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EFFECT OF STRENGTH TRAINING SESSION ON IMMUNOLOGICAL AND PHYSIOLOGICAL BLOOD MARKERS

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KEYWORDS: physical exercise, immune function, leukocytes

The strength exercises are considered an essential part of any kind of training program, and skeletal muscle hypertrophy is one of the main adaptations to this type of training. Although widely studied, the mechanisms responsible for this adaptation are not completely clear, moreover, little is known about the inflammatory responses in strength training with durations of muscle actions predominantly eccentric. Hypertrophy of muscle tissue is an important phenomenon in high performance sport, for recreational practitioners of physical activity in the aging process and also pathological conditions such as obesity, AIDS, muscular dystrophy and diabetes. The aim of this study was to evaluate the immune response induced by strength training protocol with muscle actions predominantly eccentric. Twenty volunteers 10 sedentary and 10 regular weight training practitioners participated in this study (height 1.73 ± 0.06 m trained and 1.75 ± 0.08 m untrained; and weight 74.78 ± 14.91 kg trained and 73.05 ± 3.40 kg untrained). They hold 4 sets of 8-10 reps of exercise (leg press, extensor bench and leg curl), 65% of 1RM, 90s range, and the duration of the execution of each repetition 2" to concentric and 3" to eccentric actions. Blood samples were collected immediately before, after, 2 and 24 hours of the final training session. Here we investigated physiological mediators (lactate) and subpopulation of leukocytes (neutrophils, lymphocytes and monocytes). The training session was able to increase lactate levels

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immediately after the end of exercise (1.79 ± 0.85 to 9.98 ± 4.87) and return to baseline (3.19 ± 1.81) 2 hours later. Comparing groups only the neutrophil values presented significant differences. In comparison between times in each group, for the neutrophil values, the sedentary group had higher values in the time of 2 hours after exercise (8.04 ± 3.92), while the regular weight training practitioners presented higher values in the time of 2 hours after (4.69 ± 2.07) compared to the pre and 24 hours (2.79 ± 1.49 / 2.97 ± 1.32). For the monocyte concentrations, the sedentary group presented higher values only in the time of 2 hours (0.74 ± 0.33) and the regular weight training practitioners only in the post exercise period (0.78 ± 0.30). For the lymphocyte concentrations in the sedentary group there was a reduction 2 hours after (2.31 ± 0.57 to 1.42 ± 0.36), whereas in the regular weight training practitioners there was an increase only in post-training values (2.77 ± 0.74). The results show that strength training session is able to induce changes in the subpopulations of leukocytes, and provokes significant, although transient, modulation of the immune system, specifically of the leukocyte sub-population.