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Investigation of cardio exercise's effects on body perception and life satisfaction in relation with some parameters

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Abstract

The aim of this study was to investigate the effect of cardio exercise together with some parameters on body perception and life satisfaction. 48 sedentary individuals between 20-45 years old were voluntarily participated in the study. 14-week cardio Exercise was applied to Experimental group and body weight, height, body fat percentage, body mass index, metabolism rate measurements of participants in experimental-control group were taken as pretest-posttest. "Body Areas Satisfaction" sub-dimension of "The Multidimensional Body-Self Relations Questionnaire (MBSRQ)" scale was used to determine the body perception levels of participants in the research whereas "Life Satisfaction with Life Scale" was used to determine their life satisfaction levels. As a result; a significant difference was found between pretest and posttest values of body weight, body fat percentage, body mass index, metabolism rate, life satisfaction and body perception of males and females doing cardio exercises (experimental group). Depending on cardio exercise program, a positive development was determined in body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception properties of females and males in experimental group. It was considered that cardio exercise program positively changed life satisfaction and body perception level with physiological parameters.

Key words: Cardio Exercise, Body perception, Life satisfaction.

INTRODUCTION

Physical inactivity has been increased due to the modern life and it causes many illnesses and decreases in daily activity performance of humans (26). Physical health refers to the health of physical development, that is, without any diseases or an individual being able to practice activities and take care of himself (31). Physical exercise and weight loss is a positive impact on psychological well-being and body image (5). Regular physical exercises should be inseparable part of energetic life style of human life. The programs including these exercises are effectually applied for decreasing and prevention of various health problems occurring as a result of physical inactivity, undernutrition and excess nervousness. An active life style improves liveliness and energy, strengthens the energy and desire of an individual for living (22). Low levels of cardiorespiratory fitness are related with all causes of death and high risk of cardiovascular disease. Developments in fitness are associated with decreased deadness. As a result, low level fitness is an important factor, unconnected risk factor for early death (23; 24). Physical health refers to the health of physical development, that is, without any diseases or an individual being able to practice activities and take care of himself. Mental health shows good life adjustment or an individual without any trouble hindering the psychological efficacy (31). Physical inactivity has been increased due to the modern life and it causes of many illnesses and decreases in daily activity performance of human (37). Physical fitness is a highly complex phenomenon and it consists of the following components: cardio respiratory endurance, muscle skeletal fitness, body composition and weight, flexibility and balance (18). The long-term fitness and health effects of the performance of appropriate physical activities include the reduction of risk factors of the most significant health problems, the improvement of cardio respiratory functions, muscle strength and endurance, flexibility and body composition (19). Physical exercise has psychological benefits as well as its physical benefits, especially in females (21). It is well known

that regular physical activity decreases the rate of becoming sick and the rate of death due to heart diseases, obesity and colon cancer and positively affects mood (34). Schilder described body perception as "a picture of our own body that is shaped in our mind, that is, how we seem to ourselves" (29; 15). Recently, in spite of increase in obesity, ideal body image for women is indicated as thin and for men as muscled especially in western society (14). Engaging in regular physical exercise and practice has been linked with mental health benefits (27). Life satisfaction can also be expressed as a sensual reaction of person to the life including labor time, leisure time and after hours together expressing his/her satisfaction on lifetime (30). The reason for life satisfaction, which is known as one of the basic signs of welfare, is that high life satisfaction develops positive feelings of the person and makes to overcome with stress-causing events easily (16). In the light of this information, the aim of the study was to investigate the effect of cardio exercise together with some parameters on body perception and life satisfaction of sedentary individuals.

METHODOLOGY

In this study which was performed to investigate the effect of cardio exercise together with some parameters on body perception and life satisfaction, 48 sedentary individuals between 20-45 years old were voluntarily participated and they were grouped into two: I-Control group, II: Experimental group. 14-week cardio exercise was applied to experimental group and body weight, height, body mass index, body fat percentage; measurements of participants in experimental-control group were taken as pretest-posttest. "Body Areas Satisfaction" sub-dimension of "The Multidimensional Body Self Relations Questionnaire (MBSRQ)" scale developed by Winstead and Cash (38) was used to determine the body perception levels of participants in the research whereas "Life Satisfaction with Life Scale" developed by Diener et al. (11) was used to determine their life satisfaction levels.

The participants were made to do cardio exercise at the 60-70% of their target heart rate 30-35 minutes a day, 3 days a week for twelve weeks. They were made to do warm up exercises for 15-20 minutes before the exercise, and cool down exercises for 5-10 minutes after the exercise. Exercise intensity was determined by Karvonen method (13). The height of the subjects was measured by millimetric height scale and their weight was measured by F.Bosch Medizintechnik electronic weighing machines. And body fat percentage was measured by Tanita. Body Mass Index of the participant women was calculated by weight/height^2 (kgm^2) formula (33).

Metabolic rate is expressed in terms of heat liberation during chemical events. A lot of factors effect metabolic rate; physical activity, food intake, age, sex, sex hormones, race, body height, body weight, hereditary factors, sleep, body temperature, ambient temperature, climate, growth hormone, pregnancy (8).

Metabolic rate formula (Pekcan 2008);

BMH (male): weight (kg) x 1 kkal /kg x 24

İMH (female): weight(kg) x 0.95 kal /kg x 24

Cardio Exercise Program; As a cardio exercise, subjects had to run on a treadmill about 4km/h speed level with the intensity of %60-70 their target heart rate during 14 weeks as three days in a week. After this intensity level exercise at %60-70, all subjects invited to 15 minutes cycling performance at the same intensity. Bench Press, butterfly, military press for arm region, barbell curl, triceps, pushdowns for forehand and wide-grip lateral pull down, seated (cable) row and leg extension, leg curl exercise was performed 4 set 12 repetitions as Fitness training aim. In addition to these, sit –up, jumping and waist rotation exercises was completed. Stretching exercise was performed before starting training, and after completing running cycling and fitness exercises, as cooling down. Rest between sets was 1 minute and rest between movements was 2 minutes in Fitness training.

Multidimensional Body Self Relations Questionnaire; In addition to weight, body mass index, the "Multi-dimensional Body-Self Relations Questionnaire (MBSRQ) - Body Areas Satisfaction Scale," which was developed by Winstead and Cash (1984) and of which reliability and validity studies were carried out by Dogan and Dogan (12) was used to determine the level of body self-perception of the men in the pretest-posttest measurements. The MBSRQ has 7 scales: 1-Appearance evaluation; 2-Appearance orientation; 3-Fitness evaluation; 4-Fitness orientation; 5-Health evaluation; 6-Health orientation; 7-Body areas satisfaction. Multi-dimensional Body-Self Relations Questionnaire (MBSRQ) - Body Areas Satisfaction Scale minimum score is 9 and the maximum score is 45. Alpha

internal consistency coefficients of sub-groups vary between 0.72 and 0.81 for all subjects (12).

Life Satisfaction with Life Scale developed by Deiner et al. (11) was used as a data totaling tool and its reliability and validity studies were carried out by Köker (20) to determine the level of body self-perception of the women in the pretest - posttest measurements. Consequently, reliability studies, reliability of test-retest was found as r=0.85 and item-test correlations were found between 0.71 and 0.80.

Data Analysis

All measurements and tests for the subjects were administered twice first before the administration of training program (pretest) and then after the administration of training program (posttest). Comparison of pretest and posttest values of the sample was performed with paired samples t-test, Wilcoxon. For all analyses, the criterion for significance was set at an alpha level of $p<0.05$.

RESULTS

Table 1. Investigation of pretest-posttest values of parameters of males participated in experimental-control group of the research

Variables	Groups		N	x	SD	t	p
Body height (cm)	Experimental group		10	173.60	5.73	-	-
	Control group		12	177.92	2.50	-	-
Body weight (kg)	Experimental group	Pretest	10	93.01	22.41	0.491	p<0.05*
		Posttest	10	89.12	14.89		
	Control group	Pretest	12	80.57	9.38	0.010	p<0.05*
		Posttest	12	82.25	8.75		
Body fat (%)	Experimental group	Pretest	10	30.59	5.09	0.005	p<0.05*
		Posttest	10	24.17	4.71		
	Control group	Pretest	12	17.48	6.29	0.034	p<0.05*
		Posttest	12	19.34	5.36		
BMI (kg/m²)	Experimental group	Pretest	10	30.86	7.38	0.491	p<0.05*
		Posttest	10	29.70	5.69		
	Control group	Pretest	12	25.86	3.76	0.011	p<0.05*
		Posttest	12	26.41	3.38		
Metabolism rate	Experimental group	Pretest	10	2011.70	324.68	0.036	p<0.05*
		Posttest	10	1970.30	303.74		
	Control group	Pretest	12	1927.83	116.89	0.694	p>0.05
		Posttest	12	1932.33	151.94		
Life satisfaction	Experimental group	Pretest	10	27.80	3.73	0.012	p<0.05*
		Posttest	10	29.20	3.61		
	Control group	Pretest	12	21.25	4.84	0.522	p>0.05
		Posttest	12	20.91	4.94		
Body perception Body areas satisfaction.	Experimental group	Pretest	10	34.80	7.80	0.005	p<0.05*
		Posttest	10	43.10	4.09		
	Control group	Pretest	12	33.66	2.53	0.024	p<0.05*
		Posttest	12	32.33	2.74		

A meaningful difference was found between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of males doing cardio exercises (experimental group) ($p<0.05$). The pretest average of body weight belonging to males doing cardio exercises (experimental group) was 93.01±22.41 while posttest average of them was determined as 89.12±14.89; their pretest average of life satisfaction was 27.80±3.73 while their posttest average was 29.20±3.61; their pretest average of body perception was indicated as 34.80±7.80 whereas their posttest average of body perception was 43.10±4.09 with an increase in values. There was a meaningful difference between pretest and posttest values of body fat percentage, body weight, body mass index, metabolism rate, life satisfaction and body perception variables of males not doing cardio exercises (control group) ($p<0.05$) however, this difference was in a negative direction. The pretest average of life satisfaction belonging to males in control group was 21.25±4.84 while posttest average of them was determined as 20.91±4.94 with a decrease. Their pretest average of body perception was 33.66±2.53 while their posttest average was 32.33±2.74 also with a decrease in values.

Table 2. Investigation of pretest-posttest values of parameters of females participated in experimental-control group of the research

Variables	Groups		N	x	SD	t	p
Body height (cm)	Experimental group		14	161.86	5.61	-	-
	Control group		12	161.67	2.71	-	-
Body weight (kg)	Experimental group	Pretest	14	70.65	8.56	0.009	p<0.05*
		Posttest	14	62.11	5.86		
	Control group	Pretest	12	70.52	12.97	0.230	p>0.05
		Posttest	12	70.74	13.08		
Body fat (%)	Experimental group	Pretest	14	31.86	2.476	0.001	p<0.05*
		Posttest	14	26.15	3.008		
	Control group	Pretest	12	34.19	6.09	0.477	p>0.05
		Posttest	12	34.33	6.19		
BMI (kg/m²)	Experimental group	Pretest	14	27.13	4.357	0.009	p<0.05*
		Posttest	14	23.71	1.867		
	Control group	Pretest	12	26.73	5.01	0.533	p>0.05
		Posttest	12	26.96	5.03		
Metabolism rate	Experimental group	Pretest	14	1369.86	100.362	0.198	p<0.05*
		Posttest	14	1358.00	100.870		
	Control group	Pretest	12	1368.33	118.54	0.783	p>0.05
		Posttest	12	1367.53	116.29		
Life satisfaction	Experimental group	Pretest	14	27.00	3.37	0.020	p<0.05*
		Posttest	14	27.79	2.83		
	Control group	Pretest	12	23.41	4.81	0.931	p>0.05
		Posttest	12	23.33	5.54		
Body perception Body areas satisfaction	Experimental group	Pretest	14	33.21	6.20	0.001	p<0.05*
		Posttest	14	39.50	4.10		
	Control group	Pretest	12	29.25	6.10	0.099	p>0.05
		Posttest	12	28.25	6.28		

There was a meaningful difference between pretest and posttest results of body fat percentage, body weight, body mass index, metabolism rate, life satisfaction and body perception variables of females doing cardio exercises (experimental group) ($p<0.05$). The pretest and posttest averages of body weight belonging to females doing cardio exercises (experimental group) were 70.65±8.56 and 62.11±5.86, respectively; while pretest and posttest averages of them for life satisfaction were determined as 27.00±3.37 and 27.79±2.83, respectively; pretest and posttest averages of their body perception were 33.21±6.20 and 39.50±4.10, respectively with an increase in values. While a positive improvement was observed in physical parameters of females doing cardio exercises, a positive improvement was also indicated in life satisfaction level and body perception property in parallel to this. It was indicated that there wasn't a meaningful difference between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of females not doing cardio exercises (control group) ($p>0.05$).

DISCUSSION

In this study which was performed in order to investigate the effect of cardio exercise together with some physical; the following results were obtained. There was a meaningful difference between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of males doing cardio exercises (experimental group). The pretest average of life satisfaction belonging to males doing cardio exercises (experimental group) was 27.80±3.73 while their posttest average was 29.20±3.61; their pretest average of body perception was indicated as 34.80±7.80 whereas their posttest average of body perception was 43.10±4.09 with an increase in values. A meaningful difference was found between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of males not doing cardio exercises (control group) however, this difference was in a negative direction. Body weight, body fat percent, body mass index of males in control group were increased whereas the pretest average of life satisfaction belonging to males in control group was 21.25±4.84 while posttest average of them was determined as 20.91±4.94, and their pretest average

of body perception was 33.66±2.53 while their posttest average was 32.33±2.74 with a decrease in values (Table 1).

In a paper where the relationship between physical activity and life satisfaction was investigated, Bastug and Duman (3) found that, life satisfaction level in German and Turkish societies was investigated thinking with demographic data. In a study of Stein and Book (32) there was meaningful difference between life satisfaction levels of the people participating and nonparticipant in physical exercise. It was indicated that educated individuals overcoming troubles and producing influential remedies have high life satisfaction degree. In another study related with body perception; university students, both genders rely on appearance fixing and positive reasonable admittance as their dealing ways, whereas female students rely to a greater extent than male students on these two coping strategies. Perception of body image can influence students' body image and students should be aware of how day-to-day events and situations can activate thoughts, interpretations and conclusions that often trigger positive or negative cognitive and behavioral reactions to their body image experiences and ensuing coping strategies and behaviors (10; 41). Yigit (39) found that, decreasing in body weight changes, body mass indexes, sum of the fat content in the body as percentage, and age of body measurement and increasing in max VO2 parameter of middle-aged sedentary men group was observed as statistically meaningful. The findings of this paper were corresponded to those of our study.

There was a meaningful difference between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of females doing cardio exercises (experimental group). A meaningful difference was not indicated between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of females not doing cardio exercises (control group). While a positive improvement was observed in physical parameters of females doing cardio exercises, a positive improvement was also indicated in life satisfaction level and body perception property in parallel to this (Table 2). Some studies have stated a positive impact of physical exercise on self-esteem, mental health, and self-perception (6). Physical exercise has benefits as a means in treatment for anxiety and depression (28). A statistically significant difference was detected among men who do exercises regularly and are beginner in doing exercises, through the measurements of body mass index (BMI), body fat rate (BIA), maxO2, rest pulse, balance and 1RM maximum force (7). Some studies have also found negative relations between mental health and sedentary behavior while sedentary behavior as Television viewing was related with increased likelihood of mental troubles (34). Physically passive men and women have a higher rate of cardiovascular disorder. Physical exercise is significant for preserving well fitness (36). As well as its protective influence, physical exercise is also recommended in therapy of many chronic disorders (17). It was determined that the individuals who participated in doing exercises for longer times and whose frequency of doing exercises was high had more positive self-presentation (1) and the individuals who were active physically had more positive physical sense of self that those having lower activity levels (2). On their research on body self-perception levels and gender roles of female athletes, Bastug and Kuru (4) Multidimensional Body-Self Relations Questionnaire was used so as to determine the body perception levels of women. As a result, a significant relationship was found between the body perception and gender roles of women participated in the study. Significance was found between cardio exercises and body perception as the result of the study that we conducted which have similarities with that study. Grogan (15) investigated body image and exercise participation of both males and females. They found that body image related with exercise participation. It was found by Church et al. (9) that beforehand obese, overweight or sedentary postmenopausal females specified a stepped dose-response variance in fitness levels of physical activity training. Yigit , Kolukısa and Aydogan (40), when pre and post-test results obtained were compared, a statistically significant decline was found in women in terms of parameters such as body-weight, body mass index, body fat content (%), basal metabolism, total daily energy requirement of the body, age and muscle strength; whereas an increase was observed with respect to VO2 max parameter. These studies are related with this research.

Consequently, a meaningful difference was found between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of males and females doing

cardio exercises (experimental group). There was a meaningful difference between pretest and posttest values of body weight, body fat percentage, body mass index and body perception variables of males in control group however, this difference was in a negative direction. The pretest average of life satisfaction belonging to males in control group was 21.25±4.84 while posttest average of them was determined as 20.91±4.94 with a decrease in the value while their pretest average of body perception was 33.66±2.53 while their posttest average was 32.33±2.74 with a decrease in values. A meaningful difference was not found between pretest and posttest values of body weight, body mass index, body fat percentage, metabolism rate, life satisfaction and body perception variables of females in control group. All these findings indicated that cardio exercise program together with physiological parameters positively changed life satisfaction and body perception. The researchers should note that the findings obtained in the study have some limitations in terms of the generalization of all the middle- aged women and men. Studies with a bigger sample group or different sample groups can provide the opportunity to reach more reliable results. The study can be extended by dealing with personality traits and some other psychological factors besides satisfaction of physical space.

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