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Original article

Evaluation of Exercise Addiction of Obese Adults

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Abstract. *Study objectives:* The aim of this study was to evaluate exercise addiction levels of adults and search the correlation between exercise addiction and gender, age, and exercise experience. *Methods:* A total of 148 obese (body mass index > 30) men and women who exercise regularly at least one hour per day and at least three days per week for four months were recruited randomly for the study. Data were collected using "Demographic Information Form" and "Exercise Addiction Scale (EAS)". *Results:* Scores of EAS were evaluated through these three sub-dimensions of the scale; "Excessive Focus and Emotion Change", "Postponement of Individual-Social Needs and Conflict", "Tolerance Development and Passion". Statistically significant relationships were found between sub-dimension scale scores and gender, age, and exercise experience. In all sub-dimension of EAS scores were higher in women than men. Scores of younger adults were higher than the older group. In addition, it was found that individuals who have exercise experience of more than 5 years had lower addiction scores less experienced group. *Conclusion:* The results suggest that women, older adults, and less experienced individuals have more tendency for exercise addiction.

Key words: Obesity, gender, age, exercise experience, exercise addiction.

Introduction

Exercise is considered a subcategory of physical activity. Commonly exercise means programmed repetitive body movements in certain fields. Many individuals begin to exercise at some point in their lives but then quit. The common reason for quitting is to begin exercise without appropriate information, knowledge, or training. Actually, exercise means continuous, planned, and structured physical activities that were adapted individual's physical fitness. Moreover, exercise should target to improve other aspects of the physical and mental well-being of individuals. Aerobic, dance, brisk walking, and running are some examples of exercise (1).

Prominent positive effects of exercise may be mentioned as regulating body oxygen distribution and metabolic processes, increasing strength and endurance, reducing body fat, improving joint-muscle movements (2).

Exercise is an important tool for obesity treatment; it decreases the loss of lean body mass which occurs in restricted diets and also increases energy expenditure (3). Daily average thirty minutes moderate intensity exercise is recommended for adults. This kind of activity provides 840kj (=200 kcal) energy consumption. In obese individuals, continuous daily physical activity is targeted. Energy consumption changes according to an individual's body weight and activity intensity. Continuous daily exercise is a critical action for the prevention and treatment of obesity among other management approaches. Many studies showed the relative correlation between exercise and body

mass index. These studies suggest that continuous and regular exercise limits the progression of obesity (4).

Addiction can be described as an individual's losing control over an object or activity. Addiction is an irrepressible desire for an object, a person, or an action. Addicted individuals can harm themselves physically or psychologically. American Psychiatric Association (APA) suggested that if three of seven criteria exist the individual can be classified as "addicted". In addition, the individual should be followed up for one year to make this diagnosis certainly (5). Physiopathology studies suggested that an increase of dopamine and endorphin cause pleasure emotion and continuity of this process leads to addiction in individuals. Intense exercises increase the tendency to addiction. At this stage, if an individual stops doing exercise he would feel anxiety, sleeplessness, aggression, and headache symptoms.

This study aimed to evaluate exercise addiction levels of obese adults and to research the relationship between exercise addiction and gender, age, and exercise experience.

Methods

Research Group

The population of the study was obese adults that do exercise in Turkey. The sample of the study was 148 obese individuals (body mass index is over 30) between the ages of 50-55 doing exercise at least one hour per day and at least three days per week regularly for four months.

Data Collection

All participants were informed about the study, context, and data privacy, and their consent were taken. The data about addiction were collected using Exercise Addiction Scale (EAS). Furthermore, gender, age, exercise experience, length, and weight data were collected by personal data form.

EAS was developed by Demir et al. (2018) to measure individuals' exercise addiction (6). The scale consists of five-point Likert-type items (1. absolutely agree, 5. strongly disagree). There are 17 items and 3 sub-dimensions on the scale; "Excessive Focus and Emotion Change" (7 items), "Postponement of Individual Social Needs and Conflict" (6 items), and "Tolerance Development and Passion" (4 items). In our study addiction levels were compared and evaluated through these three sub-factors between groups. Validity and reliability study of EAS was done by Demir et al. (2018) (6) Cronbach Alpha reliability coefficient for general of the scale was found 0.88; it was 0.83 for the first sub-factor, 0.79 for the second sub-factor, and 0.77 for the third sub-factor.

Statistical Analysis

During data analysis initially, Kolmogorov–Smirnov normality test was performed. As the significance value of the test result was higher than 0.05 distribution was accepted as normal. The difference in exercise addiction levels between age, gender, and exercise experience groups were tested by the independent sample t-test. All analyses were carried out using IBM SPSS Statistics for Windows. P values <0.05 were considered statistically significant.

Results

Table 1 shows that mean addiction scores were found significantly different between women and men participants. Test results of "Excessive Focus and Emotion Change", "Postponement of Individual-Social Needs and Conflict" and "Tolerance Development and Passion" sub-dimensions were respectively found as "t = 2.87; p<.05", "t = 2.86; p<.05", and "t = 2.88; p<.05".

Table 2 summarizes mean exercise addiction score differences of age groups in three sub-dimension scales. The differences between age groups were found statistically significant. Significance test results of "Excessive Focus and Emotion Change", "Postponement of Individual-Social Needs and Conflict", and "Tolerance Development and Passion" sub-dimensions were respectively found as "t = 3.01; p<.05", "t = 3.11; p<.05", and "t = 2.95; p<.05".

Table 3 shows exercise addiction score differences between more (over 5 years) and less (1-5 years) experienced groups in terms of exercise. Test results suggested

Table 1. Distribution of exercise addiction sub-dimension scores according to gender

Sub-dimensions	Gender	N	$\bar{X}$	Sd**	t	p
Excessive Focus and Emotion Change	Women	76	3.96	.98	2.87	**.02***
	Men	72	3.75	1.12		
Postponement of Individual-Social Needs and Conflict	Women	76	3.40	1.45	2.86	**.02***
	Men	72	3.19	1.07		
Tolerance Development and Passion	Women	76	3.89	1.61	2.88	**.02***
	Men	72	3.68	1.04		

*p <.05, **Standard Deviation

Table 2. Distribution of exercise addiction sub-dimension scores according to age

Sub-dimensions	Age (year)	N	$\bar{X}$	Sd**	t	p
Excessive Focus and Emotion Change	50-52	90	3.69	1.34	3.01	**.01***
	53-55	58	4.02	1.21		
Postponement of Individual-Social Needs and Conflict	50-52	90	3.23	1.48	3.11	**.01***
	53-55	58	3.42	1.67		
Tolerance Development and Passion	50-52	90	3.62	1.23	2.95	**.02***
	53-55	58	3.80	1.59		

*p <.05, **standard deviation

Table 3. Distribution of exercise addiction sub-dimension scores according to exercise experience

Sub-dimensions	Exercise experience (year)	N	$\bar{X}$	Sd**	t	p
Excessive Focus and Emotion Change	1-5	63	4.54	1.01	3.23	**.01***
	over 5	85	3.65	1.08		
Postponement of Individual-Social Needs and Conflict	1-5	63	3.50	1.07	3.62	**.01***
	over 5	85	3.31	1.08		
Tolerance Development and Passion	1-5	63	3.76	1.09	3.19	**.01***
	over 5	85	3.54	1.05		

*p <.05, **standard deviation

that in all three sub-dimensions addiction scores between groups were found statistically significant. Test results of "Excessive Focus and Emotion Change", "Postponement of Individual-Social Needs and Conflict" and "Tolerance Development and Passion" sub-dimensions were respectively found as "t = 3.23; p<.05", "t = 3.62; p<.05)", and "t = 3.19; p<.05".

Discussion and Conclusion

Exercise addiction scores of obese participants were found significantly different between women and men. In all three sub-dimensions, women were found to be more addicted than men. Most of the studies that researched exercise addiction according to gender revealed similar results as our study. Furthermore, in their long-term interventional study, Jepsen et al. (2015) have found that physical activity has led to positive life quality results in obese adults (7).

However, in some studies evaluating sub-dimension addiction scales, it was found that men have higher addiction scores than women. Some authors explained this fact as men were doing more exercise than women to relieve stress. Moreover, in a body weight control study by Pinto et al. (1999), it was found that while the body weight of participants changed their addiction state had led to positive effects in the context of

health parameters (8). The study on obese and non-obese children by Trost et al. (2001) suggested that addiction levels of obese children were lower than the non-obese group (9). In the literature search, we found both supporting and non-supporting results about our study.

In our study, exercise addiction scores of all sub-dimension scales revealed statistically significant differences between age groups. It was found that older participants had more tendency to exercise addiction than the younger group. In the literature, many studies were found supporting this result in different aspects. As a general opinion, it can be suggested that older individuals pay more attention to their health status, therefore they tend to be more addicted to exercise than young individuals. Another opinion was put forward that some factors like increase of social status, desire to socialize, aesthetic concerns, and tendency to avoid responsibility, and desire to gain self-confidence of elder individuals motivate them to do more exercise (10). These studies also suggested similar results about the relationship between age and exercise addiction (11, 12, 13).

In our study, the exercise addiction levels of obese participants in different exercise experience groups were found to be significantly different in all three sub-dimension scales. Addiction scores of less experienced individuals were found higher than the others. These results suggesting an increased tendency to addiction of less experienced obese individuals are similar to some other studies in the literature (14). In the study by Bavli et al. (2016) exercise addiction of dancers was researched (15). In this study they found that some of the participants were asymptomatic, some of the participants were symptomatic and some of the participants were addicted. It was revealed that most of the addicted participants were in the higher education group. In the study by Faghri et al. (2016) exercise addiction and body mass index levels were found to be correlated (16). The study by Morse et al. (2011) suggested that exercise addiction was lower in individuals in high the body mass index group (17). In the study by Ferraro et al. (2013), it was found that obese individuals who have higher exercise addiction scores have achieved more positive progress about body weight and waist circumference (18).

The results of our study suggest strong correlations between exercise addiction levels and gender, age, and exercise experience. More studies on different groups with more participants are needed to be conducted to reveal the cause-effect relationships of exercise addiction with these factors.

Conflicts of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

References

1. Uzun U. Evaluating exercise addiction of university students attending sports science education. Unpublished Master Thesis. Trakya University, Social Sciences Institute 2019.
2. Akgol O. Evaluation of exercise addiction levels of adults doing exercise. Unpublished Master Thesis. Manisa Celal Bayar University, Health Sciences Institute, Manisa 2019.
3. Pekmez CT, Ozdemir G, Ersoy G. The importance of exercise to obesity treatment. International Journal of Human Sciences 2012; 9(2): 141-160.
4. Bozbora A. Obesity and Treatment. Nobel Publications I.stanbul 2002.
5. Koroglu E. American Psychiatric Association: Identification and classification of psychiatric diseases. Handbook, Ankara 2001.
6. Demir GT, Hazar Z, Cicioglu, HI.. Exercise addiction scale (EAS): A Study of Validity and Reliability. Kastamonu Education Journal 2018; 26(3): 865-874.
7. Jepsen R, Aadland E, Robertson L, Kolotkin RL, Andersen JR, Natvig GK. Physical Activity and Quality of Life in Severely Obese Adults during a Two Year Lifestyle Intervention Programme. J Obes 2015; 2015: 1-11.
8. Pinto BM, Clark MM, Cruess DG, Szymanski L, Pera V. Changes in Self-Efficacy and Decisional Balance for Exercise among Obese Women in a Weight Management Program. Obesity 1999; 7(3): 288-292.
9. Trost SG, Kerr LM, Ward DS, Pate RR. Physical activity and determinants of physical activity in obese and non-obese children. Int J Obes 2001; 25(6): 822.
10. Crust L, Earle K, Perry J, Earle F, Clough A. Clough PJ. Mental toughness in higher education: Relationships with achievement and progression in first-year university sports students. Personality and Individual Differences 2014; 69: 87-91.
11. Keeler AL. The transtheoretical model and psychological skills training: Application and implications with elite female athletes, Unpublished Doctoral Thesis, West Virginia University, USA 2006.

12. Kholbry WP. Exercise self efficacy, stages of exercise change, health promotion behaviors, and physical activity in postmenopausal Hispanic women, Unpublished Doctoral Thesis, San Diego University, USA 2006.
13. O'Hea EL, Boudreaux ED, Jeffries SK, Taylor CL, Scarinci IC, Brantley PJ. Stage of change movement across three health behaviors: The role of self-efficacy, Am J Health Promot 2004; 19(2): 94-102.
14. Nogueira A, Molinero O, Salguero A, Márquez S. Exercise addiction in practitioners of endurance sports: a literature review. Front Psychol 2018; 9: 1484.
15. Bavli O, Isik S, Canpolat O et al. Dansçılarda egzersiz bağımlılığı semptomunun incelenmesi. Int J Sport, Exer & Train Sci 2016; 1(2): 120-124.
16. Faghri P, Buden J. Health Behavior Knowledge and Self-efficacy as Predictors of Body Weight. J Nutr Disorders Ther 2015; 5(3): 1-5.
17. Morse T, Dussetschleger J, Warren N, Cherniack M. Talking about health: correction employees' assessments of obstacles to healthy living. J Occup Environ Med 2011; 53(9): 1037-1045.
18. Ferraro L, Faghri PD, Henning R, Cherniack M. Center for the Promotion of Health in the New England Workplace Team Workplace-based participatory approach to weight loss for correctional employees. J Occup Environ Med. 2013; 55: 147–155.

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