LOW BACK PAIN AND POSTURAL CONTROL, EFFECTS OF TASK DIFFICULTY ON CENTRE OF PRESSURE AND SPINAL KINEMATICS.

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ABSTRACT

Association of low back pain and standing postural control (PC) deficits are reported inconsistently. Demands on PC adaptation strategies are increased by restraining the input of visual or somatosensory senses. The objectives of the current study are, to investigate whether PC adaptations of the spine, hip and the centre of pressure (COP) differ between patients reporting non-specific low back pain (NSLBP) and asymptomatic controls. The PC adaption strategies of the thoracic and lumbar spine, the hip and the COP were measured in fifty-seven NSLBP patients and 22 asymptomatic controls. We tested three “feet together” conditions with increasing demands on PC strategies, using inertial measurement units (IMUs) on the spine and a Wii balance board for centre of pressure (COP) parameters. The differences between NSLBP patients and controls were most apparent when the participants were blindfolded, but remaining on a firm surface. While NSLBP patients had larger thoracic and lumbar spine mean absolute deviations of position (MADpos) in the frontal plane, the same parameters decreased in control subjects (relative change (RC): 0.23, 95% confidence interval: 0.03 to 0.45 and 0.03 to 0.48). The Mean absolute deviation of velocity (MADvel) of the thoracic spine in the frontal plane showed a similar and significant effect (RC: 0.12 95% CI: 0.01 to 0.25). Gender, age and pain during the measurements affected some parameters significantly. PC adaptions differ between NSLBP patients and asymptomatic controls. The differences are most apparent for the thoracic and lumbar parameters of MADpos, in the frontal plane and while the visual condition was removed.