

JOINT MOBILIZATION IMPROVES SPATIOTEMPORAL POSTURAL CONTROL AND RANGE OF MOTION IN THOSE WITH CHRONIC ANKLE INSTABILITY

Hoch MC, Staton GS, McKeon PO: University of Kentucky, Lexington, KY

Context: Individuals with chronic ankle instability (CAI) have demonstrated impaired postural control and decreased dorsiflexion range of motion (ROM). Joint mobilization (JTMOB) may assist in improving postural control and restoring ROM in this group. **Objective:** Examine the effect of a single posterior talar glide JTMOB treatment on time-to-boundary (TTB) postural control and dorsiflexion ROM. **Design:** Randomized crossover study. **Setting:** Research laboratory. **Participants:** Twenty individuals with self-reported CAI (9 males, 11 females, age: 23 ± 5.5 years, height: 174.6 ± 7.8 , weight: 76.9 ± 14.8) participated in two separate testing sessions. Subjects were included if they reported at least one ankle sprain, two episodes of ankle “giving way” in the past three months, and disability scores of $\leq 90\%$ on the Foot and Ankle Ability Measure (FAAM) and $\leq 80\%$ on the FAAM-Sport. Subjects who reported bilateral CAI were tested on the self-reported worse limb. **Intervention(s):** On each test session, subjects either received two, 2-min repetitions of posterior talar glide JTMOB consisting of 1-sec oscillations at the point of tissue restriction or rest for 5 min. On both days, subjects performed three, 10-second trials of barefoot single-limb stance on a forceplate with eyes open (EO) and eyes closed (EC). Subjects also performed three trials of the weight-bearing lunge test to assess dorsiflexion ROM. The mean of each measure was used for analysis. Independent variables included treatment (JTMOB, control) and vision (EO, EC). **Main Outcome Measures:** The mean of TTB minima and the standard deviation of TTB minima in the mediolateral (ML) and anteroposterior (AP) directions and dorsiflexion ROM (cm) were the dependent variables. Separate treatment by vision ANOVAs were used to compare each TTB variable. Post-hoc paired sample t-tests were calculated to explain significant interactions. A paired sample t-test was used to compare dorsiflexion ROM. The alpha level was set at $p \leq 0.05$. **Results:** Significant treatment by vision interactions were found for the mean of TTBAP minima ($p = 0.001$), the standard deviation of TTBAP ($p = 0.001$), and the mean of TTBML minima ($p = 0.03$). Post hoc analyses revealed significantly higher TTB values for the JTMOB treatment for the mean of TTBAP minima with EO (JTMOB: 5.93 ± 1.40 s, Control: 4.95 ± 1.05 s, $p < 0.001$) and the standard deviation of TTBAP minima with EO (JTMOB: 3.85 ± 1.03 s, Control: 3.04 ± 0.86 s, $p < 0.001$). However, no difference was detected for the mean of TTBML minima with EO ($p=0.07$). There were no differences between JTMOB-EC values and control-EC values in either direction. For both treatments, TTB-EO values were significantly higher than TTB-EC values ($p<0.001$). A significant increase in dorsiflexion ROM was detected after JTMOB treatment compared to control (JTMOB: 12.62 ± 2.79 cm, Control: 12.20 ± 3.01 cm, $p = 0.01$). **Conclusions:** A single posterior talar glide JTMOB treatment significantly improved TTB postural control and dorsiflexion ROM. This indicates that incorporating JTMOB into rehabilitation can improve sensorimotor function and arthrokinematic restrictions experienced by those with CAI.

Word Count: 489