

The Positive Effects of Acute Resistance Exercise on Blood Lipid Profiles in College-Aged Men

Alam FF, Park JK, Schwarz N, Lamar AP, and Koh Y

Exercise & Biochemical Nutrition Laboratory and Baylor Laboratories for Exercise Science and Technology; Department of Health, Human Performance, and Recreation; Baylor University; Waco, TX

Category: Undergraduate

Advisor / Mentor: Koh, Y (Yunsuk_Koh@baylor.edu)

ABSTRACT

Low- to moderate-intensity exercise has been widely recommended for people at any age to improve cardiovascular health due to its positive effects on blood lipids and lipoproteins. Recently, many people have been participating in not only low- to moderate-intensity, but high-intensity exercise as well in order to improve their cardiovascular health. However, it is unclear whether high-intensity exercise, particularly resistance exercise, can positively influence blood lipids and lipoproteins. **Purpose:** The current study examined the effects of low- and high-intensity of resistance exercise on changes in blood lipids and lipoproteins. **Methods:** In a randomized, cross-over design, 10 healthy recreationally resistance-trained (at least 3 to 6 days per week for a minimum of one year) college-aged men participated in the study. The participants performed a lower body resistance exercise, consisting of the leg press and unilateral knee extension, at two different exercise intensities (low-intensity: 50% of 1-RM and high-intensity: 80% of 1-RM). The volume of the intensities of exercise was similar. Overnight fasting blood samples were collected at baseline and 3-hr, 24-hr, and 48-hr post exercise for each intensity to determine blood lipids and lipoproteins (TC, Lp(a), VLDL-C, LDL-C, and HDL-C). A 2 (intensity) X 4 (time) ANOVA with repeated measures was used to examine the mean differences in intensity and time on blood lipids and lipoproteins. The Bonferroni pairwise comparisons were conducted as post hoc to locate the significant mean differences. If a significant interaction was found, the follow-up simple effects test was conducted. A p -value $< .05$ was set for the statistical significance. **Results:** Either low- or high-intensity resistance exercise did not significantly alter Lp(a), VLDL-C, or HDL-C. However, regardless of the intensity, LDL ($p = .045$) and TC ($p = .028$) significantly decreased by 7.90 (8.76 ± 0.32 mg/dL) and 6.80% (11.34 ± 0.93 mg/dL), respectively, at 48-hr post exercise. **Conclusion:** Regardless of the intensity level, resistance exercise may positively alter blood lipid profiles by decreasing TC and LDL-C in recreationally-trained men. Therefore, the current study suggests that high-intensity resistance exercise can also be an effective method to improve cardiovascular health.