

The Effect of Structural Integration on Ankle Joint Position Sense and Balance

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BACKGROUND Structural integration (SI) is a manual therapy created by Ida Rolf that focuses on whole body functionality [1]. The mechanisms and effectiveness of the treatment, however, are still not well known. This may be due to limited studies done using small sample sizes combined with no placebo or control group [1]. Possibly underlying the effects of SI is fascia, which is affected largely by tension and has proprioceptive capabilities based on the function of mechanoreceptors [2]. The purpose of this study was to determine if SI could affect ankle joint position sense (JPS) and balance, both proprioceptive, in recreational soccer players.

METHODS After approval from the university IRB, twenty subjects were randomly assigned into two groups; the treatment group underwent 10 SI sessions and the control group had no treatment. Pre-, 5-week, and post-intervention measurements included ankle JPS and balance assessment. JPS was assessed with an iPod application to measure joint replication error of three angles within dorsiflexion and plantarflexion. Balance was evaluated with center of pressure (COP) excursion, in the x and y directions, as measured by a force platform during four conditions of a single-leg balance test.

RESULTS At time of submission, only pre- and 5-week measurements were completed. There was a significant effect of angle ($p < 0.01$) on JPS error, but group ($p = 0.065$) and time ($p = 0.713$) interactions with angle were non-significant. Even so, JPS error reduced in the treatment group from $3.62 \pm 2.89^\circ$ to $3.32 \pm 1.62^\circ$ at 70° plantarflexion, from $3.26 \pm 1.70^\circ$ to $2.69 \pm 2.04^\circ$ at 90° dorsiflexion, and from $2.96 \pm 2.30^\circ$ to $2.29 \pm 0.41^\circ$ at 100° dorsiflexion. The control group reduced error at 100° from $2.01 \pm 2.05^\circ$ to $1.63 \pm 1.09^\circ$, but increased at 70° from $4.05 \pm 1.96^\circ$ to $4.67 \pm 1.85^\circ$ and 90° from $3.37 \pm 1.48^\circ$ to $3.70 \pm 2.09^\circ$. For balance, there was a significant interaction between condition and time on COP excursion in the x ($p = 0.006$) and y ($p = 0.035$) directions. Excursion reduced from pre- to 5-week testing across all conditions. Group had a non-significant effect on x ($p = 0.677$) and y ($p = 0.363$) COP excursion.

CONCLUSIONS The balance changes appear to be a learning effect in both groups; after 5 weeks, both improved significantly. JPS error improved in the treatment group, but non-significantly. It is possible that five weeks of SI fascial manipulation is not enough time for significant changes between groups.

REFERENCES

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