usually tests for muscular strength or power, and outcomes are typically graded from 0 to 5, and interpreted as 5 being normal [8,11].

In the 1960s, a different use for MMT was developed by a chiropractor, George Goodheart [12]. In Goodheart's technique, called Applied Kinesiology (AK), specific muscles are tested (similar to Kendall and Kendall), not to evaluate muscular strength or power per se, but to evaluate the neural control of muscle function [12]. The basic premise of AK is that when there is some "aberrant nervous system input to a muscle," it is less likely to be able to resist an externally applied force [12]. Therefore, target conditions of AK-style MMT (AK-MMT) include various types of neurologic dysfunction, which then may be related to some altered physiological function, such as organ, endocrine or immune dysfunction [7,12–16]. However, both the origin(s) and the cause(s) of this irregular neurological input are yet unclear and fervently debated. One other notable difference between AK-MMT and the Kendall-style MMT is that in AK-MMT, the outcome is binary, and usually labelled "strong" (or "facilitated") or "weak" (or "inhibited") [12]. So with this divergence in the 1960s, differing viewpoints about MMT began to emerge. While the tests may be similar in appearance, both the purpose of performing the tests and the interpretation of the test results differ significantly.

Following on from Goodheart's work, a third distinct type of MMT emerged. While it is often referred to colloquially as simply "muscle testing," it has also been referred to by other names, such as "kinesiology[1]," "muscle response testing," "arm response testing," "arm testing," "the arm push down test," "muscle monitoring," and others [10]. Examples of technique systems that use kMMT include, but are not limited to: Touch for Health, HeartSpeak, Contact Reflex Analysis (CRA), PSYCH-K, and Total Body Modification (TBM). For clarity, this type of MMT will be referred to as "kinesiology-style MMT" (kMMT), and it is the third generation of MMT which is the subject under investigation in this study.

3. The kinesiology-style Manual Muscle Test

A kMMT muscle test is distinctly different in a number of ways from its predecessors:

(1) kMMT is not as specific as either MMT or AK-MMT;
(2) the applications and interpretations of kMMT results are not standardised;
(3) typically only one muscle, commonly called "the indicator muscle," is used for testing;
(4) the indicator muscle is tested repeatedly as the target condition changes;
(5) the specific muscle used as the indicator muscle is of little significance to the outcome of the test; and finally,
(6) the amount of force applied to the indicator muscle is also not standardised, with variations ranging from a great deal of pressure to an amount barely perceivable.

Point 5 above means that it is not the specific muscle that is of importance, but what the practitioner is testing for (i.e. the target condition) that is fundamental. This is a noteworthy difference between kMMT and AK-MMT. In other words, once the practitioner decides on the target condition and the interpretation of the outcome, any indicator muscle can be used to conduct the test. The selection of indicator muscle may vary with kMMT technique system and practitioner preference, however, a deltoid, hamstring or pectoralis major are commonly utilised.

Nevertheless, kMMT does have some similarities to the other forms of MMT as well. For instance, its basic premise is comparable in that users contend that alterations in efferent nervous stimulation into a muscle, will cause the muscle to weaken [17,18]. Again, the cause(s) and source(s) of these alterations are unclear. Another similarity is that patients are asked to resist the practitioner's applied pressure in an analogous way.

During a kMMT, an external force is likewise applied to a muscle. At first, this practitioner-applied pressure causes an isometric then an eccentric contraction. More explicitly, during a kMMT, the patient holds a specific joint in a fixed position, usually in partial flexion. The practitioner then applies pressure, usually into extension, as the patient resists this pressure using an isometric contraction. For example, the practitioner may ask the patient to hold his shoulder (i.e. the glenohumeral joint) in 90° flexion, palm facing down, while he tests the anterior deltoid (see Fig. 1). Where the practitioner places his own hand for the application of the force into extension is often a matter of contention [10], but the location is routinely on the distal forearm of the patient, just proximal to the wrist joint, with the elbow held in full and locked extension (see Fig. 2). Some muscle testing practitioners disagree with this placement, as it contradicts Kendall's convention of testing one joint at a time [1], since pressure is being applied to both the shoulder and elbow joints simultaneously. The degree of shoulder flexion and abduction and elbow flexion may vary as well. Finally, while the degree of pressure that a practitioner applies can markedly differ, a steady

Fig. 1. Kinesiology-style manual muscle testing (kMMT): an example of one style.

[1] It may be useful to note that there are now two other disciplines that use of the term "kinesiology:" (1) "Kinesiology" as in the study of human movement [Twietmeyer G. What is kinesiology? Historical and philosophical insights. Quest 2012; 64(1): 4–23.], and (2) "Kinesiology Taping" in the field of Physiotherapy/Physical Therapy [Kahanov L. Kinesio taping®, part 1: An overview of its use in athletes. Athletic Therapy Today 2007; 12(3): 17–8.] Both are from different fields altogether, and not related to kMMT.