



Masterclass

Muscle energy technique: An evidence-informed approach

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SUMMARY

This article describes the principles of evidence-based medicine and how these principles may be implemented in osteopathic practice and applied to the use of muscle energy technique. Because the feasibility of strict adherence to 'evidence-based' principles is debated, an approach of 'evidence-informed practice' is recommended. The principles and diagnostic and treatment practices associated with muscle energy technique are re-examined in light of recent research. Implications for the application of muscle energy are outlined, and recommendations are made regarding clinical practice.

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1. Introduction

Muscle energy technique was developed by osteopathic physician, Fred Mitchell, Sr. It was refined and systematised by Fred Mitchell, Jr., and has continued to evolve with contributions from many individuals. Muscle energy technique (MET) is used by practitioners from different professions and has been advocated for the treatment of shortened muscles, weakened muscles, restricted joints, and lymphatic drainage. In addition to using muscle effort to mobilise joints and tissues, MET is considered by some to be a biomechanics-based analytic diagnostic system that uses precise physical diagnosis evaluation procedures to identify and qualify articular range of motion restriction.¹ Recent research suggests a revision of MET concepts and practices is required, particularly considering the trend towards evidence-based medicine (EBM).

2. Evidence-based medicine and evidence-informed practice

Medical and allied health practitioners have been encouraged to practice according to the principles of EBM.² However, some practitioners raise concern that EBM may be applied for economic reasons rather than best care.^{3,4} Others argue that EBM does not account for other kinds of medical knowledge⁵ and that EBM

studies, primarily randomised controlled trials (RCTs), address average results from large groups instead of data applicable to individual patients.⁶ A treatment effective for the majority may not always be effective for an individual for a variety of reasons, including the aetiology of their condition, past experience (negative or positive), and expectations of treatment outcome. Some approaches may be more effective in the hands of particular practitioners because of skill and experience. Certain treatments may also have larger non-specific (placebo) effects, and these effects should not be dismissed. The adoption of 'best' evidence may unintentionally limit practice, so balance between external clinical evidence and clinical experience is necessary.

In manual therapy, strict adherence to EBM is not possible due to a lack of high-quality evidence on which to base decisions. EBM was originally intended to *integrate* clinical expertise with the best available clinical evidence,¹⁰ but many have argued that a narrow interpretation of EBM is prevalent, where treatment must be *based* on high-quality evidence and the role of clinical experience is devalued.^{3–6} Given that many professions are not able to *base* treatment on evidence, it has been argued that a preferred terminology is 'evidence-informed practice'⁷ or 'evidence-informed osteopathy',^{8,9} which more accurately reflects the reality of the use of evidence in osteopathic practice. Evidence-informed practice has been defined as the process of integrating research evidence when available but including personal recommendations based on clinical experience, while retaining transparency about the process used to reach clinical decisions.⁷

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2.1. Implementing evidence-informed principles into osteopathic practice

Given the paucity of high-quality research evidence related to osteopathic practice, it can be difficult to see how implementing EBM principles may make a difference to practice. However, adopting practices consistent with evidence-informed practice – using evidence when available to guide decision making – may shift the practice culture to improve patient care. While Strauss¹¹ described 5 steps of EBM (asking a question, finding the evidence, applying information in combination with clinical experience and patient values, and evaluating the outcomes), a practitioner must start this approach with a ‘spirit of inquiry’.¹²

2.1.1. Spirit of inquiry

Osteopaths should have a spirit of inquiry,¹² a curiosity about the best evidence to guide clinical decision making. If a practitioner believes they already know everything or that clinical secrets can only be obtained from esoteric experiential practices, that modern research has nothing to offer, then the practitioner is unlikely to embrace evidence-informed practice. Willingness to change when there is good reason to do so is important for clinicians as well as the profession.

2.1.2. Search for evidence

Keeping informed can be daunting for those unaccustomed to searching electronic databases and reading papers. For osteopaths, subscriptions to relevant journals (membership of many professional associations provides electronic access to osteopathic and manual therapy journals) are a place to start. Practitioners should regularly sight journal contents, skim the abstracts of interesting articles, and read further if there is relevance to clinical practice. Many osteopathic and manual therapy journals provide evidence summaries, comment on clinical guidelines, and review articles, which may offer evidence to guide decision making.

Practitioners should ask questions and research patient problems. When presented with a new or a difficult problem, practitioners should spend time researching the problem. In addition to consulting textbooks, practitioners are also able to access information using the free PubMed service or Google Scholar, which have links to primary research articles or other clinical information. When searching electronic databases, the PICOT (population, intervention, comparison, outcome, timeframe) approach is useful for identifying keywords and phrases.^{11,13} Osteopaths should develop a culture of seeking knowledge, looking at every patient encounter as a challenge to learn more.

2.1.3. Integrate evidence with clinical experience

Critical appraisal of research involves determining if the results are valid, if they are important, and if they will improve patient care. Critical appraisal may initially be difficult for those unfamiliar with this approach, and osteopaths are encouraged to participate in journal clubs to discuss articles and learn about the process of article critique.

Evidence-informed practice involves assessing the relevance of existing evidence with the needs of the patient and integrating this knowledge with our own experience, other forms of evidence (expert opinion, physiological rationale, etc.), and the patient's expectations and needs during treatment. In short, evidence-informed practice uses evidence to make informed decisions and guide treatment for the benefit of patients. Working within evidence-based guidelines, treatments should be consistent with current research, but the flexibility to use treatments according to the judgement of the clinician (based on previous experience, awareness of patient values or preferences) should be utilized.

Practitioners may use research evidence and clinical guidelines to add techniques to what they use for best patient care, rather than removing treatments with anecdotal or theoretical rationale, but this will depend on the available evidence relevant to the patient presentation.

2.1.4. Evaluate outcomes

By evaluating the effect of a change in practice approach, an osteopath can assess whether the change has been beneficial. This may be difficult to determine because of the heterogeneity of patients and their complaints, however, if standard outcome measures are used (validated self-reported questionnaires, visual analogue pain scales, the Oswestry Disability index, Neck Disability index, etc.) then evaluation becomes more objective.

3. Evidence-informed approach to muscle energy

Like many manual therapeutic approaches, the efficacy and effectiveness of MET technique are under-researched, and there is little evidence to guide practitioners in the choice of the most useful technique variations (such as number of repetitions, strength of contraction, duration of stretch phase), causing frustration for those endeavouring to integrate relevant evidence into practice. A limited but growing number of studies show positive change following MET intervention. Studies that demonstrate an increase in the extensibility of muscles^{14–19} and spinal range of motion^{20–24} support the rationale of treating patients with reduced mobility, although research involving clinical outcomes is scarce. One case study series²⁵ and one RCT²⁶ for the treatment of acute low back pain (LBP) are the only English language studies that examined MET as the sole treatment using clinical outcomes. Both reported decreased pain following treatment. The lack of clinically relevant research is not surprising given that MET is typically used in conjunction with other techniques. Several clinical trials investigating osteopathic management of spinal pain have included MET as a treatment component, and given that treatment significantly reduced the reported pain and disability in these trials, they provide further support for the effectiveness of muscle energy, at least as part of a treatment package.^{27–29} While there is need for further investigation of muscle energy, available evidence supports the use of this approach to treat restricted mobility and spinal pain.

Although limited evidence exists for the efficacy of muscle energy, the current research literature indicates a need to reconsider the clinical diagnostic methods and the physiological mechanisms causing therapeutic effect. The mechanisms underlying the possible therapeutic effects are largely speculative, but evidence supports the plausibility of several modes of action. An understanding of the likely mode of action may inform and influence the application of muscle energy.

3.1. Diagnostic concepts

Drs. Mitchell, Sr. and Jr., integrated clinical and anatomical observations and developed their approach based on Fryette's physiological spinal coupling concept³⁰ and a pelvic biomechanical model developed in conjunction with Paul Kimberley.¹ Their approach has been adopted by most North American authors of MET texts^{1,31–35} although authors elsewhere have not always linked the technique to these models.³⁶ Recent evidence casts doubt on the predictability of spinal coupled motion and raises questions about the validity and reproducibility of many of the recommended diagnostic tests.

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