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### The Effect of Seated Posture on Thoracolumbar Fascia, thus Influencing Balance

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Excessive flexion or extension of the lumbar spine, otherwise known as poor posture, can result in mechanical alterations of the fascia and surrounding tissues. This excessive or prolonged loading can result in micro- and macro-changes to fascial systems. These changes put stress on the thoracolumbar fascia (TLF) and exert additional pressure on the paraspinal muscle compartment (PMC), which may result in proprioceptive deficits, negatively impacting balance. **PURPOSE:** The purpose of this study was to determine if acute insults to the TLF were capable of affecting measures of balance. **METHODS:** Healthy young individuals (n=16; M= 8, F= 8; ages 19-21) were chosen for this experiment. Participants were not involved in varsity sports, not taking oral contraceptives, and had no history of back injury. During baseline testing (BL), hip angle was measured while seated in a comfortable position. In the following two sessions, participants sat in different forced postures, erect (EP; upright with a hip angle of 90°) and slouched (SP; hip angle of < 90°). Posture was maintained for 20-minutes while watching media on a laptop in a quiet laboratory. Immediately following each posture, participants performed a sensory organization test (SOT) on a Neurocom EquiTest. The six SOT conditions isolate the sensory systems that affect balance. For each session, SOT conditions were randomized. Participants were required to wait at least 24 hours prior to the next session. Dependent t-tests were conducted using SPSS and analyzed BL vs. EP, BL vs. SP, and EP vs. SP. **RESULTS:** During BL vs. EP, increased equilibrium scores were observed in Condition 3 ( $BL_3 - EP_3 = -1.354 \pm 2.664$ ;  $p = 0.025$ ), Condition 5 ( $BL_5 - EP_5 = -5.288 \pm 8.859$ ;  $p = 0.031$ ), and Condition 6 ( $BL_6 - EP_6 = -10.369 \pm 12.446$ ;  $p = 0.005$ ). During SP, participants performed better in Condition 3 ( $BL_3 - SP_3 = -2.606 \pm 3.321$ ;  $p = 0.007$ ) and Condition 6 ( $BL_6 - SP_6 = -14.739 \pm 14.194$ ;  $p = 0.001$ ) compared to BL. No significance was found for EP vs. SP. **CONCLUSION:** The acute insult to the TLF was not influential enough to affect all balance sensory systems, but there is evidence that some systems were. This is beneficial for future research where longer durations of insult to the TLF may elicit significance due to increased stress on the PMC as well as more prominent micro- changes to the fascia and surrounding tissues.