

# Research Paper Review

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# Is manipulative therapy more effective than sham manipulation in adults?: A systematic review and meta-analysis

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# ABSTRACT

## Background

Manipulative therapy is widely used in the treatment of spinal disorders. Manipulative techniques are under debate because of the possibility of adverse events. To date, the efficacy of manipulations compared to sham manipulations is unclear. The purpose of the study is: to assess the efficacy of manipulative therapy compared to sham in adults with a variety of complaints.

# Study design

Systematic review and meta-analysis.

# Methods

Bibliographic databases (PubMed, EMBASE, CINAHL, PEDro, Central) along with a hand search of selected bibliographies were searched from inception up to April 2012. Two reviewers independently selected randomized clinical trials (RCTs) that evaluated manipulative therapy compared to sham manipulative therapy in adults, assessed risk of bias and extracted data concerning participants, intervention, kind of sham, outcome measures, duration of follow-up, profession, data on efficacy and adverse events. Pooled (standardized) mean differences or risk differences were calculated were possible using a random effects model. The primary outcomes were pain, disability, and perceived recovery. The overall quality of the body of evidence was evaluated using GRADE.

# Results

In total 965 references were screened for eligibility and 19 RCTs (n = 1080) met the selection criteria. Eight studies were considered of low risk of bias. There is moderate level of evidence that manipulative therapy has a significant effect in adults on pain relief immediately after treatment (standardized mean difference [SMD] - 0.68, 95% confidence interval (-1.06 to -0.31). There is low level of evidence that manipulative therapy has

a significant effect in adults on pain relief (SMD - 0.37, -0.69 to -0.04) at short- term follow-up. In patients with musculoskeletal disorders, we found moderate level of evidence for pain relief (SMD - 0.73, -1.21 to -0.25) immediate after treatment and low level of evidence for pain relief (SMD - 0.52, -0.87 to -0.17) at short term-follow-up. We found very low level of evidence that manipulative therapy has no statistically significant effect on disability and perceived (asthma) recovery. Sensitivity analyses did not change the main findings. No serious adverse events were reported in the manipulative therapy or sham group.

#### Conclusions

Manipulative therapy has a clinical relevant effect on pain, but not on disability or perceived (asthma) recovery. Clinicians can refer patients for manipulative therapy to reduce pain.

## **ANALYSIS**

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#### **Background Information**

Manipulative therapy (MT) is used widely in the treatment of musculoskeletal and other complaints and its use has increased in the past few decades (1). It is utilized by a number of healthcare professions – primarily chiropractors and physiotherapists – but is also an available treatment modality for osteopaths, some physicians and a variety of other disciplines.

Manipulative therapy is the subject of ongoing research into its effectiveness and safety, although the nature of the intervention presents challenges regarding blinding of study participants and introduction of a sham control group. Many studies compare manipulative therapy in combination with exercise or an additional intervention against that additional intervention alone. Several systematic reviews have been performed comparing these types of studies (2-4). The current review was undertaken to evaluate the efficacy of manipulative therapy when compared with a "sham manipulative therapy". There was no limitation placed on the type of condition treated, simply that the intervention be manipulative therapy and the control group include a "sham" treatment.

#### PERTINENT RESULTS

Initial searches yielded 965 potentially eligible studies. Thirty-five studies were assessed in full text and 19 studies comparing manipulative therapy (for any condition) with a "sham manipulation" were chosen for inclusion in the review.

# Description of studies

## Interventions:

- MT vs. sham only: 11 studies
- MT plus soft tissue therapy vs. sham MT and effleurage: 3 studies
- MT plus range of motion exercises vs. sham MT plus range of motion exercises: 1 study
- 3 intervention groups: 3 studies
- 4 intervention groups: 1 study

## Outcome Measures:

- *Primary outcome measures*: Pain (14 studies), disability (6 studies) and perceived recovery (1 study).
- *Secondary outcome measures*: Quality of life (4 studies), range of motion (3 studies), Headache frequency (1 study), pulmonary function (2 studies), and adverse events (8 studies).

## Follow-up Measurements:

- Short-term (less than 3 months): 11 studies
- Intermediate term: 5 studies
- Long-term (4-10 months): 3 studies

## Effect of Manipulative Therapy

## <u>Pain:</u>

Data from 7 studies was pooled, demonstrating a low level of evidence indicating that manipulative therapy provided a statistically significant decrease in pain scores in short-term follow-up. Moderate evidence was provided to indicate that MT provides superior pain relief compared to sham treatment in an intermediate follow-up time. In the long-term follow-up, there was low level evidence in support of MT versus sham treatment.

## Condition:

For patients with general musculoskeletal (MSK) complaints, there was low-to-moderate level support for the use of MT versus sham MT. For patients with neck and/or low back pain, only a low level of evidence was provided to support MT over sham MT. For non-MSK complaints (dysmenorrhea), a non-significant improvement was noted with MT versus sham MT.

## Profession:

No statistically significant difference was noted between the 4 professions providing MT treatment in any of the included studies.

## <u>Disability:</u>

A low level of evidence indicated that MT had no effect on disability versus sham MT.

## Range of Motion:

A very low level of evidence suggested that MT is no more effective at improving range of motion as

compared with sham MT.

#### Adverse Events:

Eleven studies did not report adverse events, while 4 studies reported no adverse events. Any adverse events reported in the remainder of studies were limited to minor aggravation of neck pain or headaches, muscle soreness or local discomfort. Similar adverse events were reported in the sham MT group in some studies. No serious complications were reported in any study utilizing MT or sham MT.

## **CLINICAL APPLICATION & CONCLUSIONS**

MT was found to be effective at relieving pain in short-, intermediate- and long-term follow-up periods after treatment when compared with sham MT. No effects were noted on disability or pulmonary conditions (e.g. asthma). Further, no serious adverse effects were noted in any of the included studies. Minor adverse effects such as muscle soreness or other MSK aggravations were noted in both the MT and sham MT groups, suggesting no greater risk of adverse effects when using actual MT.

This body of literature, now including this particular systematic review, suggests that MT is a safe and effective intervention for MSK complaints, while providing further understanding of the superiority of actual versus sham MT. For practitioners who do not offer MT, consideration should be given to establishing a potential partnership or referral option with a clinician who does offer this type of intervention.

#### **STUDY METHODS**

## Search Strategy

MEDLINE, EMBASE, CINAHL, CENTRAL and PEDro electronic databases were searched from inception to April 2012. Search terms relating to intervention (manipulation, spinal manipulation, manipulative therapy, high velocity thrust, chiropractic manipulation, osteopathic manipulation, musculoskeletal manipulation), comparison (placebo, sham treatment, sham manipulation) and design (randomized clinical trial or randomized controlled trial) were combined in the final search.

## Selection Criteria

Randomized, controlled trials comparing MT with sham MT in adult patients, regardless of condition treated, outcomes measured or additional/adjunctive interventions were deemed eligible for this study.

#### **Risk of Bias**

Risk of bias was evaluated using the Cochrane Back Review Group criteria (5). A study was considered to have low risk of bias if it fulfilled at least 6 of the 12 criteria items established by the Cochrane Group.

## **STUDY STRENGTHS / WEAKNESSES**

## Limitations

• The diversity of professions providing MT (with varying levels of training and expertise with

MT) was high.

- The sample size in most studies was relatively small.
- Four studies used cross-over designs, which limited the ability to blind the patients to the treatments they were receiving.

# Strengths

- A comprehensive search strategy was employed.
- Meta-analysis of data (when applicable) provided additional statistical support for the authors' conclusions.
- Inclusion of all professions providing MT limits the possibility of professional bias.

# Additional References

- 1. Hurwitz EL. Epidemiology: spinal manipulation utilization. J Electromyogr Kinesiol 2012; 22: 648–654.
- 2. Rubinstein SM, van Middelkoop M, Assendelft WJ et al. Spinal manipulative therapy for chronic low-back pain: an update of a Cochrane review. Spine 2011; 36: E825–E846.
- 3. Proctor ML, Hing W, Johnson TC, Murphy PA. Spinal manipulation for primary and secondary dysmenorrhoea. Cochrane Database Syst Rev 2006; 9: CD002119.
- 4. Hondras MA, Linde K, Jones AP. Manual therapy for asthma. Cochrane Database Syst Rev 2005; 18: CD001002.
- 5. Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. In The Cochrane Collaboration. Edited by Higgins JPT, Green S; 2011. Available from www.cochrane-handbook.org.

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