

Abstract

Title: Kinesiological analysis of tachi-waza technique in judo

Objectives: The aim of this work is to measure activity of selected back muscles and oblique abdominal muscle using surface EMG. At the same time, determine the load with comparison with the maximum free contraction for musculus erector spinae with selected judo techniques tai otoshi, o goshi and uchi mata. Then perform intra-individual comparisons between different techniques and comparisons between measured probands.

Methods: To determine the muscle chain in a motion cycle in techniques tai otoshi, o goshi and uchi mata by surface EMG method and kinetic analysis. Six probands with several years of experience in judo were selected to measure. The measurements were four muscles on both sides: musculus trapezius, musculus erector spinae, musculus latissimus dorsi a musculus obliquus externus abdominis.

Results: There was some similarity for intra-individual comparison. Three probands between the technique tai otoshi and o goshi, two between tai otoshi and uchi mata. Can be assumed, that techniques tai otoshi is basic technique with which the probands began in their youth. In the inter-individual comparison, the results showed, that the technique is very individual. Most muscles involved 80% of the average motion cycle. Most often at the end of the movement cycle was the m. obliqus externus abdominis. Unequal engagement of the right and left sides and the overall load of this muscle were found when evaluating MVC results m. erectoru spinae. This can lead to health problems.

Keywords: judo, electromyography, tachi-waza, kinesiology, MVC