

The Profiles of Narcissism and Self-Esteem Among Anabolic Androgenic Steroid Users in the Sport of Bodybuilding: A Cross-Sectional Study

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Abstract

Background: Contrary to common assumptions, bodybuilders who abstain from anabolic-androgenic steroids (AAS) may exhibit higher levels of narcissism and self-esteem compared to AAS users. This study aimed to compare these psychological traits between AAS users and non-users to construct a distinct psychometric profile. **Methods:** An analytical cross-sectional study was conducted across 16 gyms in Turkey. Data were collected from 25 AAS users and 41 non-users using the Narcissistic Personality Inventory (NPI-16) and the Two-Dimensional Self-Esteem Scale (self-liking/self-competence). Logistic regression analyzed the predictive effects of narcissism and self-esteem on AAS use. **Results:** Non-users scored significantly higher on narcissism (Odds ratio (OR) = 1.48), global self-esteem (OR = 1.11), self-competence (OR = 1.18), and self-liking (OR = 1.21) than users. These findings suggest that natural training may reinforce self-enhancement tendencies, reducing reliance on AAS. **Conclusion:** Bodybuilders who refrain from AAS display stronger narcissistic traits and elevated self-esteem, including its sub-dimensions. This paradoxical profile highlights the potential psychological benefits of natural training, challenging stereotypes about AAS users.

Keywords: anabolic steroids; bodybuilding; narcissism; self-esteem; psychological profile

Vücut geliştirme sporunda anabolik androjenik steroid kullananlarda narsisizm ve öz saygı profilleri: kesitsel bir çalışma

Özet

Yaygın varsayımların aksine, anabolik-androjenik steroidlerden (AAS) uzak duran vücut geliştiriciler, AAS kullanıcılarına kıyasla daha yüksek düzeyde narsisizm ve öz saygı sergileyebilirler. Bu çalışma, AAS kullanıcıları ve kullanmayanlar arasında bu psikolojik özellikleri karşılaştırarak belirgin bir psikometrik profil oluşturmayı amaçlamaktadır. **Yöntemler:** Türkiye'deki 16 spor salonunda analitik kesitsel bir çalışma yürütülmüştür. Veriler, Narsistik Kişilik Envanteri (NPI-16) ve İki Boyutlu Benlik Saygısı Ölçeği (kendini beğenme/öz yeterlilik) kullanılarak 25 AAS

kullanıcısı ve 41 kullanıcı olmayan kişiden toplanmıştır. Narsisizm ve benlik saygısının AAS kullanımı üzerindeki yordayıcı etkileri lojistik regresyon ile analiz edilmiştir. Sonuçlar: Kullanıcı olmayanlar, narsisizm (Odds oranı (OR) = 1,48), genel öz saygı (OR = 1,11), öz yeterlilik (OR = 1,18) ve kendini beğenme (OR = 1,21) konularında kullanıcılara göre önemli ölçüde daha yüksek puan aldı. Bu bulgular, doğal antrenmanın öz geliştirme eğilimlerini güçlendirerek AAS'ye olan bağımlılığı azaltabileceğini göstermektedir. Sonuç: AAS'den kaçınan vücut geliştiriciler, alt boyutları da dahil olmak üzere daha güçlü narsisistik özellikler ve yüksek öz saygı sergilemektedir. Bu paradoksal profil, doğal antrenmanın potansiyel psikolojik faydalarını vurgulayarak AAS kullanıcıları hakkındaki klişeleri çürütmektedir.

Anahtar Kelimeler: Anabolik steroidler; vücut geliştirme; narsisizm; öz saygı; psikolojik profil.

INTRODUCTION

The pursuit of an idealized physique has become a defining feature of modern bodybuilding culture, driven by societal pressures to achieve muscularity and aesthetic perfection (1,2). Within this context, anabolic-androgenic steroids (AAS) have emerged as a controversial yet prevalent tool for enhancing performance and appearance, particularly among competitive bodybuilders (2,3). While the physiological risks of AAS are well-documented—including cardiovascular dysfunction, hormonal imbalances, and psychiatric effects (3,4)—the psychological drivers of AAS use remain less understood. Notably, the relationship between AAS use and traits like narcissism and self-esteem presents a paradox: while some studies associate steroid use with pathological narcissism and low self-worth (4,5), others suggest that AAS users may seek these substances to compensate for fragile self-esteem or body dissatisfaction (5-9). This discrepancy underscores the need for a clearer psychometric profile of AAS users, particularly in comparison to their non-using counterparts.

In contemporary psychology, narcissism is broadly categorized into two types: Grandiose narcissism, characterized by overt confidence, dominance and entitlement, aligns with the stereotypical 'arrogant' personality (10–13). Individuals with this trait exhibit high levels of extraversion, self-assurance and a need for admiration, which may superficially align with the competitive ethos of bodybuilding. Vulnerable narcissism, on the other hand, is marked by hypersensitivity to criticism, covert insecurity, and fluctuating self-esteem. Vulnerable narcissists often compensate for these traits with fantasies of superiority (10–13). This subtype may be particularly relevant to anabolic-androgenic steroid (AAS) users who seek pharmacological enhancement to mitigate body image insecurities (12–15). Bodybuilding is a unique arena for narcissistic expression where physical appearance is the means and the end of success. While some researchers posit that AAS users exhibit elevated grandiose narcissism, others argue that steroid use may be a maladaptive coping mechanism for underlying inadequacy. This dichotomy is similar to the 'muscle dysmorphia' phenomenon, whereby athletes perceive themselves as being insufficiently muscular despite having objective evidence to the contrary (17-18).

Self-esteem, a cornerstone of psychological well-being, is increasingly recognized as a multifaceted construct, particularly in high-performance contexts such as competitive bodybuilding (19, 20). Traditional unidimensional models of self-esteem often fail to capture the nuanced ways in which individuals evaluate themselves (19, 20). In contrast, the Two-Dimensional Self-Esteem Model, comprising self-liking and self-competence, provides a more granular understanding of self-worth (19–22). The self-liking dimension reflects the emotional aspect of self-esteem, representing an individual's subjective evaluation of their inherent worth as a social being (21, 22). High self-liking is associated with emotional resilience, social confidence, and a stable sense of belonging. In bodybuilding, self-liking may be related to athletes' satisfaction with their physique as a marker of social acceptance or attractiveness (21–23). The self-competence dimension encapsulates the cognitive-evaluative aspect, measuring perceived efficacy in achieving goals (20–23). It aligns with Bandura's (1977) concept of self-efficacy, which is critical in sports contexts where mastery and control are emphasized (24). For bodybuilders, self-competence may manifest as confidence in training outcomes or the ability to resist taking performance-enhancing drugs (20, 23). These dimensions interact dynamically: while self-liking anchors global self-worth, self-competence fuels motivation and goal-directed behavior. However, discrepancies between the two, such as high self-competence paired with low self-liking, may lead to maladaptive behaviors. Prior studies on AAS users have predominantly examined global self-esteem, overlooking these sub-dimensions. This study addresses this gap by examining self-esteem in more detail, offering insights into whether AAS use is linked to deficits in self-liking (e.g. body dissatisfaction) or self-competence (e.g. perceived training efficacy). (23).

Previous studies have been limited by small sample sizes, cultural homogeneity and a focus on extreme pathology. Despite evidence that non-users may derive greater psychological benefits from natural training, few studies have directly compared narcissism and self-esteem between AAS users and non-users in bodybuilding. This study addresses these gaps by comparing narcissism and self-esteem (including sub-dimensions) between Turkish bodybuilders who use AAS and those who do not, and by evaluating predictive relationships between these traits and AAS use via regression analysis. By clarifying these relationships, the study aims to inform interventions that promote a healthier self-perception and reduce the reliance on AAS among high-risk athletic populations.

METHOD

Experimental Approach to the Problem

To examine the hypothesis of the present investigation, Narcissistic Personality Inventory and Two-Dimensional Self-Esteem Scale were applied to collect data. The narcissism personality inventory and, the two-dimensional self-esteem scale were used for body building athletes. While 25 of these athletes were using steroid substances, 41 of them were not using steroid substances. The values of narcissism, self-esteem and self-esteem sub-dimensions were associated with steroid substance use. Finally, we developed a linear regression model to estimate the effects of narcissism, self-esteem, and self-esteem subscales on whether or not to use steroid substances.

Subjects

A total of 66 bodybuilding athletes were examined. These athletes regularly do bodybuilding training for 2 hours a day, every day of the week. The mean (SD) age was 24.55 ± 4.23 years for the 66 body building athletes. Before conducting the scales, all subjects were informed of the risks of the study and gave informed consent.

Procedures

The researchers used two instruments to collect data. The first of these instruments is the Narcissistic Personality Inventory, the 16-item version of which was standardized into the Turkish language by Atay (26) and re-adapted into the Turkish language by Gungor and Selcuk (27). The other instrument is the two-dimensional self-esteem (self-liking/self-competence scale). This scale has been developed by Tafarodi and Swann [22] and adaptation to Turkish language by Doğan [28]. This scale has two dimensions, 16 items, and the responses were provided as a 5-point scale. The athletes used approximately 20 minutes of time to respond to information on narcissism and self-esteem. The scale order was consistent: narcissism and self-esteem. The methodology used when administering the narcissism and self-esteem scales is summarized in the following paragraphs.

Narcissistic Personality Inventory-16 (NPI-16)

This is a self-report scale developed by Raskin and Hall (29) according to the DSM-III criteria for narcissistic personality disorder. Ames et al (30) created the 16-item form of the NPI, and each of these forms has two statements. One of these statements indicates a narcissistic trait. Participants are asked to read these item pairs and mark the statement that they think reflects them. The adaptation to the Turkish study was done by Atay (26), and Gungor and Selcuk (27) revised and reordered some of the statements. The Cronbach's alpha internal consistency coefficient of the scale was calculated as 0.75 and 0.74. It is assumed that as the scores obtained from the scale, whose total score can range from 0 to 16, increase, the grandiose narcissistic traits of the participants increase.

Two-dimensional self-esteem (Self-Liking/Self-Competence Scale)

This scale was developed by Tafarodi and Swann [22] and adapted to the Turkish language by Doğan [28]. This scale has two dimensions, 16 items, and the responses are given in the form of a five-point scale. The sum of the two scores will be used to determine the level of self-worth. Items 1, 3, 5, 6, 7, 9, 11, and 15 of the scale are related to the self-like subdimension, and items 2, 4, 8, 10, 12, 13, 14, and 16 are related to the self-competence dimension. Tafarodi and Swann (22) concluded that the scale confirmed its two-factor structure

based on the confirmatory factor analysis ($\chi^2 = 6.56$, $df = 103$, $CFI = .92$, $RMSEA = .006$), and they also found that the internal consistency coefficients for the sub-dimensions and the total scale were between .82 and .90. The scale was found to be reliable and valid in the Turkish language by Doğan (28). The researcher concluded from the confirmatory factor analysis that the two-dimensional structure of the scale was validated ($\chi^2=258.40$, $df=98$, $CFI=0.97$, $RMSEA=0.049$) and determined the internal consistency coefficients ranging from 0.72 to 0.83 for the subdimensions and total score of the scale. The Cronbach alpha coefficient for the total score was determined as .89.

Data Collection

The data for the research were collected in a face-to-face interview. If participants wished to participate in the study, they signed an informed consent form.

Statistical Analysis

Statistical analysis were performed using IBM SPSS statistics software (version 27). Data are presented as mean \pm SD. The normality of the variables was assessed with the Kolmogorov-Smirnov test. Intraclass correlation coefficient (ICC) and coefficient of variation (CV) for absolute reliability were used to analyze the reliability of the performance tests. Ninety-five percent confidence intervals (CIs) were calculated for both the ICC and the CV. The dependent variable in the model was whether steroid substances are used. For the regression analysis, binary logistic regression analysis was assessed to determine the effect of steroid substance on narcissism, self-esteem and its subdimensions. Significant differences were accepted at $p \leq 0.05$.

Ethical approval and institutional permission

Ethical committee approval was obtained to conduct this study (Ethics Committee of Selcuk University the Faculty of Sports Sciences' Non-Invasive Clinical Research Ethics Committee: 26/10/2023:114). Participants in the study were informed of the purpose and scope of the study. This study was carried out according to the tenets of the Declaration of Helsinki.

FINDINGS

In Table 1, in terms of the narcissism variable, 18 out of 25 people who used steroid substances were predicted correctly in this model, while 35 out of 41 people who did not use steroids were predicted correctly (In Table 1). On the other hand, when the self-esteem sub-dimensions were evaluated, in terms of the self-competence sub-dimension, it was seen that 10 of the 25 people who used steroid substances were predicted correctly in this model, while 33 of the 41 people who did not use steroids were predicted correctly. At the same time, in terms of the self-liking sub-dimension, 12 out of 25 people who used steroids were predicted correctly in this model, while 34 out of 41 people who did not use steroids were predicted correctly. When evaluated over the total self-esteem, it was seen that 14 out of 25 people who used steroid substances were predicted correctly in this model, while 34 out of 41 people who did not use steroid substances were predicted correctly (Table 1).

Table 1. 2x2 Correct Classification Percentage for Logistic Regression Model

| | Observed | Predicted | | % Correct |
|-------------------------------|--------------|--------------|--------------|-----------|
| | | Steroids (-) | Steroids (+) | |
| Narcissism | Steroids (-) | 35 | 6 | 85.4 |
| | Steroids (+) | 7 | 18 | 72.0 |
| Self-esteem | Steroids (-) | 34 | 7 | 82.9 |
| | Steroids (+) | 11 | 14 | 56.0 |
| Self-Competence sub-dimension | Steroids (-) | 33 | 8 | 80.5 |
| | Steroids (+) | 15 | 10 | 40.0 |
| Self-Liking sub-dimension | Steroids (-) | 34 | 7 | 82.9 |
| | Steroids (+) | 13 | 12 | 48.0 |

Subjects who do not use steroids are 1.47 times more likely to be narcissists than those who do (In Table 2). Therefore, the fact that the subjects participating in the study tend not to use steroids, but rather not to use

them, makes them even more narcissistic. One unit change in narcissism affects not using steroids by 0.39 units. It can be said that subjects who do not use steroids are 1.11 times more likely to have self-esteem, 1.18 times more self-competence sub-dimension, and 1.20 times more likely to have self-liking sub-dimension than those who do. Therefore, the fact that the subjects participating in the study tend not to use steroids, but rather not to use them, brings them to a greater sense of self-esteem, self-competence sub-dimension and self-liking sub-dimension. One unit change in self-esteem affects not using steroids by 0.10 units, one unit change in self-competence sub-dimension affects not using steroids by 0.167 units, and one unit change in self-liking sub-dimension affects not using steroids by 0.18 units (Table 2).

Table 2. The output of the logistic regression. Log odds, odds ratio, and confidence intervals (95% CI) for odds ratio and p values of the coefficients.

| Model Coefficients: Steroid | | 95% Confidence Interval | | | | | |
|-------------------------------|----------|-------------------------|--------|-------|-------|-------|------------|
| Predictor | Estimate | Lower | Upper | SE | Z | p | Odds ratio |
| Intercept | -3.384 | -5.114 | -1.655 | 0.882 | -3.83 | <.001 | 0.0339 |
| Narcissism | 0.392 | 0.182 | 0.601 | 0.107 | 3.66 | <.001 | 1.4795 |
| Intercept | -7.022 | -11.103 | -2.941 | 2.082 | -3.37 | <.001 | 0.0009 |
| Self-esteem total score | 0.102 | 0.040 | 0.164 | 0.032 | 3.21 | 0.001 | 1.11 |
| Intercept | -5.535 | -8.857 | -2.214 | 1.695 | -3.27 | 0.001 | 0.0039 |
| Self-Competence sub-dimension | 0.167 | 0.059 | 0.274 | 0.055 | 3.05 | 0.002 | 1.1813 |
| Intercept | -6.853 | -11.025 | -2.680 | 2.129 | -3.22 | 0.001 | 0.0011 |
| Self-Liking sub-dimension | 0.189 | 0.068 | 0.309 | 0.062 | 3.07 | 0.002 | 1.2079 |

When the effect of independent variables on the dependent variable is examined, one unit change in narcissism, self-esteem total score, self-competence sub-dimension, and self-liking sub-dimension affects not using steroids by 0.392, 0.102, 0.167, and 0.189 units, respectively (In Figure 1).

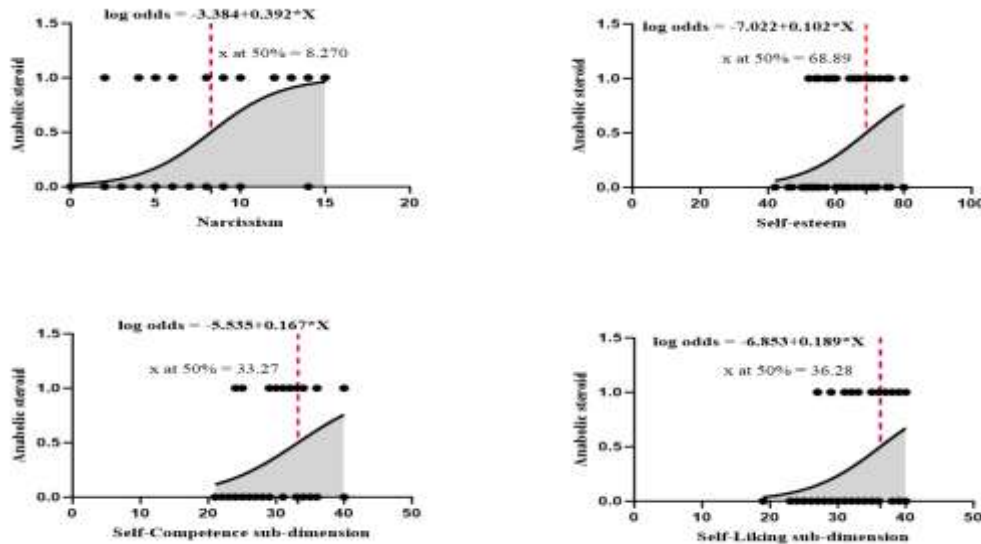


Figure 1. When the effect of independent variables on the dependent variable is examined, one unit change in narcissism, self-esteem total score, self-competence sub-dimension, and self-liking sub-dimension affects not using steroids by 0.392, 0.102, 0.167, and 0.189 units, respectively.

Test of the predictive power of narcissism, self-competence sub-dimension, self-liking sub-dimension, and self-esteem using receiver operating characteristic curve. Areas under the curve (AUC) and p-values are presented. The area under the ROC curve (AUC) was used to compare the predictive power of these four

variables individually and in combination. Analysis was performed anabolic steroid users ($n = 41$) and non-users ($n = 25$) among volunteers (In Figure 2).

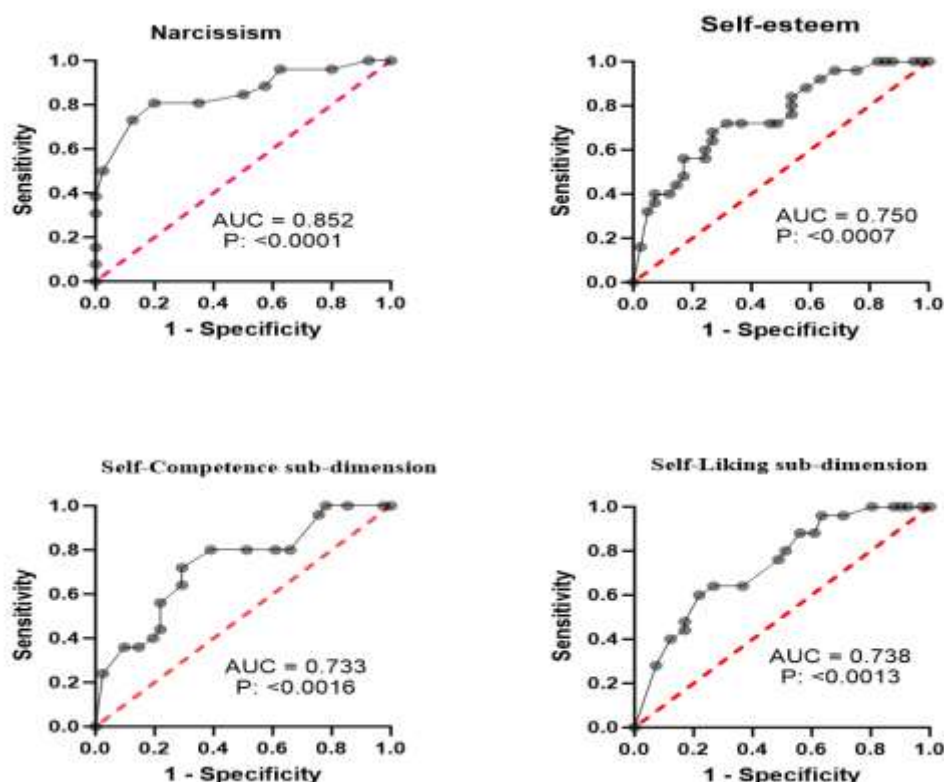


Figure 2. Testing the predictive power of narcissism, self-competence sub-dimension, self-liking sub-dimension, and self-esteem using receiver operating characteristic curve. Areas under the curve (AUC) and p values are indicated. The predictive power of these four variables, individually and in combination, was compared using the area under a ROC curve (AUC). Analysis was performed anabolic steroid users ($n = 41$) and non-users ($n = 25$) volunteers.

DISCUSSION AND CONCLUSION

In this study, which examined the narcissism and self-esteem profiles of anabolic androgenic steroid (AAS) users in the sport of bodybuilding, it was found that bodybuilders were more prone to not using steroids in terms of narcissism and self-esteem. In a study that does not overlap with our study to establish a psychometric profile of anabolic steroid users, Porcerelli and Sandler (31) examined weightlifters and bodybuilders who used and did not use anabolic steroids on an objective assessment of narcissism and clinical ratings of empathy. Participants were 16 weightlifters and bodybuilders who reported using anabolic steroids within the last year and a comparison group of 20 weightlifters who had not used steroids. Narcissism was assessed using the Narcissistic Personality Inventory and clinical ratings of empathy. The steroid users had significantly higher scores on the dimensions of pathological narcissism and significantly lower scores on the clinical ratings of empathy. An association between anabolic steroid use and narcissistic personality traits is documented in these preliminary findings. In a study examining whether steroid use may be associated with body image concerns in athletes, the sample of 139 male athletes recruited from fitness centers included 43 bodybuilders, 48 runners, and 48 martial artists (tae kwon do practitioners). Bodybuilders reported significantly more body dissatisfaction, high volume desire, high thinness desire, and increased bulimic tendencies than other athlete groups. In addition, measures of perfectionism, ineffectiveness, and low self-esteem were significantly elevated among bodybuilders. They also reported the highest rates of use of anabolic steroids and the most liberal attitudes toward the use of steroids. Steroid users reported that the most important reason for their use of steroids was to improve their physical appearance. Steroid users reported a greater desire to gain muscle mass, a greater fear of immaturity, and a greater tendency to bulimia nervosa

than did non-steroid users (32). Another study identified an experimental group of bodybuilders who had not used AAS for more than 18 months ($n=12$). A group of controls ($n=12$), all of whom reported that they did not use or had never used AAS, were also included in the study during this period. The user group was significantly heavier than the control group and exhibited abnormal personality traits in contrast to the control group. The personality traits of AAS users before they started using AAS were not different from the personality traits of controls. There were significant differences between pre and post personality traits in the AAS user group (33). Cooper and colleagues found that the narcissistic personality scores of individuals who used steroids were higher than those of individuals who did not use steroids (33). In one study, a group of females ($n=30$) and a group of male competitive bodybuilders ($n=29$) who met diagnostic criteria for anorexia nervosa were evaluated on a battery of psychological measures and their participation in exercise was reported. After separating the male sample into steroid users and non-steroid bodybuilders, the entire analysis was repeated. The results revealed that bodybuilders who used steroids were more narcissistic than those who did not (34).

The sample group of a study consisted of a total of 42 bodybuilding athletes who used steroids and did sports voluntarily (35). In addition, a control group of 22 people was created and they did not use steroids. The 16-item Narcissistic Personality Inventory (NPI-16) was used as a data collection tool. The narcissism level of athletes before steroid treatment was determined as (8, 5714), and the narcissism level of athletes after steroid treatment was determined as (13, 4286). According to the results of statistical analysis, it was determined that there was an increase in the narcissism levels of athletes after steroid treatment. When this result is evaluated according to narcissistic personality traits, it can be said that athletes like their body and physical characteristics more after anabolic steroid treatment. On the other hand, in our study, participants who do not use steroids are 1.4795 times more likely to be narcissists than those who do. Therefore, the fact that the subjects participating in the study tend not to use steroids, but rather not to use them, makes them even more narcissistic. Since narcissism is an individual's excessive admiration for their own physical and mental abilities, according to our study, these individuals do not use steroids.

While this study provides valuable insights into the psychological profiles of AAS users and non-users, several limitations should be acknowledged. First, the modest sample size ($n=66$) and exclusive focus on male bodybuilders may limit the generalizability of the findings. Future research should include larger, more diverse cohorts, including women and athletes at different competitive levels, to validate these results. Second, the cross-sectional design precludes causal inferences; longitudinal studies tracking narcissism and self-esteem before and after AAS initiation could clarify directional relationships. Third, self-reported measures of AAS use and psychological traits may be susceptible to response biases (e.g., underreporting steroid use or overstating self-esteem). Incorporating biochemical verification of AAS use and multi-informant assessments (e.g., peer ratings of narcissism) could enhance reliability. Additionally, cultural factors specific to the Turkish context (e.g., societal attitudes toward body image) may influence the results, warranting cross-cultural replications. Finally, unmeasured confounders—such as body dysmorphia, training intensity, or social support—could mediate the observed relationships and should be explored in future work. Despite these constraints, the study offers a foundational understanding of the paradoxical psychological dynamics between AAS users and non-users.

In our study, it can be said that subjects who do not use steroids are 1.11 times more likely to have self-esteem, 1.18 times more self-competence sub-dimension, and 1.20 times more likely to have self-liking sub-dimension than those who do. Therefore, the fact that the subjects participating in the study tend not to use steroids, but rather not to use them, brings them to a greater sense of self-esteem, self-competence sub-dimension and self-liking sub-dimension. A study from 2010 (36) indicated AAS abuse may be linked to certain social and psychological characteristics of the user, such as low self-esteem, afflicted hostility, childhood conduct disorder, and a tendency towards high-risk behavior.

In conclusion, this study revealed a paradoxical psychological profile among bodybuilders: those who abstained from AAS exhibited significantly higher levels of narcissism, self-esteem, and its sub-dimensions (self-competence and self-liking) compared to users. These findings challenge prevailing assumptions that AAS use is driven by or exacerbates grandiose self-perception, suggesting instead that natural training may

foster stronger self-enhancement tendencies. The results underscore the need to reconsider motivational frameworks for AAS use, emphasizing non-pharmacological factors (e.g., social validation or intrinsic satisfaction) that shape bodybuilders' self-concept. Future research should explore longitudinal dynamics and cultural moderators to clarify causality and generalizability. Clinically, these insights highlight the potential benefits of psychological interventions that bolster self-esteem and healthy narcissism in athletes, reducing reliance on performance-enhancing substances. By illuminating the complex interplay between psychology and AAS use, this study contributes to a more nuanced understanding of athlete well-being in high-pressure sporting environments.

REFERENCES

1. Akkoç O, Yücesir I. Vücut Geliştirme, Fitness Sporunu Yapan ve Sedanter Bireylerin, İstirahat Metabolizma Hızı ve Bazı Antropometrik Ölçümlerinin Karşılaştırılması. *İÜ Spor Bilimleri Dergisi*. 2015; 5(1), 1-16.
2. Montuori P, Loperto I, Paolo C, et al. Bodybuilding, Dietary Supplements And Hormones Use: Behaviour And Determinant Analysis In Young Bodybuilders. *BMC Sports Science, Medicine And Rehabilitation*. 2021; 13, 1-11.
3. Dakanalis A, Timko A, Madeddu F, et al. Are the male body dissatisfaction and drive for muscularity scales reliable and valid instruments? *Journal of Health Psychology*. 2015; 20(1), 48-59.
4. Çağlayan D, Koz M. Vücut geliştirme sporu ile ilgilenen kişilerde kas yoksunluğu belirtilerinin incelenmesi: Samsun ili örneği. *SPORMETRE Beden Eğitimi ve Spor Bilimleri Dergisi*. 2020;18(4), 180-192. 10.
5. Gök R, Yalçın AD, Tural Ü. Anabolik Steroidlerin Kötüye Kullanımı. *Bağımlılık Dergisi*. 2016; 17(4), 172-180.
6. Bahrke MS, Yesalis CE. Abuse Of Anabolic Androgenic Steroids And Related Substances in Sport And Exercise. *Current Opinion in Pharmacology*. 2004; 4(6), 614-620.
7. Gümüş B, Dinç N, Güzel P. Sporda Hormonal Etkileşim ve Cinsel Davranış. *Avrasya Spor Bilimleri ve Eğitim Dergisi*. 2020; 2(2), 107-117.
8. Powers SK, Howley, ET. *Exercise Physiology: Theory And Application To Fitness And Performance* (10. Edition). New York, NJ: McGraw-Hill Higher Education; 2018.
9. Di Luigi L, Romanelli F, Sgrò P, Lenzi A. Andrological Aspects Of Physical Exercise And Sport Medicine. *Endocrine*. 2012; 42(2), 278-284.
10. Türk Dil Kurumu (TDK). Available from: <https://sozluk.gov.tr/> Accessed in 2023 (November 29)
11. Yabancı C. Lise Öğrencilerinin Sosyal Medyaya İlişkin Tutumları ile Narsisizm ve Yalnızlık Düzeyleri Arasındaki İlişkinin İncelenmesi. Bursa Uludağ Üniversitesi, Guidance and Psychological Counseling. Master's Thesis. Türkiye, 2019
12. Rozenblatt S. In Defence Of Self: The Relationship Of Self- Esteem And Narcissim To Aggressive Behavior. Long Island University, Psychology. Unpublished Doctoral Dissertation. USA, 2002.
13. Bolat Y, Ülker M, Demir CG. Kavramsal Açıdan Narsisizm ve Eğitimde Narsistik Kişilik. *Uluslararası Sosyal Araştırmalar Dergisi*. 2016; 9(46), 482-493.
14. Bozkuş O, Araz A. Narsisizm ve Evlilik Uyumu İlişkisinde Reddedilme Duyarlılığı ve Olumlu Yanılsamaların Aracı Rolü. *Nesne Psikoloji Dergisi*. 2015;3(6), 29-54.
15. Çakmak V. Online Benlik Sunumu ve Narsisizm Arasındaki İlişki: Üniversite Öğrencileri Üzerinde Bir Araştırma. *AJIT-E: Online Academic Journal Of Information Technology*. 2018; 9(31), 137-152.
16. Karaaziz M, Atak İE. Narsisizm ve Narsisizmle İlgili Araştırmalar Üzerine Bir Gözden Geçirme. *Nesne Psikoloji Dergisi*. 2013;1(2), 44-59
17. Uçar SA. Yetişkinlerde Egzersiz Bağımlılığı ile Narsisizm Arasındaki İlişkinin İncelenmesi. Bursa Uludağ Üniversitesi, Beden Eğitimi ve Spor. Doctoral Dissertation, Türkiye, 2019
18. Küsgülü Ü. Üniversite Öğrencilerinin Mutluluk, Umut ve Narsisizm Düzeylerinin İncelenmesi. Tokat Gaziosmanpaşa Üniversitesi, Psikoloji. Unpublished Master's Thesis, Türkiye, 2014.
19. Acun-Kapıkıran N, Güzel NC. İki boyutlu benlik saygısı: Diğer benliklerle ilişkisi. *Bolu Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*. 2021; 21(4), 1294-1310.
20. Balcı Ş, Karakoç E, Ögüt N. Sağlık Çalışanları Arasında Sosyal Medya Bağımlılığı: İki Boyutlu Benlik Saygısının Rolü. *Akdeniz Üniversitesi İletişim Fakültesi Dergisi*. 2020;33(3), 296-317.
21. Tafarodi RW, Swann WB. Self-liking and self-competence as dimensions of global self-esteem: Initial validation of a measure. *Journal of Personality Assessment*. 1995; 65, 322-342.
22. Tafarodi RW, Swann WB. Two dimensional Self-Esteem: Theory And Measurement. *Personality And Individual Differences*. 2001; 31, 653-673.
23. Doğan T, Eryılmaz A. Benlik saygısı ve öznel iyi oluş arasındaki ilişkilerin incelenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*; 2013;33(33), 107-117.
24. Koç H, Arslan C. Üniversite öğrencilerinde algılanan sosyal destek, benlik saygısı ve sabır arasındaki ilişkiler. *Turkish Psychological Counseling and Guidance Journal*. 2019; 9(54), 821-840.
25. Tafarodi RW, Wild N, Ho C. Parental authority, nurturance, and twodimensional self-esteem. *Scandinavian Journal of Psychology*. 2010;51, 294-303.

26. Atay S. Narsistik Kişilik Envanteri'nin Türkçe'ye Standardizasyonu. Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi. 2009;11(1), 181-196.
27. Gungor ND, Selcuk FU. Narsistik Kişilik Envanteri (NPI16): Türkçe Uyarlaması. Yayınlanmamış Tartışma Metni, Atılım Üniversitesi Sosyal Bilimler Araştırma ve Eğitim Laboratuvarı, 2015.
28. Doğan T. İki Boyutlu Benlik Saygısı: Kendini Sevmeye ve Öz-Yeterlik Ölçeği'nin Türkçe Uyarlaması ve Psikometrik Özelliklerinin İncelenmesi. Eğitim ve Bilim. 2011; 36 (162), 126-137.
29. Raskin R, Hall CS. The Narcissistic Personality Inventory: alternative form reliability and further evidence of construct validity. J Pers Assess. 1981; 45:159-162.
30. Ames DR, Rose P, Anderson PC. The NPI-16 As A Short Measure Of Narcissism. Journal Of Research in Personality. 2006;40, 440-450.
31. Porcerelli JH, Sandler BA. Narcissism and empathy in steroid users. American Journal of Psychiatry. 1995;152(11), 1672-1674.
32. Blouin AG, Goldfield GS. Body image and steroid use in male bodybuilders. International Journal of Eating Disorders. 1995;18 (2), 159-165.
33. Cooper CJ, Noakes TD, Dunne T, Lambert MI, Rochford KA. High prevalence of abnormal personality traits in chronic users of anabolic-androgenic steroids. British Journal of Sports Medicine. 1996; 30, 246-250.
34. Scott-Robertson LF. A psychological comparison of competitive male bodybuilders and females diagnosed with anorexia nervosa. York University Institute of Health Science. Master's Thesis, USA, 1996.
35. Tazegül Ü. Comparison of the Narcissism Level of the Bodybuilders before and after the Application of Anabolic Steroid Cure. Universal Journal of Educational Research. 2018; 6(6), 1149-1152.
36. van Amsterdam J, Opperhuizen A, Hartgens F. Adverse health effects of anabolic-androgenic steroids. Regulatory Toxicology and Pharmacology. 2010; 57(1), 117-123.