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- Title:** Is Osteopathic Manipulative Treatment Clinically Superior to Sham or Placebo for Patients with Neck or Low-Back Pain? A Systematic Review with Meta-Analysis
- Author:** Ceballos-Laita, L.;Jiménez-Del-Barrio, S.;Carrasco-Uribarren, A.;Medrano-de-la-Fuente, R.;Robles-Pérez, R.;Ernst, E.
- Journal:** Diseases
- Abstract:** **Objectives:** The aim of this systematic review and meta-analysis was to compare whether osteopathic manipulative treatment (OMT) for somatic dysfunctions was more effective than sham or placebo interventions in improving pain intensity, disability, and quality of life for patients with neck pain (NP) or low-back pain (LBP).  
**Methods** A systematic review and meta-analysis was carried out. Searches were conducted in PubMed, Physiotherapy Evidence Database, Cochrane Library, and Web of Science from inception to September 2024. Studies applying a pragmatic intervention based on the diagnosis of somatic dysfunctions in patients with NP or LBP were included. The methodological quality was assessed with the PEDro scale. The quantitative synthesis was performed using random-effect meta-analysis calculating the standardized mean difference (SMD) with RevMan 5.4. The certainty of evidence was evaluated using GRADEPro.  
**Results** Nine studies were included in the qualitative synthesis, and most of them showed no superior effect of OMTs compared to sham or placebo in any clinical outcome. The quantitative synthesis reported no statistically significant differences for pain intensity (SMD = -0.15; -0.38, 0.08; seven studies; 1173 patients) or disability (SMD = -0.09; -0.25, 0.08; six studies; 1153 patients). The certainty of evidence was downgraded to moderate, low, or very low.  
**Conclusions** The findings of this study reveal that OMT is not superior to sham or placebo for improving pain, disability, and quality of life in patients with NP or LBP.
- Link:** <https://www.mdpi.com/2079-9721/12/11/287>
- Keywords:** low back pain , neck pain , osteopathic manipulative treatment , OMT , meta analysis , systematic review
- Volume:** 12
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- ISSN:** 2079-9721 (Print)2079-9721
- DOI:** 10.3390/diseases12110287

- Title:** Effectiveness of osteopathic craniosacral techniques: a meta-analysis
- Author:** Amendolara, A.;Sheppert, A.;Powers, R.;Payne, A.;Stacey, S.;Sant, D.
- Journal:** Frontiers in Medicine
- Abstract:** **Background:** Craniosacral osteopathic manipulative medicine-also known as craniosacral therapy (CST)-is a widely taught and used component of osteopathic medicine. This paper seeks to systematically review and conduct a meta-analysis of randomized controlled trials assessing the clinical effectiveness of CST compared to standard care, sham treatment, or no treatment in adults and children.  
**Methods** A search of Embase, PubMed, and Scopus was conducted on 10/29/2023 and updated on 5/8/2024. There was no restriction placed on the date of publication. A Google Scholar search was conducted to capture grey literature. Backward citation searching was also implemented. All randomized controlled trials employing CST for any clinical outcome were included. Studies not available in English as well as studies that did not report adequate data were excluded. Multiple reviewers were used to assess for inclusions, disagreements were settled by consensus. PRISMA guidelines were followed in the reporting of this meta-analysis. Cochrane's Risk of Bias 2 tool was used to assess for risk of bias. All data were extracted by multiple independent observers. Effect sizes were calculated using a Hedge's G value (standardized mean difference) and aggregated using random effects models. The GRADE system was used to assess quality of evidence.  
**Results** The primary study outcome was the effectiveness of CST for selected outcomes as applied to non-healthy adults or children and measured by standardized mean difference effect size. Twenty-four RCTs were included in the final meta-analysis with a total of 1,613 participants. When subgroup analyses were performed by primary outcome only, no significant effects were found. When secondary outcomes were included in subgroup analyses, results showed that only Neonate health, structure ( $g = 0.66$ , 95% CI [0.30; 1.02], Prediction Interval [-0.73; 2.05]) and Pain, chronic somatic ( $g = 0.34$ , 95% CI [0.18; 0.50], Prediction Interval [-0.41; 1.09]) show reliable, statistically significant effect. However, these should not be interpreted as positive results as wide prediction intervals, high bias, and statistical limitations temper the real-world implications of this finding. **CONCLUSIONS AND RELEVANCE:** CST demonstrated no significant effects in this meta-analysis, indicating a lack of usefulness in patient care for any of the studied indications.
- Free full text:** <https://www.frontiersin.org/journals/medicine/articles/10.3389/fmed.2024.1452465/full>
- Keywords:** cranio-sacral osteopathy , meta analysis

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**Volume:** 11  
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- Title:** Effectiveness of Osteopathic Manipulative Treatment on Hemodynamic and Pulmonary Response in Coronary Artery Bypass Graft Patients: A Meta-Analysis
- Author:** McGonegal, C.;Bhatti, S.;Carrasquillo, J.;Potesta, M. A.;Kavulich, J.;Toldi, J.
- Journal:** Cureus
- Abstract:** In the realm of cardiovascular care, the quest for innovative and holistic approaches to enhance patient outcomes persists. This study analyzes osteopathic manipulative treatment (OMT) and its potential impact on pain intensity, length of hospitalization, respiratory function, and hemodynamic response in patients undergoing coronary artery bypass grafting (CABG). OMT, with its emphasis on physical manipulation of the body's muscles and tissues, presents a potential treatment beyond the realms of conventional post-operative care. Google Scholar was used to identify four relevant articles for further review. RevMan 5.4 was utilized for meta-analytic evaluation in order to produce forest plots with associated standardized mean difference (SMD), confidence interval (CI), and heterogeneity ( $I^2$ ). Output from collection and analysis revealed statistically significant decreases in negatively viewed outcomes, including length of stay (SMD 0.39; 95% CI -0.02,-0.76;  $I^2 = 0\%$ ) and pain control (SMD 1.67; 95% CI -1.34,-0.67;  $I^2 = 94\%$ ). Parameters for respiratory function and hemodynamic response, including vital capacity (SMD 0.91; 95% CI 0.57,1.24;  $I^2 = 96\%$ ) and maximal aerobic capacity (SMD 0.50; 95% CI 0.19, 0.82;  $I^2 = 0\%$ ), showed a statistically significant increase. These findings suggest the incorporation of OMT as a viable adjunct for postoperative management in CABG patients, yielding favorable reductions in adverse outcomes such as length of hospitalization and pain. Moreover, it has demonstrated enhancement in maximal aerobic and vital capacity. This study suggests that the addition of osteopathic management to post-bypass standards can ultimately prevent certain morbidities associated with this specific patient population.
- Free full text:** <https://www.cureus.com/articles/283412-effectiveness-of-osteopathic-manipulative-treatment-on-hemodynamic-and-pulmonary-response-in-coronary-artery-bypass-graft-patients-a-meta-analysis#!/>
- Keywords:** cardiac rehabilitation, coronary artery bypass graft, hemodynamics, meta analysis, OMT, osteopathic manipulative treatment, post-operative care, pulmonary response
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- Volume:** 16
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**DOI:** 10.7759/cureus.67968

- Title:** The Neurophysiological Effects of Craniosacral Treatment on Heart Rate Variability: A Systematic Review of Literature and Meta-Analysis
- Author:** Cook, A. C.;Egli, A. E.;Cohen, N. E.;Bernardi, K.;Chae, M. Y.;Kapalko, B. A.;Coyne, S. A.;Scott, R.
- Journal:** Cureus
- Abstract:** Craniosacral treatment (CST) is an osteopathic technique grounded in the assumption that there is an intrinsic, fine movement of the cerebrospinal fluid. This rhythmic movement can be utilized for diagnostic and therapeutic purposes by palpation and manipulation of the skull, spine, and associated connective tissues. Therapeutic benefit is likely due to action on the autonomic nervous system (ANS), specifically through the vagus nerve. Current literature on the neurophysiological effects of CST is limited, which has contributed to controversy regarding its effectiveness. Heart rate variability (HRV) as a measure of cardiovascular stress and autonomic system activity is thus proposed as a tool to evaluate the neurophysiologic effects of CST. HRV can be analyzed in two different bands, high-frequency (HF) and low-frequency (LF) power associated with a parasympathetic and sympathetic response. In this meta-analysis, we provide a brief introduction to CST, analyze three primary studies, and summarize the therapeutic benefits and pitfalls of this alternative treatment on the ANS. A significant negative HF standardized mean difference after CST was observed; standardized mean difference = -0.46; 95% CI (-0.79,-0.14). No significant effect on LF power was observed. We conclude that CST does provide a moderate short-term increase in parasympathetic activity. These findings suggest that CST may be used to treat patients with an overactive sympathetic state. Further studies should be conducted for comparison against a control group to eliminate the possibility of a placebo effect and to elucidate long-term effects.
- Free full text:** <https://www.cureus.com/articles/272727-the-neurophysiological-effects-of-craniosacral-treatment-on-heart-rate-variability-a-systematic-review-of-literature-and-meta-analysis#!/>
- Keywords:** autonomic nervous system, cranio-sacral osteopathy, heart rate variability, meta analysis, neurophysiology
- Language:** eng
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- ISSN:** 2168-8184
- DOI:** 10.7759/cureus.64807

- Title:** Efficacy of Osteopathic Manipulative Treatment for Pain Reduction in Patients With Patellofemoral Pain Syndrome: A Meta-Analysis of Randomized Controlled Trials
- Author:** Delgadillo, B. E.;Bui, A.;Debski, A. M.;Miller, B.;Wu, S. S.
- Journal:** Cureus
- Abstract:** Patellofemoral pain syndrome (PFPS) is among the most common causes of musculoskeletal pain in the United States. It is defined as retropatellar or peripatellar pain that is reproduced with functional activities that load the patellofemoral joint in a flexed position, such as stair climbing or squatting. While it presents in both adolescents and adults, it is commonly found in physically active individuals, such as athletes and military recruits. Exploring the role of osteopathic manipulative treatment (OMT) in PFPS is of particular interest given the absence of a definitive treatment and the poor long-term prognosis associated with PFPS. This meta-analysis includes three studies exploring the use of OMT to reduce pain in patients suffering from PFPS and exploring the efficacy of OMT as a primary intervention. In these studies, pain assessments, pre-treatment, and post-treatment follow-up of at least 30 days were performed using a 10-cm visual analog scale (VAS). The mean difference in pain between OMT and no treatment (NT) groups using the random effects model was -3.95 (-6.39; -1.50) with a  $p < 0.01$ , suggesting OMT resulted in significant knee pain reduction in those with PFPS. A measure of heterogeneity, known as  $I^2$ , was found to be high at 97%, which suggests caution should be taken when interpreting the overall results. Given the lack of definitive treatment and the poor long-term prognosis for PFPS, the authors suggest OMT provides an effective option for pain relief in patients with PFPS. Further research is needed to provide results that may be more clinically applicable or valuably interpreted.
- Free full text:** <https://www.cureus.com/articles/226042-efficacy-of-osteopathic-manipulative-treatment-for-pain-reduction-in-patients-with-patellofemoral-pain-syndrome-a-meta-analysis-of-randomized-controlled-trials#!/>
- Keywords:** knee, meta analysis, OMT, osteopathic manipulative treatment, patellofemoral pain syndrome, PFPS
- Language:** eng
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- ISSN:** 2168-8184
- DOI:** 10.7759/cureus.59439



- Title:** The Effects of Osteopathic Manipulative Treatment (OMT) on Postoperative Length of Stay: A Meta-Analysis
- Author:** Henwood, L.;Le Donne, M. E.;Vaughn, A.;Kamil, S.;Harrington, A.;Scott, R.
- Journal:** Cureus
- Abstract:** Osteopathic manipulative treatment (OMT) is a therapy used by osteopathic physicians in various medical settings. Postoperatively, OMT can be utilized to optimize the body's function and recovery. This meta-analysis examines the efficacy of OMT in reducing the length of postoperative hospital stays. Given the significant implications of prolonged hospitalization for both patients and healthcare resources, research strategies to safely shorten this period are crucial. This meta-analysis examined five select studies that measured the length of hospital stay in postoperative patients who received OMT compared with postoperative patients who did not. A random effects model was applied in our statistical analysis to account for heterogeneity due to variations in surgical procedures, hospitals, and patient populations. Individually, three studies reported statistically significant reductions in hospital stay for OMT patients, while two did not. This meta-analysis, comprising five studies and 519 patients, found a mean difference of -2.37 days in favor of OMT; however, this finding did not reach a statistical significance ( $P = 0.06$ ). The substantial heterogeneity observed (heterogeneity  $\tau^2 = 6.75$ ,  $\chi^2(2) = 34.6$ ,  $df = 4$ ,  $P < 0.00001$ ,  $I^2 = 88\%$ ) suggests that clinical dissimilarities among the five studies may have resulted in our inconclusive findings. While OMT shows promise in postoperative care, further research with standardized protocols and more homogenous patient populations is needed to assess its true impact.
- Free full text:** <https://www.cureus.com/articles/213664-the-effects-of-osteopathic-manipulative-treatment-omt-on-postoperative-length-of-stay-a-meta-analysis#!/>
- Keywords:** length of stay, meta analysis, OMT, osteopathic manipulative treatment, post-operative care
- Language:** eng
- Volume:** 16
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- Pages:** e59983
- ISSN:** 2168-8184
- DOI:** 10.7759/cureus.59983

- Title:** **Is Craniosacral Therapy Effective? A Systematic Review and Meta-Analysis**
- Author:** Ceballos-Laita, L.;Ernst, E.;Carrasco-Uribarren, A.;Cabanillas-Barea, S.;Esteban-Pérez, J.;Jiménez-del-Barrio, S.
- Journal:** **Healthcare**
- Abstract:** **Objectives:** The aim of this study was to evaluate the clinical effectiveness of craniosacral therapy (CST) in the management of any conditions.  
**Methods** Two independent reviewers searched the PubMed, Physiotherapy Evidence Database, Cochrane Library, Web of Science, and Osteopathic Medicine Digital Library databases in August 2023, and extracted data from randomized controlled trials (RCT) evaluating the clinical effectiveness of CST. The PEDro scale and Cochrane Risk of Bias 2 tool were used to assess the potential risk of bias in the included studies. The certainty of the evidence of each outcome variable was determined using GRADEpro. Quantitative synthesis was carried out with RevMan 5.4 software using random effect models. Data Synthesis: Fifteen RCTs were included in the qualitative and seven in the quantitative synthesis. For musculoskeletal disorders, the qualitative and quantitative synthesis suggested that CST produces no statistically significant or clinically relevant changes in pain and/or disability/impact in patients with headache disorders, neck pain, low back pain, pelvic girdle pain, or fibromyalgia. For non-musculoskeletal disorders, the qualitative and quantitative synthesis showed that CST was not effective for managing infant colic, preterm infants, cerebral palsy, or visual function deficits.  
**Conclusions** The qualitative and quantitative synthesis of the evidence suggest that CST produces no benefits in any of the musculoskeletal or non-musculoskeletal conditions assessed. Two RCTs suggested statistically significant benefits of CST in children. However, both studies are seriously flawed, and their findings are thus likely to be false positive.
- Link:** <https://www.mdpi.com/2227-9032/12/6/679>
- Keywords:** systematic review , crying infants , meta analysis , cranio-sacral osteopathy , clinical effectiveness , headache , neck pain , low back pain , pelvic girdle pain , fibromyalgia , infantile colic , preterm infants , cerebral palsy , visual function deficits , pediatrics
- Volume:** 12
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- ISSN:** 2227-9032
- DOI:** 10.3390/healthcare12060679

- Title:** **Clinical Effectiveness of Craniosacral Therapy in Patients with Headache Disorders: A Systematic Review and Meta-analysis**
- Author:** Carrasco-Uribarren, A.;Mamud-Meroni, L.;Tarcaya, G. E.;Jiménez-Del-Barrio, S.;Cabanillas-Barea, S.;Ceballos-Laita, L.
- Journal:** **Pain Management Nursing**
- Abstract:** **OBJECTIVES:** To analyze the effectiveness of craniosacral therapy in improving pain and disability among patients with headache disorders. **DESIGN:** Systematic review and meta-analysis. **DATA SOURCES:** PubMed, Physiotherapy Evidence Database, Scopus, Cochrane Library, Web of Science, and Osteopathic Medicine Digital Library databases were searched in March 2023. **REVIEW**  
**Methods** Two independent reviewers searched the databases and extracted data from randomized controlled trials comparing craniosacral therapy with control or sham interventions. The same reviewers assessed the methodological quality and the risk of bias using the PEDro scale and the Cochrane Collaboration tool, respectively. Grading of recommendations, assessment, development, and evaluations was used to rate the certainty of the evidence. Meta-analyses were conducted using random effects models using RevMan 5.4 software.  
**Results** The searches retrieved 735 studies, and four studies were finally included. The craniosacral therapy provided statistically significant but clinically unimportant change on pain intensity (Mean difference = -1.10; 95% CI: -1.85, -0.35; I(2): 44%), and no change on disability or headache effect (Standardized Mean Difference = -0.34; 95% CI -0.70, 0.01; I(2): 26%). The certainty of the evidence was downgraded to very low.  
**CONCLUSION:** Very low certainty of evidence suggests that craniosacral therapy produces clinically unimportant effects on pain intensity, whereas no significant effects were observed in disability or headache effect.
- Link:** [https://www.painmanagementnursing.org/article/S1524-9042\(23\)00153-4/fulltext](https://www.painmanagementnursing.org/article/S1524-9042(23)00153-4/fulltext)
- Keywords:** cranio-sacral osteopathy, headache, meta analysis, systematic review
- Language:** eng
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