**Title:** Ankle-Joint Self-Mobilization and CrossFit Training in Patients With Chronic Ankle Instability: A Randomized Controlled Trial

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**Study Design:** Randomized controlled trial

**Abstract:**

Context: Ankle-joint mobilization and neuromuscular and strength training have been deemed beneficial in the management of patients with chronic ankle instability (CAI). CrossFit training is a sport modality that involves these techniques.

Objective: To determine and compare the influence of adding self-mobilization of the ankle joint to CrossFit training versus CrossFit alone or no intervention in patients with CAI.

Design: Randomized controlled clinical trial.

Setting: Research laboratory.

Patients or Other Participants: Seventy recreational athletes with CAI were randomly allocated to either self-mobilization plus CrossFit training, CrossFit training alone, or a control group.

Intervention(s): Participants in the self-mobilization plus CrossFit group and the CrossFit training-alone group pursued a CrossFit training program twice a week for 12 weeks. The self-mobilization plus CrossFit group performed an ankle self-mobilization protocol before their CrossFit training, and the control group received no intervention.

Main Outcome Measure(s): Ankle-dorsiflexion range of motion (DFROM), subjective feeling of instability, and dynamic postural control were assessed via the weight-bearing lunge test, Cumberland Ankle Instability Tool, and Star Excursion Balance Test (SEBT), respectively. Results: After 12 weeks of the intervention, both the self-mobilization plus CrossFit and CrossFit training-alone groups improved compared with the control group (P , .001). The self-mobilization plus CrossFit intervention was superior to the CrossFit training-alone intervention regarding ankle DFROM as well as the posterolateral- and posteromedial-reach distances of the SEBT but not for the anterior-reach distance of the SEBT or the Cumberland Ankle Instability Tool.

Conclusions: Ankle-joint self-mobilization and CrossFit training were effective in improving ankle DFROM, dynamic postural control and self-reported instability in patients with CAI.

Key Words: range of motion, balance, rehabilitation

**NIH Risk of Bias Score:** 14/14

**Key Findings of the Study:**

1. Among patients with chronic ankle instability, ankle joint self-mobilization was effective in improving the self-reported instability, ankle dorsiflexion, range of motion, and dynamic postural control.
2. CrossFit training alone also improved ankle dorsiflexion, range of motion, dynamic postural control, and self-reported instability.
3. Adding self-mobilization to CrossFit training produced better results than either intervention alone.

**Reviewer Summary:**

This article studied the effects of ankle-joint self-mobilization plus CrossFit training compared to CrossFit training alone among individuals with chronic ankle instability (CAI). The control group received no intervention. They assessed changes in ankle-dorsiflexion range of motion (DFROM), subjective feeling of instability, and dynamic postural control.

Three techniques were implemented in the ankle-joint self-mobilization plus CrossFit training group to enhance posterior gliding of the talus: ankle-joint self-mobilization with a resistance band, kettlebell dorsiflexion, and band pull. The CrossFit training program implemented in both intervention groups consisted of a warm-up, a principal training phase (Workout of the Day), and a cool-down phase. The study used 3 methods to compare changes in ankle range of motion, functional performance, and balance: the weight-bearing lunge test, Star Excursion Balance Test (SEBT), and the Cumberland Ankle Instability Tool (CAIT).

The results showed the self-mobilization plus CrossFit training group significantly improved in ankle motion, dynamic balance, and self-reported ankle instability compared to the control group. The CrossFit-alone group also significantly improved in all areas when compared to the control group. The control group did not experience change. The combination of self-mobilization plus CrossFit training appeared to be superior to CrossFit alone for DFROM and SEBT, but not for CAIT. CAIT was greater in the self-mobilization plus CrossFit group, but not significant.

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

Based on the results, it can be concluded that self-mobilization plus CrossFit training appears to be a useful approach in improving DFROM, dynamic postural control, and self-reported instability in patients with CAI. Self-mobilization is a straightforward approach that can be taught by a professional and implemented by most individuals as a tool to gain additional benefits in ankle motion and in turn decrease injury rate in related body structures. It is a simple, cost-effective technique that can be used outside the clinical setting to create significant changes in an individual’s ankle instability. Clinicians can consider implementing ankle-joint self-mobilization techniques in rehabilitation along with strength training as a functional approach to treatment.