

## **EFFECT OF INVERTOR/EVERTOR AND PLANTAR-/DORSIFLEXOR FATIGUE ON PLANTAR PRESSURE DISTRIBUTION**

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### **ABSTRACT**

Running induced lower limb muscle fatigue does not identify which loading alterations relate to fatigue of specific muscles. The purpose of the present study was to compare the effect of selectively induced fatigue of the lower limb muscles on plantar pressure distribution. Twelve male participants were assessed. A quasi-experimental pre-test post-test design was applied. The RS Scan system prior to and following dominant leg concentric isokinetic ankle invertor/evertor (InEv-F) and plantar-/dorsiflexor (PD-F) fatiguing was used. Maximum pressure (kPa) and impulse for 10 plantar regions of the dominant leg was measured. Differences between the dependant variables were evaluated with repeated-measures ANOVA with Tukey HSD tests for post hoc analysis ( $p < 0.05$ ). InEv-F and PD-F resulted in increased forefoot and decreased toe pressure and impulse. InEv-F attributed to significantly decreased heel pressure. Fatigue of tibialis anterior and posterior, achieved during both InEv-F and PD-F, resulted in loading similarities during fatigue. Independently InEv-F and PD-F contributed to increased injury risk through altered loading. To mitigate the injury risks of running associated with lower limb fatigue, targeted ankle inversion/eversion and plantar-/dorsiflexion resistance training is recommended.

**Key words:** Plantar pressure; Foot loading; Fatigue; Running; Biomechanics.