ABSTRACT

Title: Experimental investigation of human gait analysis parameters

Objective: The main objective of diploma thesis was an experiment, that examined kinematic and dimensional parameters of human gait which was captured by several cameras and acquired data was recorded in 2D and 3D measurement.
Secondary objective was to compare and statistically evaluate data acquired from measurement.
The objective of analysis was to discover and describe possible regularities, patterns of human gait and other connections in investigated subjects.

Methods: Comparative method was used in the thesis. The purpose of the experiment was to compare parameters measured during attempts of every subject that were conducted under different conditions (different velocity, dressed, undressed, in the environment of 2D and 3D recording) and also to compare different subjects with each other.

Results: In the experiment we observed that it is possible to prove the relation between the length of a step and the velocity of gait and also the relation between the change in the body height and the velocity of human gait by three dimensional recording of gait and its analysis. This contention was confirmed in the comparison dressed and undressed subjects. The result of the experiment was, that with increasing velocity of gait is changed the length of the step and the change in the body height at fast walking. Relation between the length of the step and the real body height was not proved. The length of the step at particular velocity is individual. When we compared 2D and 3D recording we found out that three dimensional recording is more accurate and more reliable.

Key words: gait, kinematic analysis, analysis of gait, biomechanics