Abstract

Title: Assessment of the significance of falling techniques through the measurement of force and impact velocity during sideways falls.

Goals: The aim of this study is to compare biomechanical parameters of controlled and uncontrolled breakfalls using a force plate, such as force impulse, maximum force and time.

Methods: Two top judo competitors with at least 10 years of judo training experience were purposively selected for the study. One of the selection criteria was the technical level that reaches at least 1st kyu (brown belt) which guarantees the technical maturity of the individuals. A biomechanical force plate from Kistler was used to obtain data which allows real-time measurement of force and impact velocity. The data were evaluated using BioWare software. Furthermore, descriptive analysis of the results was performed in Microsoft Excel.

Results: The results of this study show that a controlled (controlled) sideways fall performed with the technique used in judo generally exhibits a smaller average maximum impact force, longer duration and higher average force impulse than an uncontrolled (uncontrolled) sideways fall.

Keywords: Judo, breakfalls, fall biomechanics, force plate, maximum force, force impulse, fall velocity, controlled fall, uncontrolled fall.