

The effect of combined aerobic and resistance exercise training on characteristics of the metabolic syndrome in obese adults

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Abstract

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Abstract

The purpose of this study was to determine the effects of aerobic training alone, resistance training alone, and combined training on characteristics of metabolic syndrome. Forty obese [body mass index (BMI)  $\geq 27$  kg/m<sup>2</sup>] males, aged 18-29 years were randomized into four groups: aerobic training group (n=10), resistance training group (n=10), combined training group (n=10) and control group (n=10). The aerobic training was composed of 50-70 % maximal heart rate (HRmax) 60 min/day, 5 days/week. Resistance training was performed 60 min/day, 5 days/week at 50-60 % of one-repetition maximum (1-RM) during 1-4 weeks, at 60-70 % of 1-RM during 5-8 weeks and at 70-80 % of 1-RM during 9-12 weeks. The combined training was separated into aerobic training (2 days of single week; 3 days of double week) and the resistance training (3 days of single week; 2 days of double week). All subjects' anthropometric variables, characteristics of metabolic syndrome, and components of physical fitness were measured at baseline and after 12 weeks of exercise training. Components of physical fitness were significantly improved after 12 weeks of exercise training ( $p < 0.001$ ). The absolute changes in both fasting glucose (FG) and triglycerides (TG) percentages in the combined training after a 12-week exercise program were -8.5 % and -8.7 %, -5.6 % and -7.0 % in the aerobic training, -6.6 % and -4.3 % in the resistance training, respectively. In conclusion, our results observed that combined training had greater

improvements in FG and TG than aerobic training or resistance training alone.

Keywords: aerobic training, resistance training, combined training, physical fitness, metabolic syndrome

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