

The Effects of Bosu Cardio and Aerobic Step Exercise on Some Blood Parameters in Sedentary Female

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ABSTRACT

The aim of study was to examine the effects of 10 weeks bosu cardio and aerobic step exercises on body composition and some blood parameters in sedentary female. Thirty eight sedentary female participated in this study. They were subjected to a one hour Bosu Cardio and Aerobic Step sessions 3 times a week. The intensity of the exercises was increased gradually and their heart beats were raised up to 130-140 per minute at the end of sessions. Student t and Paired Samples t tests were used in this study. In this study at the after of 10 week exercise routine, found in Bosu Cardio Group a decrease 7.57 % in cholesterol, 8.13 % in Triglyceride, and 8.38% in LDL-C. However, there were increases of 1.82% in HDL-C. There was in Aerobic Step Group at the after of exercise routine, a decrease of 2.62% in cholesterol, % 2.94 in Triglyceride, and %3.56 in LDL-C. However, there were increases of %1.78 in HDL-C. Routine exercises has produced significant effect on cholesterol, Triglyceride, HDL-C and LDL-C ($p < 0.05$ and $p < 0.001$).

Conclusions: In sedentary women, 10-week bosu cardio and aerobic step exercises had positive effects on body composition and some blood parameters. In both groups, body weight, body mass index, fat percentage, waist and hip circumference decreased. Cholesterol, triglyceride and LDL-C values decreased, HDL-C values increased. The risk for cardiovascular problems reduced. While doing Cardio Bosu and aerobic step exercise, the nutritional status of sedentary women should be checked. The number of exercises, exercise intensity and duration can be increased to increase the positive effect of cardio bosu and aerobic step exercises on sedentary women.

Key Word: Cardio Bosu Exercise, Aerobic exercise, Blood Parameters, Waist Hip ratio

INTRODUCTION

During the corona virus 19 outbreak, individuals' physical activity levels remain well below the recommended levels. The sedentary lifestyle causes development of diseases such as cardiovascular disease, diabetes, obesity, some types of cancer and muscular-skeletal problems.^{1,2} Sedentary life is perhaps one of the greatest harmful diseases on females.³ Studies support a significant incremental effect of exercise on blood lipids and lipoproteins in women's. Aerobic exercise training or physical activity In humans, it provides a decrease in triglyceride, total cholesterol (TC), low density lipoprotein (LDL-C) values and an increase in High density lipoprotein (HDL-C) values. Low blood levels of HDL-C are an independent risk factor for Cardio Vascular Disease (CVD). Data provide strong evidence that people who are more physically active have higher HDL-C.⁴⁻⁸ Cardiovascular disease in women is the leading cause of mortality in world, and less than optimal lipid and lipoprotein levels are major risk factors for CVD. Studies were indicated that moderate and low intensity exercise, if it's performed adequate time period cause decrease serum total Cholesterol level. Regular aerobic training results in improvement in high-density lipoprotein cholesterol. Aerobic exercise is efficacious for increasing HDL-C and decreasing TC, LDL-C, and TG in women).^{2, 9-11} It is commonly suggested that the regular exercise positively affects plasma lipid profiles. However, any change in the plasma lipid profile differs related to the type and level of exercise. Physically fit and active individuals tend to have lower levels of lipids than less active individuals. Different physical fitness programs and studies are organized to reduce the negative effects of inactivity. Participation in physical activity may increase

reasons such as being healthy, looking good, having social interaction, being popular, and losing.¹²⁻¹⁷ The training using BOSU may help improve static balance and functional ability in women.¹⁸ We are wondering the effect of the Bosu cardio exercise in the same phase as the aerobic step exercise. In this study was to examine the effects of 10 weeks bosu cardio and Aerobic step exercise on body composition and some blood parameters in sedentary female.

MATERIAL AND METHOD

Subjects: Thirty eight sedentary female (Bosu Cardio mean age 37.26 and Aerobic Step age 35.94) participated in this study. We also excluded studies of subjects having specific medical problems in which treatments such as with diet or drugs would influence the effect of exercise. **Exercises Program:** They were subjected to a one hour Bosu Cardio (n=19) and Aerobic Step (n=19) sessions 3 times a week. The intensity of the exercises was decreased gradually and their heart beats were raised up to 130-140 per minute at the end of sessions. Bosu group exercises: Bosu Step Ups, Bosu Burpees, Bosu Jogging, Bosu Shuffles, Bosu Jumping Jacks and Bosu Mountain Climbers. Aerobic steps group are general aerobic routines. **Data Measurement:** HDL-C, LDL-C, TC and Triglyceride levels were determined these blood samples. Triglyceride, TC, HDL-C and LDL-C were determined by Hitachi 717 auto analyzer. The blood pressure and heart beats were measured by Digital Blood Pressure Meters ALP K2 777. At the end of 10 weeks period all measurements were repeated. Body composition was measured by Tanita TBF 305 bioelectric impedance analyzer. The waist and hip circumferences were

measured using a measuring tape. Body Mass Index (BMI) and waist hip ratio were calculated by standard formulas. Waist to hip ratio= Hip circumference/ Waist circumference. **Statistical analysis:** Analysis was performed on SPSS 25.00 version. Kolmogorov-Smirnov test was used to evaluate the normality of parameters. Comparison of age

and Height were used in this study with The Independent t-test. The difference between pre-test, pro-test results was paired sample t-test. A difference was considered as significant when p value was less than 0.05 in 95 % confidence of interval.

RESULTS

Table 1. Age and Height Parameters of Sedentary Females

Variables	Group	X	Sd.	t-test
Age (year)	Bosu Cardio	37.26	7.02	0.58
	Aerobic Step	35.94	6.94	
Height (cm)	Bosu Cardio	165.26	5.85	-0.18
	Aerobic Step	164.31	4.59	

X: Mean Sd: Standard deviation

Between Bosu Cardio group and Aerobic Step group found in age and height not difference ($p < 0.05$).

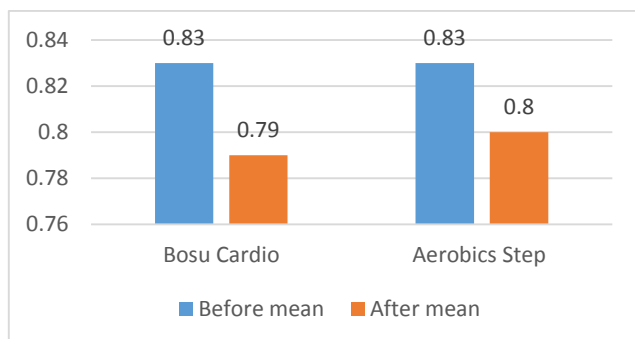
Table 2. Anthropometric and Blood Parameters of Sedentary Females for exercise pro test and post test

Variables	Time	Bosu Cardio Group			Aerobic Step Group		
		x/ Sd.	t	Change %	x/ Sd.	t	Change %
Body Weight (kg)	Before	72.53±7.47	7.37**	-6.47	71.22±5.37	8.84**	-5.42
	After	67.84±6.12			67.36±4.12		
Body mass index (kg/m ²)	Before	26.68±3.50	7.22**	-6.86	26.44±2.65	5.52**	-4.95
	After	24.95±3.01			25.13±2.09		
Hip circumference (cm)	Before	85.89±6.24	8.23**	-5.46	86.68±5.84	10.06**	-4.01
	After	81.22±5.80			83.20±5.81		
Waist circumference (cm)	Before	103.79±2.99	8.61**	-1.47	104.15±2.79	7.08**	0.69
	After	102.26±2.49			103.43±2.55		
Fat %	Before	30.53±2.25	11.86**	-15.95	29.94±2.39	7.85**	-10.06
	After	25.66±2.72			26.94±2.50		
Cholesterol (mg/100 cc)	Before	199.58±9.85	11.46**	-7.57	192.47±12.91	8.10**	-2.62
	After	184.47±10.01			187.42±14.08		
Triglyceride (mg/100 cc)	Before	104.95±7.98	6.38**	-8.13	105.42±9.08	3.16*	-2.94
	After	96.41±8.71			102.32±9.03		
HDL-C (mg/100 cc)	Before	51.05±3.81	-3.33*	1.82	52.84±2.98	-8.49**	1.78
	After	51.98±3.67			53.78±3.09		
LDL-C (mg/100 cc)	Before	104.26±8.36	7.23**	-8.38	104.47±10.35	4.58	-3.56
	After	95.52±10.00			100.75±11.07		

* $p < 0.05$ and ** $p < 0.001$

Table -3: Risk of Cardiovascular Diseases before and after Exercise Round in Sedentary Female.

Variables	Group	Before (x/ Sd.)	After (x/ Sd.)	t	Change %
TC/HDL-K	Bosu Cardio	3.91 ± 0.71	3.55 ± 0.69	1.37	-9.21
	Aerobic Step	3.64±1.06	3.48±0.68	2.04	-4.40
LDL-K/HDL-K	Bosu Cardio	2.04 ± 0.61	1.84 ± 0.58	1.24	-9.80
	Aerobic Step	1.98±0.70	1.87±0.71	1.7	-5.56



Graphic 1. Waist to hip ratio of the before and after Exercises in Sedentary Female

DISCUSSION

In this study, it was determined that sedentary Female had a mean age of Bosu cardio group 37.26 and aerobic step group 35.94 year. If the BMI value is 18.5-24.9 kg / m² in adults, it is stated as normal weight, if it is 25--29.9 kg / m², it is stated as overweight.¹⁹ The waist to hip ratio was calculated as waist girth divided by the hip girth. Waist hip ratio above 0.85 for females are important indicators of lifestyle-related health problems throughout the world. Sedentary women with waist circumference of more than 85 cm had almost doubled mortality risk compared to active women with waist circumference below 80 cm.^{20, 21} In this study, Waist to hip ratio found before 10 weeks exercise program 0.83 cm and after 0.79 cm in bosu cardio group

and 0.83 cm and after 0.80 cm aerobic steps group (Graphic1). It can be said that the cardiovascular risk ratio has decreased according to the result of this investigation. The decrease in environmental measurements is similar in both groups.

Aktaş et al.³ in a study, was found aerobic trainings affected positively body composition on the sedentary females. Çiçek et al.,²² in one study, it was found that 3 months regular cardio exercise decrease the risk of cardiac vascular diseases. Akyol and İmamoğlu²³ in sedentary female study, Body weight found before 3 months aerobic exercise program, a decrease of %9.6 in body weight. Koca²⁴ found at the end of the three months exercise program, a decrease %11.74 in hip circumference and %3.46 in waist circumference. In this study, found during 10 weeks exercise program, a decrease of %6.47 in body weight, %6.86 in Body mass index, %5.46 hip circumference and %1.47 waist circumference in bosu cardio group. There was decrease of %5.42 in body weight, %4.95 in Body mass index, % 4.01 hip circumference and %0.69 waist circumference in aerobic steps group (Table 2). The effects of Bosu cardio and Aerobic steps exercises are on Body weight, Body mass index, hip and waist circumference since ($p < 0.01$). Body weight, body mass index and waist circumference values decreased in both groups. Exercises have been shown to have a positive effect.

Studies have shown that appropriate exercise make because improving effect on serum TG, LDL-C and HDL-C values.^{25,26} Akyol and İmamoğlu²³ investigated to effect time exercise on serum lipids of sedentary females before and after menopause and they determined to increase in HDL-C and to decrease in LDL-C, total cholesterol, and triglyceride. Turgut et al.²⁷ in a study, found there a significant difference in lipid and lipoprotein values between the first measurement and the second measurement after 3 months of aerobic exercise. İmamoğlu et al.,⁴ (2017) in a study, regular aerobic and weight-lifting plus aerobic exercises have been found to reduce the risk of cardiovascular disease in sedentary Female. Koca²⁴ found aerobic exercise was effective in female with initially high total cholesterol, triglyceride, and LDL-C levels. In this study, found in Bosu Cardio Group at the after of 10 week exercise routine, a decrease of 15.95 % in fat ratio ,7.57 % in cholesterol, 8.13 % in Triglyceride, and 8.38% in LDL-C. However, there were increases of 1.82% in HDL-C. There was in Aerobic Step Group at the after of exercise routine, a decrease of 10.06 % in fat ratio, 2.62% in cholesterol, % 2.94 in Triglyceride, and %3.56 in LDL-C. However, there were increases of %1.78 in HDL-C (Table 2). Routine of the 10 weeks exercise has produced significant effect on cholesterol, Triglyceride, HDL-C and LDL-C ($p < 0.05$ and $p < 0.001$). It can be said that cardio Bosu exercises are more effective than aerobic step exercises when done in the same period. Regular aerobic exercise modestly increases HDL-C level. There appears to exist a minimum exercise volume for a significant increase in HDL-C level. Exercise duration per session was the most important element of an exercise prescription. Exercise was more effective in subjects with initially high total cholesterol levels or low body mass index.²⁸ In this study found same conclusion. If this observation were applied to our results,

the increase in HDL-C level by exercise determined by this analysis would, by a rough estimate, result in a CVD risk reduced by approximately 5.1% in men and 7.6% in women.²⁸ Coroner heart disease risk decrease %1.5 cause of to decrease %1 of HDL-C so that, in this study, decrease of LDL-C and increases of HDL-C have decreased risk of CHD. Regular aerobic exercise modestly can increase HDL-C level. The periodic risk of heart disease can estimate by dividing TC to HDL-C. As a result of the estimation 4.5-5 levels show important cardiovascular disease risk, 3.8-4 levels show low cardiovascular disease risk.²³ In another the risk factor is high if TC/HDL-C ratio is higher than 5; the risk factor is low if the ratio is lower than 3.5.²⁹ In this in study, the cardiovascular risk ratios were found before from exercise 3.91 mg/100cc and after exercise 3.55 mg/100cc in Bosu Cardio group. Cardiovascular risk ratios were found in Aerobic steps exercise group before 3.64 mg/100cc and after 3.48 mg/100cc (Table 3). The prevalence of cardiovascular risk in sedentary women after exercise was reduced according to pre-exercise. The cardiovascular risk ratio of aerobic step group are little higher than Bosu cardio group. Bosu cardio exercise can accept well than aerobic step exercise for sedentary women.

CONCLUSION

In sedentary women, 10-week bosu cardio and aerobic step exercises had positive effects on body composition and some blood parameters. In both groups, body weight, body mass index, fat percentage, waist and hip circumference decreased. Cholesterol, triglyceride and LDL-C values decreased, HDL-C values increased. The risk for cardiovascular problems reduced. While doing Cardio Bosu and aerobic step exercise, the nutritional status of sedentary women should be checked. The number of exercises, exercise intensity and duration can be increased to increase the positive effect of cardio bosu and aerobic step exercises on sedentary women.

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