

## THE EFFECT OF DOMINANT AND NON-DOMINANT ANKLE SPRAIN ON BODY BALANCE AND ANKLE MOBILITY AND MUSCLE FORCE

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**Study Design:** Cross-sectional study

**Objectives:** To compare the effects of dominant and non-dominant ankle sprain on body balance, ankle joint mobility and related muscle force.

**Background:** It is unclear whether the effect of ankle sprain varies depending on whether the injured foot is dominant or non-dominant.

**Methods and measures:** Twenty-one able-bodied subjects (control group (CG)), six female with right ankle sprain (ERA) and six females with left ankle sprain (ELA), between 20 to 30 years old with right dominant foot, were studied. Using a dynamometer, a goniometer and Romberg test, the ankle's maximum isometric force, mobility and balance control were quantified and analyzed using MANOVAs ( $\alpha < 0.05$ ).

**Results:** The balance control on CG, ERA and ELA groups were ( $456.8s \pm 278.1$ ), ( $60.33s \pm 73.7$ ) and ( $29.3s \pm 13.2$ ) respectively. This implies a significant balance impairment in injured subjects particularly the ELA group ( $p < 0.05$ ). Compared to CG, the muscle force of ERA group was affected by 26% in the injured side. However, in ELA group, both of the right and the left feet were affected by 12% and 39% for plantar flexors and 28% and 30% for dorsiflexors respectively ( $p < 0.05$ ). Plantar flexion was affected in injured subjects. However, in ERA group, only the injured foot (by 79%) and in ELA group the injured (60%) and uninjured feet (89%) lost dorsiflexion mobility.

**Conclusion:** Ankle sprain affects balance, ankle muscle force and mobility. Non-dominant foot injury affects both sides. Conversely, dominant foot injury does not affect the non-injured foot.