Abstract

Title: Gait analysis of female basketball players

Objectives: The main objective of this thesis is to perform gait analysis using Qualisys and Kistler systems in long time female basketball players and population that does not engage in any regular sports activity on competitive level. Selected spatiotemporal, kinematic and kinetic gait parameters are compared between measured groups.

Methods: 20 female probands participated in this experimental study. Tested group consists of 10 long time female basketball players between ages of 21 and 29 (mean age of 24,5). Control group consists of 10 female probands between ages of 24 and 25 (mean age of 24,5) that do not engage in any competitive sport on regular basis. Qualisys Motion Capture system was used to gather 3D kinematic gait data. Ground reaction forces were measured by using Kistler force plates. Data was obtained by both systems at the same time. Evaluated gait parameters were walking speed, step length, pelvic and shoulder rotation range of motion in transversal plane, CG of foot range of motion and all ground reaction forces components. Two-sample t-test and Mann-Whitney U test with significance level of 0,05 were used for statistical analysis of obtained data.

Results: Results of this study demonstrate that long time engagement in asymmetrical sport can have influence on certain gait parameters. Shoulder rotation range of motion in transversal plane and step length in relation to height showed statistically significant difference between compared groups. Female basketball players achieved greater mean range of motion in comparison with control group. Step length in control group got linearly longer with increasing height which was not the case in tested group where the same linearity was absent and the tallest players made shorter steps. Certain differences are shown in weight acceptance to mid-stance ratio of vertical ground reaction force of both lower limbs however neither was statistically significant. Results cannot be applied to broader population because of smaller sample size.

Key words: basketball, gait analysis, kinematic gait analysis, ground reaction forces, Qualisys, Kistler