**Article Full Title**

Talus mobilization-based manual therapy is effective for restoring range of motion and enhancing balance in older adults with limited ankle mobility: A randomized controlled trial

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**Paper Abstract**

Background- The ankle plays a key role in balance, but ankle range of motion decreases with ageing. Research question- To establish whether a talus mobilization-based manual therapy intervention may be effective for increasing range of motion and balance in older adults with limited ankle mobility due to the ageing process. Methods- Randomized clinical trial in which 42 community-dwelling older adults with limited ankle mobility were allocated to an experimental or a control group. The experimental intervention consisted of six sessions of anteroposterior talus mobilization, whereas the control intervention was a sham treatment. Baseline change in weight and non-weight bearing ankle range of motion (ROM), balance outcome in terms of the Timed up and go (mobility and dynamic balance), Single-leg stand (static balance and stability), Functional reach (margins of stability) and Romberg tests (static balance) were assessed. Analysis of variance based on a mixed-linear model of repeated measures looked for group interactions. Results- Forty participants completed the study. Participants who received six sessions of manual therapy showed greater improvements in the Timed up and go, Functional reach and Single-leg stand tests than participants who received a sham intervention (p &lt; 0.001). Both groups presented similar performance in post-treatment static balance measures (p&gt; 0.05). Significance- An anteroposterior talus mobilization-based manual therapy intervention is effective for increasing ankle ROM, with a positive effect on dynamic balance, mobility, and stability in community-dwelling older adults with limited ankle mobility.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

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

Yes

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

Yes

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

Yes

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

No

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

Yes

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

Yes

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

Yes

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

Yes

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

Yes

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

Yes

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

Yes

1. **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?**

No

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

No

1. **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**

Anteroposterior talus mobilization increased ankle mobility and balance abilities in older adults with weight-bearing ankle dorsiflexion ROM below 35 degrees.

**Key Finding #2**

Manual Therapy showed no significance in improving bipedal static stability or postural sway while standing.

**Please provide your summary of the paper**

The ankle plays a big role in weight bearing of the human body during both static and dynamic tasks. As a person ages, ankle joint function decreases, especially with the motion of plantarflexion to dorsiflexion. This decrease in ROM can put older adults at a higher risk for falls. This study looked at the effects of anteroposterior talus mobilization-manual therapy over the course of six sessions in a two-week time period. The participants were community-dwelling older adults, 60 years and older, with wight-bearing ankle dorsiflexion ROM below 35 degrees in both the right and left limb. The exclusion criteria included musculoskeletal injury in the last three months prior to starting the trial and any sort of central or vestibular pathology. The participants were divided up into a control group and an experimental group. In each session the experimental group received a grade IV of three 30-second mobilizations of the talus in anteroposterior glide on both limbs. While the control group did not receive mobilization at the talus but instead only physical contact at the talus. Both groups performed a Timed up and go, Functional reach, left and right single-leg stand at baseline (prior to receiving mobilization) and right after the last treatment session. It was found that anteroposterior talus mobilization increased ankle mobility in community dwelling older adults, which in turn helped increase balance and decrease the risk of falls. It was also found that manual therapy was not effective in improving bipedal static stability due to the fact that not much ankle movement is needed to maintain static posture while standing with both legs on the ground.

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

I think that this study showed the importance of manual therapy in older adults. In my opinion so much of older adults are studied through hip and knee OA. ROM and strength at the ankle decrease with age putting older adults at a greater falls risk but also affecting both their overall balance and gait. Moving forward I think that this study should be performed on a larger group of individuals and implemented in conjunction with a strength program for fall prevention. This can be implemented in senior centers and any sort of physical therapy clinic. I think that the treatment duration would need to last longer than two weeks to test the long term effect of manual therapy mobilization on the talus.