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The Relationship Between Exercise Addiction And Beliefs İn Sports Nutritional Supplements

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Abstract

Purpose: In this study, it was aimed to investigate the relationship between exercise addiction levels and attitudes of athletes against nutritional supplements. Material: A total of 257 students, 62.8% (n = 161) male and 37.4% (n = 115) female, studying in the sports science faculty of Çanakkale Onsekiz Mart University, constituted the research group. "Exercise Addiction Scale" and "Belief in Sports Nutritional Supplements Scale" were used as data collection tools. The relational screening method was used in the research. The relationship between exercise addiction and belief in sports supplements was investigated using Pearson correlation and structural equation model. Results: It was observed that the dimension of the "Postponement of Individual-Social Needs and Conflict" affects positively and significantly (β = .366, p≤ .05) the "Sport Nutritional Supplements Belief" and was statistically significant. It was found that "Tolerance Development and Passion" "Sport Nutritional Supplements Belief", which is one of the sub-dimensions of exercise addiction, positively and significantly (β = .217, p≤ .05). According to the model, it was determined that exercise addiction affects Sport Nutritional Supplements Belief by 20.8% (R2 = .208). Conclusions: According to the research results, it was concluded that exercise addiction predicted belief in sports supplements at a positive and significant level. Considering that the students of the sports sciences will work in the field as a sports scientist in the future, it is considered important to have sufficient knowledge and equipment about exercise addiction and sports nutritional supplements.

Keywords: Exercise Addiction, Supplements, Nutrition

INTRODUCTION

Today, it is possible to say that nutritional supplements are used a lot in their sedentary, apart from elite athletes. In studies, it has been stated that the use of dietary supplements is increasing (1, 2), this rate varies between 40% and 80% in athletes (3, 4). In fact, in the USA, almost half of the population has been stated to take nutritional supplements at least once (1). The most commonly used nutritional supplements are multivitamins, minerals, vitamin C, proteins, amino acids, creatine, glutamine, sports drinks and sports bars (5). Athletes use their nutritional supplements to increase speed, strength, quickness, and muscle volumes (6). In the nutrition of athletes, not only the energy spent during the competition period or during the training, but also the lost liquid and micronutrients must be met (7). Therefore, athletes need to take nutritional supplements in cases where normal diets are inadequate. It is seen that the use of sports nutrition supplements is not only in athletes but also in individuals who go to gyms (gym) and exercise regularly. In a study, it was found that 43.8% of those who went to the gym took nutritional supplements (8).

The increasing use of sports supplements caused this sector to grow steadily. The health of the products used in this sector is controversial. In their study, Geyer et al. (9) found 15% of the 634 nutritional supplements they examined, containing anabolic steroids and doping. There are many opinions that it is useful and harmful in the use of sports supplements. Some athlete's nutritional supplements contain substances that cause side effects, causing sleep disorders and cardiovascular problems (10). Pascale et al (11) stated that 25% of

sports supplements are more than acceptable estrogenic values, while 50% of these supplements contain melamine, a non-protein nitrogen source. It has been stated that people who do not have anemia problems or who are not genetically predisposed may have side effects such as using iron supplements such as hemochromatosis and organ toxicity (12). In addition to studies defending the view that it is harmful and has side effects, there are also studies indicating that dietary supplements are not harmful. In a study on rats, it was reported that there was no adverse effect on kidney and liver in the protein-supplemented group, and that there was an improvement in the liver compared to rats in the protein-free group (13). Many studies have suggested that whey protein can benefit cancer patients (14). Individuals' needs and genetic structure should be taken into consideration in the use of sports supplements.

It can be stated that it is important to investigate the reasons that push individuals to use sports supplements. It is a known fact that physical activity and exercise have physical and psychological positive effects. It is possible that if the exercise passes to the level of addiction, it will affect the daily life of the person. While exercise addiction was previously considered a positive addiction, subsequent research focused on its harmful effects (15, 16). In people with exercise addiction, although there are injuries, effects such as the continuation of exercise, obsessive exercise, and affecting personal life are observed (17, 18). It has been stated that people who are addicted to exercise experience stress, depression, and sleep problems when they do not exercise (19). Exercise is fun at first, but later becomes a necessity (20). Some findings show that regular exercise and sports are effective on exercise addiction (21). In a study, it was determined that the exercise addiction level of sports science students was 6.9% (22). In a study conducted in Turkey, compared to elite athletes with sports science faculty students it was found to have more exercise addiction (21).

One of the triggers of exercise addiction may be the dissatisfaction of the person's own body shape and weight dissatisfaction (17, 23). Many studies are showing that there is a relationship between exercise addiction and eating disorder in studies conducted (19, 24, 25). In his research, Shroff et al. (23) stated that the majority of patients with nutritional deficiency exercise excessively. Research suggests that exercisers do not have enough information about dietary supplements (26, 27). The fact that addiction has an incentive to use substances and the ones who do not have enough information about nutrition may cause undesirable situations. In such cases, exercise addiction is likely to trigger the use of dietary supplements. Lichtenstein et al (28) reported that the group that went to fitness centers and has symptoms of exercise addiction is the group that uses sports supplements more than others. In this study, it was aimed to examine the relationship between exercise addiction levels and attitudes of athletes to dietary supplements of students studying in the faculty of sports sciences.

MATERIAL AND METHOD

Research pattern

In this study, a relational screening method was used to investigate the relationship between exercise addiction levels and nutritional supplements attitudes of students studying in the faculty of sports sciences. The relational screening method was chosen to give an idea about the cause-effect relationship between exercise addiction and attitude to nutritional supplements (29).

Research group

A total of 257 students, 62.8% (n = 161) male, and 37.4% (n = 115) female, studying in the sports science faculty of Çanakkale Onsekiz Mart University, constituted the research group. The average age of the participants was found to be 20.99 ± 2.47.

Data collection tools

Exercise Addiction Scale: The exercise addiction scale developed by Tekkurşun-Demir, Hazar, and Cicioğlu (2018 30) was used. Scale; It consists of 17 items: "Excessive Focus and Emotion Change" (7 items), "Postponement of Individual-Social Needs and Conflict" (6 items), and "Tolerance Development and Passion" (4 items). Confirmatory factor analysis (CFA) was performed to test the construct validity of the exercise addiction scale for this study. As a result of DFA analysis, 1 item in “Excessive Focus and Emotion Change” dimension and 2 items in “Postponement of Individual-Social Needs and Conflict” dimension with low factor load were removed from the dataset. After these operations, the data set has been found to reach acceptable values ($\chi 2$ / sd = 3.255, GFI = .922, CFI = .899, IFI = .902, RMSEA = .079). The Cronbach's alpha value of the scale's "Excessive Focus and Emotion Change" dimension was .836, “Postponement of Individual-

Social Needs and Conflict" dimension was .752 and finally "Postponement of Individual-Social Needs and Conflict" dimension was .702.

Belief in Nutritional Supplements Scale: Karafil, Ulaş, and Atay (31) developed the scale. The scale consists of one dimension and 6 items. It was determined that the scale reached acceptable values after two modifications made in DFA analysis for construct validity ($\chi 2$ / sd = 2.174, GFI = .935, CFI = .927, IFI = .914, RMSEA = .068). The Cronbach's alpha value of the scale was found to be .910. With these results, it can be stated that it is suitable for this research in two scales.

Data Analysis

The relationship between exercise addiction and beliefs of nutritional supplements of the Faculty of Sport Sciences students was tested with the structural equation model. SEM has been preferred because it is one of the strong analysis methods for developing theory among variables. Determination of extreme values z scores were examined and 6 data with extreme values were extracted and analyzes were done with 336 datasets. Then skewness kurtosis values were examined to check whether the data were normally distributed. Parametric tests were preferred because the values were between +1 and -1 (32). Since there is a multiple linearity problem, VIF value is examined. After understanding that there was no multiple linearity problem, the relationship between exercise addiction and levels of belief in dietary supplements was tested with Pearson correlation and SEM analysis. While SPSS 23 was used for descriptive statistics and Pearson correlation analysis, AMOS 23 was used in DFA and SEM analysis. An2 / sd, GFI, CFI, IFI, and RMSEA values were examined to test the SEM model. The significance value was based on $p < 0.05$.

RESULTS

Table 1. Correlation Values and Descriptive Statistics of the Relationship Between Belief in Exercise Addiction and Sports Nutritional Supplements

Variables	Mean	Sd.	Skew.	Kurt.	1	2	3	4
1. SNSBS	4.69	1.15	-.605	-,104	1			
2. EFEC	4.49	.46	-.719	-,051	-.051	1		
3. PISNC	3.34	.92	.396	-,731	.421**	.120**	1	
4. TDP	3.77	.82	.003	-,877	.312**	.356**	. 544**	1

1.SNSBS= Sport Nutritional Supplements Belief Scale 2. EFEC = Excessive Focus and Emotion Change, 3. PISNC= Postponement of Individual-Social Needs and Conflict, 4. TDP = Tolerance Development and Passion

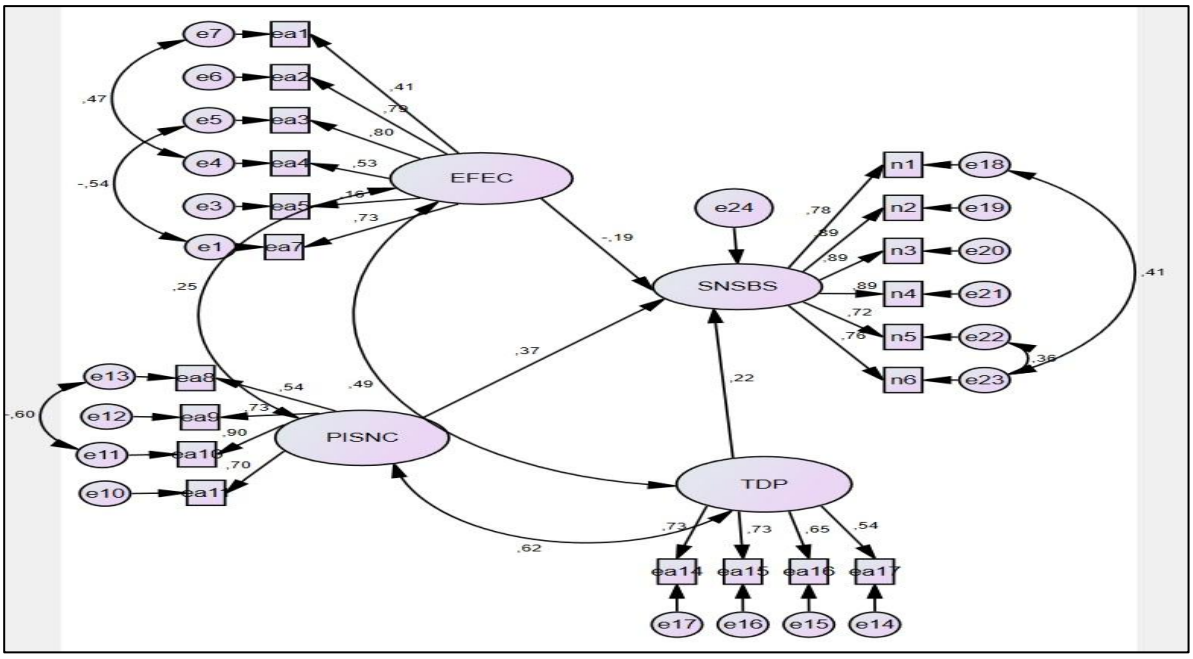

Figure 1. Path Analysis for the Relationship Between Belief in Exercise Addiction and Sports Nutritional Supplements

It was observed that the fit indexes of the model, which examines the effect of exercise addiction sub-dimensions on belief in sports nutritional supplements, meet the necessary fit criteria. ($\chi 2$ / sd = 3.292, GFI = .905, CFI = .91, IFI = .911 and RMSEA = .080). According to these results, it was seen that the model reached acceptable reference values and the model was confirmed (33-34). The path model showing the relationship between exercise addiction and belief in sports supplements is shown in table 2.

Table 2. Standardized Regression Results Regarding the Effect of Exercise Addiction on Sports Nutritional Supplements

Path	Path coefficient (β)	Standardized estimate (Estimate)	Standard Error (S.E)	Critical Ratio (C.R)	Significance Value (p)
EFEC → SNSBS	-.190	-.302	.124	-2,436	,075
PISNC → SNSBS	.366	.696	.188	3,699	***
TDP → SNSBS	.217	.292	.148	1,973	,049

SNSBS= Sport Nutritional Supplements Belief Scale, EFEC = Excessive Focus and Emotion Change, PISNC= Postponement of Individual-Social Needs and Conflict, TDP = Tolerance Development and Passion

According to Table 2, it was observed that the Postponement of Individual-Social Needs and Conflict dimension, which is one of the sub-dimensions of exercise addiction, positively and significantly (β = .366, p≤ .05) and it was statistically significant. It was found that "Tolerance Development and Passion" "Sport Nutritional Supplements Belief", which is one of the sub-dimensions of exercise addiction, positively and significantly (β = .217, p≤ .05). It was found that exercise addiction "Excessive Focus and Emotion Change" dimension did not statistically affect "Sport Nutritional Supplements Belief". According to the model, it was determined that exercise addiction affects Sport Nutritional Supplements Belief by 20.8% (R2 = .208).

DISCUSSION

In this study, which aims to examine the relationship between exercise addiction and beliefs of sports nutritional supplements of students studying in the faculty of sports sciences, it was concluded that they positively and significantly affect the Postponement of Individual-Social Needs and Conflict and Sport Nutritional Supplements Belief. It is concluded that exercise addiction affects belief in sports nutritional supplements by 20.8%.

There are many reasons for individuals' desire to exercise excessively, such as social, cultural, and health. One of them is maintaining body weight, having a lean body, and having a beautiful postural appearance by increasing muscle mass (35). The desire to look beautiful and exercise addiction can cause individuals to make wrong choices about nutrition. In his research, Shroff et al. (23) stated that eating disorder patients have their appearance as a reason for exercising. Today, it can be stated that the appearance of the exterior and the support of the media also lead individuals to eating disorders and excessive exercise. Studies are showing that there is a relationship between excessive exercise and eating disorder (18, 19, 35). The important thing is the effect of exercise addiction on the belief in sports nutrition supplements, positive or negative results. It can be stated that controlled and supervised intake may benefit or side effects may be seen in excessive intake.

Research has revealed that those who exercise do not have enough information about nutrition (26, 27). When combined with exercise addiction and insufficient information, some health problems are likely to occur. Although addiction knows that the individual is harmful to himself, it can be expressed as an unavoidable desire for a certain substance, person, or service and when they do not feel well (36). In this case, the anxiety of exercise addicts about their body appearance as well as their desire to exercise can cause them to perceive that they are malnourished. It can be stated that exercise addicts are more uncontrolled and close to misuse than those who are not addicted to sports supplements. Sports nutritional supplements are one of the options that stand in front of people who are addicted to exercise with substance use. The important thing is to use these nutritional supplements correctly. As in bigorexia, the individual's dislike of his / her body shape and the lack of muscle ratio in his body cause the person to lift big weights, overprotect high protein foods, take nutritional supplements or even use anabolic steroids (37). In addition to the belief that they are insufficient training, exercise addicts can form the

thought of malnutrition over time. This thought may lead them to an intake of extreme sports supplements. The existence of studies showing that sports supplements have some side effects (10-12) makes it clear that caution should be taken in this regard. In the study of Geyer et al. (9) Supplement Anabolic steroid and doping containing substances in 15% make the choice of sports supplements and dosage even more important. Hurst et al. (38) reported that users of sports supplements that believed that sports supplements were effective were more likely to use doping. Considering the effect of addiction on sports supplements, it can be stated that it poses some risks that can lead up to the use of doping.

CONCLUSIONS

As a result of this research, it has been revealed that exercise addiction is a positive and significant predictor of sports nutritional supplements. Although it is known that exercise has many benefits, it should be emphasized that the risks of exercise addiction should be revealed, as in any addiction. Users should be informed about sports nutritional supplements. It is thought that it is important for the students of the faculty of sports to reach a sufficient level of equipment and knowledge about exercise addiction and sports nutritional supplements. In this context, it may be suggested to increase the content and place of these subjects in the undergraduate programs.

REFERENCES

1. Yilmaz İ, Yanardag M, Birkan B, Bumin G. Effects of swimming training on physical fitness and water orientation in autism. Pediatrics International, 2004; 46: 624-626. Bailey RL, Gahche JJ, Miller PE, Thomas PR, Dwyer JT. Why US adults use dietary supplements. JAMA Intern Med. 2013;173: 355-361.
2. Morrison LJ, Gizis F, Shorter B. Prevalent use of dietary supplements among people who exercise at a commercial gym. International Journal of Sport Nutrition and Exercise Metabolism, 2004: 481-92.
3. Couzin-Frankel J. The supplement sleuth. Science, 2015; 349: 780–783.
4. Molinero O, Márquez S. Use of Nutritional Supplements In Sports: Risks, Knowledge, and Behavioural-Related Factors. Nutrición Hospitalaria. 2009; 24: 128-34.
5. Deldıcque L, Francaux M, Potential harmful effects of dietary supplements in sports medicine. Current opinion in clinical nutrition and metabolic care, 2016; 19(6): 439-445.
6. Froiland K, Koszewski W, Hingst J and Kopecky L. Nutritional supplement use among college athletes and their sources of information. International Journal of Sports Nutrition Exercise Metabolism. 2004;14: 104–120
7. Timurkaan H, Timurkaan S, Özen G, Meriç F, Uğraş S, Çelik D. Spor ve Beslenme, 3.Baskı, Milli Eğitim Bakanlığı Destek Hizmetleri Genel Müdürlüğü Basımı; 2012. (in Turkish)
8. Ruano J, Teixeira VH. Prevalence of dietary supplement use by gym members in Portugal and associated factors. J Int Soc Sports Nutr 2020;17:11. https://doi.org/10.1186/s12970-020-00342-z
9. Geyer H, Parr MK, Koehler K, Marec U, Schänzer W, Thevis MNutritional supplements cross-contaminated and faked with doping substances. Journal of mass spectrometry, 2008; 43(7): 892-902.
10. Juhn M. Popular sports supplements and ergogenic aids. Sports Medicine. 2003; 33(12): 921–39.
11. Pascale B, Steele C, Attipoe, S, O'Connor FG, & Deuster, PA. Dietary supplements: knowledge and adverse event reporting among American Medical Society for Sports Medicine physicians. Clinical Journal of Sport Medicine, 2016; 26(2): 139-144.
12. Zoller H, Vogel W. Iron supplementation in athletes—first do no. Nutrition, 2004; 20: 615-619. https://doi.org/10.1016/j.nut.2004.04.006
13. Toedebusch RG, Childs TE, Hamilton SR, Crowley JR, Booth FW, Roberts MD. Postprandial leucine and insulin responses and toxicological effects of a novel whey protein hydrolysate-based supplement in rats. Journal of the International Society of Sports Nutrition, 2012; 9: 24-33.
14. Patel S. Emerging trends in nutraceutical applications of whey protein and its derivatives. J Food Sci Technol, 2015; 52, 6847–6858. https://doi.org/10.1007/s13197-015-1894-0
15. Carmack, MA, Martens R, Measuring commitment to running:a survey of runners' attitudes and mental states. Journal of Sport Psychology, 1979;1: 25–42.
16. Berczik K, Szabo A, Griffiths MD, Kurimay T, Kun B, Urbán R, Demetrovics Z, Exercise addiction: symptoms, diagnosis, epidemiology, andetiology. Substance Use & Misuse, 2012; 47(4): 403-417.
17. Landolfi E. Exercise addiction. Sports Medicine. 2013; 43(2): 111-119.
18. Rocks T, Pelly F, Slater G, & Martin LA. Prevalence of exercise addiction symptomology and disordered eating in Australian students studying nutrition and dietetics. Journal of the Academy of Nutrition and Dietetics. 2017; 117(10): 1628-1636.
19. Hausenblas HA, Downs DS. Exercise dependence: a systematic review. Psychology of Sport and Exercise, 2002;3(2): 89-123.
20. Egorov AY, Szabo A. The exercise paradox: An interactional model for a clearer conceptualization of exercise addiction. Journal of Behavioral Addictions, 2013; 2(4): 199-208.
21. Cicioğlu Hİ, Demir GT, Bulgay C, Çetin E. Addiction levels among elite level athletes and students of sports sciences faculty. Journal of Dependence. 2019; 20(1): 12-20.
22. Szabo A, Griffiths M. Exercise addiction in British sport science students. International Journal of Mental Health and Addiction, 2007; 5: 25–28.
23. Shroff H, Reba L, Thornton LM, Tozzi F, et al. Features associated with excessive exercise in women with eating disorders. Internatiol Journal of Eating Disorders, 2006; 39: 454–61.
24. Bratland-Sanda S, Sundgot-Borgen J, Ro O, Rosenvinge JH, Hoffart A, Martinsen EW. Physical activity and exercise dependence during inpatient treatment of longstanding eating disorders: An exploratory study of excessive and non-excessive exercisers. Internatiol Journal of Eating Disorders, 2010; 43(3) :266-273.

25. Vardar E, Vardar SA, Toksöz İ, Süt N. Exercise dependence and evaluations of psychopathological features. Düşünen Adam The Journal of Psychiatry and Neurological Sciences, 2012; 25: 51-57.
26. Rosenbloom CA, Jonnalagadda SS, Skinner R. Nutrition knowledge of collegiate athletes in a Division I National Collegiate Athletic Association institution. Journal of the Academy of Nutrition and Dietetics, 2002;102: 418– 420.
27. Heikkilä M, Valve R, Lehtovirta M, Fogelholm M. Nutrition knowledge among young Finnish endurance athletes and their coaches. International journal of sport nutrition and exercise metabolism, 2018;28(5):522-527. doi: 10.1123/ijsnem.2017-0264
28. Lichtenstein MB, Jensen ES, Szabo A. Exercise addiction, obsessive passion, and the use of nutritional supplements in fitness center attendees. Translational Sports Medicine, 2020;3: 188– 195.
29. Fraenkel JR, Wallen NE, Hyun HH. How to design and evaluate research in education. New York: McGraw-Hill; 2012.
30. Tekkurşun-Demir G, Hazar Z, Cicioğlu Hİ. Exercise addiction scale (EAS): A study of validity and reliability. Kastamonu Education Journal, 2018;26(3): 865-874.
31. Karafil, AY, Ulaş M, Atay E. Spor Besin Takviyeleri İnanç Ölçeği: Türkçeye uyarlama, geçerlik ve güvenilirlik çalışması. EJERCongress 2019 Conference Proceedings (s. 2290-2295) . Ankara: Anı Publishing. (in Turkish).
32. Tabachnick BG, Fidell LS, Ullman JB. Using multivariate statistics (Vol. 6). Boston, MA: Pearson; 2013.
33. Kline RB. Principles and practice of structural equation modeling. The Guilford Press, New York: NY; 2016.
34. Tabachnick BG, Fidell LS. Using multivariate statistics (5. bs.). New York: Allyn and Bacon; 2007.
35. Yıldırım Ġ, Ersöz G, Büyükkök M, Zengin G, Özel Ö. Correlation between depression and eating attitudes and behaviors among those who performed regular physical activities. Journal Of Human Sciences, 2016;13(2): 3590-3599.
36. Seferoğlu SS, Yıldız H. Dijital çağın çocukları: İlköğretim öğrencilerinin Facebook kullanımları ve internet bağımlılıkları üzerine bir araştırma, İletişim ve Diploması Dergisi, 2, Çocuk ve Medya Özel Sayısı, 2013;31-48 (in Turkish)
37. Grieve FG. A Conceptual Model Of Factors Contributing To The Development Of Muscle Dysmorphia. Eating Disorders, 2007;15(1): 63-80.
38. Hurst P, Kavussanu M, Boardley I, Ring C. Sport supplement use predicts doping attitudes and likelihood via sport supplement beliefs. Journal of sports sciences, 2019; 37(15): 1734-1740.