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THE INFLUENCE OF AEROBIC EXERCISE PROGRAM ON BLOOD LIPIDS PROFILE IN OBESE LADY TEACHERS

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ABSTRACT

To investigate the effects aerobic exercise of 12 week program on blood lipids in obese lady teachers. In this study, a total of 40 obese lady teachers were selected as exercise group (n = 20) and control group (n = 20). Participants joined sessions for 60 min per day, 4 days per week for 12-weeks. There were significant findings in weight, body mass index (BMI) , high density lipoproteins (HDL), low density lipoproteins (LDL),total cholesterol, and triglyceride between pre-test and post test scores in the exercise group ($p<0.05$). It was concluded that regular aerobic exercise may affect blood lipids positively in obese lady teachers. Furthermore, it may result in decreasing obesity in obese lady teachers.

KEYWORDS: Aerobic Exercise, Blood Lipids, BMI, HDL, LDL, Obese lady teachers, Total Cholesterol, Triglyceride.

INTRODUCTION

After completing of 35-40 years of life span, obesity is an increasing problem in ladies.[1] Effective early strategies for the prevention of obesity are needed. Although the physical activity is one of the widely accepted strategies for the treatment of obesity; according to Steinbeck, (2001)[2], the role of physical activity in the prevention of obesity is still unclear. Pediatric obesity tends to be more severe and is associated with more extreme psychosocial and physical morbidity, which may contribute disproportionately to the cost of adult obesity. Earlier prevention strategies for kids may have decrease obesity in their later life.[2,3] Obesity

is associated with increased disorders like cardiopulmonary function, systemic blood pressure, decreased aerobic fitness, increased rate of Type 2 diabetes Mellitus and cardiovascular diseases.[4,5] Earlier studies showed that highly active children had higher HDL cholesterol and/or lower total cholesterol levels when compared to their inactive peers. Although there are several reports in the literature regarding the effects of exercise on health related physical components and blood lipids in obese girls[6], the effect of exercise on preventing obesity should be highlighted with more specific research. The aim of this study was to investigate the effect of 12 week aerobic exercise training on blood lipids in obese lady teachers aged between 30 to 40 years.

METHODS

In this prospective study, the study group consisted of 40 obese lady teachers aged between 30 to 40 years. They were randomly selected from primary, secondary schools of Shirala tahsil, Sangli District and were randomly and equally assigned to the exercise (N = 20) and the control groups (N = 20) by using a numbering table for randomization. General physical examination, blood lipid, was testing for all participants both before and after 12 week exercise program. Participants were informed about aims and details of this study. Informed consent was given and signed to their parents at the beginning of the study.

Measurements and Tools

All the measurements were performed 3 days before the exercise treatment and 2 days after exercise program rest for both (exercise/control) groups.

Height and Weight: Height was measured by one investigator to the nearest 0.5 cm with the portable height measure). Weight (in light clothing) was measured to the nearest 0.5 kg on medical scales. The BMI was calculated as weight/height2 (kg/m2).

Blood Lipids Measurements

Blood samples were drawn in a medical center in the morning after their breakfast. By using Beckman Coulther STKS device, Low density lipoproteins (LDL), high density lipoproteins (HDL), total cholesterol (TC) and triglycerides analyzed by physicians.

Aerobic Exercise Training

The exercise group performed aerobic exercises at an intensity of 50 to 60% of their target heart rates. Training was performed four days in a week during 12 week each 60 minutes

period. At the beginning of each exercise session, nutrition knowledge, consumption of fluid and caloric was given to all participants. Each exercise class started with 10 minute warming-up exercises and ended with 8 to 10 min cooling down exercises. The exercise intensity and target heart rate was determined by using Karvonen method for each participant individually.

Statistical Analyses

SPSS 15.0 Statistical package was used for analyzing data. Differences between groups were evaluated with independent t-tests and pre-test and post test differences was compared with paired t-tests ($p<0.05$).

RESULTS

In the baseline measurements, the mean height of exercise group was 141.67±7.39, while the mean height of control group was 139.89±5.68 (Table 2). Paired sample t-tests results revealed significant differences from pre-test to post-test measurements in the aerobic group for weight, BMI, HDL, LDL, total cholesterol, and triglycerides ($p<0.001$) scores. In control group, however, there were significantly negative changes in all variables (weight, BMI, HDL, LDL, total cholesterol, and triglycerides).

Table 1. Aerobic exercise program.

Week	1	2	3	4	5	6	7	8	9	10	11	12
TD (min)	49+20	50+20	60	65	70	75	80	85	90	90	90	90
T I (%)	20	25	30	35	40	45	45	50	55	55	60	60
TF (Dy/W)	3	3	3	3	3	3	3	3	3	3	3	3

TD- Training duration, TI- Training intensity, TF- Training frequency

Table 2. Changes in the parameters of blood lipids in aerobic group and control group.

Variable	Exercise group (n = 20)			Control group (n = 20)		
	Pre Test	Post Test	P	Pre Test	Post Test	P
Weight (kg)	53.31± 10.13	50.71±10.84	0.00	52.65±4.34	53.71±4.23	0.00
BMI (cm)	27.07±2.14	24.03±2.30	0.00	25.81±1.36	25.24±1.53	0.47
HDL (mg/dl)	43.32±8.40	52.61±8.05	0.00	43.82±4.92	41.68±4.48	0.00
LDL (mg/dl)	105.93±21.14	92.89±14.12	0.00	93.17±8.96	97.03±10.82	0.03
Total cholesterol (mg/dl)	110.07±39.48	95.78±33.04	0.00	113.96±23.78	117.14±24.39	0.00
Triglycerides (mg/dl)	165.82±27.42	140.60±21.56	0.00	150.84±18.03	153.52±17.7	0.00

P<0.01

DISCUSSION

The significant investigation of this study was that 12 weeks of aerobic training program improved impaired LDL, total cholesterol in obese lady teachers aged between 30 to 40

years. These results were also in line with the previous literature that found improvements in health related parameters of obese participants as a result of regular exercise participation.[2,6,7,8] Moreover, similar results have been reported in adults.[9,10]

According to Nassis et al.[11], the effect of aerobic exercise training program on insulin sensitivity in overweight and obese girls (N = 19) were examined. Body composition and blood lipids and lipoproteins were assessed before and after 12 weeks of aerobic training. They reported that cardio-respiratory fitness increased by 18.8% ($p < 0.05$) as a result of training. They also concluded that 12 weeks of aerobic training improved insulin sensitivity in overweight and obese girls without any significant changes in body weight, body fat percent and circulating concentrations of adiponectin, IL-6, CRP, and other inflammatory markers. In our study, on the other hand, we found that body fat percentage significantly decreased after 12 weeks aerobic exercise. The reason for this differentiation might be longer duration for exercise application and different population in our study. Although the majority of studies have found just an inverse relationship between physical activity and body fatness in children, some studies found positive relationships. Saygin and Dukkanci[12], have reported that this inconsistency in the current literature that 78% of studies found that there was negative relationship while 4% of studies found that there was positive relationship between physical activity level and body fatness. 18% of these studies also found no relationship.[12]

CONCLUSION

We concluded that regular and long term aerobic exercises had positive effects on physical fitness values and blood lipids of obese lady teachers. Moreover, further research is needed to understand the effects of exercise on lipid metabolism of obesity in lady teachers.

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