**Article Full Title**

The Short-Term Effects of Joint Mobilizations on Acute Mechanical Low Back Dysfunction in Collegiate Athletes

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**Paper Abstract**

Context: Although a variety of theories and studies have been cited to support the use of joint mobilization in the spine as an integral part of the treatment and rehabilitation process, information about the short-term effects of joint mobilization on acute low back injury with respect to patient pain and strength changes has been limited. Objective: To examine the short-term effects of grade 1 and 2 posteroanterior joint mobilizations at the lumbar spine on subject pain and muscle force after an episode of acute, mechanical low back pain. Design: Group (2) by time (2 or 3).  Setting: Athletic training clinic. Patients or Other Participants: Male collegiate athletes (n = 19) with mechanical low back pain as assessed through a standardized evaluation were randomly assigned to a control (n = 10) or experimental (n = 9) group. Intervention(s): All subjects underwent a standardized treatment protocol of cryotherapy and stretching during data collection. Subjects completed the McGill Pain Questionnaire and a visual analog scale (the latter to assess pain levels during range-of-motion activities) and, using a handheld dynamometer, performed 3 maximum voluntary isometric contractions to determine muscle force. Grade 1 and 2 joint mobilizations were administered to the experimental group, whereas the control group was placed in a prone position of comfort for the time it took to perform the joint mobilizations. Main Outcome Measure(s): Baseline, immediate post-treatment, and 24-hour post-treatment measurements of pain and muscle force were taken. Results: Compared with the control group, the experimental group demonstrated significant decreases in the sensory sub-scale scores of the McGill Pain Questionnaire and in pain during lumbar extension and a significant increase in force production. Conclusions: Grade 1 and 2 joint mobilizations reduced subjects’ pain and increased force production in the short-term stages of mechanical low back pain.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

**Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

Yes

**Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Cannot Determine, Not Reported, or Not Applicable

**Was the treatment allocation concealed (so that assignments could not be predicted)?**

No

**Were study participants and providers blinded to treatment group assignment?**

No

**Were the people assessing the outcomes blinded to the participants' group assignments?**

No

**Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

Yes

**Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Yes

**Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Yes

**Was there high adherence to the intervention protocols for each treatment group?**

Yes

**Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

Yes

**Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

**Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

Cannot Determine, Not Reported, or Not Applicable

**Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Yes

**Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

There was no significant difference in the McGill Pain Questionnaire between the group of athletes who received joint mobilization treatment for mechanical low back pain and those who did not.

**Key Finding #2**

There was an increase in paraspinal activation for athletes who received joint mobilization intervention in immediate and 24-hour post-testing.

**Key Finding #3**

Joint mobilization for the lumbar spine in athletes is beneficial for decreasing mechanical low back pain over time during end range flexion and extension.

**Key Finding #4**

Grade 1 and 2 joint mobilizations for athletes with minor mechanical low back pain injuries aided in the short-term rehabilitation process requiring little time and no cost.

**Please provide your summary of the paper**

The random control trial in this article consisted of 19 NCAA Division III male athletes with an average age of 20.3 years old. They all report with acute low back pain which started less than 49 hours prior to the experiment and were excluded if they were suspected to have any condition that was not mechanical in nature where joint manipulation was contraindicated. The McGill Pain Questionnaire, dynamometer paraspinal force production, and the visual analog scale during lumber flexion and extension were measures utilized within the study. Participants were tested prior to, immediately after, and 24-hours after treatment to assess the effects of joint mobilization as treatment compared to the control group who only received the standard protocol for all participants consisting of 15 minutes of cryotherapy and a stretching routine of for the hamstrings, hip rotators, and low back. The experimental group received Grade I and II posteroanterior joint mobilizations in prone position for 6 sets of 30 seconds to the 3 spinous processes around the level of pain. Key findings to the study are stated above.

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

Grades 1 and 2 mobilizations can be a beneficial tool used to treat athletes with minor, acute mechanical low back pain when there are no contraindications present. It is important for the physical therapist to perform a thorough examination to rule out radicular involvement, disc involvement, fracture, and potential other causes of pain that were not included in the study. Though there was a decrease in pain in both groups, other areas looked at in the study such as paraspinal activation and pain during end ranges of flexion and extension supported the use of posteroanterior joint mobilizations for this patient population. Looking at clinical practice of low back pain in athletics, joint mobilization could be a good tool to use in certain situations of acute mechanical low back pain as it does not take much time or cost. Using a test-retest method to assess success of joint mobilization treatment can assess whether this treatment is helping decrease pain or increase motion for patients. This study is limited to the short-term (24-hour) effects of joint mobilization treatment, Grade I and II mobilizations, and only specific to 20-year-old male athletes with acute low back pain. It is important to consider all aspects of the patient and skills of the physical therapist when implementing joint mobilizations as treatment.