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The effect of 6 weeks of aerobic training on serum leptin levels and body mass index of inactive male students

Mosayeb Akbarzadeh Frootan¹, Mehrdad Fathei², Masoomeh Sadat Modaresi³

1. MSc of Physical Education and Sport Sciences Islamic Azad University of Bojnourd;
2. Exercise Physiology Assistant Professor at Ferdowsi University of Mashhad; 3. Exercise Physiology phd Student at Ferdowsi University of Mashhad

Dr.mfathei@gmail.com

Introduction: Sport has a profound effects on morphology and biochemical properties of white adipose tissue(1). Leptin is a hormone that is secreted by adipose tissue and associated with changes in adipose tissue and person's body mass index(1,2). In a study on inactive men, 8 weeks aerobic-resistance training caused a significant decrease in leptin levels and body mass index(2) . Given that most research has been done on overweight subjects, the aim of this study was to examine the effect of 6 weeks of aerobic training on serum leptin levels and body mass index of inactive male students.

Methodology: This was a quasi-experimental design with pre-test and post-test. 30 inactive males of Islamic Azad University of Bojnourd aged 20-23 years were selected and randomly divided into two groups of training(n=15) and control(n=15). Training program included aerobic exercise for 6 weeks and 3 sessions per week for 90 minutes. Exercise was performed at 60 to 75 percent of heart rate reserve and maximum heart rate was calculated with the use of formula $220 - \text{age}$. Before and after training each person's body mass index was calculated and blood samples were taken to determine serum leptin levels.

After ensuring of the normal distribution and homogeneity of groups, paired t –test and Independent t-test was used of to determine the means difference within the group and between groups and the level of significance $P < 0/05$ was considered.

Results: The findings of the present study suggest that serum leptin levels and body mass index decreased in the training group significantly ($P < 0/05$). While in the control group, a significant difference was not seen between pre-test and post-test levels of leptin and BMI ($P > 0/05$). Also no significant differences were found between the two groups of training and control in leptin levels and body mass index ($P < 0/05$).

Discussion: In the present study, serum leptin level was reduced after exercise was probably due to a decrease in body weight. In one study, 10% reduction in body weight resulted in a 30% reduction in plasma leptin level(3). Exercise can reduce the size of fat cells and lipid content and resulting in decreased body fat(1). Also Long-term exercise may inhibit the synthesis of leptin mRNA by other factors such as Catecholamine release, change in energy consumption, improve insulin sensitivity and changes in fat metabolism which decreases serum leptin level(3).

Key words: aerobic training, Leptin, body mass index

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