

Influence of the shoe type on the ground reaction forces during gait

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Abstract: Aim: The aim of this research was to estimate a relationship between the type of footwear and ground reactions forces during gait, and its influence on postural stability. Background: Most of the experiments dedicated to gait analysis are made barefoot. This type of research does not give any information about the influence of shoe-type on GRF. Also, the influence of the shoe type on postural stability, like body sway and center of pressure displacement is still unclear. In the literature no complex study performed by male and female volunteers in different shoe types can be found, i.e. no experiment was done in which each of the volunteers was performed gait in different footwear and barefoot in one session. Materials and methods: 7 women and 5 men took part in the experiment. Each of them performed a gait on the force platform in different shoe types - with different heel height and stiffness. Women walk: barefoot, in shoes with flat, profiled sole, high-heels and men: barefoot, suit shoes and sports shoes Also, one minute stabilograms were recorded. Results: Results revealed differences in maximal values of ground reaction forces for different footwear types and their influence on static stability, like amplitude of COP medio-lateral and antero-posterior. Also kinetic, like time of support phase, heel-off and toe-off phase changed. Moreover, an influence of the shoe type on the M-L, A-P and vertical forces are described. Acknowledgment: The work has been supported by the National Science Centre of Poland under the grant OPUS 9 no. 2015/17/B/ST8/01700.

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