Abstract

Objective: This study sought to analyze the effect of muscle fatigue induced by active isotonic resistance training at a moderate intensity by measuring the knee extension motion during the stabilometric response in a single-leg stance among healthy university students who perform resistance training on a regular basis. Method: Eleven healthy university students were subjected to a one-repetition maximum (1RM) test. In addition, stabilometric assessment was performed before and after the intervention and consisted of a muscle fatiguing protocol, in which knee extension was selected as the fatiguing task. The Shapiro-Wilk test was used to investigate the normality of the data, and the Wilcoxon test was used to compare the stabilometric parameters before and after induction of muscle fatigue, at a significance level of p<0.05. Descriptive statistics were used in the analysis of the volunteers’ age, height, body mass, and body mass index (BMI). Results: The sample population was 23.1±2.7 years of age, averaged 1.79±0.07 m in height and 75.6±8.0 Kg in weight, and had a BMI of 23.27±3.71 Kg.m−2. The volunteers performed exercises 3.36±1.12 days/week and achieved a load of 124.54±22.07 Kg on 1RM and 74.72±13.24 Kg on 60% 1RM. The center of pressure (CoP) oscillation on the mediolateral plane before and after fatigue induction was 2.89±0.89 mm and 4.09±0.59 mm, respectively, while the corresponding values on the anteroposterior plane were 2.50±2.2 mm and 4.09±2.26 mm, respectively. The CoP oscillation amplitude on the anteroposterior and mediolateral planes exhibited a significant difference before and after fatigue induction (p=0.04 and p=0.05, respectively). Conclusions: The present study showed that muscle fatigue affects postural control, particularly with the mediolateral and anteroposterior CoP excursion.

Keywords

Rehabilitation, muscle fatigue, exercise, postural balance.