Response of Insulin Resistance Indicators to Aerobic Exercise at Different Intensities in Obese College Students

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Abstract : The purpose of this study was to determine whether progressive aerobic exercise intensity effects the changes in insulin resistance indicators among obese college students in Taiwan. Forty-eight obese subjects [body mass index (BMI) ⬚ 27 kg/m2, aged 18-26 years old] were randomized into four equal groups (n = 12): light-intensity training group (LITG): 40-50% of their heart rate reserve (HRR); middle-intensity training group (MITG): 50-70% of their HRR; high-intensity training group (HITG): 70-80% of their HRR, and control group (CG). The aerobic exercise training program was performed 60 minutes per day on a treadmill three days/week in a training period of 12 weeks. All subjects' anthropometric data, blood biochemical parameters, and health-related physical fitness components were measured at baseline and after 12 weeks. At baseline, all insulin resistance indicators did not differ significantly among the four groups (p > 0.05). After 12-week exercise intervention, the HITG had significantly more changes in insulin level than the MITG, LITG, and CG. Our findings suggested that a short-term aerobic exercise program can play an important role in improving insulin resistance indicators; either middle-intensity training significantly increases the insulin level, but the high-intensity exercise training program effectively improves obese college students' insulin resistance.

Keywords : aerobic training, exercise intensity, insulin resistance, obesity