# The Effectiveness of Manual Therapy Techniques As Used in Manual Osteopathy.

A Literary Review.

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#### In Brief

This literary review overviews the tenets of manual osteopathic theory as outlined by Dr. Andrew Taylor Still, and examines the effectiveness of manual therapy techniques, as used by manual osteopaths in clinical practice, and as discussed in research.

The goal of this literary review is to unbiasedly bring together manual therapy research, as practiced in manual osteopathy, in order to form a consensus, and determine individual technique effectiveness, for clinical application, with the hopes of guiding future opportunities in manual osteopathic research.

Submitted to the National University of Medical Sciences - Spain as part of the requirement for the Bachelor of Science in Osteopathy on the Seventh of March in the year Twenty-Twenty Three.



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#### **INTRODUCTION**

Osteopathic Manual Practice, also referred to as Manual Osteopathy or Osteopathy, was founded by Dr. Andrew Taylor Still in the year 1874, who pioneered concepts of wellness, and recognized the importance of treating somatic dysfunctions within the context of the whole body. [2] [64]

Through his teachings, Dr. Still would go on to outline eight tenets which are believed to govern the body's ability to self regulate and to self heal, which can be distilled down into four core tenets.

## CORE TENETS OF OSTEOPATHIC THEORY - THE BODY AS A HOLISTIC UNIT

The first tenet is based upon the concept of the body being comprised of many systems and biological elements, all functioning together. This includes the skeleton, joints, muscles, nerves, circulation, connective tissues, and internal organs.

According to this tenet, because all these structures are interrelated to each other, they have

the capabilities of affecting one another. [33]

- **STRUCTURE AND FUNCTION IS INTERRELATED** The second tenet is based upon the concept that the structures of the body are able to influence how the body will function, and vice versa.

Should there be dysfunctions found in the overall structures or in the posture of the body, then this may limit the individual's ability to function optimally. [33] This decline in functionality can be associated to the individual's parts, or more globally to the body's systems; all dependant upon the quality of the structures which makes up the individual. [33]

For an individual to be functioning optimally, according to this tenet, the structures of the body need to be free of dysfunctions. [33]

#### - FLUIDS, AND NERVE IMPULSES

The third tenet is based upon the concept that the arteries and other tubular structures, including blood flow circulation, lymphatic flow, and nerve

This research thesis is submitted to the National University of Medical Sciences - Spain for the *Bachelor of Science in Osteopathy* 



#### CITATION

Colasurdo A, (2023). The Effectiveness of Manual Therapy Techniques As Used in Manual Osteopathy. A Literary Review. NUMSS BSc(Ost) Research Thesis.

**TOPIC ACCEPTED BY NUMSS** September 12, 2022 SUBMISSION DEADLINE June 2, 2023 activity, are all critically important to human health. These functions serve to balance the relationships between the body's structures, as well as to coordinate human function. [33]

Without the nutritive elements which healthy blood carries to its destinations, and without the removal of waste products carried away to be dispelled, according to this tenet, would spell the beginning of disease in the human body. [2]

#### - THE BODY IS SELF REGULATING

The fourth, and final, core tenet is based upon the concept that the body has the innate capabilities to regulate itself by way of immune functions, and through tissue repair processes [33].

According to this tenet, thanks to these processes, the body does not require outside aid to heal structurally; however, an accumulation of events impacting the body may in fact lead to a state where the body is unable to manage the assaulting dysfunction(s) any longer. [33]

#### THE PRACTICE OF MANUAL OSTEOPATHY

The practice of Manual Osteopathy was birthed from these four core tenets, and has its roots in traditional Shawnee and Cherokee indigenous medicine, bodyworks, and healing arts. [65]

The profession of Manual Osteopathy, at it's core, is considered to be a "patient-centred whole body [approach] to health care [offering] functional [improvements] and pain relief" [1] by examining how the "skeleton, joints, muscles, nerves, circulation, connective [tissues], and internal organs [all] function [together] as a holistic unit." [1]

The manual therapy techniques which Osteopaths use in clinical practice, either, draw upon its Shawnee and Cherokee roots, as is the case with osteoarticular techniques, and certain soft tissue techniques used by osteopathic practitioners, [65] or they were introduced at a later point in time by a student of Dr. Still's, or one of their own students, as is the case with muscle energy techniques.

In the end, all manual therapy techniques used by Manual Osteopaths, philosophically, stem from the four core tenets established by Dr. Still, and are used to remove barriers, give the body enough resources, which should allow it to return to a state of structural homeostasis and heal; as much as clinically possible. [33]

#### **OBJECTIVE**

The overall objective of this research thesis is to review the current bodies of literature surrounding each of the manual therapy techniques used by manual osteopaths in clinical practice, in order to determine their individual effectiveness, and determine what the current research consensus is, surrounding their clinical application(s).

#### **METHODS**

Because of the broad nature of the question being researched in this literary review, we have categorized all the techniques into seven major groupings: Osteoarticular Techniques, Muscle Energy Techniques, Soft Tissue Techniques, Positional Release Techniques, Visceral Manipulation Techniques, Cranial Techniques, and Therapeutic Exercises.

Our research inclusion criteria involves the assessment of randomized control trials, systematic reviews, and meta-analyses.

All studies were classified by grouping, and subsequently, the research in each grouping was assessed to come up with a consensus about said grouping.

Finally, in order to diminish the risk of personal biases infiltrating this research, all studies which we have reviewed in this piece of research were selected from the PubMed database at random.

### MANUAL THERAPY TECHNIQUES - OSTEOARTICULAR TECHNIQUES

Osteoarticular Techniques are performed on joints by a clinician, by applying a force which mimics the gliding motion which occurs naturally between bones. [21] This form of therapy can take on one of two majorly identifiable forms:

Osteoarticular Joint Mobilizations (MOB) are performed at slow speeds, which can involve oscillations, and a "hold" or a stretch at the end of the available range of motion. [21]

While Osteoarticular Joint Manipulations (MAN), also referred to as High Velocity Low Amplitude (HVLA) techniques are more aggressive in nature with a high velocity thrust occurring at the end of the available range of motion. [21]

Both forms have their place in clinical treatment; MOBs are utilized to not only "restore motion but to also [provide] a [neurophysiological] effect" [3] which reduces pain and muscle spasms.

While HVLAs are primarily utilized to push beyond an available range, and as such, they are used to "increase the available range [of motion] if it is not full" and to also breakdown "adhesions that disrupt joint movement." [21]

It is the responsibility of the osteopathic practitioner to determine whether the application of osteoarticular techniques is justified [3] which will also be determined by the jurisdiction of the area of practice, as HVLAs may be prohibited as they are considered protected acts.

An extensive body of research exists surrounding osteoarticular techniques, in different applications, and populations. However, what most researchers agree upon is that although osteoarticular techniques do show positive effects when incorporated as a part of a larger physical

therapy intervention [4] [7] [8] [9] [10] [11] [13]; at times, long term benefits have yet to be adequately investigated [5], and causation needs to be adequately established when MOB techniques are utilized in isolation. [4]

Because of this, osteoarticular techniques should be utilized in conjunction with other modalities, as a part of a larger intervention strategy.

#### - MUSCLE ENERGY TECHNIQUES

Muscle Energy Techniques are performed on muscles with the goal(s) of causing an autogenic inhibition, a reciprocal inhibition, and adjust proprioceptive activity through alternating periods of muscular contractions against resistance, and stretching. [22] [23] This form of therapy can take on one of two majorly identifiable forms:

Muscle Energy Techniques (MET) are mainly utilized to mobilize joints and stretch "tight muscles and fascia, to reduce pain, and to improve circulation and lymphatic flow" [14] [17] as well as improve range of motion. [17]

While Proprioceptive Neuromuscular Facilitation (PNF) has all of these benefits, [24] as well as improving strength and power, and athletic performance. [24]

When we take MET or PNF stretching and compare it to passive stretching, research does show an increase in positive outcomes [15] [17] [18], however when we assess this modality for its effectiveness on trigger points, other techniques and modalities do seem to be more effective. [17]

Some studies have also compared MET to other techniques such as Active Release Techniques (ART) or Mulligan Mobilizations (MUL), these studies have found that ARTs, MULs, and METs are all equally effective, and neither has been shown to be superior when compared to the

#### others. [19] [20]

While benefits of these techniques are documented, proper protocol and consistency must be followed in order to attain and maintain the benefits of this modality. [24]

#### - SOFT TISSUE TECHNIQUES

Soft Tissue Techniques are performed to "help manage a health condition or enhance wellness" [25] by manipulating the soft tissues of the body.

This modality encompasses many different techniques including Swedish Massage techniques, Sports Massage techniques, and Clinical Massage techniques, all of which are utilized to release muscle spasms [25] and other soft tissue related dysfunctions.

When we assessed the research, we notice that "prior reviews have conclusions of low strength of evidence" [26] [30] [31] [32] because of gaps in the research concerning specific soft tissue massage types when assessed against specific pain syndromes, [26] [27] [28] [30] [31] [32] also because primary studies don't provide adequate details about the massage treatment received it limits the conclusions which can be drawn concerning the characteristics of the treatment method. [26] On top of this, trials that do not contain a placebo group are at a greater risk of "overestimating the specific contributions from the active intervention." [29]

That being said, when we assessed the current body of literature surrounding soft tissue techniques, we notice that those receiving swedish massage "noted empowerment with an improved ability to perform activities of daily living" [28] [32], however, benefits of massage for functional improvements were only observed in the short-term follow-up. [30] [31] [32] It's also important to note that only minor adverse effects were noticed with this modality. [30]

#### - POSITIONAL RELEASE TECHNIQUES

Positional Release Techniques encompasses quite a large number of variations built upon a very similar technical base. This includes Facilitated Positional Release Techniques (FPRT), Balanced Ligamentous Tension Techniques (BLTT), Strain / Counter-Strain Techniques (SCST), Still Techniques (STILL), and ART, to name a few.

These techniques, while having different targets, variations on a similar theory, indications, and contraindications for their use, are all built upon the concept of applying a compressive force to the segment of the body where the structural dysfunction is located, and moving the segment to a position of ease, which may also simultaneously apply a force of torsion to the dysfunctioned tissues. The reasoning behind these techniques is to put the tissues underhand into a state of relaxation.

At which point, as an example, the clinician can simply hold the position of ease while maintaining the point of contact for a predetermined amount of time, until the tissues underhand relax; the clinician can oscillate at the point of contact until the tissues underhand relax; the clinician can even take the muscle through its passive range of motion while simultaneously maintaining the point of contact in an effort to get the tissues underhand to relax, and more.

Positional release techniques are mainly utilized to normalize tissue texture changes [34], and can also be modified to "influence deep muscles involved in joint mobility." [34]

While examining the research surrounding this grouping, we noticed a disparity in some of the conclusions being drawn. Research does show that positional release techniques are clinically significant and more beneficial than other techniques and/or modalities which it was being assessed against, with regards to specific pain syndrome outcomes, [35] [36] [39] [40] [41] however we also need to note that in some situations, this grouping of techniques seemed to show no statistical significance. [35] [36]

That being said, while these techniques may be a "viable treatment option for clinicians treating musculoskeletal conditions" [40] further research is necessary to determine optimal dosage and long-term effects on patient outcomes. [40]

Currently, some variations of positional release, at times, showed no long term lasting benefits, in research. [36]

With all this in mind, research does support the idea of using positional release techniques as a part of a larger intervention strategy as it has been shown to have potential benefits. [37] [38]

#### - VISCERAL MANIPULATION TECHNIQUES

Visceral Manipulation (VM) Techniques, also referred to as Visceral Osteopathy (VO) or Manual Visceral Therapy (MVT), involves the manipulation of the intra-abdominal viscera. [49]

The theory surrounding VMs proposes the idea that the mobility of the organs can be disrupted in a similar fashion to articular mobility. [49] This theory then goes on to claim that these visceral "disturbances can trigger, increase, or maintain musculoskeletal complaints" such as irritable bowel disorders, amongst others. [49]

Despite the fact that the World Health Organization incorporated visceral techniques into its benchmark for training in Osteopathy in 2010, some countries such as France has banned the teachings and practices of VMs, [49] which begs the question, how reliable and effective are VM techniques.

The body of research surrounding the use of VMs is conflicting at best. Some studies suggest

possible benefits associated with VMs, [43] [44] [47] [48] while other studies contain a low conclusive quality, as the possible beneficial effects of VMs are skewed by the fact that they have not been isolated from other therapeutic modalities, [42] [44] further studies also show no potential benefits in changing patient outcomes when incorporating VMs as opposed to conventional care. [45] [46] [47] [49]

On top of this, a systematic review concluded that the "diagnostic techniques used in visceral osteopathy are unreliable", [49] and they went on to state that the least biased of the studies assessed, in regards to VO, showed "no significant difference [in] the main outcome". [49]

They also noticed that the studies themselves were weakened by biases due to the absence of examiner blinding, from unsuitable statistical methods, and/or from the absence of primary study outcomes. [49]

The systematic review then went on to conclude that the techniques in VO lacked reliability and efficacy. [49]

#### - CRANIAL TECHNIQUES

Cranial Techniques, also referred to as Cranial Osteopathy (CO), involves the manipulation of what Dr. William Garner Sutherland coined as the Primary Respiratory Mechanism, which involves the "intrinsic rhythmic movements of the brain [causing] rhythmic fluctuations of cerebrospinal fluid and changes among dural membranes, cranial bones, and the sacrum." [51]

The practice of CO involves the "non-invasive hands-on gentle manipulation of the skull to modify the parameters of [this Primary Respiratory Mechanism]." [51]

Just as with VMs however, the "evidence

supporting the reliability of diagnosis and efficacy of treatment in this field appears scientifically weak and inconsistent". [51]

When we delved further into this body of research we noticed a significant amount of conflicting evidence. While some studies showed potential benefits such as in pain reduction, changes in autonomic nervous system function, and improvement in sleeping patterns; [50] other studies contained low conclusive quality, as the potential benefits of CO were skewed by the fact that they have not been isolated from the potential effects produced by other modalities. [51] [53]

A systematic review of the CO field found that there is "no evidence to support the reliability of diagnoses made using cranial osteopathy", [51] and that most of the existing literature surrounding CO was vulnerable to high risks of biases, "and failed to demonstrate any reliability for selected outcomes." [51]

On top of this, an attempt to structure the teachings of palpation training, in regards to the cranial field, was unsuccessful in improving the precision of a clinician's cranial palpation performance. [52]

The systematic review went on to conclude that, at present, "there is insufficient evidence to support cranial osteopathy as being relevant for the diagnosis or treatment of patients" [51] and they also concluded that the "efficacy of techniques and therapeutic strategies in cranial osteopathy is almost non-existent." [51]

Because of the scarcity of quality available data surrounding CO and the severe limitations of the available literature, [51] most of which is seriously flawed, [51] further research is needed into this specific field. [50] [53]

#### - THERAPEUTIC EXERCISES

Therapeutic Exercises (TE) involves movement, "prescribed to correct impairments, restore muscular and skeletal function, and/or [to] maintain [an individual's] state of well-being." [62]

There are far too many benefits to exercise which can be enumerated, in any one review, and when we examined the literature surrounding TE specifically, we noticed that this body of literature is quite extensive, and also quite promising.

A large number of studies suggest that TEs can be used to reduce the symptoms of specific pain syndromes, can improve and/or restore bodily functions, can affect depressive disorders, can improve an individual's overall state of wellbeing, can increase an individual's resistance to illness, and can decrease the length of time of recovery. [54] [55] [57] [59] [60] [61] [62]

On top of this, when we compare Manual Therapy to the application of Therapeutic Exercises, we notice that Manual Therapy "achieves a faster reduction in pain perception [when compared to] therapeutic exercise" [55] and TEs "reduces disability faster than manual therapy." [55]

In certain situations however, we still don't understand the precise nature of the relationships between TEs, specific musculoskeletal pain syndromes, and improvement. [60] Because of this, further research is warranted into these specific areas. [54] [56] [60]

#### CONCLUSION

Throughout this literary review we have examined 65 different primary sources which we selected across the PubMed database, at random, in order to form each consensus about each individual manual therapy technique grouping, made use of, in the manual osteopathic field; primarily examining Randomized Control Trials, Systematic Reviews, and Meta-Analyses selected across the platform.

Throughout our investigations we have noticed that most of the manual therapy techniques used by Manual Osteopaths show potentially beneficial outcomes when used clinically. [3] [14] [15] [17] [18] [19] [20] [21] [24] [25] [28] [32] [34] [35] [36] [37] [38] [39] [40] [41] [54] [55] [57] [59] [60] [61] [62]

That being said however, some of the techniques used by practitioners, do contain gaps in their individual bodies of research, concerning their potential benefits [26] [27] [28] [30] [31] [32] [60], and a few studies showed a low strength of evidence to support their use clinically. [26] [30] [31] [32] [35] [36]

Researchers do agree that most manual therapy techniques showed enough strength of evidence, concerning their potentially beneficial effects, when used in tandem with each other, and incorporated as a part of a larger physical therapy intervention. [4] [7] [8] [9] [10] [11] [13] [37] [38] [40] [63]

That being said, researchers do caution against the use of certain techniques, in isolation, because, at times, causation still needs to be adequately established, [4] [40] [54] [56] [60] and potential long term benefits still needs to be adequately investigated. [5] [30] [31] [32] [35] [36] [40]

On top of this, it's important to note that two out of the seven groupings, specifically Visceral Manipulations and Cranial Osteopathy, while in a handful of cases did show potential benefits, [43] [44] [47] [48] [50] these bodies of research, specifically, are considered to be skewed by unreliable results, [42] [44] [49] [51] [52] [53] with a handful of studies showing no potential benefits attributed to the use of these techniques. [45] [46] [47] [49] [51] Also, because of the efficacy and reliability issues in the studies, surrounding the use of VMs and CO techniques, Countries have taken to outright banning their teachings entirely. [49] [51]

Based off of our review of the literature surrounding each grouping, we can advocate for the use of Osteoarticular Techniques, Muscle Energy Techniques, Soft Tissue Techniques, Positional Release Techniques, and Therapeutic Exercises, clinically.

However, we suggest that *Visceral Manipulation Techniques*, and *Cranial Techniques* be further scrutinized, and a further consensus drawn after further research is conducted, to either include or remove them from Osteopathic Manual Practice, and from the Osteopathic model of care.

#### **AUTHOR'S DECLARATIONS**

The author has no conflict of interest to declare. There is no financial interest to report. We certify that the submission is original work.

#### **KEYWORDS**

Osteopathy; Manual Osteopathy; Osteopathic Manual Practice; Manual Therapy; Osteoarticular Joint Mobilizations; MOB; Osteoarticular Joint Manipulations; MAN; High Velocity Low Amplitude; HVLA; Muscle Energy Techniques; MET; Proprioceptive Neuromuscular Facilitation; PNF; Active Release Techniques; ART; Soft Tissue Therapy; STT; Swedish Massage; Sports Massage; Clinical Massage; Facilitated Positional Release Techniques; FPRT; Balanced Ligamentous Tension Techniques; BLTT; Strain / Counter-Strain Techniques; SCST; Still Techniques; STILL; Visceral Manipulation; VM; Visceral Osteopathy; VO; Manual Visceral Therapy; MVT; Cranial Osteopathy; CO; Therapeutic Exercises; TE

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