

Analysis of right arm biceps brachii muscle activity with varying the electrode placement on three male age groups during isometric contractions using a wireless EMG sensor

Abstract

The purpose of this study was to quantify and analyze the muscle activity of the biceps brachii (BB) muscle from three different male age groups and varying the electrode placement on their muscles. Six subjects in three different age groups (adolescents, vicenarian and tricenarian) participated in this study. The electrodes were placed on one of three locations on the upper arm BB: muscle belly (M), upper muscle of the belly (U) and lower muscle of the belly (L). The current study shows some significant differences of muscle activeness among the three age groups and the electrode placement location. It indicates that there is difference in BB activity between adolescents and vicenarians, and between vicenarians and tricenarians ($p < 0.05$), but no interaction between adolescents and tricenarians ($p > 0.05$). According to statistical analysis, vicenarians' BBs are the most active, and then adolescents, and then tricenarians. The majority of the EMG results show that the muscle activity is highest in the lower portion of the muscle and decreases continuously up to the upper portion. Therefore, the present findings suggest that, EMG activity varies due to electrode placement and results are not similar for all age groups. Results are helpful for biceps rehabilitation, muscle coordination and other neuromuscular activities of the upper arms.

Keywords — Adolescent, electromyography, tricenarian, vicenarian, electrode placement