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Effects of 8 week step-aerobic exercises on (state and trait) anxiety levels and quality of life of women

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Abstract

The aim of this paper is to compare and determine anxiety levels and quality of life of women doing regular 8-week step-aerobic exercise and who didn't and to examine the effects of exercises on these parameters. Ninety six voluntary people, 48 in experimental group and 48 in control group, took part in the study. Average age, height, weight of the women comprising experimental and control groups, are 27.23 ± 9.02 years, 164.4627.23 ± 5.31 cm, 70.63±12.35 kg and 32.94 ±9.12 years, 164.56 ±6.36 cm, 65.33 ± 9.55, respectively. The women in the experimental group did moderately (KAH MAX. 40-60 %) step-aerobic and pilates exercises 3 days a week for 75 minutes for 8 weeks. To determine trait and state anxiety levels of each individual who participated in the study, State (STAI FORM TX -I) and Trait (STAI FORM TX -2) Anxiety Inventory developed by Spielberger et al. and whose reliability and validity analysis was conducted by Öner and Le Coumpte was administered. To assess life quality of participants, SF-36 scale was used, which was developed by Ware and whose reliability and validity analysis was completed by Kocyigit et al. Following 8 week exercise program, significant positive changes were observed ($p<0.01$) in the trait anxiety and life quality level of the experimental group except state anxiety level and bodily pain state, which is one of the physical health condition subscales. In the control group, no significant changes were found in any indicator except in general health status and total physical health scores, indicators of quality of life. Compared to the control group, in the experimental group 8 week exercise program used in this study had a positive effect on trait anxiety levels and life quality of women at this age.

Keywords: Quality of life, state anxiety, step aerobics, trait anxiety.

INTRODUCTION

Developments in science and technology result in an increase in industrialization and urbanization today. Accordingly, people become more and more inactive. Inactive lifestyle is one of the risk factors in developing such chronic diseases as diabetes, cancer, obesity, hypertension, cardiovascular diseases, bone and joint diseases and depression (1,5,6,9,10,11,12,14,15,16,17,18,20,21).

One of the important public health problems caused by inactivity is psychological disorders (25). Depression and anxiety are among the most common psychological disorders.

Ströhle (25) found a direct correlation between inactivity and the symptoms of anxiety and depression. Although diverse treatment methods such as psychological therapy, medical treatment are used in the treatment of anxiety and depression, exercise is a psychological intervention having an important place of practice in clinical psychology on its own. It has been found that antianxiety and antidepressant drugs used in pharmacological treatment are expensive and have various and serious side effects on life quality (4). However, exercises and aerobic exercises are regarded as an alternative treatment that is effective on diverse mood disorders and anxiety. They are inexpensive activities to be done alone (23).

Many studies conducted suggest that regular physical activities are closely related with mental health (8,25,29), that the adults that do regular physical activities show low-level of anxiety and depression symptoms (3,7,22,26,32) therefore, exercise has a protective effect against development of mental disorders.

Regular physical activity is beneficial for mental health and prevention of possible various chronic diseases (2), therefore contributes to improvement in general health and becomes part of a health life (31).

Most studies in the relevant literature show that regular physical activities lead to positive effects on life quality of people (10,20).

The aim of this study is to examine the effects of 8 week regular step aerobic exercises on women's anxiety (state and trait) levels and their life qualities.

MATERIAL & METHOD

Ninety six voluntary people, 48 in experimental group and 48 in control group, participated in the study. It was found that average age, height, weight of the women comprising experimental and control groups, are 27.23 ± 9.02 years, 164.4627.23 ± 5.31 cm, 70,63±12,35 kg and 32,94 ±9.12 years, 164,56 ±6,36 cm, 65,33 ± 9,55, respectively. The women comprising exercise group did moderately (KAH MAX. 40-60 %) step-aerobic and pilates exercises 3 days a week for 75 minutes for 8 weeks. The control group was not requested to conduct any performance.

In order to determine state and trait anxiety levels of participants, state (STAI FORM TX -I) and trait anxiety inventories (STAI FORM TX -2) were used, which were developed by Spielberger et al. (24) and whose reliability and validity analysis were conducted by Öner and Le Coumpte (19). First measurement to assess initial trait anxiety level was recorded one day before the start of exercise program while the initial measurement of state anxiety level was conducted before the start of first exercise session. Following eight week exercise program, state anxiety was measured right after the last exercise session while trait anxiety was assessed one day after. In order to evaluate life quality of participants, SF-36 scale was used, which was developed by Ware (27) and whose validity and reliability for Turkish participants were analyzed by Koçyiğit et al. (13).

SPSS 15 program was employed to analyze the data collected. After the test, it was first determined whether the data satisfied parametric test conditions. For in-group comparisons paired-samples t- test and for intergroup comparisons, independent-samples t-test were used. For intergroup comparisons, first pre-test and post-test differences were calculated and an evaluation was made over these differences.

RESULTS

Table 1 shows that statistically significant decrease was observed in general health condition, one of life quality parameters ($p<0.05$) while in all other parameters and anxiety levels no significant difference was seen. Regarding comparison of total scores, significant difference was observed in only physical health score.

Table 1. Pre-test and post-test results of control group's anxiety and life quality.

Variables	Tests	N	X±SD	t	P
State Anxiety	Pre-test	48	43.75±5.39	-0.571	0.571
	Post-test		44.19±4.32		
Trait Anxiety	Pre-test	48	48.48±5.22	-0.278	0.782
	Post-test		48.71±4.76		
Physical Functioning	Pre-test	48	74.90±19.58	-0.565	0.575
	Post-test		76.67±25.67		
Role Physical	Pre-test	48	60.42±34.53	0.496	0.622
	Pre-test		59.38±34.83		
Bodily Pain	Pre-test	48	28.75±17.09	1.770	0.083
	Post-test		28.13±16.84		
General Health Status	Pre-test	48	63.02±12.32	2.205	0.032*
	Post-test		61.15±12.43		
Vitality	Pre-test	48	57.60±20.26	-0.759	0.452
	Post-test		58.65±19.62		
Social Functioning	Pre-test	48	66.41±20.49	1.823	0.075
	Post-test		62.50±21.73		
Role Emotional	Pre-test	48	43.06±38.87	1.520	0.135
	Post-test		38.89±41.45		
Mental Health	Pre-test	48	65.50±19.97	-0.496	0.622
	Post-test		65.83±18.69		
Physical Health Score	Pre-test	48	53.88±5.16	3.186	0.003*
	Post-test		53.13±4.91		
Mental Health Score	Pre-test	48	48.50±10.01	0.345	0.732
	Post-test		48.35±9.49		

*$p<0.05$

Taking into consideration statistical results of experimental group, following exercise program, over-limiting bodily pain in women occurred and significant increase was seen in state anxiety level ($p<0.05$). Significant decrease was observed in trait anxiety whereas statistically significant increase in all parameters of life quality except bodily pain was found ($p<0.05$). In comparisons of total scores, in both physical and mental health scores, important increases were seen in exercises.

In intergroup comparisons, statistical differences regarding all variables were found between experimental and control groups ($p<0.05$).

Table 2. Pre-test and post-test results of experimental group's anxiety and life quality values.

Variables	Tests	X±SD	t	P
State Anxiety	Pre-test	41.63±4.91	-5.064	0.000*
	Post-test	46.44±5.85		
Trait Anxiety	Pre-test	48.46±5.82	3.748	0.000*
	Post-test	45.58±4.52		
Physical Functioning	Pre-test	69.79±20.42	-11.221	0.000*
	Post-test	96.88±4.57		
Role Physical	Pre-test	35.42±27.21	-16.205	0.000*
	Post-test	96.88±8.36		
Bodily Pain	Pre-test	32.50±18.04	7.426	0.000*
	Post-test	7.29±14.40		
General Health Status	Pre-test	50.00±13.91	-4.856	0.000*
	Post-test	62.40±12.84		
Vitality	Pre-test	39.28±19.30	-15.255	0.000*
	Post-test	83.54±6.99		
Social Functioning	Pre-test	50.26±24.66	-6.600	0.000*
	Post-test	82.55±25.62		
Role Emotional	Pre-test	25.00±31.13	-15.787	0.000*
	Post-test	97.92±8.15		
Mental Health	Pre-test	48.67±18.75	-11.525	0.000*
	Post-test	80.17±8.25		
Physical Health Score	Pre-test	49.63±5.23	-10.555	0.000*
	Post-test	57.46±3.36		
Mental Health Score	Pre-test	38.79±9.34	-15.555	0.000*
	Post-test	60.29±3.65		

*p<0.05

DISCUSSION

In this study where the objective is to determine the effects of 8 week regular step aerobic exercises on women's anxiety levels and their life quality, positive changes were observed in trait anxiety levels and life quality levels ($p<0.05$) except state anxiety level and bodily pain, which is one of the sub-variables of physical health condition in experimental group. In the control group, no significant change was seen in any indicator except in general health status and physical health score.

In many studies in the relevant literature, it is evident that different types of physical exercises are effective in contribution to mental health development, prevention of such psychological problems as distress and anxiety as well as in their treatment besides creating very important positive effects like low-level depression and anxiety symptoms (1,3,5,7,9,12,15,17,22,23,26,32). The results obtained in this study on trait anxiety level show similarity with the literature while the results in the study on state anxiety level are not similar to those in the literature. O'Connor et al. (18) stated that anxiety that occurs as a reaction to maximal exercise depends on the level of anxiety before exercise as well as on the time when assessment is done following the exercise. While it is argued that the first five minutes after maximal exercise test is closely related with some kind of negative mood, assessments done 10-15 minutes after the test lead to positive state of mind (18). In another research, Jalili (12) studied the effects of two different performance methods on female and male university students' depression and anxiety levels. Both groups took part in a program 3 days a week for six weeks. One group was doing fitness for sixty minutes a day while the other one did volleyball for 90 minutes.

Table 3. Comparison of anxiety and life quality of control and experimental groups.

Variables	Group	X±SD	t	P
State Anxiety Differences	Experimental	-4.81±6.58	-3.584	0.001*
	Control	-0.44±5.31		
Trait Anxiety Differences	Experimental	2.88±5.31	2.759	0.007*
	Control	-0.23±5.70		
Physical Functioning Differences	Experimental	-27.08±16.72	-6.398	0.000*
	Control	-1.77±21.72		
Role Physical Differences	Experimental	-61.46±26.28	-14.417	0.000*
	Control	1.04±14.55		
Bodily Pain Differences	Experimental	25.21±23.52	7.203	0.000*
	Control	0.63±2.45		
General Health Status Differences	Experimental	-12.40±17.68	-5.304	0.000*
	Control	1.88±5.89		
Vitality Differences	Experimental	-44.27±20.11	-13.467	0.000*
	Control	-1.04±9.51		
Social Functioning Differences	Experimental	-32.29±33.90	-6.777	0.000*
	Control	3.91±14.85		
Role Emotional Differences	Experimental	-72.92±32.00	-14.353	0.000*
	Control	4.17±18.99		
Mental Health Differences	Experimental	-31.50±18.94	-11.074	0.000*
	Control	-0.33±4.66		
Physical Health Score Differences	Experimental	-7.83±5.14	-11.024	0.000*
	Control	0.75±1.63		
Mental Health Score Differences	Experimental	-21.50±9.58	-14.974	0.000*
	Control	0.15±2.93		

*p<0.05

At the end of the study, it was found that anxiety level of students participating in volleyball, a team

sports, was lower than that of individual participants in fitness. In addition, team sports naturally increases mutual agreement and social cooperation, helps respect to oneself and others. Therefore, team sports were effective in decreasing anxiety level (12). In the present study, significant increase in state anxiety level following 8 week step-aerobic and pilates exercises may result from high anxiety levels of women before their last exercise session and from evaluations of state and trait anxiety levels at different times. In addition, that the exercises done in this paper are individual, require no cooperation and the possibility of missing rhythm and the stress caused by this rhythm may have also led to the increase in state anxiety.

In the evaluation of quality of life, except in bodily pain in the experimental group, statistically significant increase was observed in all sub-items and total scores while significant decrease was seen in pain. In the scale of quality of life, health is evaluated between 0-100 in sub-scales and 0 signifies bad health condition while 100 means well-being. It can be argued that the important fall in pain in this case means strong pain which limits motions of individuals and their adversely affected health condition. It is possible that deterioration in pain after exercise in the experimental group is caused by participants' sedentary life and not having done any sports before.

In previous studies, the relationship between exercises and advanced physical and mental health was very well established (11). In the studies conducted on both the young and the elderly, a positive relation was found between exercise and being healthy. It was argued that physically active individuals are healthier than their sedentary peers and feel better themselves (16,30). In another research by Gillison et al. (10), it was stated that light and moderate intensity exercises done for 3-6 months contributed to physical and mental health (10). Likewise, Papavasilou (20) argued that exercise improved physical, mental, emotional and psychological awareness levels of quality of life all at the same time (20).

Daşkapan et al. (6) found that a close positive correlation was detected with regards to gender and body mass index between energy expended and the physical function, vitality, social function and mental health parameters of SF-36 quality of life survey (6). In similar studies, moderate intensity physical activity and physical function, general health, vitality and total physical health score (14,28). Riise et al. (21) in one of their studies suggested that a strong positive correlation was found between physical activity level and total physical health score while a lower correlation was shown with mental health score. In the present study, the results showed similarity with the relevant literature with regards to all parameters and their total scores except bodily pain of quality of life scale.

In intergroup comparisons, significant differences were found between anxiety level and all variables and total scores of quality of life.

It is possible to say that significant differences in all the other variables except state anxiety level result from positive effects of exercise.

To conclude, eight week exercise program used in the present study has positive effects on trait anxiety levels and life quality of women in the experimental group at this age compared to those in the control group

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