

The Effect on Exercise Addiction and Anxiety Levels in Breathing Exercises in  
Bodybuilding Athletes

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ORIGINAL ARTICLE

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**Abstract**

Exercise is considered a promising and emerging treatment for getting rid of addiction. It has been observed that people who exercise regularly have a clearer mind and cope with negative emotional states more easily. The aim of this study is to examine the effect of breathing exercises on exercise addiction and anxiety levels in individuals who come to bodybuilding. The universe of the study consisted of 40 female and male participants who do sports in the fitness center of the Asis Sports Complex located in Van Yuzuncu Yil University. The participants were randomly divided into two groups as experimental (n=20) and control (n=20). The experimental group was given breathing exercises for 40 minutes, 2 days a week for 10 weeks. The Exercise Addiction Scale and Beck Anxiety Scale were applied to the participants before and after the study. The normality distribution of the data was evaluated with the Kolmogorov–Smirnov and Shapiro-Wilk tests for statistical test selection. Since the data showed normal distribution in the comparison of the scale scores of two independent groups, the Student T test was used. As a result of this study, it can be said that doing breathing exercises regularly for health purposes creates a negative situation at the level of exercise addiction. Although exercise addiction seems like a positive situation, increasing addiction can lead to some physical and psychological problems. With regular breathing exercises performed in the experimental group, a negative increase in exercise addiction scores and a significant positive decrease in anxiety levels were observed. In individuals who do bodybuilding sports, regular breathing exercises increase the level of exercise addiction while decreasing anxiety levels. Based on all these, regular breathing exercises have a positive effect on the level of anxiety, while causing an increase at a level that will pose a risk in the level of exercise addiction.

**Keywords:** Bodybuilding Athletes, Breathing Exercises, Exercise Addiction, Anxiety.

**Vücut Geliştirme Sporcularında Nefes Egzersizlerinin  
Egzersiz Bağımlılığı ile Anksiyete Düzeyleri Üzerindeki Etkisi**

**Öz**

Egzersiz, bağımlılıktan kurtulmak için, umut verici ve yeni ortaya çıkan bir tedavi olarak kabul edilmektedir. Düzenli olarak egzersiz yapan kişilerin daha berrak bir zihne sahip olduğu, olumsuz duygu durumları ile daha kolay başa çıktığı gözlemlenmiştir. Bu araştırmanın amacı, vücut geliştirmeye gelen bireylerde nefes egzersizlerinin egzersiz bağımlılığı ile anksiyete düzeyleri üzerindeki etkisini incelemektir. Araştırmanın evrenini Van Yüzüncü Yıl Üniversitesinde bulunan asis spor kompleksinin fitness salonunda spor yapan kadın ve erkek 40 katılımcı oluşturmuştur. Katılımcılar deney (n=20) ve kontrol (n=20) olarak randomize bir şekilde iki grubu ayrılmıştır. Denek grubuna 10 hafta haftada 2 gün, 40 dk nefes egzersizleri yaptırılmıştır. Katılımcılara çalışma öncesi ve sonrasında Egzersiz Bağımlılığı Ölçeği ile Beck Anksiyete ölçeği uygulanmıştır. İstatistiksel test seçimi için verilerin normallik dağılımı Kolmogorov–Smirnov ve Shapiro-Wilk testleri ile değerlendirilmiştir. Bağımsız iki grubun ölçek puanları karşılaştırmalarında veriler normal dağılım sergilediği için Student T testi kullanılmıştır. Bu çalışmanın sonucunda sağlık amaçlı düzenli olarak nefes egzersizleri yapmanın egzersiz bağımlılık düzeyinde negatif bir durum oluşturduğu söylenebilir. Egzersiz bağımlılığı olumlu bir durum gibi görünse de bağımlılığın artması fiziksel ve psikolojik bir takım sorunlara yol açabilir. Deney grubunda yapılan düzenli nefes egzersizleri ile egzersiz bağımlılığı puanlarında negatif yönde bir artış, kaygı düzeylerinde ise pozitif yönde anlamlı bir düşüş görülmüştür. Vücut geliştirme sporu yapan bireylerde düzenli nefes egzersizleri egzersiz bağımlılığı düzeyini artırırken kaygı düzeylerini azaltmaktadır. Tüm bunlardan yola çıkarak düzenli nefes egzersizleri kaygı düzeyinde olumlu bir etki gösterirken egzersiz bağımlılığı düzeyinde risk oluşturacak düzeyde bir artışa neden olmuştur.

**Anahtar kelimeler:** Vücut Geliştirme Sporcuları, Nefes Egzersizleri, Egzersiz Bağımlılığı, Anksiyete.

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## Introduction

Popular all over the world, the term "fit body" has taken its place as a symbol of high status and fitness for both men and women. Fitness centers are used to have a good and fit physique. Fitness halls offer venues for various competitions and various training equipment that facilitate recreational sports and allow adjustment of physical formulas (Sasatelli, 2015). Exercise; They are repetitive body activities performed in a regular and planned manner, aimed at improving or maintaining different aspects of physical fitness (Hausenblas et al., 2004). People may choose to exercise to control weight, reduce chronic diseases (such as high blood pressure, heart diseases, osteoporosis, diabetes, stroke, stress, psychological problems), have a good time, develop a positive personality and improve social life (Cicioglu et al., 2019). If physical activity is excessive, negative consequences may occur. Addiction is defined as the continuation of substance use, problems results use of a substance or behavior to achieve a certain effect (Hamer et al., 2002).

Exercise addiction can be identified by symptoms such the person losing control over exercise, constantly increasing the frequency, expected benefit from exercise, missing social events and focusing on exercise, and lifestyle becoming exercise-centered (Bavli et al., 2011). Exercise addiction; It is defined as engaging in physical activity beyond one's control, constantly expected benefit from exercise, not being able to spare time for family and friends because of not being able to allow exercise, and doing sports instead of participating in sports (Adams et al., 2002). According to Hausenblas and Downs (2002), exercise addiction; as a result of physical and psychological pathologies due to being away from exercise and a strong desire to do physical activity. Experiencing negative mood experiences such as anxiety, irritability, and low mood when not exercising. Continuing to exercise despite injury, pain, suffering or any physical limitation. Beginning to neglect personal care, relationships and finances due to excessive exercise. Not quitting or having difficulty quitting exercise despite negative results (Karatosun, H. 2010). When a person exercises unbalancedly and does not exercise, their anxiety levels increase and they experience irritability and insomnia (Polat, 2015).

Many researchers suggest that exercise addiction should be considered a psychological anxiety disorder in diagnosis (Fox et al., 2004). When an individual performs exercise regularly, he or she may feel psychological pressure to exercise more than necessary to achieve a certain performance becomes a problem for the person. Nowadays, it can be seen that there are many healthy people who take exercise seriously and make it an important element of their lives. When an individual performs exercise regularly, he or she may feel psychological pressure to exercise more than necessary to achieve a certain performance becomes a problem for the person. (Cakır, 2019).

Exercise is effective in preventing and treating chronic diseases as well as being healthy. Regular exercise habit is a solution to many health problems that trigger old age, diseases and rapid aging. It is like a magic key that opens the door. However, eating deficiencies and some mental health problems may occur in connection with the exercise program. Depression, anxiety, emotional distress, etc. situations are considered normal. Also, the mentioned problems may also be the reason for the exercise exercise. (Ersoy, 2004). Exercise addicts may experience psychological dysfunction, physical injury, and problems in social relationships (Hamer et al., 2007). Breathing exercises are method that has positive effects on mental and physical problems caused by stress. These exercises can relax the person and reduce the symptoms of psychological-anxiety disorders by helping balance the autonomic nervous system (Hayama et al., 2012). Breathing slowly and deeply is effective as it ensures that oxygen reaches the entire lungs. This is different from shallow breathing; because shallow breathing only provides oxygen to the lower part of the lungs. Breathing exercises can help reduce the physical and mental effects of anxiety especially by activating parasympathetic nervous system (Bhargava et al., 1988). Regular breathing exercises encourage active use of the diaphragm muscle. With these exercises, the lungs fill with more air and respiratory efficiency increases. Many studies have emphasized that breathing exercises reduce anxiety levels and help people be calmer by reducing daily stress, post-traumatic stress and addiction (Koulouglioti et al., 2008). Paffenbarger's 1994 study shows that regular breathing exercises can reduce anxiety levels. Also confirmed that breathing exercises have positive effects on anxiety. These findings show that breathing exercises and acceptable in anxiety. In particular, research on how such practices can be used to improve health and quality of life allows the use of these techniques to become widespread and these benefits to reach wider audiences with more scientific support (Smith et al., 2007; Javnbahkt et al., 2009). Breathing exercise is considered a promising and emerging treatment for individuals recovering from addiction. Exercise, usually It is recommended to do 30 minutes 3-5 times a week (Star JA, 2000). The aim of this study is to examine the effects of breathing exercises on exercise addiction and anxiety level in bodybuilding athletes. For this purpose, the hypothesis that "the effect of breathing exercise applications on exercise addiction and anxiety levels of individuals doing bodybuilding sports has a significant effect in intra-group and inter-group comparisons according to both gender and experimental and control groups" was tested.

## **Method**

### ***Model of the Research***

In this study, a pre-test-post-test control group experimental design was used, which is one of the quantitative research methods. Sample selection was determined randomly.

## ***Population and Sample***

The population of the research will consist of 20 test subjects and 20 control volunteers, male and female participants, who do sports in the fitness center of the Asis sports complex located at Van Yuzuncu Yil University. The subject group performed breathing exercises for 40 minutes, 2 days a week for 10 weeks.

## ***Data Collection Tools***

**Beck Anxiety Scale (BAS):** It is a self-report scale that determines the frequency of anxiety symptoms. It consists of 21 items. It is scored between 0-3. It is a Likert type scale. High scores indicate the severity of anxiety. A score of 0-7 is considered to be at a normal level, indicating the minimum level of anxiety, in the range of 8-15 points, it is considered as mild anxiety, in the range of 16-25 points, it is considered as moderate anxiety, and in the range of 26-63 points, it is considered severe anxiety, medical treatment for individuals with scores above 16. In Turkey, The validity and reliability study BAS conducted by Ulusoy, his colleagues (Ulusoy et al., 1998). Cronbach Alpha reliability coefficient for general of the scale was found 0,92 and 1-week retest reliability coefficient of  $r= 0,75$ .

**Exercise Addiction Scale (EAS):** In the study, the exercise addiction of the participants was determined with the Exercise Addiction Scale (EAS) developed by Tekkursun-Demir et al., (2018). Dimensions: "excessive focus and emotional change", "postponement of individual-social needs and conflict", "tolerance development and passion". Scoring of the scale; Rating is scored as "1=Strongly Disagree", "2=Partially Disagree", "3=Moderately Agree", "4=Agree", "5=Strongly Agree". Score ranges are evaluated as "1-17 normal group, 18-34 low risk group, 35-51 risk group, 52-69 dependent group, 70-85 highly dependent group". The first 7 items constitute "Excessive focus and emotional change" sub-dimension, next 6 items constitute "postponement of individual-social needs and conflict" sub-dimension, last 4 items constitute the "tolerance development and passion" sub-dimension. There are no reverse items in the scale consisting of 17 items. Cronbach Alpha reliability coefficient for general of the scale was found 0,88; it was 0,83 for the first sub-factor; it was 0,79 second sub-factor; it was 0,77 for the third sub-factor.

## ***Analysis of Data***

As a result of the study, for statistical test selection, the normality distribution of the data was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests. In the comparison of scale scores between two independent groups, the Student T test was used because the data exhibited a normal distribution. SPSS 17 program was used in the analysis of the data.

### Ethics of Research

Approval was received from Pamukkale University Ethics Committee. (02.11.2023 decision no: E-60116787-020-443449). The study was conducted in accordance with the principles of the Declaration of Helsinki. Adhered to the “Scientific Research and Publication Ethics Directive of Higher Education Institutions” throughout the research process.

### Result

Table 1

Pretest-Posttest T-test Analysis Table for Scales by Gender in Dependent Groups

|                     |                                 |          | $\bar{X}$ | Sd    | t     | p    |
|---------------------|---------------------------------|----------|-----------|-------|-------|------|
| <b>Woman (n=19)</b> | <b>Anxiety level</b>            | Pretest  | 36,53     | 8,7   | 1,51  | 0,15 |
|                     |                                 | Posttest | 34,53     | 9,47  |       |      |
|                     | <b>Exercise Addiction Level</b> | Pretest  | 50,58     | 23,43 | -2,45 | 0,02 |
|                     |                                 | Posttest | 56,11     | 26,18 |       |      |
| <b>Man (n=21)</b>   | <b>Anxiety level</b>            | Pretest  | 36,57     | 8,9   | 0,71  | 0,49 |
|                     |                                 | Posttest | 35,14     | 10,26 |       |      |
|                     | <b>Exercise Addiction Level</b> | Pretest  | 47,52     | 21,32 | -3,78 | 0,00 |
|                     |                                 | Posttest | 54,48     | 25,64 |       |      |

In Table 1, the pre-test-post-test values of women and men were compared separately, a significant difference was found only between tests values of the exercise addiction level in both women and men(  $p < 0,05$ ).. As a result of regular breathing exercises of male and female athletes, their exercise addiction levels increased by approximately 6 points in the post-test values compared to the pre-test values and their addiction levels increased. In the anxiety scale, there is no significant difference in tests values ( $p > 0,05$ ).

Table 2

Pretest-Posttest T-test Analysis Table in Independent Groups for the Scales between Women and Men

|   |              |       | $\bar{X}$ | Sd    | t    | p |
|---|--------------|-------|-----------|-------|------|---|
| <b>Anxiety level Pretest</b>            | Woman (n=19) | 36,53 | 8,7       | -0,02 | 0,99 |   |
|   | Man (n=21)   | 36,57 | 8,9       |       |      |   |
| <b>Anxiety level Posttest</b>           | Woman (n=19) | 34,53 | 9,47      | 0,43  | 0,67 |   |
|   | Man (n=21)   | 35,14 | 10,26     |       |      |   |
| <b>Exercise Addiction Level Pretest</b> | Woman (n=19) | 50,58 | 23,43     | -0,2  | 0,84 |   |
|   | Man (n=21)   | 47,52 | 21,32     |       |      |   |

|  |              |       |       |     |      |
|--|--------------|-------|-------|-----|------|
| <b>Exercise Addiction Level Posttest</b> | Woman (n=19) | 56,11 | 26,18 | 0,2 | 0,84 |
|  | Man (n=21)   | 54,48 | 25,64 |     |      |

\*p<0.05

As seen in Table 2, according to the Independent Groups t-test analysis results comparing the pretest and posttest values of female and male athletes, no significant difference was found between the pretest and posttest average scores obtained from both scales according to gender(p>0,05). The scores obtained from the scales are close to each other in both pretests and posttests.

Table 3

Pre-test and Post-test T-test Analysis Table Independent Groups for Scales between the Experimental and Control Groups

|  | <b>Groups</b>       | $\bar{X}$ | <b>Sd</b> | <b>t</b> | <b>p</b> |
|--|---------------------|-----------|-----------|----------|----------|
| <b>Anxiety level Pretest</b>             | Experimental (n=20) | 30,35     | 8,08      | -6,44    | 0,00     |
|  | Control (n=20)      | 42,75     | 2,99      |          |          |
| <b>Anxiety level Posttest</b>            | Experimental (n=20) | 25,65     | 2,89      | -19,58   | 0,00     |
|  | Control (n=20)      | 44,05     | 3,05      |          |          |
| <b>Exercise Addiction Level Pretest</b>  | Experimental (n=20) | 69,25     | 11,65     | 15,44    | 0,00     |
|  | Control (n=20)      | 28,7      | 1,49      |          |          |
| <b>Exercise Addiction Level Posttest</b> | Experimental (n=20) | 80,15     | 5,85      | 36,46    | 0,00     |
|  | Control (n=20)      | 30,35     | 1,76      |          |          |

\*p<0.05

In Table 3, when the pre-test and post-test values of the experimental and control groups are compared separately, a significant difference is found between the experimental and control groups in both test values (p<0.05). In the Anxiety level, it is seen that the control group has a higher mean than the experimental group in both test values. When the test values of the exercise addiction level are compared, it is seen that the test score mean of the control group is much lower than the experimental group.

Table 4

Pretest-Posttest T-test Analysis Table for Scales in Experimental and Control Groups in Dependent Groups

|                            |                                 |                 | $\bar{X}$ | <b>Sd</b> | <b>t</b> | <b>p</b> |
|----------------------------|---------------------------------|-----------------|-----------|-----------|----------|----------|
| <b>Experimental (n=20)</b> | <b>Anxiety level</b>            | <b>Pretest</b>  | 30,35     | 8,08      | 2,39     | 0,03     |
|                            |                                 | <b>Posttest</b> | 25,65     | 2,89      |          |          |
|                            | <b>Exercise Addiction Level</b> | <b>Pretest</b>  | 69,25     | 11,65     | -4,46    | 0        |
|                            |                                 | <b>Posttest</b> | 80,15     | 5,85      |          |          |
| <b>Control (n=20)</b>      | <b>Anxiety level</b>            | <b>Pretest</b>  | 42,75     | 2,99      | -1,14    | 0,27     |
|                            |                                 | <b>Posttest</b> | 44,05     | 3,05      |          |          |

| Exercise Addiction Level | Pretest  | 28,7  | 1,49 | -4,35 | 0 |
|--------------------------|----------|-------|------|-------|---|
|                          | Posttest | 30,35 | 1,76 |       |   |

\*p<0.05

In Table 4, where the pretest and posttest mean values of the experimental and control groups were compared within themselves, no significant difference was found in the Anxiety level pretest-posttest comparisons of the control group ( $p>0.05$ ), while a significant difference was found in all other comparisons ( $p<0.05$ ). While a significant decrease was observed in the anxiety level compared to the pretest values in the experimental group that did regular self-exercise, a significant increase was found in exercise dependency levels. A similar difference was found in the control group, but the difference was greater in the experimental group.

## Discussion

The purpose of this study is to examine the effects of breathing exercises on exercise addiction and anxiety levels in bodybuilding athletes. For this purpose, that "the effect of breathing exercise applications on exercise addiction and anxiety levels of individuals doing bodybuilding sports has a significant effect in intra-group and inter-group comparisons according to both gender and experimental and control groups" was tested. Significant difference was found only between the pre-test and post-test values of the exercise addiction scale in both women and men. It has been associated with the risk of exercise addiction in athletes according to gender and no difference was found between genders (Levit et al., 2018). This result is consistent with other studies finding that there is no difference in the risk of exercise addiction between male and female athletes (Smith et al., 2010; Bingol & Bayansalduz, 2016; DelaVegaetal., 2016; Zeulner et al., 2016; Reche et al., 2018; Orhan et al., 2019). However, two studies have reported that there may be a difference in the risk of exercise addiction in male and female athletes. The results of these two studies are contradictory. Szabo et al. (2013) found that male athletes have a higher risk of exercise addiction than female athletes, while McNamara and McCabe (2012) reported that female athletes have a higher risk of exercise addiction than male athletes. In our study, gender was affected by breathing exercises of male and female athletes, their exercise addiction levels increased by approximately 6 points in the post-test values compared to the pre-test values and their addiction levels increased. It is seen that the control group has a higher mean than the experimental group in both pre-test and post-test values on the Beck Anxiety Scale. It has been found that the anxiety level of people who do regular sports is lower than those who do not do sports. This finding supports the helpful role of sports in the treatment of anxiety (Bavli et al., 2011). Comparing the test levels in the experimental and control groups when it was determined that the average of the control group was lower than the experimental group.

In the pre-test-post-test comparisons of the scales between the experimental and control groups, there is a significant difference in the comparisons of both the Beck anxiety scales and the exercise addiction scales of the experimental group. As a result of the study, it can be said that individuals who participate in regular breathing exercises are a factor that can cause exercise addiction symptoms to emerge, based on an increase of approximately 10 points between the average scores. In a different study similar to our study, it was reported that exercise addiction levels increased as the weekly exercise frequency increased (Basoglu, 2018).

## **Conclusion**

On the exercise addiction scale, a score above 31 is considered risky. In our study, exercise addiction increased from 69 points to 80 points in individuals who did regular breathing exercises. This is not a desired result. There are various factors for individuals to reach their goals without falling into exercise addiction. In this study, exercise addiction in individuals showed a significant increase with breathing exercises done for 40 minutes twice a week. Based on this, it is of critical importance to make regular evaluations in athletes throughout the process (avoiding excessive exercise, nutrition, etc.) to determine the development and exercise perceptions of athletes. In contrast to this result, exercise addiction increased by approximately 2 points in the control group during the process. It can be said that the breathing exercises performed played an encouraging role in the exercise addiction levels of athletes. As a result of this study, it can be said that doing regular breathing exercises for health purposes creates a negative situation at the level of exercise addiction. Although exercise addiction seems like a positive situation, increasing addiction can lead to a number of physical and psychological problems. With regular breathing exercises performed in the experimental group, a negative increase in exercise addiction scores and a significant positive decrease in anxiety levels were observed. In individuals who do bodybuilding sports, regular breathing exercises increase the level of exercise addiction while decreasing anxiety levels. Based on all these, regular breathing exercises have a positive effect on the level of anxiety, while causing an increase at a level that will pose a risk in the level of exercise addiction. The relevant study can be conducted in different sports branches and the results can be compared. In addition, since this study is limited to individuals who do bodybuilding sports living only in Van province, it is recommended to reach a larger number of individuals and apply different breathing exercise protocols.

## **Ethics Committee Permission Information**

Ethics review board: Pamukkale University Ethics Committee

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## Author Contributions

Both authors contributed equally to all stages of the research.

## Disclosure Statement

No potential conflict of interest was reported by the authors.

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