

Acute Effects of Lateral Ankle Sprains on Range of Motion, single limb Balance, and Self-Reported Function

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Context: One in three individuals who suffer a lateral ankle sprain (LAS) subsequently develop chronic ankle instability; characterized by life-long residual symptoms, recurrent injury, and decreased physical activity. Collectively, the high incidence of chronic ankle instability indicates that intervention effectiveness for acute LAS is poor. However, our inability to properly treat acute LAS is not surprising given our limited understanding of post-LAS consequences. **Objective:** To examine the acute effects of LASs on dorsiflexion range of motion (DFROM), time-to-boundary (TTB) single limb balance (SLB), and self-reported function (SRF). **Design:** Prospective cohort study. **Setting:** Research Laboratory. **Patients:** 12 patients (6 males, 6 females; 21.6 ± 2.9 yrs; 172.9 ± 13.1 cm; 79.1 ± 21.4 kg) with an acute LAS participated. All patients suffered a first time ankle sprain or a first recurrent sprain that was ≥ 12 after the initial sprain. **Interventions:** All patients were evaluated for DFROM, TTB, and SRF at 1-week, 2-weeks, 4-weeks, 6-weeks, and 8-weeks post injury. Both the involved and uninvolved limbs were measured during the patients first test session with follow-up sessions testing only the involved limb. **Main Outcome Measures:** The weight-bearing lunge test (WBLT) assessed DFROM as the farthest distance (cm) from the great toe to the wall achieved when the knee touched the wall without the ipsilateral heel lifting off the ground. All participants performed 3 trials of single limb stance with eyes open on a force plate for 10 seconds to measure their single limb balance. To calculate TTB measures, COP data files were processed using Matlab software program. SRF was measured using the Foot and Ankle Ability Measure (FAAM) and FAAM-Sport (FAAM-S). Post injury time points were compared to a control condition; uninvolved limb for DFROM and SLB and preinjured data for SRF using multivariate ANOVAs with an alpha level of 0.05. **Results:** Relative to the control condition (FAAM: $97.0 \pm 7.8\%$, FAAM-S: $94.5 \pm 13.8\%$), FAAM and FAAM-S were significantly lower at 1-week (FAAM: $63.5 \pm 26.6\%$; $p < 0.01$, FAAM-S: $37.1 \pm 21.5\%$; $p < 0.01$), and 2-weeks (FAAM: $76.1 \pm 22.0\%$; $p = 0.04$, FAAM-S: $55.3 \pm 26.1\%$; $p < 0.01$) post injury. The FAAM-S ($55.3 \pm 26.1\%$; $p = 0.02$) was also significantly lower score compare to control condition at 4-weeks post-injury. Both FAAM and FAAM-S were not significant different at 6-weeks post-injury. DFROM was not significantly different between the control condition (12.3 ± 4.4 cm), 1-week (9.2 ± 5.4 cm), 2-weeks (9.5 ± 4.8 cm), 4-weeks (10.8 ± 3.8 cm), 6-weeks (10.7 ± 5.0 cm), and 8-weeks post-injury (11.4 ± 5.0 cm). Similarly, post-injury TTB measures were not significantly different from the control condition. **Conclusions:** Following acute LASs, SRF during activities of daily living returns to pre-injury levels in 4-weeks while SRF during sporting activities takes 6-weeks to return to pre-injury levels. Non-significant declines in DFROM and TTB were observed as in this sample of acute LAS and appear to present with unique recovery patterns. Different recovery patterns among the tested outcomes indicate the need for further research with a larger cohort and for a longer post-injury duration.