The Effect of Two Selected Exercise Methods on Metabolic Syndrome Indicators and Body Composition Inactive Overweight Women

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Abstract

Aim: The purpose of this research was comparison of the effect of 6 weeks of endurance and circular interval training on body composition and fasting blood glucose, insulin, high-density lipoprotein, low-density lipoprotein, cholesterol and triglyceride in overweight and non-athlete women.

Methods: Thirty female volunteers were randomly divided into three groups (control and two experimental groups). The exercises were performed for six weeks, three days a week and each session for 60 minutes. Descriptive statistics and one-way ANOVA and t-test were used for statistical analysis.

Results: The results of this study showed that: Endurance interval training made a significant difference in BMI (p = 0.0) before and after training, and circular interval training was effective on BMI (p = 0.2), subcutaneous fat (p = 0.2) before and after training. There was a significant difference in BMI between endurance and circular group and between endurance and control group. There was no significant difference in waist to hip ratio between the groups and in each group before and after the test. Pre- and post-test of endurance interval group showed significant differences in LDL, HDL, cholesterol, blood glucose and insulin index and the difference in triglyceride index was not statistically significant.

Conclusion: The analysis of this study showed individuals who trained had a positive effect on body composition and metabolic syndrome but for more meaningful impact we need more training time.

Keywords: Overweight, Exercise, Body Composition, Metabolic Syndrome

Introduction

Metabolic syndrome is a combination of risk factors and cardiovascular determinants including central obesity, insulin resistance, glucose intolerance, dyslipidemia, nonalcoholic fatty liver disease and hypertension [1]. The WHO estimates that 23% of men and 12% of women worldwide have metabolic syndrome [2]. Overweight and obesity are on the rise all over the world, affecting women of all ages and ethnic groups [3]. Obesity is the most important health problem in developed and developing countries, epidemiological studies show that factors such as an increase in BMI, inactivity, central obesity, and a high-fat diet are all independent factors for cancer risk [4]. On the other hand, studies show that Iran is one of the countries at high risk of obesity-related diabetes [5]. Chronic complications of diabetes are associated with high blood glucose levels [6]. Increased blood glucose causes non-enzymatic binding of glucose to proteins inside and outside the cell. People with long-term diabetes mellitus develop kidney failure, eye damage, cardiovascular system failure, and central nervous system failure [7]. Today, experts believe that diet and medicines alone are not enough to treat and control the blood sugar and metabolism of diabetic patients, rather, physical activity and exercise should be added to the daily schedule of these people [8]. Several studies have shown that decreased physical fitness increases the risk of diabetes and increased physical activity can effectively prevent diabetes [3, 9]. There is currently sufficient scientific evidence to compare different aerobic exercise programs to reduce risk factors such as fasting blood lipids, fasting blood glucose, especially in obese individuals [10]. In a study, Manson et al. investigated the association between vigorous regular exercise and the prevalence of diabetes in 87,253 American women. During the 8 years of follow-up research was shown; Women who exercised and exercised at least once a week were less likely to develop type 2 diabetes than those who did not have any physical activity [11]. Obesity and overweight are effective in chronic diseases such as diabetes, cancer, coronary heart disease, dyslipidemia, etc. [12, 13]. Given that BMI is a standard index that defines obesity, it is not fully correlated with body fat distribution [14, 15].