Abstract

Background: Pain and dysfunction of the shoulder complex are commonly found physiotherapy practice. These musculoskeletal abnormalities are related to instability and inadequate kinematic function, that depend on the integrity of the muscle tissues. Thus, to enhance the results of exercise therapies, and prevent and attenuate pain and dysfunction, the use of oscillatory pole has been implemented in clinical practice. Objectives: The purpose of this study was to analyze the electromyographic (EMG) activity of shoulder stabilizing muscles during exercises performed with oscillatory and non-oscillatory poles. Methods: Twelve female volunteers, aged 20.4 years±1.9, participated in this study. EMG data were collected from upper trapezius (UT), lower trapezius (LT) and middle deltoid (MD) during three different exercises with an oscillatory and a non-oscillatory pole. The EMG signals were analyzed in the time domain through the calculation of Root Mean Square (RMS). The RMS values were normalized by the peak value obtained over all trials for each muscle. Statistical analysis was performed with repeated measures ANOVA and post-hoc of Bonferroni tests. Results: The EMG activity of UT, LT and MD muscles were significantly higher with the oscillatory pole than the non-oscillatory pole (all p<0.001). There were no significant differences in the activation of these muscles between exercises. Conclusion: The results of the present study indicated that the oscillatory pole does require higher activation of the shoulder muscles and therefore, may be useful in the training of the shoulder complex.

Keywords

Electromyography, shoulder, biomechanics, exercise, vibration.