



Osteopathic manipulation and its applicability in the emergency department: A narrative review

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ABSTRACT

Background: Osteopathic manipulative treatment (OMT), also known as osteopathic manipulative medicine (OMM), is a set of manual techniques, developed by Dr. Andrew Taylor Still, founder of osteopathic medicine, initially limited to osteopathic medicine, for the treatment of painful conditions. This toolset is now used by allopathic physicians, international osteopaths, physical therapists, chiropractors, and other healthcare workers for the treatment of musculoskeletal pain. OMT can be used in the emergency department (ED) for the treatment of musculoskeletal complaints as an adjunct to pharmacologic agents (e.g., NSAIDs), or an alternative to opioids. **Objective:** This narrative review provides emergency clinicians with an understanding of OMT, including a broad overview of the basis, development, and common subtypes of OMT; data on OMT efficacy and on the use of conditions commonly encountered in the ED setting; and information on how to implement the use of OMT in emergency medicine and urgent care settings.

Discussion: OMT can be used for a wide variety of acute and chronic pain conditions, particularly back pain, headaches, neck pain, and extremity pain (assuming that life-threatening conditions have been excluded). There are small studies and case series demonstrating both efficacy and subjective improvement with OMT, including in the ED. However, limitations to the current body of literature include: small numbers of patients, challenges with blinding and standardization, limited adverse event reporting, and most research has been outside of the ED setting. There is great opportunity for future studies and application of OMT in the ED. There are an increasing number of emergency clinicians incorporating OMT in their practice and despite the perception of OMT requiring extended periods of time to perform, current data suggests OMT does not prolong ED visits or cost to patients. OMT is a procedure with billing codes, and courses and training in OMT are available for both osteopathic and allopathic physicians.

Conclusion: OMT is being used and has great potential in the management of acute and chronic musculoskeletal pain in the ED in addition to, or instead of pharmacologic agents, in particular as an opioid-sparing option.

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1. Introduction

Osteopathic manipulative treatment (OMT), also known as osteopathic manipulative medicine (OMM), is a set of manual techniques, developed by Dr. Andrew Taylor Still, founder of osteopathic medicine, initially limited to osteopathic medicine, for the treatment of painful conditions. This toolset is now used around the world by allopathic physicians, international osteopaths, physical therapists, chiropractors,

complementary and alternative medicine (CAM) providers, and other healthcare workers for the treatment of musculoskeletal pain [1].

Up to 52% of emergency department (ED) visits occur due to a chief complaint of pain, and among non-critical ED visits, up to 14% of pain-related visits may occur due to chronic pain [2]. Typical approaches for the management of musculoskeletal pain include the use of pharmacologic agents (e.g., acetaminophen, non-steroidal anti-inflammatory drugs [NSAIDs]), opioids, skeletal muscle relaxants, and more recently, nerve blocks. Whilst often effective these medications have the risk of adverse effects, and delay of onset in relief when given by mouth. In addition, the opioid crisis highlighted the challenge for clinicians to balance the need for pain relief with the potential for misuse, and opioid use disorder. For patients with more severe pain, non-opioid alternatives to pain control may include ketamine, nitrous oxide, intravenous

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(IV) lidocaine, neuroleptics (e.g., droperidol), and ultrasound-guided nerve blocks are excellent options, and may benefit from OMT, as adjunctive therapy, or as an alternative in less severe pain.

Non-pharmacological strategies for pain relief used in the ED setting include cryotherapy, heat therapy, acupuncture, and OMT [3]. ED patients have demonstrated a willingness to trial non-pharmacologic pain management strategies, particularly if the treating provider encourages this trial and if the subjective pain is rated as severe [4].

Though no EM-specific guidelines exist regarding the use of OMT, the American Osteopathic Association (AOA) Task Force on the Low Back Pain (LBP) Clinical Practice Guidelines recommends the use of OMT for back pain management [5]. The Academic Consortium for Integrative Medicine and Health Commentary to Health and Human Services (HHS) recommends the use of evidence-based standards for the inclusion of OMT into insurance coverage and treatment protocols [6]. Data are available that describe OMT as effective for a wide variety of chronic pain conditions, improvement in disability, and decrease in pain medication usage. Based on these data the inclusion in pain management guidelines has been developed [7]. OMT research in the ED showed a greater decrease in pain intensity and equivalent pain relief when comparing the use of OMT with that of intramuscular (IM) ketorolac for the treatment of acute musculoskeletal pain [8]. In patients with acute ankle injuries treated with OMT, there was an improved range of motion at one week compared with standard-of-care therapies [9].

Despite guideline recommendations and data on effectiveness, OMT usage in the ED is limited [10]. Perceived barriers to OMT use include lack of both patient and clinician (non-osteopathic) familiarity with OMT as an option for pain management, concerns about time and workflow incorporation, liability concerns, hospital privilege issues, fears of practicing non-standard care, concerns about reimbursement, physician disinterest, and lack of confidence in OMT skills [11,12]. Education for patients, allopathic physicians, and advanced practice providers, which includes training in OMT for clinicians, is a strategy for including OMT as an option for pain relief [13]. Most research on the effectiveness and safety of OMT is in the outpatient setting [14]. Extrapolation of these data to the ED support that OMT can be used to improve pain and not increase the length of stay. Safety is a common concern of clinicians hearing about or considering OMT. No serious adverse events from OMT have been reported to date [15,16].

OMT is reimbursable when performed by a qualified physician [17], does not increase the cost of care compared to standard treatments [18], and is an accepted modality for pain management [12]. Continuing education on OMT has been shown to increase allopathic physicians' interest in using this modality and to improve confidence in OMT skills [19]. This review serves as an update to previously published data on OMT in emergency medicine [12], and to equip the emergency clinician with the evidence base for OMT and practical information on how to incorporate this skillset into their practice.

2. Methods

For the section of this article entitled, "What can OMT be used for in the ED," the authors searched Embase, Google Scholar, and PubMed for articles using the following search terms combined with the term "osteopathic": facilitated positional release, fascial distortion model (FDM), high-velocity low-amplitude, lymphatic pump, muscle energy, myofascial release, and visceral manipulation. The following search terms were also used: balanced ligamentous tension, counterstrain, craniosacral, neuromusculoskeletal medicine (NMM), osteopathic manipulation, osteopathic manipulation treatment (OMT), osteopathic manipulative treatment (OMT), osteopathic manipulative therapy (OMT), osteopathic manipulative medicine (OMM).

The search was conducted from database inception to January 2024. Embase, Google Scholar, and PubMed yielded 656 distinct articles.

Personal files were hand searched and reference sections of retrieved articles were also used to identify articles for review. Authors evaluated systematic reviews and meta-analyses, randomized controlled trials (RCTs), prospective and retrospective studies, survey studies, case reports and series, and other narrative reviews, with preference for systematic reviews and meta-analyses, when available. References cited by selected articles were also reviewed. Only articles published in English were considered for review. A total of 656 abstracts were reviewed, and 65 articles were selected for inclusion in this narrative review. Among these, there were 13 systematic reviews and meta-analyses, 15 RCTs, 14 prospective studies, 3 retrospective studies, 8 survey studies, 2 case reports, and case series, and 10 narrative reviews or expert consensus documents.

3. Discussion

3.1. What is OMT?

OMT refers to a set of hands-on manual manipulative techniques used for the treatment of pain [5]. The term OMT is often interchanged with osteopathic manipulative medicine (OMM) [20]. This set of techniques has traditionally been used by osteopathic physicians (i.e., Doctors of Osteopathy, DOs), but has been adopted by Doctors of Medicine (MDs), osteopaths outside of the United States (US), and other healthcare workers [21]. As of 2020, there were 196,861 clinicians in 46 countries using OMT in their practice [21]. OMT was originally developed by Dr. A.T. Still, MD in the late 1800s, the founder of osteopathic medicine, with the concept based on body structure, and function are deeply intertwined, and thus possesses a unique ability to heal itself [22]. The four central tenets of osteopathic medicine include (1) the body is a unit, including mind, body, and spirit; (2) the body is capable of healing itself; (3) there is a reciprocal relationship between the body's structure and function; and (4) understanding of these first three principles allows for rational treatment to help facilitate pain relief [23].

Over many years, subtypes or categories of OMT have been developed (Table 1). A core principle is that OMT is applied to correct somatic dysfunction, an imbalance in body structures, which alters their function. This is diagnosed based on palpation and physical examination findings, including tissue texture changes, asymmetry, restriction of motion, and tenderness to palpation (TART) [24]. Techniques applied to address somatic dysfunction can be direct, in which the force applied by the clinician directly opposes the barrier or restriction in the tissue, or indirect, in which the clinician applies a force away from the barrier. Active techniques require the involvement or engagement of the patient in some way, whereas indirect techniques are passive on the part of the patient [1].

3.2. What can OMT be used for in the ED?

The highest quality evidence to date suggests that OMT is possibly more effective than comparators for improving functional status and reducing pain in both acute and chronic non-specific LBP, chronic non-specific neck pain, and chronic non-cancer pain. Limited or inconclusive evidence exists in support of the efficacy of OMT for LBP with sciatica, pediatric conditions, neurological conditions, and IBS [15]. Regardless, the evidence behind the use of OMT for conditions commonly encountered in the ED will be reviewed here.

3.2.1. Back pain

Back pain is one of the most common conditions for ED visits, including acute and chronic. Before considering OMT, severe and life-threatening conditions presenting with back pain must be considered and excluded.

The largest body of evidence supporting the use of OMT for pain management is for the treatment of back pain. The *OSTEOPATHIC* trial

Table 1
Subtypes of OMT [1,12,25]. Adapted from: Roberts A, Harris K, Outen B, et al. Osteopathic Manipulative Medicine: A Brief Review of the Hands-On Treatment Approaches and Their Therapeutic Uses. *Medicines*. 2022;9(5):33. doi:<https://doi.org/10.3390/medicines9050033>.

Type of OMT*	Description	Uses	Active or Passive?	Direct or Indirect?
BLT	The clinician applies compressive forces to “balance” dysfunction tissues, typically joints	Improve ROM, reduce restriction	Usually passive	Indirect
Counterstrain	A tender point is identified and the clinician holds that tender point while placing the patient in a position of ease for 90 s before returning to neutral	Resolve pain at a tender point	Passive	Indirect
Cranial osteopathy	The clinician uses hands-on methodologies to improve the motion of the cranium and sacrum	Balance CSF flow, improve functioning of the CNS and PNS	Either	Either
Diaphragm doming	Pressure is applied to the diaphragm beneath the rib cage	Relax the diaphragm to improve respiratory functioning; reduce back and thoracic pain	Direct	Active
FDM	Pain is categorized into one of six fascial distortions, which are diagnosed based on characteristic body language and verbal descriptions. Specific techniques are applied to address these distortions	Reduce pain, improve ROM	Either	Either
HVLA	A rapid force is applied to a joint	Reduce restriction, improve ROM	Passive	Direct
Indirect diaphragm release	The rib cage is manipulated into a position of ease	Relax the diaphragm to improve respiratory functioning; reduce back and thoracic pain	Either	Indirect
Lymphatic pump	Forces are applied to the major areas of lymphatic flow obstruction	Improve lymphatic flow	Either	Direct
Muscle energy	A muscle or muscle group is induced to relax via reciprocal inhibition	Reduce muscular pain and spasm, improve ROM	Active	Direct
Myofascial release	Forces are applied to myofascial tissues either against or away from a barrier	Reduce myofascial restrictions	Either	Either
Rib raising	The rib posterior angles are engaged until a release is palpated by the clinician	Reduce sympathetic activity via the sympathetic chain ganglia, improve chest excursion and lymphatic flow, decrease back pain	Passive	Direct

* Note that this is not a comprehensive list, as there are 40 types of OMT listed in the AACOM glossary [24]. BLT = balanced ligamentous tension, CNS = central nervous system, CSF = cerebrospinal fluid, FDM = fascial distortion model, HVLA = high-velocity low-amplitude, PNS = peripheral nervous system, ROM = range of motion.

published in 2013, a randomized, double-blind, sham-controlled trial, found a large effect size for OMT in patients with higher baseline pain ratings as well as clinically significant improvement in functional status in the OMT group [26]. Systematic review and meta-analysis data published the following year found moderate-quality evidence that OMT significantly improves functional status and pain in patients with nonspecific acute and chronic LBP and in postpartum back pain. Low-quality evidence shows functional and pain improvement in pregnant patients with LBP [27]. A more recent systematic review and meta-analysis on the effectiveness of OMT for LBP in pregnant and postpartum women identified similar results [28].

A 2023 multi-center, single-blind, randomized clinical study compared visceral manipulation plus physical therapy versus sham visceral manipulation plus physical therapy for the treatment of LBP. This study showed superiority in the visceral manipulation group for scores of pain, functional disability, and depression immediately after treatment, which were sustained at four weeks [29]. In 2021 the *Journal of the American Medical Association (JAMA)* published an RCT. Two hundred subjects were randomized to the OMT arm and were compared to 200 subjects randomized to sham OMT for the treatment of subacute and chronic LBP. OMT was found to be statistically superior to sham OMT for LBP-specific activity limitation at three months; however, the clinical significance of this finding is unclear [30]. In 2022, a prospective comparison study evaluating myofascial release versus electrotherapy for non-specific LBP found improvement in pain for both groups but no significant difference between the modalities [31]. A prospective, nonrandomized, controlled, parallel-group trial published in 2017 showed a non-statistically significant improvement in pain and functional status with decreased oral medication use in the group treated with the FDM compared with standard-of-care [32]. A 2023 retrospective cohort study conducted within the Pain Registry for Epidemiological, Clinical, and Interventional Studies and Innovation (PRECISION) included 1,358 adults with chronic LBP and found that OMT was associated with improved pain and functional outcomes [33]. In summary, this body of literature suggests OMT may be effective for the treatment of acute, subacute, and chronic LBP.

3.2.2. Headache

A large body of literature exists on the use of OMT for headache management. In 2024, a systematic review and meta-analysis evaluating craniosacral therapy for headache disorders found that this modality leads to clinically unimportant effects on pain intensity, and no significant effects were observed in headache effect or disability. These conclusions were made with very low certainty due to the quality of the studies included [34].

A systematic review and meta-analysis published in 2020, which included six RCTs, found that spinal manipulative therapy decreased migraine days, though the effect size was small and there was a great deal of heterogeneity among studies [35]. Another systematic review and meta-analysis published in 2020 evaluated the use of craniosacral therapy for chronic pain conditions, including headache and migraines, and found that craniosacral therapy had greater post-treatment effects than standard-of-care and sham modalities for disability and pain intensity, and these effects persisted at six months when compared to sham therapies [36].

A 2017 systematic review found that OMT holds potential for headache management but with a low level of evidence [37]. In 2012, a systematic review evaluating the effects of craniosacral therapy identified positive outcomes for pain reduction, but there was heterogeneity in study quality [38]. In sum, there is mixed high-level evidence regarding the effectiveness of OMT for headache disorders, though most data suggest its potential benefit.

In 2022 a scoping review analyzed 15 RCTs, one pilot study, and one case series that evaluated the use of OMT for the treatment of headaches (both tension and migraine). All studies included reported significant headache improvement with the use of OMT, and myofascial release was the most commonly utilized subtype of OMT [39]. A small single-arm pilot trial published in 2020, which was not included in the aforementioned systematic reviews and meta-analyses, found significant pain relief for tension-type headaches with the use of craniosacral therapy [40].

Another single-blind randomized placebo-controlled pilot study conducted in a primary care setting in 2014 compared OMT versus

standard-of-care for the treatment of tension headaches. There was a significant reduction in headache frequency compared with the control group, lasting up to three months post-treatment in the OMT group [41]. A 2021 controlled pilot study evaluating OMT effectiveness for the treatment of post-concussive headaches identified a significant improvement in immediate pain relief in the OMT group versus the control [42]. A case report exists outlining the resolution of occipital neuralgia after the use of OMT [43]. Thus, the literature suggests the potential effectiveness of OMT for a wide variety of headache types that may present to the ED.

3.2.3. Neck pain

Systematic review data suggests OMT is effective for the treatment of chronic neck pain [15]. In a 2022 systematic review and meta-analysis of five RCTs, with low risk of bias but low-level evidence, OMT provided significant improvements in pain and functional status in patients with non-specific neck pain [44]. In 2020 a systematic review and meta-analysis of RCTs found significant effects of craniosacral therapy for the treatment of chronic pain conditions, including neck pain, and these effects lasted up to six months [45]. A randomized, double-blind, placebo-controlled pilot study published in 2018 evaluated the use of visceral manipulation for patients with functional dyspepsia and nonspecific neck pain. Though the cervical range of motion did not change, pain levels and trapezius muscular spasm (assessed via electromyography) improved with visceral manipulation [46]. A 2016 RCT comparing muscle energy with static stretching for mechanical neck pain identified pain and functional improvement in the muscle energy group [47]. Also in 2016, a randomized trial found clinically significant improvement in chronic neck pain patients treated with craniosacral therapy when compared with sham control. These patients also had substantial improvements in pain and quality of life measured at 20 weeks post-treatment [36]. In light of the evidence available, OMT seems to present a viable option for pain relief in patients with cervicalgia.

3.2.4. Extremity pain

OMT has been used to treat a wide variety of extremity pain complaints. Several studies suggest the effectiveness of OMT for the treatment of plantar fasciitis, including a single-blind RCT employing the use of counterstrain [48] and a pilot study [49] followed by a single-arm prospective effectiveness study using the FDM [50]. Another single-arm prospective effectiveness study found that muscle energy technique improved range of motion and function in patients with adhesive capsulitis [51]. Case report data also suggests the effectiveness of the FDM for the improvement of pain and range of motion in adhesive capsulitis [52]. One randomized, double-blind, placebo-controlled study evaluated the use of manual therapy for the treatment of epicondylitis and found that patients in the experimental group demonstrated improved grip strength, pain intensity, function, and activity limitation secondary to pain compared with placebo [53]. A single-blind trial in patients with carpal tunnel syndrome found that OMT led to patient-perceived improvement in symptoms and function [54]. For patients with patellofemoral pain syndrome, a randomized controlled single-blind pilot study found that pain was significantly improved with OMT compared with patients in the placebo arm [55].

3.2.5. Generalized chronic pain

Chronic pain is a common presentation to the ED (10–16% of visits) [2,56]. These presentations can be challenging for both the patient and clinician, particularly in providing symptomatic relief for chronic pain. OMT may provide benefits to these patients.

A 2018 survey study of ED physicians and trainees, nurses, advanced practice providers, and paramedics noted provider dissatisfaction with treating chronic pain patients in the ED; however, additional training in the management of this condition was associated with increased provider confidence [57]. The use of OMT in ED clinical practice presents an

opportunity to intervene in chronic pain, improving both patient symptoms and clinician satisfaction with the care provided.

A systematic review and meta-analysis evaluating the efficacy of craniosacral therapy published in 2020 found small to medium-size pooled effects immediately after treatment for pain intensity, functional disability, and physical quality of life [36]. Another systematic review published the same year evaluating the efficacy of manual therapy for fibromyalgia patients found that there was moderate evidence to suggest reduced pain intensity in patients treated with OMT [58].

Several RCTs [59–63] and a pilot study [64] conducted in patients with fibromyalgia have noted improvements in pain intensity, functional disability, and physical quality of life in patients treated with OMT [36]. The German fibromyalgia consumer reports list osteopathy as the ninth most effective management strategy for the treatment of fibromyalgia [65]. A systematic review published in 2020, which evaluated 16 RCTs, found that OMT is effective for chronic, non-cancer pain based on moderate quality evidence [66]. In older patients with osteoporosis, quality of life was improved with OMT compared with sham OMT [67].

3.3. Research Limitations

Research has not been emphasized as a core tenant within the field of osteopathic medicine, as osteopathy has been traditionally focused on providing primary care (particularly in underserved areas) [68,69]. In light of this, much of the modern research that has been conducted regarding the efficacy of OMT has been conducted by osteopaths outside of the US, as osteopaths in other countries are often required to complete a thesis prior to graduation from their programs [70]. Data has shown that OMT efficacy is the same regardless of whether it is performed by licensed osteopathic physicians or international osteopaths [71]. In light of this, data from osteopathic studies conducted abroad can likely be extrapolated to support the performance of OMT by US-based physicians.

Some of the obvious challenges faced by osteopathic research include the difficulty of standardizing treatments across patients in randomized trials. Just like humans differ drastically in their shape, size, and appearance, somatic dysfunction differs from person to person and thus requires a customized approach.

Triple blinding is not possible in OMT studies, since the clinician treating the patient needs to make a diagnosis of somatic dysfunction in order to address their pain appropriately. In addition, it is challenging to develop sham treatments or placebos for OMT. Patients know whether a clinician has laid hands on them, so being on a “waiting list” is unlikely to function similarly to a placebo pill administered in a pharmacological trial. Light touch or comparisons of OMT combined with physical therapy versus physical therapy alone may serve as better options for comparison arms [69].

The robustness of OMT studies is often challenged by a lack of adverse event reporting, small participant numbers, a lack of comparison arms, uneven treatment groups, and a lack of randomization or blinding [15]. Finally, most OMT studies to date have been conducted in the outpatient setting, making it challenging to extrapolate research data to the unique environment and workflow of the ED.

3.4. Is there time to do OMT in the ED?

Only 55% of osteopathic physicians use OMT in their practice occasionally, and 28% regularly [10]. Currently, 10% of emergency physicians in the US are osteopathic physicians and increasing [72]. However, it is unknown how many of these emergency physicians use OMT in the ED.

A retrospective chart review conducted in a single large community academic ED from 2005 to 2013 found that OMT was being performed daily in the ED, most commonly for back pain and muscular spasms [14]. Of note, this was a department with an osteopathic residency,

largely accounting for the widespread use [14]. OMT use is likely less common in most EDs; however, there is no existing data on this.

In the experience of the osteopathic physician authors of this review, OMT can be incorporated daily into the ED workflow, like any other standard bedside procedure. The application of OMT may take as little as 2–6 min [12] and can be used to treat a wide variety of chief complaints.

Inpatient studies have demonstrated high rates of patient satisfaction – 94% of patients felt that OMT was helpful for their recovery and 98% would recommend it for other patients admitted to the hospital [73]. In light of the rapidity with which these techniques can be performed and the potential for improving patient satisfaction, emergency clinicians should strongly consider incorporating OMT into their workflow.

3.5. What are the risks of OMT?

This is a common concern of clinicians of OMT. An overview of systematic reviews and meta-analyses conducted in 2022 found no serious adverse events from OMT have been reported to date [15]. However, the overall safety event reporting in OMT RCTs is not robust.

Events that have been reported in RCT data include stiffness and fatigue [15]. Common side effects noted specifically after treatment with the FDM can include localized bruising, swelling, and soreness [25]. A randomized, single-blind crossover study evaluating the efficacy of OMT for LBP stratified by hydration status found that patient ratings of their pain, as well as the number and severity of somatic dysfunctions and asymmetries on osteopathic structural examination, were all improved in the well-hydrated state [74]. In light of this data, patients treated with OMT in the ED should receive instructions to drink plenty of water after treatment, particularly if they report poor water intake over the days preceding their ED visit.

3.6. Is OMT billable?

OMT is a procedure that can be billed in the ED and is reimbursed by Medicare, Medicaid, and private insurance. Elements needed to bill for OMT include the following: the medical necessity for the OMT (i.e., indication), specific somatic dysfunction (including TART changes), number of body regions, the technique(s) utilized, and the outcome (i.e., subjective improvement in pain and objective improvement in TART changes). ED clinicians should select the International Classification of Disease (ICD)-10 code that correlates with the body region treated; for example, somatic dysfunction of the cervical region. In the US, there are Current Procedural Terminology (CPT) codes that correspond to the number of body regions treated: 98925 for 1–2 body regions, 98,926 for 3–4 body regions, 98,927 for 5–6 body regions, 98,928 for 7–8 body regions, and 98,929 for 9–10 body regions [12,75]. Based on the experience of the authors, the ED clinician should discuss the development of an OMT template for their electronic medical record with their billing and coding department to ensure that all necessary elements are included and to simplify the documentation process to save time during busy ED shifts.

3.7. Where can ED physicians learn or refresh OMT skills?

There are numerous extant courses designed to help osteopathic physicians refresh their OMT skills, or allopathic physicians to learn OMT. The American Academy of Osteopathy (AAO) offers live continuing medical education (CME) courses throughout the year and at the AAO Convocation conference on a yearly basis [76]. While not an exhaustive list, Ohio University Heritage College of Osteopathic Medicine offers an “Osteopathic Medicine for All” CME course [77]; Michigan State University offers a Certification in Functional Manual Medicine open to physical therapists (PTs) and physicians (MD or DO) [78]; A.T. Still University hosts an “Introduction to OMM for allopathic physicians

and osteopathic physicians” [79]; and the FDM Academy teaches OMT courses that are open to osteopathic physicians, allopathic physicians, advanced practice providers, PTs, PT assistants, occupational therapists, athletic trainers, chiropractors, naturopaths, dentists, medical students, and rolfers [80]. Various academic institutions now offer a rotation in OMT for MD residents and fellows [19,81]. Thus, opportunities for osteopathic physicians to refresh their skills or for allopathic physicians to acquire a skill set in OMT are abundant.

4. Conclusion

OMT is a hands-on, non-pharmacologic modality for the treatment of musculoskeletal pain for which there is a large body of evidence to suggest safety and efficacy. Specifically, OMT may be used for the management of both acute and chronic back pain, headaches, neck pain, and extremity pain, as well as generalized chronic pain. There is time to perform OMT during an ED shift, it is a billable procedure, and there are numerous CME courses available. This tool should be considered by emergency clinicians as part of their ED treatment regimen for pain control.

CRediT authorship contribution statement

J. Pelletier: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Writing – original draft, Writing – review & editing. **T. Capistrant:** Conceptualization, Data curation, Methodology, Writing – original draft, Writing – review & editing, Formal analysis. **S.P. Nordt:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Dr. Todd Capistrant reports a relationship with Fascial Distortion Model (FDM) Academy that includes: employment. Dr. Todd Capistrant reports a relationship with Handspring Publishing Limited that includes: book and textbook authorship. Dr. Jessica Pelletier reports a relationship with Fascial Distortion Model (FDM) Academy that includes: travel reimbursement. Dr. Todd Capistrant reports a relationship with American Fascial Distortion Model Academy (AFDMA) that includes: board membership. Dr. Jessica Pelletier reports a relationship with American Fascial Distortion Model Academy (AFDMA) that includes: board membership. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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