
QUESTION: Are joint mobilizations an effective therapeutic technique in reducing the severity of pain in physically active women with nonspecific low back pain?

Clinical Bottom Lines:

Using grade 1 and grade 2 posteroanterior joint mobilizations administered in six repetitions of 30 seconds each per treatment period can be effective in reducing the severity of pain in patients suffering acute mechanical low back dysfunction. However, the study did not clarify how an increase in muscle force was produced by the joint mobilizations when the musculature was not directly manipulated, nor does this study discuss the safety of manual therapy when applied to this particular acute condition.

Summary of Key Evidence:

1. Study design – RCT X:ROX2OO
2. Sample – N=19; all collegiate male athletes, mean age 20.3. All subjects were diagnosed with acute (<48 hrs) mechanical low back dysfunction. Subjects were randomized into two groups: manual therapy or control. All patients met inclusion/exclusion criteria within the study.
3. Procedure – Both the experimental and control groups were given an initial protocol of cryotherapy/stretching for 24-48 hrs post injury. Manual therapy (grade 1 and 2 posteroanterior joint mobilizations), performed by a certified athletic trainer, was implemented to the experimental group.
4. Outcome measures – taken at baseline evaluation, immediately after manual therapy was completed, and 24 hrs post treatment. Pain during activities of daily living (measured using the McGill Pain Questionnaire), pain during range-of-motion (measured using a 0-10 VAS scale), muscle force generation (measured using a Nicholas Manual Muscle Tester handheld dynamometer).
5. Results – Both the manual therapy and control group showed a decrease in the sensory subscale of pain in the MPQ. When compared to the control group, pain from lumbar extension decreased while muscle force generation increased post treatment in the manual therapy group.

Appraisal:

Internal validity

Threats: 1) Testers were not masked allowing bias that may affect outcomes. 2) The inter-treatment reliability of the handheld dynamometer technique was not verified which could create instrument error and therefore affect outcomes. 3) No control over activities outside the study protocol could affect the reliability of the results. 4) Drop-outs, if any, were not reported which could affect the validity of the outcomes. 5) Safety of the treatment was not reported which could affect the reliability of the outcomes. 6) The MPQ was applied to measure pain levels for acute low back pain despite the fact that the MPQ targets the effects of a subject’s chronic pain levels and therefore affects the validity of the measure.

Strengths: 1) Having one tester for all treatment allows for strong inter-tester reliability for outcome measures. 2) Randomization to create homogeneous groups prior to treatment. 3) Inclusion/exclusion criteria were specified to reduce variability that might affect outcomes. 4) Specificity of administration of joint mobilizations validates the treatment procedure.

External validity

Threats: 1) Examined only collegiate male athletes, which makes the results difficult to generalize to the population. 2) The study was conducted on acute mechanical low back dysfunction (24-48 hrs post injury) although most people suffer chronic low back pain and therefore makes this study difficult to generalize to the population. 3) All measurements were
performed on athletes; therefore the outcomes may not be comparable to the non-athletic population.

**Strengths:** 1) Lack of specific inclusion/exclusion criteria makes it easy to generalize to the population. 2) Very specific details about how manual therapy was administered allows this treatment to be easily reproduced in a clinic.

**Statistical validity**

**Threats:** 1) A parametric test was used (Repeated Measures ANOVA) on ordinal data which could affect the validity of the study design. 2) Descriptive statistics were not reported for all dependent variables and therefore threatens the validity of outcomes. 3) Authors did not state that the parametric test assumptions were met which threatens the validity of the results. 4) Power was not reported, so we don’t know whether the sample size was large enough to detect the size of the expected outcome. 5) Inferential statistics were not used after randomization to determine whether the two groups were similar.

**Strengths:** 1) A post-hoc analysis was used (THSD) to demonstrate correlation. 2) P values were stated for all the dependent variables indicating which variables were due to chance. 3) Post hoc analysis values were stated for all the dependent variables signifying correlation of significant differences determined by statistical tests.

**Level of Evidence: 1b**

**Application:**

Because mechanical low back pain is widespread in the athletic population and lumbar joint mobilizations are easy to implement in any setting, we would consider using these joint mobilizations as a treatment option to temporarily alleviate low back pain.

**Citation:** Hanrahan, S., Van Lunen, B., Tamburello, M., Walker, M., The Short-Term Effects of Joint Mobilizations on Acute Mechanical Low Back Dysfunction in Collegiate Athletes. *Journal of Athletic Training*. 2005; 40(2):88-93

*This Critically Appraised Paper was written by:*