Introduction: The ankle has been reported to be the most frequently injured joint during physical activity and sport [1]. It has also been documented as the most frequently occurring injury in the United States: 1 in 10,000 people or 25,000 sprains per day [2]. One quarter of individuals are unable to attend school or work for more than 7 days [3]. Resulting in “an estimated 1.2 million physician visits per year, at a cost of $835–$1206 per patient with an annual cost of 3.8 billion dollars” [4]. Chronic Ankle instability has been defined as a reoccurrence of signs or symptoms after a first time lateral ankle sprain / strain has resolved. Signs and symptoms can include weakness, pain, swelling, another sprain, and feelings of giving out. Individuals with chronic ankle instability have a decrease in the range of dorsiflexion [5] [6]. The reoccurrence of ankle sprains have been found to be in the range of 20 – 74% depending on the source [7] [2] and conservative treatment is preferred over surgical interventions [7]. It has also been found that the talus of the injured limb of individuals was located in an anterior position relative to the tibia in comparison to uninjured limb [2]. In order to achieve maximal dorsiflexion the talus must slide posteriorly on the tibia [5]. Thus the treatment of these injuries via mobilizations in an anterior to posterior direction applied to the talus resulted in statistically significant increase in talocrural joint range of motion [6].

Methods: This study compared individuals without a history of ankle sprains and individuals with chronic ankle instability (CAI). There were a total of 10 participants per group (n=20). Participants were asked to perform three functional trials (squat, jump landing on single leg, and single leg stance) three times each prior to a talar mobilization and again afterwards. Functional range of motion was taken via a knee to wall test at four different intervals. They were taken before the functional trials, after the functional trials, immediately after the mobilization and after the functional trials were repeated again. Kinematic data was obtained via two four marker IRED clusters in order to evaluate joint maximums, minimus, and the instantaneous axis of rotation of the talocrural joint via 2 Optotrak 3020 (Northern Digital, Waterloo, Canada) camera banks. Kinetic data was collected using two force plates (AMTI, Watertown, MA) and was analyzed with respects to loading rates, center of pressure, and ground reaction forces.

Results: There was an increase in functional range of dorsiflexion achieved for both the control group and the Chronic Ankle Instability group throughout the trials. The largest increase in functional range of motion came immediately post mobilization (Figure 1). This is evident as there is a larger increase in range of motion between knee to wall 2 and knee to wall 3 for the control group and the CAI group.

Discussion and Conclusions: This study helps support previous literature indicating there is an increase in talocrural joint range of motion after mobilization to the talus. Further evaluation is warranted to determine if there are any affects of the mobilization during functional tasks.

References: