**Article Full Title**

Two-Week Joint Mobilization Intervention Improves Self-Reported Function, Range of Motion, and Dynamic Balance in Those With Chronic Ankle Instability

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**Paper Abstract**

We examined the effect of a 2-week anterior-to-posterior ankle joint mobilization intervention on weight-bearing dorsiflexion range of motion (ROM), dynamic balance, and self-reported function in subjects with chronic ankle instability (CAI). In this prospective cohort study, subjects received six Maitland Grade III anterior-to-posterior joint mobilization treatments over 2 weeks. Weight-bearing dorsiflexion ROM, the anterior, posteromedial, and posterolateral reach directions of the Star Excursion Balance Test (SEBT), and self-reported function on the Foot and Ankle Ability Measure (FAAM) were assessed 1 week before the intervention (baseline), prior to the first treatment (pre-intervention), 24–48 h following the final treatment (post-intervention), and 1 week later (1-week follow-up) in 12 adults (6 males and 6 females) with CAI. The results indicate that dorsiflexion ROM, reach distance in all directions of the SEBT, and the FAAM improved (p < 0.05 for all) in all measures following the intervention compared to those prior to the intervention. No differences were observed in any assessments between the baseline and pre-intervention measures or between the post-intervention and 1-week follow-up measures (p > 0.05). These results indicate that the joint mobilization intervention that targeted posterior talar glide was able to improve measures of function in adults with CAI for at least 1 week. " 2012 Orthopaedic Research Society. Published by Wiley Periodicals, Inc. J Orthop Res 30:1798–1804, 2012

**NIH Risk of Bias Tool**

Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

1. **Was the research question or objective in this paper clearly stated?**

Yes

1. **Was the study population clearly specified and defined?**

Yes

1. **Was the participation rate of eligible persons at least 50%?**

Cannot Determine, Not Reported, Not Applicable

1. **Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?**

Yes

1. **Was a sample size justification, power description, or variance and effect estimates provided?**

Yes

1. **For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?**

Yes

1. **Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?**

Yes

1. **For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?**

No

1. **Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?**

Yes

1. **Was the exposure(s) assessed more than once over time?**

Yes

1. **Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?**

Yes

1. **Were the outcome assessors blinded to the exposure status of participants?**

No

1. **Was loss to follow-up after baseline 20% or less?**

Yes

1. **Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?**

Cannot Determine, Not Reported, Not Applicable

**Key Finding #1**

Joint mobilization intervention that targeted posterior talar glide (especially Maitland Grade III) improved measures of function in adults with CAI for at least 1 week.

**Key Finding #2**

Improvements in self-reported function were found 1 week following intervention that exceed previously established MCID and MCD scores with the FAAM-ADL revealing 8% change and FAAM-Sport revealing 15% change (moderate-to-large effect size).

**Key Finding #3**

Baseline to pre-intervention measures and post-intervention to 1-week follow-up measures revealed no differences in dorsiflexion ROM, normalized reach distances on SEBT, or self-reported function (p > 0.05).

**Key Finding #4**

Post-intervention and 1-week follow-up measures were significantly improved for all (p /< 0.01) when compared to baseline and pre-intervention measures.

**Please provide your summary of the paper**

This prospective cohort study examined the effect of anterior-to-posterior ankle joint mobilizations (emphasis on Maitland Grade III) performed for 2 weeks in patients with CAI. Although there were only twelve volunteer participants with CAI in this study (6 male, 6 female), all participants had to report a history of >/1 ankle sprain, >/2 episodes of “giving way” within the past 3 months, and functional loss in order to be included in the study. Weight-bearing dorsiflexion range of motion (ROM), Star Excursion Balance Test (SEBT), and self-reported function on the Foot and Ankle Ability Measure (FAAM) were utilized as dependent variables in the study. Data was collected at baseline (1 week prior to intervention), pre-intervention, post-intervention (24-48 h following the final treatment), and at a 1-week follow-up (1 week later). This article should prompt clinicians to consider all aspects of CAI treatment benefits, especially including patient reported outcomes and quality of life as seen with FAAM-ADL and FAAM-Sport measures. Utilizing joint mobilizations in patients with CAI should always be considered in a treatment plan for both mechanical and functional improvements. Improvements in function in adults with CAI were seen for at least 1 week with intervention that targeted posterior talar glide. It would be helpful to explore results if further research were performed with a longer follow-up period, an adolescent population, a larger sample size, or the implementation of a control-group. Although limitations were found in this study, positive effect sizes found emphasize the importance of implementing joint mobilization intervention for individuals with CAI as a part of their comprehensive treatment plan. Overall, this article supports the use of manual therapy for patients with CAI.

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

The utilization of posterior talar glide joint mobilizations in patients with CAI should be considered for mechanical benefits in underlying dorsiflexion ROM deficits. Specifically noted, Maitland Grade III anterior-to-posterior talar glide joint mobilizations have promising potential to influence noncontractile tissues local to the talocrural joint regarding flexibility and extensibility. Furthermore, it is important to recognize and consider that joint mobilization combined with dynamic balance can improve sensorimotor control and self-reported function in individuals with CAI. The authors discussed that patients with CAI are associated with a decreased quality of life, post-traumatic ankle osteoarthritis, and further comorbidities that must be considered when developing a comprehensive treatment plan. Although this article researched 12 individuals with CAI of a similar age, utilizing manual therapy techniques in the ankle can be beneficial to patients both mechnically and in their quality of life and is therefore important to explore in other populations when appropriate.