

# The Relationship Between Sports Addiction and Personality Dimensions Based on Cloninger's Theory in Bodybuilding and Fitness Trainers in Eastern Anatolia Region of Turkey

Cemile Nihal Yurtseven<sup>1</sup>, Mehmet Ilkim<sup>2</sup>, Turhan Toros<sup>3\*</sup>, Tahir Volkan Aslan<sup>4</sup>, Muzaffer Toprak Keskin<sup>5</sup>, Mehmet Efe<sup>6</sup>, Burhan Başoğlu<sup>7</sup>, Mihriay Musa<sup>8</sup>, Nurgül Özdemir<sup>9</sup>, Serhat Polat<sup>10</sup>, Osman Dişçeken<sup>11</sup>

## Abstract

Sports addiction, which can significantly impact athletes and coaches, is influenced by various personality traits. This study aims to examine the relationship between sports addiction and personality dimensions according to Cloninger's theory among bodybuilding and fitness trainers in Eastern Anatolia, Turkey. This applied, post-event research involved a statistical population of bodybuilding and fitness trainers in the region, with a sample size of 217 participants selected through stratified random sampling. Data was collected using standardized sports addiction questionnaires and Cloninger's Nature and Character Questionnaire. Statistical analyses, including Pearson correlation, linear regression, independent t-tests, and MANOVA, were conducted using SPSS with a significance level of 0.05. The findings indicate a significant relationship between sports addiction and certain personality dimensions, such as avoidance, dependence on reward, and perseverance. However, novelty was not significantly related to sports addiction. Additionally, significant relationships were found between sports addiction and all character dimensions, including cooperation, self-direction, and self-development. No significant gender differences were observed in sports addiction or between personality dimensions of nature and character among male and female coaches. It is recommended that understanding individuals' personality dimensions can help coaches identify the likelihood of sports addiction symptoms and implement measures to mitigate associated risks.

**Keywords:** Sports Addiction, Cloninger Personality Dimensions, Bodybuilding Coaches, Fitness Coaches.

## Introduction

Exercise is widely acknowledged as a vital factor in maintaining physical and psychological well-being

(Larocque & Moreau, 2023). However, there is a risk that individuals, especially athletes, may become excessively addicted to exercise (Kovacsik et al., 2020). In the psychological literature on exercise, the term "addiction" is

<sup>1</sup> Assoc. Prof., İstanbul University Cerrahpaşa, Faculty of Sports Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0001-8201-0752>, Email: [cny@iuc.edu.tr](mailto:cny@iuc.edu.tr)

<sup>2</sup> Assoc. Prof., İnönü University Faculty of Sports Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0003-0033-8899>, Email: [mehmet.ilkim@inonu.edu.tr](mailto:mehmet.ilkim@inonu.edu.tr)

<sup>3</sup> Prof. Prof., Faculty of Sport Sciences, Department of Coaching Education, Mersin University, Mersin 33000, Turkey.

ORCID iD: <https://orcid.org/0000-0002-8328-2925>, Email: [turhantoros@yahoo.com](mailto:turhantoros@yahoo.com)

<sup>4</sup> Assoc. Prof., Mersin University, Faculty of Sport Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0002-5839-1927>, Email: [tahirvolkanaaslan@gmail.com](mailto:tahirvolkanaaslan@gmail.com)

<sup>5</sup> Assoc. Prof., Hacibektaş Veli University, Faculty of Sports Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0001-9439-0094>, Email: [toprakkeskin@nevsehir.edu.tr](mailto:toprakkeskin@nevsehir.edu.tr)

<sup>6</sup> Assoc. Dr. Siirt University, high school of Physical Education and Sports, Turkey.

ORCID iD: <https://orcid.org/0000-0003-2247-586X>, Email: [m.efes@siirt.edu.tr](mailto:m.efes@siirt.edu.tr)

<sup>7</sup> Assoc. Prof., Nevşehir Hacibektaş Veli University, Faculty of Sports Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0001-9498-671X>, Email: [bburhan@nev.edu.tr](mailto:bburhan@nev.edu.tr)

<sup>8</sup> Assoc. Prof., Uşak University Faculty of Sports Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0002-4232-0139>, Email: [mihriay.musa@usak.edu.tr](mailto:mihriay.musa@usak.edu.tr)

<sup>9</sup> Assoc. Prof., İzmir Democracy University/Faculty of Health Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0002-6124-6982>, Email: [nurgul.ozdemir@idu.edu.tr](mailto:nurgul.ozdemir@idu.edu.tr)

<sup>10</sup> Dr. İnönü University, Institute of Health Sciences. Department of Physical Education and Sports, Turkey.

ORCID iD: <https://orcid.org/0000-0002-8185-5347>, Email: [spolat2344@gmail.com](mailto:spolat2344@gmail.com)

<sup>11</sup> Dr. Hacibektaş Veli University, Faculty of Sports Sciences, Turkey.

ORCID iD: <https://orcid.org/0000-0003-2500-4932>, Email: [osmandisceken@gmail.com](mailto:osmandisceken@gmail.com)

\*Correspondence: [turhantoros@yahoo.com](mailto:turhantoros@yahoo.com)

often used to describe intense involvement in exercise (Weinberg & Gould, 2023). Some athletes may develop a dependency on their exercise routines, leading to compulsive engagement in these activities (Metin, Başkaya, & Akkoyunlu, 2023). Behaviours that involve excessive indulgence are typically regarded as abnormal and may require treatment, particularly when they negatively affect the lives of the individuals and those around them (Quraishi & Chahal, 2021). While exercise generally provides significant benefits, excessive engagement can lead to adverse consequences, highlighting a paradox where the positive effects of exercise may be overshadowed by its overuse (Gökçe Yüce et al., 2022; Schüler, Stähler, & Wolff, 2023). The natural benefits of regular, moderate exercise may be compromised by addiction, and a failure to adhere to exercise schedules can induce mood disorders in individuals with exercise addiction (Szabo et al., 2024). Symptoms such as anxiety, lethargy, irritability, and muscle stiffness are often associated with the interruption of exercise routines, particularly when breaks occur due to injury, work, or family obligations (Lim, 2021).

From a documentary perspective, an individual addicted to exercise is often driven by the activity itself, in contrast to individuals controlled by a trainer. Unlike those not addicted to exercise, exercise addicts report diminished relaxation and increased mental stress prior to a workout session. They also experience elevated levels of depression, anxiety, and overall discomfort when they miss a scheduled exercise session (Caponnetto et al., 2021). A notable characteristic of exercise addiction is the tendency to persist in exercising despite physical pain or injury (Lichtenstein et al., 2021). Frimuth et al. (2018) conceptualize exercise addiction as a hierarchical process encompassing four stages: 1) recreational exercise, 2) risky exercise, 3) problematic exercise, and 4) exercise addiction. According to various scientific sources (Association, 2013; Downs, Hausenblas, & Nigg, 2004; Hausenblas & Downs, 2002), criteria for exercise addiction include tolerance, isolation, loss of control, impact on decision-making, time management, reduction in other activities, and continuity (Freimuth, Moniz, & Kim, 2011).

Individuals within a society exhibit diverse personality traits, and athletes are no exception, demonstrating unique individual differences, talents, motivations, desires, and inclinations (Godoy-Izquierdo et al., 2023). These variations in personality, gender, and individual differences among athletes inevitably influence their performance and behaviour (De Vries, 2020). Thus, examining athletes' individual differences, including gender and personality traits, is a significant research area within the field of sports. Cloninger's neurobiological

model (1987, 1991) posits that the brain's behavioural systems are functionally organized into distinct and independent systems that activate, sustain, and inhibit behaviour in response to specific stimuli. He defines the persistence of behaviour after reward cessation as "reward-dependence" and identifies this trait, along with perseverance and three other dimensions, in the nature section of his model (Cloninger, 1991; Cloninger, 1987). Cloninger and Svrakic (1994) identify three dimensions of character. The dimension of self-leadership is characterized by viewing oneself as an autonomous individual and encompasses subcategories such as unity, respect, dignity, effectiveness, leadership, and hope. The dimension of cooperation is founded on perceiving oneself as part of the human community and society, deriving attributes such as social awareness, empathy, conscience, and a propensity for charitable activities. The dimension of self-realization is based on the notion of oneself as integrated with the world and its resources, and is linked to mystical beliefs, religious faith, sobriety, and unwavering patience (Cloninger & Svrakic, 1994).

Given that exercise is widely recognized as crucial for maintaining physical and psychological well-being, it is pertinent to consider that both athletes and coaches may develop significant dependence on training, potentially leading to physical and mental harm due to excessive engagement. Additionally, previous research has indicated a relationship between sports addiction and personality dimensions. This study aims to investigate whether there is a relationship between the degree of sports addiction and Cloninger's personality dimensions among bodybuilding and fitness trainers in the Eastern Anatolia region of Turkey. The objective is to determine if these dimensions are connected and to provide insights that could contribute to developing programs designed to enhance the well-being of trainers.

## Literature Review

Given the significance of exercise addiction and its potential negative effects on health and well-being, numerous studies have explored its prevalence, associations with psychological traits, and measurement tools. Research by Kızılet et al. (2024) and found high levels of sports addiction among sports science students, with no gender differences and an inverse relationship with sports performance. Gauld et al. (2023) and revealed a significant association between sports addiction symptoms and runner personality, with no notable gender differences in personality traits. Research by Berengüi, López-Gullón and Angosto (2021) and indicated that

higher levels of exercise addiction are associated with increased frequency and duration of exercise per week. [Wojtyna, Król and Hyla \(2020\)](#) and reported that 24.5% of athletes are at risk for sports addiction, with no direct relationship between self-esteem, narcissism, and exercise addiction, though severe exercise addiction was noted among female CrossFit practitioners. A review of existing literature reveals extensive research on the relationship between personality dimensions and sports addiction, yet studies specifically targeting bodybuilding and fitness trainers, particularly in the Eastern Anatolia region of Turkey, remain scarce.

## Materials and Methods

This study is applied in nature and classified as post-event research. The statistical population comprises bodybuilding and fitness trainers from clubs in the Eastern Anatolia region of Turkey. A stratified random sampling method was employed, and based on Cochran's formula, a sample size of 217 was determined from the total population of 283 bodybuilding trainers and 214 fitness trainers. Participants were selected proportionally to their representation in the population, with 121 bodybuilding trainers and 96 fitness trainers included in the sample, consisting of 122 women and 95 men. Participation in the study was voluntary, and all ethical considerations, including the confidentiality of information, were strictly adhered to.

The data collection tools utilized in this study included the sports addiction questionnaire developed by a prior study, and Cloninger's nature and character questionnaire. According to prior literature sports addiction questionnaire comprises six items, with responses

measured on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5), where higher scores indicate greater levels of exercise addiction. The total score ranges from a minimum of six to a maximum of thirty. According to a prior study, a score of 24 or above identifies individuals at risk of exercise addiction, scores between 6 and 12 indicate the absence of exercise addiction symptoms, and scores from 13 to 23 suggest the presence of exercise addiction symptoms. Cloninger's 125-item questionnaire assesses four temperament dimensions (novelty seeking, harm avoidance, reward dependence, persistence) and three-character dimensions (cooperation, self-direction, self-transcendence). Respondents' answers were scored, and Cronbach's alpha confirmed the reliability of the research instruments, with values of 0.86 for Terry's questionnaire and 0.89 for Cloninger's questionnaire. Data analysis included descriptive statistics and parametric tests (Pearson's correlation, linear regression, independent t-test, and multivariate analysis of variance) using SPSS23 software, with significance set at 0.05.

## Findings

The demographic information of the research participants is detailed in [Table 1](#). To assess the correlation between research variables, Pearson's correlation test was employed. The results are presented in [Table 2](#). [Table 2](#) reveals a significant positive relationship between sports addiction and both the dimensions and components of nature ( $p < 0.05$ ) as well as between sports addiction and the dimensions and components of character ( $p < 0.05$ ). The results of the regression analysis are presented in [Table 3](#).

**Table 1**

*Demographic Information of the Research Participants*

| Variable        | Floor             | Frequency | Frequency Percentage |
|-----------------|-------------------|-----------|----------------------|
| Age (Year)      | 25 or less        | 31        | 14.3                 |
|                 | 25-30             | 89        | 41.1                 |
|                 | 30-35             | 71        | 32.7                 |
|                 | 35 or More        | 26        | 11.9                 |
| Gender          | Man               | 95        | 43.8                 |
|                 | Woman             | 122       | 56.2                 |
| Degree          | Diploma and below | 16        | 7.4                  |
|                 | Associate degree  | 42        | 19.4                 |
|                 | Bachelor          | 107       | 49.3                 |
|                 | Master's Degree   | 31        | 14.3                 |
|                 | PhD               | 21        | 9.7                  |
| Coaching Degree | Bodybuilding      | 120       | 55.3                 |
|                 | Fitness           | 97        | 44.7                 |

**Table 2***Pearson Correlation Results to Investigate the Correlation Between Sports Addiction and Personality Dimensions*

| Relationship      | N   | R     | P     |
|-------------------|-----|-------|-------|
| Nature            | 217 | 0.164 | 0.03  |
| New Seeker        | 217 | 0.198 | 0.01  |
| Injury Prevention | 217 | 0.196 | 0.01  |
| Affiliate Bonus   | 217 | 0.214 | 0.001 |
| Perseverance      | 217 | 0.171 | 0.008 |
| Character         | 217 | 0.337 | 0.000 |
| Cooperation       | 217 | 0.423 | 0.000 |
| Self-Driving      | 217 | 0.115 | 0.003 |
| Self-Development  | 217 | 0.579 | 0.000 |

**Table 3***The Results of the Regression Model Between Sports Addiction and Personality Dimensions*

| Dimension   | Correlation | Coefficient of Determination | Adjusted Coefficient of Determination | Residual Error | Sig.  | Durbin Watson |
|-------------|-------------|------------------------------|---------------------------------------|----------------|-------|---------------|
| Character   | 0.271       | 0.258                        | 0.258                                 | 3.270          | 0.001 | 1.638         |
| Cooperation | 0.906       | 0.905                        | 0.905                                 | 1.17133        | 0.001 | 1.970         |

**Table 3** provides a summary of the model. The correlation coefficient between sports addiction and the nature dimension is approximately 0.52, while it is approximately 0.95 for the character dimension, indicating a significant positive correlation between the independent variables and the dependent variable ( $p=0.001$ ). The adjusted R-squared

value indicates that 25% of the variance in sports addiction is explained by the nature dimension, whereas the character dimension accounts for 90% of the variance. **Table 4** presents the results of the F-test used to evaluate the regression model.

**Table 4***The results of the F Test to Check the Regression Model of the Research*

| Dimensions | Model      | Sum of Squares | df  | Mean Square    | F       | P     |
|------------|------------|----------------|-----|----------------|---------|-------|
| Nature     | Regression | 844.458        | 4   | 211.115 10.696 | 19.738  | 0.001 |
|            | Left Over  | 2267.532       | 212 |                |         |       |
|            | Total      | 3111.991       | 216 |                |         |       |
| Character  | Regression | 2819.753       | 2   | 939.918 1.372  | 685.068 | 0.001 |
|            | Left Over  | 292.238        | 213 |                |         |       |
|            | Total      | 3111.991       | 216 |                |         |       |

The significance of the F-test values for both the nature dimension ( $p=0.001$ ,  $F=19.738$ ) and the character dimension ( $p=0.001$ ,  $F=685.068$ ) indicates that the regression models involving these independent variables,

and the dependent variable of exercise addiction are valid. These independent variables are effective predictors of changes in exercise addiction. The results of the linear regression analysis are presented in **Table 5**.

**Table 5***Results of Regression Analysis Between Sports Addiction Variable and Personality Dimensions*

| Dimensions | Regression            | Regression |            | Beta   | t       | P     |
|------------|-----------------------|------------|------------|--------|---------|-------|
|            |                       | B          | Std. Error |        |         |       |
| Nature     | Width from the Origin | 11.243     | 1.831      | 0.010  | 6.141   | 0.001 |
|            | New Seeker            | 0.011      | 0.130      |        |         |       |
|            | Injury Prevention     | -0.998     | 0.180      |        |         |       |
|            | Affiliate Bonus       | 1.692      | 0.203      |        |         |       |
|            | Perseverance          | 2          | 0.388      |        |         |       |
|            | Width from the Origin | -0.164     | 0.630      |        |         |       |
| Character  | Cooperation           | 2.787      | 0.078      | 1.876  | 35.891  | 0.001 |
|            | Self-Driving          | -1.803     | 0.054      | -1.692 | -33.634 | 0.001 |
|            | Self-Development      | 0.407      | 0.046      | 0.208  | 8.817   | 0.001 |

Table 5 presents the results of the linear regression analysis, indicating significant relationships between sports addiction and several dimensions of nature: avoidance (p = 0.001, t = 5.530), dependence on reward (p = 0.001, t = 8.316), and perseverance (p = 0.001, t = 4.149). However, no significant relationship was found between the novelty dimension and sports addiction (p = 0.932, t = 0.085). Consequently, the model developed to explain the relationship between sports addiction and personality dimensions is summarized as follows:  
Persistence 2 + Injury Avoidance 0.998 - Dependence Reward 1.692 + 11.243 = Sports Addiction.

Table 4 further demonstrates that there are significant

relationships between sports addiction and all character dimensions: cooperation (p = 0.001, t = 35.891), self-direction (p = 0.001, t = 33.634), and self-development (p = 0.001, t = 8.817) from the following results.

Perseverance 0.407 + Self-Direction 1.803 - Cooperation 2.787 = Sports Addiction.

The subsequent analysis compares the level of sports addiction between male and female trainers in bodybuilding and fitness clubs in the Eastern Anatolia region of Turkey. Initially, the assumption of equal variances was assessed and confirmed using Levene's test. Following this, an independent t-test was employed to evaluate the differences between the genders (see Table 6).

Table 6

Independent T-Test Results to Compare Sports Addiction Between Male and Female Coaches

| Variable         | Leven |       | Mean Difference | T     | df  | Sig.  |
|------------------|-------|-------|-----------------|-------|-----|-------|
|                  | F     | P     |                 |       |     |       |
| Sports Addiction | 0.280 | 0.597 | 0.15            | 0.290 | 215 | 0.772 |

The results presented in Table 5 indicate that Levene's test was not significant, confirming the equality of variances. Additionally, the independent t-test revealed no significant difference in sports addiction levels between male and female coaches (t=0.290; p=0.772). The minimal difference in average sports addiction scores between women and

men (0.15) suggests a negligible disparity between the two groups. Subsequently, the study examined differences in personality dimensions between male and female trainers in bodybuilding and fitness clubs in the Eastern Anatolia region of Turkey. The results of Wilks's lambda test are reported in Table 7.

Table 7

Results of Wilks's Lambda Test

| Dimensions | Variable | Value | F     | Df effect | df Error | Sig.  |
|------------|----------|-------|-------|-----------|----------|-------|
| Nature     | Sex      | 0.991 | 0.464 | 4         | 210      | 0.762 |
| Character  |          | 0.983 | 1.246 | 3         | 211      | 0.294 |

According to the results presented in Table 7, there are no significant differences between male and female coaches in terms of the personality dimensions of nature (F=(4, 210)=0.991, p=0.762) and character (F=(3, 211)=1.246, p=0.294). Additionally, to verify the assumption of equal variances across the personality dimensions of nature and character within the research groups, Levene's test was employed. The results of Levene's test, as shown in Table 8, indicate that none of the personality dimension components

are statistically significant, thereby confirming the equality of variances. Table 9 presents the results of the multivariate analysis of variance (MANOVA) for the personality dimensions of male and female bodybuilding and fitness trainers. The results presented in Table 9 indicate that there are no significant differences in the personality dimensions of nature and character between male and female bodybuilding and fitness trainers, suggesting that these dimensions are comparable across both groups.

Table 8

The Results of Leven's Test to Check the Equality of Variances of the Personality Dimensions of Nature and Character in the Research Groups

|                   | Leven Test | F     | Df1 | Df2 | Sig.  |
|-------------------|------------|-------|-----|-----|-------|
| New Seeker        |            | 1.821 | 3   | 213 | 0.144 |
| Injury Prevention |            | 0.239 | 3   | 213 | 0.869 |
| Affiliate Bonus   |            | 0.941 | 3   | 213 | 0.422 |
| Perseverance      |            | 0.908 | 3   | 213 | 0.438 |
| Cooperation       |            | 1.993 | 3   | 213 | 0.116 |
| Self-Driving      |            | 1.201 | 3   | 213 | 0.310 |
| Self-Examination  |            | 0.945 | 3   | 213 | 0.420 |

**Table 9**

*The Results Related to the Multivariate Analysis of Variance (Manova) of the Personality Dimensions of Male and Female Coaches*

| Source | Variable          | Sum of Square | df | Mean Square | F     | Sig.  |
|--------|-------------------|---------------|----|-------------|-------|-------|
| Sex    | New Seeker        | 1.115         | 1  | 1.115       | 0.092 | 0.762 |
|        | Injury Prevention | 0.122         | 1  | 0.122       | 0.012 | 0.915 |
|        | Affiliate Bonus   | 1.686         | 1  | 1.686       | 0.625 | 0.430 |
|        | Perseverance      | 0.666         | 1  | 0.666       | 0.889 | 0.347 |
|        | Cooperation       | 6.112         | 1  | 6.112       | 0.941 | 0.333 |
|        | Self-Driving      | 27.280        | 1  | 27.280      | 2.172 | 0.142 |
|        | Self-Examination  | 1.771         | 1  | 1.771       | 0.470 | 0.494 |

## Discussion

This study aimed to explore the relationship between sports addiction and personality dimensions based on Cloninger's theory among bodybuilding and fitness trainers in the Eastern Anatolia region of Turkey. The findings reveal a significant correlation between sports addiction and certain personality dimensions, namely avoidance of injury, reward dependence, and perseverance. However, no significant relationship was found between sports addiction and the dimension of novelty. These results align with previous research by Berengüi et al. (2021), Chamorro-Premuzic (2016), and González-Hernández et al. (2023). Specifically, González-Hernández et al. (2023) identified a significant link between perfectionism, dark personality traits, and sports addiction in high-intensity sports, while Berengüi et al. (2021) found that higher addiction levels are associated with increased frequency and duration of exercise. In interpreting these findings, it is noted that extroversion, characterized by traits such as positivity, decisiveness, activity, kindness, and sociability, may contribute to sports addiction. Extroverts' desire for social interaction and group identity, combined with their tendency to value and enjoy sports practice, suggests that sports addiction may be driven by their need for affiliation and social connection. The study found a significant relationship between all character dimensions—cooperation, self-direction, and self-development—and sports addiction. This aligns with findings from Allen, Greenlees and Jones (2013); Allen, Jerrim and Sims (2020), Chamorro-Premuzic (2016), and Gauld et al. (2023), who noted that sports addiction is linked to personality traits in athletes. Gauld et al. (2023) also observed no significant gender differences in personality traits among runners. Successful athletes often exhibit strong cooperation and a positive team image, reducing psychological stress and increasing sports satisfaction and addiction. Characteristics such as caring, altruism, and kindness, which are opposed to hostility and self-

centeredness, contribute to this dynamic. Athletes, driven by internal motivation and a desire for new experiences and success, often surpass traditional boundaries and enhance their skills and enjoyment through sports (Allen et al., 2013). The findings indicate that conscientious individuals, driven by a strong sense of progress and goal achievement, are more likely to engage in and become addicted to sports. This is because conscientious people are motivated by their internal satisfaction and enjoyment of exercise, rather than external pressures. Their ability to derive personal fulfilment from physical activity aligns with their tendency to pursue excellence and efficiency. Additionally, individuals with high self-improvement tendencies are more prone to sports addiction, as their desire for personal growth and self-betterment often translates into increased exercise habits. Furthermore, narcissistic individuals may also exhibit higher levels of sports addiction, as exercise serves to enhance their self-worth and provide positive reinforcement with fewer negative consequences (Chamorro-Premuzic, 2016). Narcissists often engage in intense physical activities to maintain their appearance and self-esteem. However, excessive exercise can lead to sports addiction as they strive to uphold their elevated sense of self-worth (Allen et al., 2013). Conversely, sports activities can become overly demanding and repetitive, potentially resulting in addiction.

Other research has indicated that there is no significant difference in sports addiction levels between men and women. These findings align with those of Dumitru, Dumitru and Maher (2018), Hill, Robson and Stamp (2015), and Kızılet et al. (2024). Kızılet et al. (2024) found that while the level of sports addiction among sports science students is high, it inversely correlates with their sports performance, with no gender differences observed. Dumitru et al. (2018) reported higher rates of sports addiction among men compared to women. Excessive exercise, or sports addiction, can lead to various negative outcomes, including physical injuries, fatigue, depression, and in severe cases, suicidal thoughts. Athletes with sports addiction often suffer from overuse injuries such as bone

stress fractures or muscle-tendon strains and may be resistant to treatment due to their dependency on sports, which hampers their recovery. Notably, a strong addiction to sports typically does not correlate with substance abuse, as affected individuals generally avoid drugs and alcohol due to their detrimental effects on athletic performance. Some studies have also explored links between sports addiction and anorexia nervosa (Hill et al., 2015).

The stressful cause to which a person resorts in sports in order not to remember it or to put up with is usually the cause of engaging in it. Thus, occupational or environmental-family stressors should first be detected and eliminated in the treatment of sports addiction. The high activity-caused trauma and lesions, such as the bone compression fractures common in them, need to be treated appropriately, which often involves reduction or cessation of the activity for some time. Of course, many cannot do this-stop sports activities-and in due course face debilitating complications. In extreme cases, sports addiction needs professional help, but without it, it is quite plausible to control and cure it on one's own. Some important things that must be considered during exercises are as follows: one should design an apt exercise program, not overdo, listen to the body, stop exercise in case the athlete's body is hurt or tired, do more stretching exercise in order to stop intense exercise, take rest days.

The research findings indicate that there is no significant difference between the personality dimensions of nature and character among male and female coaches. These results are consistent with Gauld et al. (2023), who found no significant gender differences in the personality traits of male and female runners. However, they contradict Chamorro-Premuzic (2016), who reported that women scored lower than men on dimensions of nature and character. This discrepancy may

stem from differences in the statistical populations studied or the unique nature of sports environments, which may converge the personality traits of male and female athletes. High and low scores in personality dimensions are context dependent. For instance, in high-risk situations, high harm avoidance is advantageous for survival, while low harm avoidance may be detrimental. Conversely, in stable conditions, low harm avoidance is beneficial, and high harm avoidance can be counterproductive. While temperamental traits can be advantageous or detrimental based on the context, high scores in conscientious factors are generally beneficial, whereas low scores are often less advantageous. This is particularly true for self-management, which tends to influence personality traits irrespective of gender.

## Conclusion

Overall, the research indicates that there is no significant difference in sports addiction levels between male and female bodybuilding and fitness trainers. It also suggests that the personality dimensions of these trainers, such as injury avoidance, reward dependence, perseverance, cooperation, self-direction, and self-development, can predict their level of sports addiction. To mitigate sports addiction and associated injuries, it is recommended to assess and address these personality traits in coaches. Additionally, interventions should not focus solely on gender or sports discipline but rather on the personality characteristics of coaches. Engaging sports psychologists could help manage and reduce sports addiction and promote healthier participation. Future research should include trainers from various sports disciplines to enhance the applicability of the results.

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