

عنوان مقاله:

.Estimation of Muscle Fiber Types Using Force-Time Curves During Submaximal Leg Press Task

محل انتشار:

دوفصلنامه فناوری های پیشرفته ورزشی، دوره 8، شماره 2 (سال: 1403)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Fariborz Imani - Department of Sports Biomechanics, Faculty of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran

Abbas Meamarbashi - Department of Sports Biomechanics, Faculty of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran

Mohsen Barghamadi - Department of Sports Biomechanics, Faculty of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran

خلاصه مقاله:

In the field of sports sciences and especially sports physiology, one of the most important and interesting topics is the estimation of the composition of the muscle fiber types, especially among the athletes, so the main approach of this research was to find out the relationship between the number of repetitions and the parameters obtained from the force-time curves in a sub-maximal repetitive task with the leg press machine until exhaustion to estimate the dominant type of muscle fibers. The research was a semi-experimental study. The statistical sample in this research was included ۱۹ university students. The test process was carried out in two days for each subject with an interval of ۴۸ hours to prevent muscle soreness. The first day included recording data related to anthropometry and the One Repetition Maximum Test (۱RM) on leg press machine. The second day consisted of a repetitive exercise until ۷۰% ۱RM until exhaustion. Using the Visual FoxPro software, the raw force-time data was processed in the repetitive test and applied information was extracted. The Shapiro-Wilk test was used to determine the normality of the data distribution. Pearson's or Spearman's correlation test was used to check the relationship between the parameters with a significance level of  $p < 0.05$ . There was a correlation between the number of repetitions and the sub area under the force-time curve in the first group (low repetitions) ( $r = -0.828$ ,  $p < 0.001$ ), and in the third group (high number of repetitions) ( $r = -0.626$ ,  $p < 0.001$ ). This research showed that there is an inverse relationship between the number of repetitions and the level of the force-time sub-curve in a submaximal task. The results of this study contribute to the development of a field test that can be used to predict muscle fiber composition, as well as to demonstrate the dynamic and physiological mechanism responsible for variability in the number of repetitions in a submaximal task.

کلمات کلیدی:

Slow-Twitch Muscle Fiber, Fast-Twitch Muscle Fiber, One Repetition Maximum (۱RM), Leg-Press Machine

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