Abstract

Behavior of emg activation of rectus femoris, vastus lateralis and vastus medialis muscles during maximum contraction before and after a series of repeated efforts.

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Abstract

The proposal of this study was to analyze the behavior of electromyographic activity of the Rectus Femoris, Vastus Lateralis and Vastus Medialis muscles during Maximum Isometric Voluntary Contraction (MIVC) performed before (MIVC-1) and after (MIVC-2) the series of repeated effort (four series of 12 repetitions) of the movement of extending the knee performed on an extending table with 80% of maximum load (1RM) during 15 seconds each MIVC. The participants were 10 soccer players (average age of 17.7 +/- 0.67, average corporal mass of 67.07 +/- 6.06 kg and average height of 174.6 +/- 4.98 cm). Surface electrodes (disposable) were used. The frequency established was 1024 Hz (Low/High pass at 600/10 Hz). The statistical treatment employed analysis of variance (ANOVA) for repeated measurements followed by the HSD post hoc test of Tukey. The level of significance adopted for all analyses was p < 0.05. For the Rectus Femoris muscle the value expressed in RMS referring to MIVC-1 was 346.97 +/- 63.93 and MIVC-2 was 287.58 +/- 61.03 (p = 0.06) corresponding to 82.88% of MIVC-1. Regarding the Vastus Lateralis muscle the value in MIVC-1 was 385.50 +/- 120.23 and in MIVC-2 it was 316.87 +/- 67.85 (p = 0.04) corresponding to 82.19% of MIVC-1. For the Vastus Medialis muscle MIVC-1 value was 430.88 +/- 84.23 and MIVC-2 was 396.32 +/- 70.40 (p = 0.03) corresponding to 91.97% of MIVC-1. Results demonstrated that the muscles presented action potencies during the actions performed, being greater in MIVC-1. The Rectus Femoris muscle presented electromyographic signals of lesser amplitude than the Vastus Lateralis and Vastus Medialis muscles. The Vastus Medialis muscle presented a greater percentage value between MIVC-1 and MIVC-2. The Rectus Femoris muscle was the first to present signs of fatigue.

PMID: 19097479 [PubMed - indexed for MEDLINE]