**Article Full Title**

The Effect of Additional Ankle and Midfoot Mobilizations on Plantar Fasciitis: A Randomized Controlled Trial

**Author Names**

Shashua, A., Flechter, S., Avidan, L., Ofir, D., Melayev, A., Kalichman, L.

**Reviewer Name**

Sara Yuen, SPT

**Reviewer Affiliations**

Duke University School of Medicine, Doctor of Physical Therapy Division

**Paper Abstract**

The purpose of this study was to evaluate the efficacy of ankle and midfoot mobilization on pain and function of patients with plantar fasciitis (PF). Plantar fasciitis is a degenerative process of the plantar fascia, with a lifetime prevalence of approximately 10%. Limited ankle dorsiflexion is a common finding and apparently acts as a contributing factor to the development of PF. Fifty patients with PF, aged 23 to 73 years, were randomly assigned to either the intervention or control group. Both groups received 8 treatments, twice a week, consisting of stretching exercises and ultrasound. In addition, the intervention group received mobilization of the ankle and midfoot joints. Dorsiflexion range of motion was measured at the beginning and at the end of treatment. The results were evaluated by 3 outcomes: the numeric pain-rating scale, Lower Extremity Functional Scale, and algometry. No significant difference was found between groups in any of the outcomes. Both groups showed a significant difference in the numeric pain-rating scale and Lower Extremity Functional Scale. Both groups significantly improved in dorsiflexion range of motion, with no difference between groups. The addition of ankle and foot joint mobilization aimed at improving dorsiflexion range of motion is not more effective than stretching and ultrasound alone in treating PF. The association between limited ankle dorsiflexion and PF is most probably due to soft tissue limitations, not the joints.

**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?**

Cannot Determine, Not Reported, or Not Applicable

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?**

Yes

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

Yes

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**

In the analysis of pre and post treatment, outcomes between the control (stretching and therapeutic ultrasound) vs the intervention (ankle and midfoot mobilization, stretching, and therapeutic ultrasound) groups, the NPRS and LEFS showed continuous improvement throughout all measurement points in both groups, with no difference between them.

**Key Finding #2**

Algometry measures pre and post treatment showed no differences in the treatment vs control groups pain intensity.

**Key Finding #3**

Conventional treatments alone (stretching and therapeutic ultrasound) may be effective for treating plantar fasciitis.

**Key Finding #4**

**Please provide your summary of the paper**

The authors situated their study in investigations of connections between manual therapy aimed at increasing dorsiflexion range of motion and other plantar fasciitis treatments. This single-blind randomized controlled trial compared conventional plantar fasciitis treatments (stretches for the gastrocnemius, soleus, and plantar fascia and therapeutic ultrasound) to receiving ankle and midfoot mobilizations in addition to those control interventions. This article used 3 methods to compare the outcomes of the 2 groups: NPRS, LEFS, and algometry. No measures supported a significant difference in improvements in pain or function with the addition of ankle and midfoot mobilizations. But of the 46 patients that completed the study, 29 improved their pain intensity scores measured by algometry, and 18 participants improved in function based on the outcomes of their LEFS scores. These findings support the effectiveness of conventional stretching and therapeutic ultrasound treatments for plantar fasciitis. The authors suggest that the cause of limited dorsiflexion that presents with heel pain diagnosed as plantar fasciitis is posterior leg tightness and not ankle joint stiffness. Therefore, clinicians should consider techniques focused on soft tissue tightness, and not ankle and midfoot mobilizations. Some limitations of this study include a bias from participants, who were not blinded to their treatment group. The authors disclosed that 2 participants in the control group dropped out of the study due to dissatisfaction. In comparison, the 2 participants that dropped out of the treatment group did so for family and health reasons. The participants also gave their follow up NPRS and LEFS data via phone which may have introduced communication complications. The authors also did not mention how participant adherence to home treatment prescriptions was tracked or how that may have affected participant outcomes.

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

Clinicians may consider the control groups success in with the conventional treatments used in this study-- the seated plantar fascia stretch, standing gastrocnemius and soleus stretches, and therapeutic ultrasound (1 MHz, 1.5 W/cm^2, 50% pulses for 5 minutes)-- to treat patients with heel pain diagnosed as plantar fasciitis. However, they should always keep in mind that treatments are ideally patient-specific. Clinicians using manual therapy to increase dorsiflexion range of motion in patient with plantar fasciitis should focus on soft tissue techniques for loosening posterior leg muscle groups instead of techniques that target ankle and midfoot joint stiffness.