

Long-term impact of ankle sprains on postural control in fascial densification

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Background: Ankle sprain (AS) is very common in the general population and especially among sportsmen. Long-term effects of significant AS on postural control and fascial changes are unknown.

Aims: to evaluate the effect of an AS in the past on postural control and fascial changes in the adjacent body segment.

Methods: Case-control study included 20 young, apparently healthy subjects with a history (≥ 6 months) of significant (Grades 2, 3) AS and 20 control subjects without AS. Demographic data were collected and all subjects undergo Star excursion balance test (SEBT) and evaluation of fascial densification in calf and upper foot areas according to the Stecco method. Study was performed in accord with international and local ethical policies and approved by IRB.

Results: Comparison of the SEBT results in the research group significant differences were found between the leg with and without AS with lower results for a sprained foot: anterior ($p = 0.009$), posterior ($P = 0.048$), antero-medial ($p = 0.043$), postero-medial ($p = 0.011$). In the control group no difference in SEBT parameters was found between right and left legs. In the comparison of SEBT results (leg with AS in the study group vs. right leg in the control group) significant differences were found (lower scores in the AS controls) in following directions: anterior ($p < 0.001$), antero-lateral ($p < 0.001$), posterior ($P = 0.028$), postero-medial ($P = 0.001$), medial ($P = 0.001$), antero-medial ($p < 0.001$).

In the study group, the leg with AS significantly high prevalence of fascial densification was found in following points: talus internal rotation ($p = 0.020$), talus retro ($p = 0.034$), talus external rotation ($p = 0.046$) and pes external rotation ($p = 0.008$). No difference between the legs was found in a control group. A comparison between the leg with AS in the study group and the right leg in a control group showed significantly high prevalence of fascial densification in following points: talus internal rotation ($p = 0.014$), talus retro ($p = 0.001$), talus lateral ($p = 0.040$) and pes external rotation ($p = 0.060$).

Conclusions: Our results show that there are long term effects of an AS on postural control and on the sensitivity and motility of fascia in calf and foot. More observational and interventional studies are needed to understand the causal relationships between fascial condition and postural control and to suggest possible ways of treatment.