

## **OSTEOPATHIC MEDICINE CLINICAL TOOL**

Osteopathic medicine is an important manipulative therapy, widely used by doctors of osteopathy (DOs) throughout the United States. This clinical tool describes osteopathy's history and some of its key principles and techniques. It also reviews the evidence for the use of osteopathic manipulative treatment (OMT) on a number of common conditions.

### **HISTORY**

Osteopathic medicine was founded in 1872 by Dr. Andrew Taylor Still. His focus was on developing a system of medical care that would promote the body's innate ability to heal itself. He called this system of medicine osteopathy.<sup>1</sup> In 1892, Dr. Still opened the American School of Osteopathy in Kirksville, MO. As of 2014, there are 26 osteopathic medical schools in the United States.<sup>1</sup> Each school is accredited by the American Osteopathic Association's Commission on Osteopathic College Accreditation, which is recognized by the U.S. Department of Education.

The osteopathic curriculum for DOs in training involves four years of academic study, similar to what their MD colleagues receive, in addition to 150 to 200 hours of training in OMT, which may also be referred to as osteopathic manipulative medicine (OMM). Osteopathic physicians subscribe to the practice of treating the whole person and receive extensive training in structure and function of the musculoskeletal system. Approximately 50% of all osteopathic physicians go on to utilize OMT in their practice.<sup>2</sup>

Osteopathic graduates can choose to complete an osteopathic, allopathic, or dually accredited residency and can choose to become board certified through allopathic licensure, osteopathic licensure, or both. Today, more than 20% of medical students in the United States are training in osteopathic programs.<sup>1</sup> Osteopathic physicians can become certified to practice in any specialty; however, a large percentage choose primary care. In fact, approximately 65% of DOs are primary care physicians.<sup>2</sup>

### **THEORY**

The four tenets of osteopathic medicine include the following:<sup>3</sup>

1. The body is a unit.
2. The body possesses self-regulatory mechanisms.
3. Structure and function are reciprocally interrelated.
4. Rational treatment is based on an understanding of body unity, self-regulatory mechanisms, and the interrelationship of structure and function.

## **TECHNIQUE**

The practice of OMT involves the identification of “somatic dysfunctions,” which are improperly functioning components of the body’s framework system. These components include skeletal and myofascial structures and related vascular, lymphatic, and neural elements. Evaluation is accomplished through palpation of tender spots, identification of asymmetric bony landmarks and restricted joint motion, and/or abnormal tissue texture. Once a somatic dysfunction has been identified, various techniques are utilized to treat the area of dysfunction.

### **Examples of various osteopathic manipulative techniques<sup>2</sup>**

1. **High-velocity low-amplitude (HVLA).** The DO uses HVLA thrust techniques to push through a joint restriction and restore the range of motion of that joint.
2. **Springing techniques.** The physician repetitively and gently rocks or pulses movement against the restriction of a joint to restore the range of motion of that joint.
3. **Muscle energy technique.** The osteopath asks the patient to pull against resistance the osteopath provides to rebalance the muscles around the dysfunctional joint.
4. **Soft tissue techniques.** The physician kneads, stretches, or applies inhibitory pressure to relax soft tissues.
5. **Strain-counterstrain techniques.** These techniques involve palpating tender points and putting joints and muscles into a position to take away the pain palpated in these areas. The position is held until the restriction releases (usually within approximately 90 seconds). This technique retrains the nervous system to relax the muscle via the Golgi tendon reflex.
6. **Facilitated positional release.** In these techniques, the joint or tissue is taken to the position of most comfort. Traction or compression is applied to facilitate the release of tissue tension.
7. **Still technique.** This technique is set up like facilitated positional release, but after traction or compression is applied, the joint is moved through its restrictive barrier.
8. **Cranial osteopathy.** This gentle, manual technique emphasizes balancing the tension of the dura mater of the brain and working with subtle rhythmic pulsations of the cerebrospinal fluid to correct disturbances in the neuromuscular system.
9. **Lymphatic techniques.** Various techniques that generally promote the movement of the lymphatic fluid to promote healing. This is often used for lymphedema.

## **RISKS**

Common transient effects including local pain, headache, tiredness or fatigue, and radiating pain occur in 30% to 61% of patients.<sup>4,5</sup> These symptoms begin within four hours and usually resolve within 24 hours. One systematic review found that worsening disk disease occurs in less than 1 in 3.7 million patients.<sup>4</sup> One study found that 4.3% of subjects experienced neck stiffness after initial spinal manipulation, and it disappeared for all cases after two weeks.<sup>6</sup> Spinal manipulation was noted to have a risk of stroke of 5 per 100,000 manipulations.<sup>7</sup> Proper practitioner training minimizes these risks.

## **Evidence for Various Conditions**

OMT can be used for an array of conditions. This section describes its use in areas where the most research has been done. Most studies of the risk of spinal manipulation do not distinguish between which practitioners do the manipulation, be it osteopaths, chiropractors, physical therapists, or other practitioners. Some of the studies described below focused on spinal manipulation therapy in general. If this is the case, it is noted.

### **Low back pain (LBP)**

All major international guidelines for LBP (e.g., from the British National Institute for Health and Care Excellence, the American College of Physicians, the American Pain Society, European Guidelines, the Italian Clinical Guidelines, and the Belgian Healthcare Knowledge Centre) recommend SMT—as performed by osteopaths, chiropractors, and physical therapists—as a treatment option for acute and chronic symptoms. Clinical practice guidelines recommend manipulation when patients have failed to improve with usual care or when they are preferred by patients.<sup>8</sup> Patients most likely to respond to SMT include those with:

- Duration of pain less than 16 days,
- Lower extremity symptoms that are not distal to the knees,
- Low levels of fear avoidance,
- One or more hypomobile lumbar segments on palpation, and
- One or both hips with internal rotation range of motion greater than 35 degrees.<sup>9,10</sup>

A 2013 systematic review of osteopathic intervention for chronic, nonspecific low back pain found that only 2 of 809 papers met inclusion criteria.<sup>11</sup> Of these, one concluded that osteopathic intervention was similar to sham intervention, and the other found it had a similar level of effect as for exercise and physiotherapy. A 2013 update of a Cochrane review concluded that SMT “...is no more effective for acute low back pain than inert interventions, sham SMT, or as adjunct therapy,” noting that the number of studies focusing on this area is currently low and that more research is needed.<sup>12</sup> A 2012 “overview of systematic reviews” drew the same conclusion.<sup>13</sup>

However, one OMT-specific systematic review of six randomized controlled trials (RCTs) concluded that OMT significantly reduces low back pain versus active treatments, placebo, or no treatment,<sup>14</sup> and in 2013, the author maintained in a subsequent review that the findings remain robust.<sup>15</sup> Other OMT-specific studies have shown that OMT decreases use of pain medications,<sup>16</sup>

improves physical and psychological outcomes,<sup>17</sup> and is more effective for acute than chronic low back pain.<sup>14</sup>

### **Neck pain**

An RCT of 41 patients receiving OMT for chronic neck pain found significant reduction in pain intensity at 12 weeks follow-up, as compared to those receiving sham treatment.<sup>18</sup> Another RCT of 201 patients receiving OMT found improved short-term physical and long-term psychological outcomes as compared to usual care.<sup>17</sup> An RCT of 272 patients found that SMT was more effective than medication for short-term and long-term pain in subacute and acute neck pain.<sup>19</sup> Still another RCT of 58 patients compared OMT and intramuscular ketorolac for acute neck pain in the emergency department. Both groups had significant pain reduction ( $P < .001$ ), but the OMT group showed a greater decrease in pain intensity ( $P = .02$ ).<sup>20</sup>

### **Headaches**

A study of 80 patients found that compared with those receiving massage therapy, the group receiving SMT (performed by chiropractors, osteopaths, and physical therapists) had greater improvements in pain and disability lasting up to 24 weeks.<sup>21</sup> Craniosacral therapy is thought to be effective for migraine and tension headaches.<sup>22</sup> Another systematic review of seven RCTs concluded that massage therapy, physical therapy, relaxation, and chiropractic SMT might be as effective as propranolol and topiramate in the prophylactic treatment of migraine headaches.<sup>23</sup> One study compared results of cervical manipulation and mobilization by a chiropractor, physical therapist, and physician. All groups showed improvement as far out as 20 months, but no statistically significant difference was found between the three groups.<sup>24</sup>

Guidelines developed after a systematic review of trials published through 2009 including 21 articles concluded the following:<sup>25</sup>

- For patients with episodic or chronic migraine headaches, spinal manipulation and massage are recommended.
- For patients with episodic tension-type headaches, spinal manipulation cannot be recommended.
- For patients with chronic tension-type headaches, a recommendation cannot be made for or against the use of spinal manipulation.

One OMT-specific RCT in 63 patients found that direct and indirect myofascial release techniques are more effective than the control intervention for tension headache.<sup>26</sup> Another OMT-specific RCT of 29 patients found that participants who did relaxation exercises and received three osteopathic treatments had significantly more days per week without headaches than those who did only the relaxation exercises.<sup>27</sup> A retrospective review of the medical records of 631 patients between 2002 and 2007 found that patients treated with OMT at an osteopathic clinic had a 50% reduction in cost compared to those who received conventional hospital care.<sup>28</sup>

### **Pneumonia**

Numerous studies indicate that OMT can be a useful adjunct in the care of patients with pneumonia.<sup>29</sup> The most common technique used to treat pneumonia is the lymphatic pump technique (LPT), which is done with the intention of enhancing flow through the lymphatics and activating the immune system.<sup>30</sup> Knott and colleagues demonstrated that both thoracic and abdominal LPT increased thoracic duct lymphatic flow in dogs.<sup>31</sup> Hodge and colleagues found that the LPT stimulates the release of immune cells from lymph nodes that directly enter the lymphatic circulation.<sup>32</sup> The Multicenter Osteopathic Pneumonia Study in the Elderly evaluated 406 patients over age 50 with pneumonia. Protocol analysis found decreased mortality rates and duration of antibiotics treatment in the OMT group as compared to the group that received conventional care.<sup>33</sup>

### **Pregnancy**

An RCT of 68 patients found that osteopathic manual treatment has “medium to large” treatment effects in preventing progressive, back-specific dysfunction during the third trimester of pregnancy.<sup>34</sup> Another study of 144 patients studied the effects of OMT in the third trimester of pregnancy and found that back-specific function deteriorated significantly less in the OMT group compared to the group receiving usual care.<sup>35</sup> A 1982 RCT found decreased narcotic medication use during labor in the thoracic OMT treatment group. Length of labor was not affected.<sup>36</sup> A more recent RCT compared 160 women who received OMT throughout pregnancy to 161 women who did not. The study demonstrated decreased frequency of meconium-stained amniotic fluid ( $P < .001$ ) and decreased occurrence of preterm delivery ( $P < .01$ ).<sup>37</sup>

#### **Tips about Osteopathic Medicine from an Integrative Medicine Clinician**

While I am not a DO myself, I have the privilege of having several practice colleagues who are. I never cease to be amazed by how often they can make musculoskeletal (and other) problems go away, even when patients have been dealing with their symptoms for years. I appreciate that DOs have a number of different techniques at their disposal. My patients tell me they often prefer OMT to other types of manipulative therapies that rely more heavily on high-velocity thrusts.

Some of my favorite indications for OMT:

- Any kind of spine pain—back, neck, etc.
- Sacroiliac joint issues
- Pain in the ribs
- Back pain in pregnancy (many of the moms in my practice swear by OMT prior to delivery to make things go more smoothly)
- Headaches (craniosacral therapy can often help people with chronic sinus problems)
- Recurrent ear infections

...And the list goes on and on. Check in your facility to see if there are DOs who offer OMT. It is safe, and it often helps a great deal.

### Additional Resource

Rakel D, Johnson M. Suboccipital Release Technique. Department of Family Medicine and Community Health, University of Wisconsin School of Medicine and Public Health website. Available at <http://www.fammed.wisc.edu/suboccipital-release-technique/>. Accessed August 8, 2016.

### Whole Health Library Website

Interested in learning more about Whole Health?

<http://projects.hsl.wisc.edu/SERVICE/>

*This clinical tool was written by Amy Bauman, DO, Clinical Assistant Professor and integrative medicine family physician in the Department of Family Medicine and Community Health, University of Wisconsin-Madison School of Medicine and Public Health. Original material written in 2014, updated 2016.*

### References

1. American Association of Colleges of Osteopathic Medicine. What is osteopathic medicine? <http://www.aacom.org/about/osteomed/Pages/default.aspx>. Accessed September 17, 2014.
2. Earley BE, Luce H. An introduction to clinical research in osteopathic medicine. *Prim Care*. 2010;37(1):49-64.
3. Seffinger M, King H, Ward R, Jones J, Rogers F, Patterson M. Osteopathic philosophy. In: Chila A, ed. *Foundations of Osteopathic Medicine*. 3rd ed. Philadelphia: Wolters Kluwer; 2011.
4. Gibbons P, Tehan P. HVLA thrust techniques: What are the risks? *Int J Osteopath Med*. 2006;9(1):4-12.
5. Senstad O, Leboeuf-Yde C, Borchgrevink C. Frequency and characteristics of side effects of spinal manipulative therapy. *Spine (Phila Pa 1976)*. 1997;22(4):435-440.
6. Boline PD, Kassak K, Bronfort G, Nelson C, Anderson AV. Spinal manipulation vs. amitriptyline for the treatment of chronic tension-type headaches: a randomized clinical trial. *J Manipulative Physiol Ther*. 1995;18(3):148-154.
7. Gouveia LO, Castanho P, Ferreira JJ. Safety of chiropractic interventions: a systematic review. *Spine (Phila Pa 1976)*. 2009;34(11):E405-E413.
8. Stevens J, Saper R. Chronic low back pain. In: Rakel D, ed. *Integrative Medicine*. 3rd ed. Philadelphia: Saunders; 2010.
9. Childs JD, Fritz JM, Flynn TW, et al. A clinical prediction rule to identify patients with low back pain most likely to benefit from spinal manipulation: a validation study. *Ann Intern Med*. 2004;141(12):920-928.
10. Beneciuk JM, Bishop MD, George SZ. Clinical prediction rules for physical therapy interventions: a systematic review. *Phys Ther*. 2009;89(2):114-124.
11. Orrock PJ, Myers SP. Osteopathic intervention in chronic non-specific low back pain: a systematic review. *BMC Musculoskelet Disord*. 2013;14(1):129.

12. Rubinstein SM, Terwee CB, Assendelft WJ, de Boer MR, van Tulder MW. Spinal manipulative therapy for acute low back pain: an update of the cochrane review. *Spine (Phila Pa 1976)*. 2013;38(3):E158-E177.
13. Posadzki P. Is spinal manipulation effective for pain? An overview of systematic reviews. *Pain Med*. 2012;13(6):754-761.
14. Licciardone JC, Brimhall AK, King LN. Osteopathic manipulative treatment for low back pain: a systematic review and meta-analysis of randomized controlled trials. *BMC Musculoskelet Disord*. 2005;6(1):43.
15. Licciardone J. Systematic review and meta-analysis conclusions relating to osteopathic manipulative treatment for low back pain remain valid and well accepted. *J Bodyw Mov Ther*. 2013;17(1):2-4.
16. Andersson GB, Lucente T, Davis AM, Kappler RE, Lipton JA, Leurgans S. A comparison of osteopathic spinal manipulation with standard care for patients with low back pain. *N Engl J Med*. 1999;341(19):1426-1431.
17. Williams NH, Wilkinson C, Russell I, et al. Randomized osteopathic manipulation study (ROMANS): pragmatic trial for spinal pain in primary care. *Fam Pract*. 2003;20(6):662-669.
18. Schwerla F, Bischoff A, Nurnberger A, Genter P, Guillaume JP, Resch KL. Osteopathic treatment of patients with chronic non-specific neck pain: a randomised controlled trial of efficacy. *Forsch Komplementmed*. 2008;15(3):138-145.
19. Bronfort G, Evans R, Anderson AV, Svendsen KH, Bracha Y, Grimm RH. Spinal manipulation, medication, or home exercise with advice for acute and subacute neck pain: a randomized trial. *Ann Intern Med*. 2012;156(1\_Part\_1):1-10.
20. McReynolds TM, Sheridan BJ. Intramuscular ketorolac versus osteopathic manipulative treatment in the management of acute neck pain in the emergency department: a randomized clinical trial. *J Am Osteopath Assoc*. 2005;105(2):57-68.
21. Haas M, Spegman A, Peterson D, Aickin M, Vavrek D. Dose response and efficacy of spinal manipulation for chronic cervicogenic headache: a pilot randomized controlled trial. *Spine (Phila Pa 1976)*. 2010;10(2):117-128.
22. Upledger JE. Craniosacral therapy. *Phys Ther*. 1995;75(4):328-330.
23. Chaibi A, Tuchin PJ, Russell MB. Manual therapies for migraine: a systematic review. *J Headache Pain*. 2011;12(2):127-133.
24. Parker GB, Tupling H, Pryor DS. A controlled trial of cervical manipulation of migraine. *Aust N Z J Med*. 1978;8(6):589-593.
25. Bryans R, Descarreaux M, Duranleau M, et al. Evidence-based guidelines for the chiropractic treatment of adults with headache. *J Manipulative Physiol Ther*. 2011;34(5):274-289.
26. Ajimsha M. Effectiveness of direct vs indirect technique myofascial release in the management of tension-type headache. *J Bodyw Mov Ther*. 2011;15(4):431-435.
27. Anderson RE, Seniscal C. A comparison of selected osteopathic treatment and relaxation for tension-type headaches. *Headache*. 2006;46(8):1273-1280.
28. Schabert E, Crow WT. Impact of osteopathic manipulative treatment on cost of care for patients with migraine headache: a retrospective review of patient records. *J Am Osteopath Assoc*. 2009;109(8):403-407.
29. Yao S, Hassani J, Gagne M, George G, Gilliar W. Osteopathic manipulative treatment as a useful adjunctive tool for pneumonia. *J Vis Exp*. 2014(87):e50687-e50687.
30. Hodge LM. Osteopathic lymphatic pump techniques to enhance immunity and treat pneumonia. *Int J Osteopath Med*. 2012;15(1):13-21.
31. Knott EM, Tune JD, Stoll ST, Downey HF. Increased lymphatic flow in the thoracic duct during manipulative intervention. *J Am Osteopath Assoc*. 2005;105(10):447-456.
32. Hodge LM, Bearden MK, Schander A, et al. Lymphatic pump treatment mobilizes leukocytes from the gut associated lymphoid tissue into lymph. *Lymphat Res Biol*. 2010;8(2):103-110.

33. Noll DR, Degenhardt BF, Morley TF, et al. Efficacy of osteopathic manipulation as an adjunctive treatment for hospitalized patients with pneumonia: a randomized controlled trial. *Osteopath Med Prim Care*. 2010;4(1):1-13.
34. Licciardone JC, Aryal S. Prevention of progressive back-specific dysfunction during pregnancy: An assessment of osteopathic manual treatment based on Cochrane Back Review Group criteria. *J Am Osteopath Assoc*. 2013;113(10):728-736.
35. Licciardone JC, Buchanan S, Hensel KL, King HH, Fulda KG, Stoll ST. Osteopathic manipulative treatment of back pain and related symptoms during pregnancy: a randomized controlled trial. *Am J Obstet Gynecol*. 2010;202(1):43. e41-43. e48.
36. Guthrie R, Martin R. Effect of pressure applied to the upper thoracic (placebo) versus lumbar areas (osteopathic manipulative treatment) for inhibition of lumbar myalgia during labor. *J Am Osteopath Assoc*. 1982;82(4):247-251.
37. King HH, Tettambel MA, Lockwood MD, Johnson KH, Arsenault DA, Quist R. Osteopathic manipulative treatment in prenatal care: a retrospective case control design study. *J Am Osteopath Assoc*. 2003;103(12):577-582.