

THE EFFECT OF VIBRATION-BASED FEEDBACK ON GAIT BIOMECHANICS IN THOSE WITH CHRONIC ANKLE INSTABILITY

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Individuals with chronic ankle instability (CAI) express increased ankle inversion and large lateral deviations in center of pressure throughout the gait cycle. It is hypothesized that these gait impairments further the progression of CAI as vulnerable positioning at the ankle leads to subsequent injuries and abnormal cartilage loading. The purpose of this study was to determine if a single session of vibration-based feedback gait training in a laboratory environment and a real-world environment can decrease excessive inversion in individuals with CAI. Seven participants with CAI completed a laboratory training session and a real-world training session. During the laboratory session, participants walked on a treadmill for 10 minutes with vibration feedback, and at least 48 hours later, participants completed a 1 mile walk outside with vibration feedback for the real-world training session. Measurements were taken before and after training as well as after a 5 minute rest to determine retention. The stance phase of gait was divided into 10 subphases to be used for analysis. No significant changes in inversion ankle angle positioning between baseline, post, and retention measures for either the laboratory session ($p>0.05$) or the real-world session ($p>0.05$) were identified. Out of the seven participants, four responded to the treatment as expected, and three did not. It is possible that vibration-based gait training may illicit biomechanical changes in individuals with CAI, but future research should focus on increasing sample size and understanding the characteristics of responders versus non responders.