

Abstract

Title: Changes of trunk mobility in relation to postural stability

Objectives: The main aim of this work was to quantitatively observe segmental trunk mobility in 3D space during flexion of arm and create coupled pattern phenomena of particular spine segments. Additional aim was to verify the effect of modification of the measurements on movement performance and to relate the given movement of the arm and the segmental trunk mobility to changes in the load of the lower extremities.

Methods: The measurement itself was performed on 23 asymptomatic males aged 20 - 30. In 3 modifications of the motion measurement - no load, with load and with load and hold with arm forward, probands performed 5 repetitions of right arm flexion in the sagittal plane. The motion was scanned by system Qualisys markers while standing on 2 Kistler stabilometric platforms.

Results: In most probands, the segmental movement of the spine was repeatable. It was possible to compare it between probands and create coupled pattern phenomena of the spine. The increased arm load and hold with arm forward caused an increase in the deflections of the particular spine segments in sagittal plane. Furthermore, the increase in load has led to demonstrably greater load changes in the lower extremities. The link between the segmental trunk mobility during arm movement and the changes in the lower extremities load was not confirmed.

Keywords: thoracic spine, arm flexion, qualisys, stabilometry