

Effect of Regular Exercise on the Life Satisfaction and Self-Efficacy of the Elderly Obese

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Summary. This study aimed to investigate whether regular exercise had an effect on the life satisfaction and self-efficacy levels of obese elderly people. The life satisfaction and self-efficacy perceptions of obese individuals aged 65 years and over, who regularly exercised and those that did not exercise were compared using the Satisfaction with Life Scale and the General Self-Efficacy Scale measurement tools. While the mean life satisfaction scores statistically significantly increased among the individuals that exercised regularly, no significant difference was found in relation to the mean self-efficacy scores. The aging world population and increasing age-related obesity continue to be a global problem. In addition to regulating eating habits, which is crucial in preventing obesity, it is necessary to draw attention to the importance of regular exercise, especially in elderly obese individuals.

Key words: elderly, obese, exercise, satisfaction

Introduction

The world population is getting older, and it is estimated that by 2035, more than 20% of the US population and more than 25% of Europeans will be 65 years or older (1). In parallel with these estimations, it is expected that the 21st century will become the century of the elderly in Turkey, with the population of the elderly in the country reaching 16 million by 2050 (2). As in all age groups, the prevalence of obesity has increased in the elderly (currently affecting 38.5% of the elderly population), and this increase is associated with the interactions of many factors, such as a sedentary lifestyle, dietary changes, and age-related decrease in the metabolic rate (3,4).

It has been reported that age-related decrease in height in the elderly may cause an incorrect assessment of body mass index (BMI) values as high as 1.5 kg/m² in men and 2.5 kg/m² in women (5). While visceral fat increases in aging, subcutaneous fat decreases in other parts of the body (the abdomen, thighs, and calves),

and although there is no significant change in body weight, intra-abdominal adiposity occurs in both men and women with increasing age (6,7). The most important reason for the decrease in fat mass in old age is the negative energy balance, which occurs as a result of energy consumed being higher than energy spent (8). Despite all this information, it is reported that it is difficult to reveal the relationship between the prevalence of obesity in the elderly population and its effect on health, since the elderly person may die due to a cause that is not directly related to obesity (9,10). In addition, debates continue concerning whether body weight loss in the elderly is beneficial or harmful (11).

It is reported that limitations in physical activities in the elderly have negative effects on their health-related quality of life (12). In addition to being associated with many diseases, obesity leads to a decrease in the quality of life and disability in the elderly (13). Physical activity is an important determinant of health and physical function in the elderly population, but a sedentary lifestyle is especially common in older people.

It is reported that less than 10% of people over the age of 75 years have adequate physical activity levels (14). It is also emphasized that the quality of life of physically active individuals is also high, regular exercise is an important determinant of the quality of life, and there is a positive correlation between physical function and quality of life (15).

The aim of this study was to investigate whether exercise had an effect on the life satisfaction and self-efficacy of obese people aged 65 years and over.

Method

Study Population

The population of the study consisted of obese men aged over 65 years, who regularly exercised and those that did not engage in regular exercise, selected from the records of 17 fitness clubs in Çukurova region, Turkey in 2019. The sample was selected using the purposive sampling method, and a total of 112 obese individuals aged 65 years and older with a BMI of 30 and above were included in the study. Of these individuals, 61 regularly exercised for at least 30 minutes five days a week for the last six months (without calorie restriction) and 51 individuals did not exercise regularly.

Exclusion Criteria

Individuals with known chronic heart disease, kidney failure, liver failure, malignancy, chronic respiratory diseases, such as chronic obstructive pulmonary disease, and asthma, uncontrolled hypertension, chronic neurological disease, or musculoskeletal diseases for which exercise is contraindicated, and/or those that had used drugs in the last six months due to chronic psychological disorders were excluded.

During the data collection process, it was provided the participants with necessary information regarding the purpose and scope of the research and the protection of the confidentiality of information to be obtained. Only elderly obese individuals who volunteered to participate in the study were included in the sample. Local ethics committee approval was obtained for the study.

In this study, the Satisfaction with Life Scale (SWLS) and the General Self-Efficacy Scale (GSES) were used to collect data from the participants. In addition, a personal information form was used to determine the demographic information of the participants, such as age, height, weight, and working status.

Satisfaction with Life Scale

In this study, the life satisfaction of the participants was evaluated using SWLS developed by Diener et al. (16). SWLS is a five-item scale with options ranging from strongly disagree to completely agree. Scores obtained from each item vary between 1 and 7, and the total score ranges from 5 to 35. A higher score indicates a higher level of life satisfaction. In the current study, the Turkish version SWLS was used. The validity and reliability studies of this version were undertaken by Dagli and Yetim (17,18). In Yetim's study, the Cronbach alpha value of the scale was reported as .86 (18).

General Self-Efficacy Scale

The self-efficacy of the participants was evaluated using the 17-item GSES developed by Sherer et al. and adapted to the Turkish culture by Yıldırım and İlhan (19,20). This instrument is based on a five-point Likert scale with responses ranging from "not at all" to "very well" and consists of three sub-dimensions (initiation, persistence, and effort to continue). Eleven items in the scale are reverse-scored (items 2, 4, 5, 6, 7, 10, 11, 12, 14, 16, and 17). The lowest possible score is 17 and the highest is 85. A high score indicates a high level of self-efficacy. The Cronbach alpha reliability value was previously reported as .80 (20).

Data analysis

In the data analysis, first, the normality test was performed. Since the number of individuals in the sample was larger than 50, the Kolmogorov-Smirnov normality test was used. The results showed that the data were normally distributed, with the significance value being greater than 0.05 ($p > 0.05$).

To determine whether the life satisfaction and self-efficacy perceptions of the participants differed according to their exercise status, the

independent-samples t-test was performed. A two-way analysis of variance (ANOVA) was conducted to determine whether the life satisfaction and self-efficacy perceptions of the individuals differed according to exercise status and age.

In addition, the Cronbach alpha reliability analysis was performed for the scales used in the research. SPSS software package, v. 22 was used in the analysis of the data obtained in the study.

Results

Table 1 shows the results of the independent-samples t-test conducted to determine whether the life satisfaction scale scores of the individuals over the age of 65 years differed according to the exercise variable. The average SWLS score of the individuals who regularly exercised was found to be higher than those in the non-exercise group, and this difference was statistically significant ($t = 6.11$; $p < 0.05$). The Cronbach alpha value was found to be .85.

Table 1. Effect of Exercise on the Satisfaction with Life Scale Scores

Groups	n	\bar{X}	SD	SE	t-test	
					t	p
Exercise	61	21.78	5.79	0.67	6.11	0.00
Non-exercise	51	15.21	6.09	0.81		

Table 2 shows the results of the independent-samples t-test conducted to determine whether the GSES scores differed according to the exercise variable. Although the self-efficacy averages of the individuals in the exercise group were numerically higher than those that did not engage in regular exercise, no statistically significant difference was found ($t = 1.36$; $p > 0.05$). The Cronbach alpha value was calculated as .84.

Table 3 presents the results of the two-way ANOVA test, which was performed to determine whether the mean SWLS scores of obese individuals differed according to age. It was determined that the interaction between age and exercise did not cause a statistically significant difference in life satisfaction ($F = 0.55$, $p > 0.05$).

Table 4 shows the results of the two-way ANOVA test conducted to determine whether the mean GSES scores of the exercise groups differed according to age. The effect of age and exercise interaction on self-efficacy was found to be statistically significant ($F = 5.14$, $p < 0.05$). In particular, the individuals aged

Table 2. Effect of Exercise on the General Self-Efficacy Scale Scores

Groups	n	SD	SE	t-test		
				t	p	
Exercise	61	58.87	11.25	1.22	1.36	0.16
Non-exercise	51	56.19	11.62	1.43		

Table 3. Effect of Exercise on the Satisfaction with Life Scale Scores by Age Groups

	Groups	Age	n	\bar{X}	SD
	Exercise	65-66	17	20.18	5.64
		67-68	21	24.52	5.63
		69-70	23	22.71	5.80
	Non-exercise	65-66	15	15.19	7.07
		67-68	22	16.74	6.55
		69-70	14	16.52	5.47
	Sum of squares		Average of squares	F	p
Exercise	1239.38		1239.38	34.20	<0.01
Age	188.67		94.33	2.638	0.07
Exercise and age	42.23		21.11	0.55	0.57

Table 4. Effect of Exercise on the General Self-Efficacy Scale Scores by Age Groups

	Groups	Age	n	\bar{X}	SD
	Exercise	65-66	17	53.32	10.00
		67-68	21	62.15	9.68
		69-70	23	59.23	11.92
	Non-exercise	65-66	15	56.51	9.21
		67-68	22	52.59	12.44
		69-70	14	61.76	9.17
	Sum of squares		Average of squares	F	P
Exercise	48.80		48.80	0.40	0.50
Age	583.71		291.84	2,0	0.07
Exercise and age	1197.30		598.66	5.14	0.01

67 or 68 years, who regularly exercised were found to have higher self-efficacy scores than those that did not engage in regular exercise.

Discussion

Although energy restriction is an effective method for weight loss in young adults, exceeding moderate energy restriction (500-750 kcal/day) in the elderly may result in loss of lean body tissue (21). Regular exercise programs (at least 30 minutes of moderately dynamic exercise for five-seven days a week) and nutritional supplements are recommended for weight loss in overweight and obese elderly people to preserve muscle and bone mass (9,22). The exercise program targeting controlled weight loss should be strictly implemented for a minimum of two months in order to reduce fat tissue and ensure the permanence of weight loss, and regular exercise should be undertaken for life (23). The main goal of exercise programs in the elderly should be to increase flexibility, endurance, and strength, and they should be specially planned in accordance with the age, individual choices, health, and physical conditions of the person (24).

In a randomized controlled study conducted with 439 preobese and obese postmenopausal women aged 50-75 years, Foster-Schubert et al. reported that an exercise program of 300 min/week for six months provided controlled weight loss, and the success rate was higher in the diet + exercise group (25). In a randomized controlled study conducted in fitness clubs in

Japan, Nishijima et al. evaluated 561 female and male overweight-to-obese people with an average age of 67 years and reported that aerobic exercise performed two to four times a week for six months improved health-related quality of life (26). Another study investigating a total of 173 sedentary postmenopausal overweight women aged 50 to 75 years showed that the regular exercise group (such as 45-minute brisk walking five times a week), had better results in weight loss and body fat reduction compared to the control group according to the third- and 12th-month data (27). In addition, elderly people who are physically active and have a low abdominal circumference are less likely to develop insulin resistance and type 2 diabetes mellitus (28). It has been shown that the increase in BMI in older men was directly proportional to the increase in mortality associated with coronary heart disease and cardiovascular disease (29,30).

Conclusions

This study aimed to emphasize the importance of moderate aerobic exercise on psychological perceptions, such as life satisfaction and self-efficacy in elderly obese individuals.

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