**Article Full Title**
Manipulation and mobilization for treating chronic low back pain: a systematic review and
meta-analysis

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**Paper Abstract**

The purpose of this study is to determine the efficacy, effectiveness and safety of various mobilization and manipulation therapies for treatment of chronic low back pain. The study design is a systemic literature review and meta-analysis; the study measures self-reported pain, function, health-related quality of life and adverse events. We searched multiple electronic databases from January 2000 to March 2017 and selected randomized controlled trials comparing manipulation or mobilization therapies with sham, no treatment, other active therapies, and multimodal therapeutic approaches. 51 trials were included in the systematic review and 9 trials were judged similar enough to be pooled for meta-analysis. Mobilization interventions, compared with other active comparators including exercise regimens, significantly reduced pain but not disability, while manipulation significantly reduced pain and disability, compared with other active comparators including exercise and therapy. Overall, there is moderate-quality evidence that manipulation and mobilization are likely to reduce pain and improve function for patients with low back pain; manipulation appears to produce a larger effect than mobilization.

**NIH Risk of Bias Tool**
Quality Assessment of Systematic Reviews and Meta-Analyses

**Key Finding #1**
Thrust (manipulation) or non-thrust (mobilization) interventions were statistically significant for
the reduction of pain and disability when compared to active counterparts of exercise or
physical therapy.

**Key Finding #2**
Subgroup meta-analyses data favored thrust intervention over non-thrust intervention for pain
reduction in patients with chronic low back pain.

**Key Finding #3**
Subgroup meta-analysis data favored thrust intervention for the reduction in disability when
compared to active counterparts, yet non-thrust interventions were not statistically significant
when compared to active counterparts.

**Key Finding #4**
Thrust interventions had an increasing effect at both 3 and 6 month follow-up for pain and
disability reduction, while non-thrust interventions did not from post-treatment.

**Please provide your summary of the paper.**

This study included unimodal randomized control trials in a systematic review to compare thrust and non-thrust interventions to active therapy of exercise or physical therapy, which yielded moderate evidence in support of both thrust and non-thrust interventions. There was intentional exclusion of multimodal studies and studies analyzing the relationship between dose and outcomes due to unwanted heterogeneity.

Standardized mean differences (SMDs) using REVMAN were utilized for the meta-analysis. Pain and disability outcomes were rendered into VAS and Roland-Morris Disability Questionnaire for interpretation across studies.

This study has high external validity, meaning the study participants reflect the population of interest and high model validity, making the results less real-world applicable. Some weaknesses were data limitations and insufficient similar studies. The data limitations made it challenging to draw conclusions on patient’s health-related quality of life and insufficient similar studies made it challenging to pool data across subgroups. The strengths of this study include low risk bias across studies, clear and defined eligibility criteria of chronic low back pain, 3 and 6 month follow-up of patients, and unimodal comparison for the systemic review to avoid heterogeneity.

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

This study has the potential to directly impact care of patients with chronic low back pain, which according to this study, may have a lifetime prevalence rate up to 84% in the U.S. This moderate quality evidence in support of mobilization and manipulation can encourage the use of manual therapy in conjunction with other active treatment. Manipulation specifically demonstrated larger effects than mobilization, which supports the use of thrust techniques in clinical practice in patients with chronic low back pain.