Abstract: Relatively few studies were carried out to quantify muscle fatigue resulting from isometric contractions in elite female athletes. The purpose of this study was to evaluate fatigue profile of 30-seconds duration isometric contractions using surface electromyography (EMG) in female elite rowers. The subjects were eleven healthy female athletes between 16-24 years of age. The Vastus Lateralis (VL) muscle of the dominant leg was chosen for the EMG recordings. Experimental set up was designed in accordance to the rowing sport. While the hip joints for all the subjects were brought to a 100° flexion, the knee joints were brought to a 90° flexion. The range of the knee joint angle (15°) during the movement was set from 90 to 105° for each subject. The maximal value of MVC was used as the reference value to determine a load of 75% of MVC for each subject. The median frequency (MDF) and the mean frequency (MNF) of the power spectrum and Root Mean Square (RMS) were computed for the surface EMG signal. Least squares line fittings were computed for time series of each parameter to find initial and final values of MDF, MNF and RMS parameters. These values were compared by Wilcoxon test. Significant decreases were found between initial and final values for both MDF and MNF (p<0.01). Also, significant decrease (p<0.01) was found between initial and final RMS. The shift of the EMG power spectrum to lower frequency content has been reported in the literature accompanied by an increase of RMS values. As only few studies have been carried out with women subjects, our RMS results may indicate a special compensatory strategy of muscle load sharing or differences in muscle fiber content in these female rowers.

Keywords: Electromyography, Female, Athletes, Rowers, Fatigue, Isometric

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