

Abstract

Title: The relationship between motor tests and dynamic postural stability parameters

Objectives: The aim of this dissertation is to verify the relationship between motor performance and dynamic postural stability parameters in young individuals in the healthy population. To find out in addition whether there exists a significant relationship between motor tests and dynamic postural stability parameters, as well as to verify the differences between males and females within this relationship.

Methods: This is a quantitative correlation study investigating the possible relationship between motor tests and dynamic postural stability parameters in young healthy individuals. The Smart EquiTest device from Neurocom was used to measure dynamic postural stability. The following tests were used for these measurements: Limits of Stability (LOS), Sensory Organisation Test (SOT), Motor Control Test (MTC), Adaptation Test (ADT), Weight Bearing/Squat (WBS), Unilateral stance (US) and Rhythmic Weight Shift (RWS). Motor performance was measured using 2 batteries of tests: UNIFIT 6-60 and EUROFIT for adults. In total, 24 healthy volunteers (9 males and 15 females) aged 21-29 years were deliberately enrolled for this study. Each volunteer undertook 8 motor performance tests, anthropometric measurements and 7 tests on the Smart EquiTest device (the "EquiTest"). Data from the tests were investigated, statistically processed and compared. Statistical evaluation was performed using Microsoft Excel; the correlation between given parameters was calculated.

Results: The study results showed that more than half of the motor tests correlate with dynamic postural stability for at least one of parameters. In total, 9 motor tests correlate with a large correlation coefficient ($r \geq \pm 0.5$) with dynamic postural stability parameters. We found out in addition that the SOT dynamic postural stability test correlates best with the motor tests, where 10% of results have a large correlation. Correlation of postural stability parameters and motor tests differs between males and females.

Keywords: UNIFIT 6-60, EUROFIT, computerised dynamic posturography, NeuroCom Balance Manager System, Smart EquiTest