

Izbira »Body Sway« parametrov na osnovi njihove občutljivosti in ponovljivosti

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Abstract

Selection of body sway parameters according to their sensitivity and repeatability

For the precise evaluation of body balance, static type of tests performed on a force plate are the most commonly used ones. In these tests, body sway characteristics are analyzed based on the model of inverted pendulum and looking at the center of pressure (COP) movement in time. Human body engages different strategies to compensate for balance perturbations. For this reason, there is a need to identify parameters which are sensitive to specific balance changes and which enable us to identify balance sub-components. The aim of our study was to investigate intra-visit repeatability and sensibility of the 40 different body sway parameters. Twenty-nine subjects participated in the study. They performed three different balancing tasks of different levels of difficulty, three repetitions each. The hip-width parallel stance and the single leg stance, both with open eyes, were used as ways to compare different balance intensities due to biomechanical changes. Additionally, deprivation of vision was used in the third balance task to study sensitivity to sensory system changes. As shown by intraclass correlation coefficient (ICC), repeatability of cumulative parameters such as COP, maximal amplitude and frequency showed excellent repeatability ($ICC > 0,85$). Other parameters describing sub-dynamics through single repetition proved to have unsatisfying repeatability. Parameters most sensitive to increased intensity of balancing tasks were common COP, COP in medio-lateral and in antero-posterior direction, and maximal amplitudes in the same directions. Frequency of oscillations has proved to be sensitive only to deprivation of vision. As shown in our study, cumulative parameters describing the path which the center of pressure makes proved to be the most repeatable and sensitive to detect different increases of balancing tasks enabling future use in balance studies and in clinical practice.

Key Words: body sway, parameters, sensitivity, repeatability, balance

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