**Article Full Title**

Osteopathic manipulative treatment for low back pain: a systematic review and meta-analysis of randomized controlled trials

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**Paper Abstract**

Background: Osteopathic manipulative treatment (OMT) is a distinctive modality commonly used by osteopathic physicians to complement their conventional treatment of musculoskeletal disorders. Previous reviews and meta-analyses of spinal manipulation for low back pain have not specifically addressed OMT and generally have focused on spinal manipulation as an alternative to conventional treatment. The purpose of this study was to assess the efficacy of OMT as a complementary treatment for low back pain. Methods: Computerized bibliographic searches of MEDLINE, EMBASE, MANTIS, OSTMED, and the Cochrane Central Register of Controlled Trials were supplemented with additional database and manual searches of the literature. Six trials, involving eight OMT vs control treatment comparisons, were included because they were randomized controlled trials of OMT that involved blinded assessment of low back pain in ambulatory settings. Data on trial methodology, OMT and control treatments, and low back pain outcomes were abstracted by two independent reviewers. Effect sizes were computed using Cohen's d statistic and meta- analysis results were weighted by the inverse variance of individual comparisons. In addition to the overall meta-analysis, stratified meta-analyses were performed according to control treatment, country where the trial was conducted, and duration of follow-up. Sensitivity analyses were performed for both the overall and stratified meta-analyses. Results: Overall, OMT significantly reduced low back pain (effect size, -0.30; 95% confidence interval, - 0.47 – -0.13; P = .001). Stratified analyses demonstrated significant pain reductions in trials of OMT vs active treatment or placebo control and OMT vs no treatment control. There were significant pain reductions with OMT regardless of whether trials were performed in the United Kingdom or the United States. Significant pain reductions were also observed during short-, intermediate-, and long-term follow- up. Conclusion: OMT significantly reduces low back pain. The level of pain reduction is greater than expected from placebo effects alone and persists for at least three months. Additional research is warranted to elucidate mechanistically how OMT exerts its effects, to determine if OMT benefits are long lasting, and to assess the cost-effectiveness of OMT as a complementary treatment for low back pain.

**NIH Risk of Bias Tool**

Quality Assessment of Systematic Reviews and Meta-Analyses

**Is the review based on a focused question that is adequately formulated and described?**

Yes

**Were eligibility criteria for included and excluded studies predefined and specified?**

Yes

**Did the literature search strategy use a comprehensive, systematic approach?**

Yes

**Were titles, abstracts, and full-text articles dually and independently reviewed for inclusion and exclusion to minimize bias?**

Yes

**Was the quality of each included study rated independently by two or more reviewers using a standard method to appraise its internal validity?**

Yes

**Were the included studies listed along with important characteristics and results of each study?**

**Was publication bias assessed?**

Cannot Determine, Not Reported, Not Applicable

**Was heterogeneity assessed? (This question applies only to meta-analyses.)**

Yes

**Key Finding #1**

OMT is a distinctive modality that significantly reduces low back pain.

**Key Finding #2**

The level of pain reduction is greater than expected from placebo effects alone and persists for at least three months.

**Please provide your summary of the paper**

Spinal manipulation and osteopathic manipulation techniques are variable across clinicians and settings making it difficult to generalize findings in research. The meta-analysis and systematic review were limited to studies of English language literature and to randomized controlled trials of OMT done by osteopaths, osteopathic physicians, or osteopathic trainees in a blinded, ambulatory setting. The results of the study conclude that osteopathic manipulation treatment has a statistically significant effect on reducing low back pain. OMT has shown reduction in pain vs. placebo and twice as much reduction vs. no treatment. For the meta-analysis portion of the paper, the study found that even in the best scenario and the worst scenario, OMT was statistically significant.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

Although the use of osteopathic manipulation therapy may be considered placebo, clinicians should be trained in this category to assist in pain reduction. The study demonstrated that OMT is more effective than placebo and could be a helpful technique in pain reduction for patients. This may allow for a decrease in drug prescriptions used to control pain. Additionally, this study focused on the effects of OMT on pain because other characteristics were inconsistently reported. For this reason, the effects of OMT on functional outcome, performance outcome, and patient satisfaction should continue to be researched.