Turkish Journal of Sports Medicine
Spor Hekimliği Dergisi

Turk J Sports Med. DOI: 10.47447/tjsm.0915

RESEARCH ARTICLE

# The Relationship Between Eating Attitude, Body Image Perception and Alexithymia Among Athletes

*Sporcularda Beslenme Tutumu, Beden İmajı Algısı ve Aleksitimi Arasındaki İlişki*

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## ABSTRACT

**Objective:** With the increasing competitiveness in sports, athletes are exposed to various negative factors affecting their physical and psychological health. This study aimed to examine whether eating attitude, body image perception, and alexithymia differ by age and gender among athletes, and to evaluate the relationships between these variables.

**Materials and Methods:** This cross-sectional study included athletes aged 14-40 years, who completed a data collection form in an outpatient clinic. The form included demographic information, the Toronto Alexithymia Scale, the Eating Attitudes Test-26, and the Body Image Scale. Data were analyzed using SPSS v.23. Normality was assessed with Skewness and Kurtosis. Descriptive statistics, t-tests, Monte Carlo corrected chi-square, and Pearson correlation were performed. A p-value of <0.05 was considered significant.

**Results:** A total of 206 athletes (97 female (47.1%), 109 male (52.9%); 111 adolescents (53.9%), 95 adults (46.1%)) participated. Females scored lower on the 'body change' subscale of the Body Image Scale compared to males (p<0.05). Significant differences were found between adolescent and adult athletes regarding Toronto Alexithymia Scale scores, total Body Image Scale scores, and the subscales for 'negative perception of the body' and 'evaluation sensitivity' (p<0.05). The presence of alexithymia was associated with differences in body image perception (p<0.05). Alexithymia was found to be related to age and body image perception (p<0.05), and eating attitudes were also related to age and body image perception (p<0.05).

**Conclusion:** From adolescence onwards, athletes should be monitored for deteriorations in body image perception and difficulties in emotional expression (development of alexithymia). Gender differences should also be considered in these follow-ups.

**Keywords:** Alexithymia, body image, eating attitudes, athlete

## ÖZ

**Amaç:** Sportif aktivitenin ve beraberinde rekabetin her geçen gün giderek artması, sporcular üzerinde çeşitli negatif etkilerin ortaya çıkmasına da neden olmaktadır. Bu çalışmada, sporcularda yaşa ve cinsiyete göre beslenme tutumu, beden imajı algısı ve aleksitimi varlığı arasında fark olup olmadığı ve bu değişkenlerin birbirleri ile ilişkisi incelendi.

**Gereç ve Yöntem:** Araştırmada, 14-40 yaş arası sporculara poliklinik ortamında veri toplama formu doldurtuldu. Veri toplama formunda tanımlayıcı bilgilere, Toronto Aleksitimi Ölçeğine, Yeme Tutum Testi-26'ya ve Beden İmajı Ölçeğine yer verildi. Veriler SPSS v.23 ile analiz edildi. Normallik, Skewness ve Kurtosis ile değerlendirildi. Tanımlayıcı istatistikler, t-testleri, Monte Carlo düzeltmeli ki-kare ve Pearson korelasyon analizleri yapıldı. İstatistiksel anlamlılık için p<0.05 değeri kullanıldı.

**Bulgular:** Araştırmaya 206 sporcu (97 kadın (%47.1), 109 erkek (%52.9) / 111 adolesan (%53.9), 95 erişkin (%46.1)) dâhil edildi. Kadınların Beden İmajı Ölçeği'nin bedeni değiştirme alt faktör puanı erkeklere göre daha düşük bulundu (p<0.05). Adolesan sporcular ile erişkin sporcular arasında Toronto Aleksitimi Ölçeği puanı, Beden İmajı Ölçeği toplam puanı, Beden İmajı Ölçeği'nin bedeni olumsuz algılama alt faktör puanı ve bedeni değerlendirme duyarlılığı alt faktör puanı için gruplar arasında fark saptandı (p<0.05). Aleksitimi varlığı, beden imajı algısı

**Received:** 02.03.2025 · **Accepted:** 14.05.2025 · **Published:** 22.01.2026

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**Cite as:** Ogul A, Ercan S. The relationship between eating attitude, body image perception and alexithymia among athletes. *Turk J Sports Med*. 2026; https://doi.org/10.47447/tjsm.0915

açısından fark oluşturdu (p<0.05). Aleksitiminin yaş ve beden imajı algısı ile ilişkili olduğu belirlendi (p<0.05). Benzer şekilde yeme tutumu da yaş ve beden imajı algısı ile ilişki gösterdi (p<0.05).

**Sonuç:** Adolesan dönemden itibaren sporcuların özellikle beden imajını algılamada bozulmalar ve duygu ifade ediminde güçlükler (aleksitimi gelişimi) açısından takip edilmesi gerekmektedir. Bu takipler sırasında cinsiyet faktörü göz önünde bulundurulmalıdır.

**Anahtar Sözcükler:** Aleksitimi, beden imajı, yeme tutumu, sporcu

## INTRODUCTION

With the increasing competitive level in sports, athletes' desire to succeed drives them to adopt eating control practices in order to prepare their bodies according to the demands and requirements of competitive sports environments [1]. Athletes are more likely to engage in restrictive eating, frequent meal skipping, self-induced vomiting, diuretic use, and similar methods to achieve low body fat percentages and lower body weight [1]. When concerns about body weight and the accompanying behaviors become the central focus for the athlete, a diagnosis of an eating disorder becomes almost inevitable. Studies have shown that disordered eating behaviors lead to decreased performance, increased musculoskeletal injuries, and the development of relative energy deficiency [2].

Concerns about body image, particularly body dissatisfaction, have been shown to be associated with and even predictive of disordered eating behaviors [2]. Both internal and external pressures to achieve the body type required for a specific sport may predispose athletes to body dissatisfaction [3,4]. Researchers seeking to understand the causes of disordered eating have reached a consensus that body image disturbances and dissatisfaction play a significant role in the development of disordered eating behaviors [5].

Alexithymia is a specific form of emotional dysregulation characterized by difficulty in recognizing, identifying, and verbally expressing emotions, as well as difficulty in distinguishing one's emotional experiences from underlying physiological sensations. It is also associated with a restricted imaginative capacity [6]. Individuals with alexithymia may attempt to regulate their emotional distress through maladaptive health-related behaviors such as disordered eating or substance use [6]. Several studies have demonstrated a relationship between alexithymia and disordered eating. However, most of these studies have focused exclusively on female samples [7]. Additionally, in individuals with alexithymia, the inability to differentiate between emotional states and bodily sensations may further increase body dissatisfaction and lead to misinterpretation of both perceptual and behavioral aspects of body image [6].

This study aimed to evaluate whether gender and age create differences in terms of body image, eating attitudes, and the presence of alexithymia, and to investigate the relationships between these variables. The study hypothesized that these three variables are interrelated, that gender differences might be limited, but that disordered eating attitudes, alexithymia, and body image concerns would be more prevalent among adolescent athletes compared to adult athletes.

## MATERIAL AND METHODS

This cross-sectional study was approved by the local ethics committee (decision date=07.05.2021, decision number=751). Athletes aged between 14 and 40 years, who had sufficient Turkish literacy skills, were included in the study upon providing informed consent. For adolescent participants, consent of parents was also obtained. In this study, certain exclusion criteria were applied to ensure the integrity and reliability of the data. Participants were excluded if they provided incomplete responses in the data collection form, as accurate and complete data were necessary for valid results. Additionally, individuals who lacked sufficient proficiency in Turkish, which was required for effective communication and understanding of the study materials, were excluded. Participants who withdrew their informed consent at any stage of the study were also not included in the final analysis.

A data collection form, prepared by the researchers, was completed by the participants using a convenience sampling method in the outpatient clinic setting. The form collected descriptive information about the participants. To assess alexithymia, the Toronto Alexithymia Scale (TAS-20) was used; to evaluate disordered eating attitudes, the Eating Attitudes Test-26 (EAT-26) was applied; and body image concerns were assessed using the Body Image Scale (BIS).

***Age Categorization:*** The age classification was based on the World Health Organization's definition of adolescence (ages 10-19). Accordingly, participants aged 19 years or younger were categorized as adolescents, while those aged 20 years or older were classified as adults [8].

***Toronto Alexithymia Scale:*** This 20-item, 5-point Likert-type scale was developed by Bagby, Parker, and Taylor [9]. Higher scores indicate higher alexithymic tendencies. The Turkish validity and reliability study of the scale was conducted by Güleç et al. [10], with a Cronbach's alpha coefficient of 0.78 [10]. For the Turkish version, cut off scores were also established: a score below 51 indicated non-alexithymic individuals, while a score of 59 or above indicated clearly alexithymic individuals [11]. In this study, a cut off of 59 points was used for group classification.

***Eating Attitudes Test-26:*** The original 40-item Eating Attitudes Test was developed by Garner and Garfinkel in 1979 and was later shortened to a 26-item version by Garner, Olmstead, Bohr, and Garfinkel in 1982 [12]. The Turkish validity and reliability study was conducted by Ergüney-Okumuş et al. [13], reporting a Cronbach's alpha of 0.84 and a test-retest reliability coefficient of 0.78. Scores above 20 indicate a need for professional evaluation regarding eating behaviors, while lower scores are associated with healthier eating attitudes [13].

***Body Image Scale:*** This 21-item, 5-point Likert-type scale was developed by Saylan et al. [14]. It consists of four subscales: Negative Perception of the Body, Evaluation Sensitivity, Positive Perception of the Body, Body Change [14]. Exploratory and confirmatory factor analyses indicated high reliability for the scale, with Cronbach's alpha coefficients of 0.92 and 0.88, respectively [14]. Higher total scores indicate a more positive body image perception. Since the scale includes both negative and positive dimensions, subscale scores were also analyzed separately [14].

### Power Analysis

Power analysis was conducted using G*Power 3.1 software, focusing on t-tests and chi-square tests performed based on gender, age categories, and alexithymia presence. For t-tests, a medium effect size (d=0.50) was assumed, while for chi-square tests, an effect size of V=0.30 was used. Both tests assumed an alpha level of 0.05 and a power of 0.80. Based on these parameters, the minimum sample size required was 64 participants per group for t-tests, and a total of at least 88 participants for chi-square tests, ensuring each cell had an expected frequency greater than 5.

### Statistical Analysis

Data were analyzed using SPSS v.23 software. Normality was assessed using Skewness and Kurtosis values. Descriptive statistics, independent samples t-tests, Monte Carlo corrected chi-square tests, and Pearson correlation analyses were applied. A p-value of $<0.05$ was considered statistically significant. Data were presented as % (n) and mean±standard deviation.

## RESULTS

A total of 206 athletes participated in the study, consisting of 47.1% females (n=97) and 52.9% males (n=109). The sample included 53.9% adolescents (n=111) and 46.1% adults (n=95). The participants' mean age was 20.2±4.7 years, with an average height of 171.9±8.8 cm, body weight of 65.2±14.5 kg, and body mass index of 21.9±3.5 kg/m$^2$ (Table 1).

**Table 1. Descriptive features**

| | All (n=206) | Gender | | | Age Categorization | | |
|---|---|---|---|---|---|---|---|
| | | Female (n=97) | Male (n=109) | P value | Adolescent (n=111) | Adult (n=95) | P value |
| Age (years) | 20.2±4.7 | 19.5±4.5 | 20.8±4.9 | **0.049*** | 16.7±1.2 | 24.3±4.1 | **<0.001*** |
| Age categorization (Adolescent/Adult), % (n) | 53.9 (111) / 46.1 (95) | 60.8 (59) / 39.2 (38) | 47.7 (52) / 52.3 (57) | 0.069 | 100 (111) / 0 (0) | 0 (0) / 100 (95) | - |
| Gender (F/M), % (n) | 47.1 (97) / 52.9 (109) | 100 (97) / 0 (0) | 0 (0) / 100 (109) | - | 53.2 (59) / 46.8 (52) | 40.0 (38) / 60 (57) | 0.069 |
| Height (cm) | 171.9±8.8 | 165.7±5.8 | 177.3±7.3 | **<0.001*** | 169.6±8.8 | 174.5±8.1 | **<0.001*** |
| Weight (kg) | 65.2±14.5 | 56.5±8.8 | 73.0±14.1 | **<0.001*** | 60.2±11.2 | 71.1±15.7 | **<0.001*** |
| Body mass index (kg/m$^2$) | 21.9±3.5 | 20.5±2.9 | 23.1±3.5 | **<0.001*** | 20.8±2.6 | 23.1±4.0 | **<0.001*** |
| Engaged in sports (years) | 6.9±5.3 | 6.0±4.7 | 7.6±5.8 | **0.032*** | 4.5±2.4 | 9.6±6.4 | **<0.001*** |
| Level of sports participation, % (n) | | | | 0.150 | | | **<0.001*** |
| Professional | 23.8 (49) | 26.8 (26) | 21.1 (23) | | 19.8 (22) | 28.4 (27) | |
| Semi-professional | 22.3 (46) | 15.5 (15) | 28.4 (31) | | 27.0 (30) | 16.9 (16) | |
| Club | 37.4 (77) | 41.2 (40) | 34.0 (37) | | 46.9 (52) | 26.3 (25) | |
| Recreational | 16.5 (34) | 16.5 (16) | 16.5 (18) | | 6.3 (7) | 28.4 (27) | |

**=Significant at p<0.05 level. F/M=Female/Male*

The participants had been engaged in sports for an average of 6.9±5.3 years. Regarding the level of sports participation, 23.8% (n=49) were at the professional level, 22.3% (n=46) at the semi-professional level, 37.4% (n=77) at the club level, and 16.5% (n=34) at the recreational level (Table 1). In terms of sports disciplines, 25.2% (n=52) were football players, 16.5% (n=34) were track and field athletes, 11.2% (n=23) were volleyball players, 9.7% (n=20) practiced taekwondo, 7.3% (n=15) were wrestlers, 7.3% (n=15) were engaged in fitness training, and the remaining 22.8% (n=47) participated in various other sports.

Considering the overall sample, the athletes' mean score on the TAS-20 was 54.8±10.6, while the mean score on the EAT-26 was 11.9±8.9. Regarding body image, the total mean score on the BIS was 50.7±12.9. When the subscales of the BIS were examined, the Negative Perception of the Body subscale had a mean score of 14.3±5.9, the Evaluation Sensitivity subscale had a mean score of 12.5±4.7, the Positive Perception of the Body subscale had a mean score of 13.5±5.0, and the Body Change subscale had a mean score of 10.3±3.7.

When the scores were compared by gender, no significant differences were found between females and males in terms of TAS-20 scores, EAT-26 scores, or total BIS scores (p>0.05), (Table 2). However, a significant difference was observed in the Body Change subscale of the BIS, where females had a mean score of 9.6±3.8, while males scored 10.8±3.4 (p=0.032), (Table 2)

**Table 2. Comparison of alexithymia, eating attitudes, and body image by gender**

| | Female (n=97) | Male (n=109) | P value |
|---|---|---|---|
| Toronto Alexithymia Scale | 55.9±11.5 | 53.9±9.6 | 0.185 |
| Eating Attitudes Test-26 | 12.9±9.6 | 11.0±8.2 | 0.132 |
| Body Image Scale | 50.6±14.6 | 50.8±11.2 | 0.917 |
| Negative Perception of the Body | 14.5±6.4 | 14.1±5.3 | 0.572 |
| Evaluation Sensitivity | 13.0±5.0 | 12.0±4.4 | 0.145 |
| Positive Perception of the Body | 13.3±5.2 | 13.8±4.8 | 0.460 |
| Body Change | 9.6±3.8 | 10.8±3.5 | **0.032*** |

**=Significant at p<0.05 level.*

When comparing adolescents and adults, significant differences were found between the two age groups in terms of TAS-20 scores, total BIS scores, as well as the Negative Perception of the Body and Evaluation Sensitivity subscale scores (p<0.05), (Table 3).

**Table 3. Comparison of alexithymia, eating attitudes, and body image between adolescent and adult athletes**

| | Adolescent(n=111) | Adult (n=95) | P value |
|---|---|---|---|
| Toronto Alexithymia Scale | 57.1±10.3 | 52.2±10.3 | **0.001*** |
| Eating Attitudes Test-26 | 12.3±9.4 | 11.5±8.3 | 0.491 |
| Body Image Scale | 52.5±12.7 | 48.6±12.8 | **0.032*** |
| Negative Perception of the Body | 15.3±6.0 | 13.1±5.5 | **0.006*** |
| Evaluation Sensitivity | 13.1±4.7 | 11.8±4.7 | **0.047*** |
| Positive Perception of the Body | 13.6±4.6 | 13.5±5.4 | 0.924 |
| Body Change | 10.4±3.5 | 10.2±3.8 | 0.647 |
| *=Significant at p<0.05 level. | | | |

When participants were grouped based on the presence of alexithymia, significant differences were observed in TAS-20 scores, total BIS scores, as well as the Negative Perception of the Body, Body Evaluation Sensitivity, and Body Change subscale scores (p<0.05), (Table 4).

Correlation analysis revealed a negative correlation between TAS-20 scores and age, while total BIS scores, Negative Perception of the Body, Evaluation Sensitivity, and Body Change subscale scores showed weak positive correlations with TAS-20 scores (r<0.30).

Similarly, EAT-26 scores were negatively correlated with age, whereas Evaluation Sensitivity, Positive Perception of the Body, and Body Change subscale scores showed weak positive correlations with EAT-26 scores (r<0.30). Moreover, EAT-26 scores had a moderate positive correlation with total BIS scores (r=0.362) and Negative Perception of the Body subscale scores (r=0.341), (Table 5).

**Table 4. Comparison of eating attitudes, body image and other status by alexithymia status**

| | Non-Alexithymic (n=141) | Alexithymic (n=65) | P value |
|---|---|---|---|
| Age (years) | 20.5±4.8 | 19.6±4.5 | 0.178 |
| Gender (F/M), % (n) | 44.7 (63) / 55.3 (78) | 52.3 (34) / 47.7 (31) | 0.368 |
| Height (cm) | 172.1±8.6 | 171.3±9.3 | 0.563 |
| Weight (kg) | 65.2±14.2 | 65.2±15.3 | 0.988 |
| Body mass index (kg/m$^2$) | 21.8±3.6 | 21.9±3.3 | 0.819 |
| Engaged in sports (years) | 7.1±5.0 | 6.4±5.9 | 0.443 |
| Level of sports participation, % (n) | | | 0.737 |
| Professional | 22.7 (32) | 26.2 (17) | |
| Semi-professional | 22 (31) | 23 (15) | |
| Club | 36.9 (52) | 38.5 (25) | |
| Recreational | 18.4 (26) | 12.3 (8) | |
| Toronto Alexithymia Scale | 49.3±6.7 | 66.8±6.8 | **<0.001*** |
| Eating Attitudes Test-26 | 11.2±8.5 | 13.4±9.7 | 0.105 |
| Body Image Scale | 48.9±11.7 | 54.7±14.4 | **0.002*** |
| Negative Perception of the Body | 13.4±5.0 | 16.2±7.0 | **0.002*** |
| Evaluation Sensitivity | 11.6±4.5 | 14.3±4.6 | **<0.001*** |
| Positive Perception of the Body | 13.8±5.1 | 13.0±4.6 | 0.293 |
| Body Change | 9.9±3.6 | 11.1±3.7 | **0.034*** |
| *=Significant at p<0.05 level. F/M=Female/Male | | | |

## DISCUSSION

This study evaluated alexithymia, eating attitudes, and body image characteristics among adolescent and adult athletes. The findings indicate that adolescent athletes have higher levels of alexithymia and a more negative body image compared to adult athletes. Additionally, in the "Body Change" subscale of the BIS, male athletes scored significantly higher than female athletes.

Significant correlations were found between alexithymia levels and body image perception as well as evaluation sensitivity. Similarly, a strong relationship between eating attitudes and body image was also identified. These findings highlight the influence of age, gender, and psychological factors on body perception and eating attitudes among athletes. They also emphasize the importance of approaching athlete health from a holistic perspective, addressing both physical and psychological dimensions.

**Table 5. Correlation analysis between age, alexithymia, eating attitude and body image**

| | | Age | BMI | Engaged in sports | TAS | EAT-26 | BIS | BIS-NP | BIS-ES | BIS-PP | BIS-BC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | r | 1 | **0.253**$^{**}$ | **0.613**$^{**}$ | **-0.181**$^{**}$ | **-0.137**$^{*}$ | -0.110 | -0.135 | -0.066 | -0.050 | -0.016 |
| | p | | <0.001 | <0.001 | 0.009 | 0.050 | 0.115 | 0.054 | 0.343 | 0.475 | 0.814 |
| BMI | r | **0.253**$^{**}$ | 1 | 0.176$^{*}$ | -0.029 | -0.069 | 0.058 | -0.023 | 0.050 | -0.018 | **0.200**$^{**}$ |
| | p | <0.001 | | 0.011 | 0.680 | 0.322 | 0.408 | 0.738 | 0.480 | 0.799 | 0.004 |
| Engaged in sports | r | **0.613**$^{**}$ | **0.176**$^{*}$ | 1 | -0.073 | -0.043 | **-0.160**$^{*}$ | **-0.161**$^{*}$ | -0.051 | -0.122 | -0.069 |
| | p | <0.001 | 0.011 | | 0.297 | 0.541 | 0.022 | 0.021 | 0.469 | 0.080 | 0.324 |
| TAS | r | **-0.181**$^{**}$ | -0.029 | -0.073 | 1 | 0.033 | **0.186**$^{**}$ | **0.180**$^{**}$ | **0.277**$^{**}$ | -0.103 | 0.146$^{*}$ |
| | p | 0.009 | 0.680 | 0.297 | | 0.634 | 0.007 | 0.009 | <0.001 | 0.140 | 0.036 |
| EAT-26 | r | **-0.137**$^{*}$ | -0.069 | -0.043 | 0.033 | 1 | **0.362**$^{**}$ | **0.341**$^{**}$ | **0.218**$^{**}$ | **0.141**$^{*}$ | **0.250**$^{**}$ |
| | p | 0.050 | 0.322 | 0.541 | 0.634 | | <0.001 | <0.001 | 0.002 | 0.044 | <0.001 |
| BIS | r | -0.110 | 0.058 | **-0.160**$^{*}$ | **0.186**$^{**}$ | **0.362**$^{**}$ | 1 | **0.875**$^{**}$ | **0.749**$^{**}$ | **0.361**$^{**}$ | **0.644**$^{**}$ |
| | p | 0.115 | 0.408 | 0.022 | 0.007 | <0.001 | | <0.001 | <0.001 | <0.001 | <0.001 |
| BIS-NP | r | -0.135 | -0.023 | **-0.161**$^{*}$ | **0.180**$^{**}$ | **0.341**$^{**}$ | **0.875**$^{**}$ | 1 | **0.598**$^{**}$ | **0.158**$^{*}$ | **0.476**$^{**}$ |
| | p | 0.054 | 0.738 | 0.021 | 0.009 | <0.001 | <0.001 | | <0.001 | 0.023 | <0.001 |
| BIS-ES | r | -0.066 | 0.050 | -0.051 | **0.277**$^{**}$ | **0.218**$^{**}$ | **0.749**$^{**}$ | **0.598**$^{**}$ | 1 | -0.136 | **0.559**$^{**}$ |
| | p | 0.343 | 0.480 | 0.469 | <0.001 | 0.002 | <0.001 | <0.001 | | 0.052 | <0.001 |
| BIS-PP | r | -0.050 | -0.018 | -0.122 | -0.103 | **0.141**$^{*}$ | **0.361**$^{**}$ | **0.158**$^{*}$ | -0.136 | 1 | **-0.173**$^{*}$ |
| | p | 0.475 | 0.799 | 0.080 | 0.140 | 0.044 | <0.001 | 0.023 | 0.052 | | 0.013 |
| BIS-BC | r | -0.016 | **0.200**$^{**}$ | -0.069 | **0.146**$^{*}$ | **0.250**$^{**}$ | **0.644**$^{**}$ | **0.476**$^{**}$ | **0.559**$^{**}$ | **-0.173**$^{*}$ | 1 |
| | p | 0.814 | 0.004 | 0.324 | 0.036 | <0.001 | <0.001 | <0.001 | <0.001 | 0.013 | |

*BMI=Body Mass Index, TAS=Toronto Alexithymia Scale, EAT-26=Eating Attitudes Test-26, BIS=Body Image Scale. NP=Negative Perception of the Body, ES=Evaluation Sensitivity, PP=Positive Perception of the Body, BC=Body Change. **=Significant at p<0.01 level. *=Significant at p<0.05 level. If r <0.30, it is weak, if r=0.30 - 0.50, it is medium, if r=0.50 - 0.70, it is strong, and if r=0.70 - 1.00, it is very strong correlation.*

The physical and psychological health benefits of sports participation have long been recognized. However, certain risk factors and requirements associated with sports may pave the way for negative changes in body image, eating behaviors, and emotional expression. Athletes' concerns may vary depending on factors such as gender, level of participation, type of sport, and frequent body composition assessments conducted within the training process [7,15]. In particular, athletes involved in high-risk sports such as swimming, gymnastics, weight-dependent, and similar disciplines, where body weight and composition are critical, may experience significant concerns about their weight. These individuals are more likely to develop disordered eating behaviors, including restrictive eating, binge eating, and other maladaptive patterns. Research has shown that athletes in such sports may be at increased risk of developing eating disorders like anorexia nervosa and bulimia nervosa, which can further exacerbate psychological and physical health issues. These issues can be further compounded by the emphasis on body image within the culture of certain sports, leading to additional emotional and psychological stress [16]. In this context, identifying high-risk groups is essential for implement-

Eating disorders are associated with a complex interplay of sociocultural, psychological, familial, biological, and genetic factors. In the athletic population, risk factors for the development of eating disorders include higher level of competition, early specialization in sport-specific training, weight classification rules in weight-category sports, and the pressure to achieve a certain body weight or shape imposed by the sports environment [16]. Weight-related pressures in the sports setting can stem from comments made by coaches, referees, or teammates regarding body weight or shape, weight or shape requirements for competition, the way athletic uniforms fit the body, and the perception that lower body weight enhances performance. To address these risks, it is essential to implement regular monitoring of athletes' nutritional intake and body composition. Precautions should include periodic assessments by sports nutritionists to ensure a balanced and healthy diet, along with psychological support to address body image concerns. Furthermore, the use of validated screening tools for disordered eating behaviors should be considered [18]. Coaches and healthcare professionals should be trained to recognize early signs of eating disorders, and strategies for promoting positive body image and mental health should be integrated into the training programs [16]. It is known that 45% of female athletes and 32.5% of male athletes experience disordered eating behaviors or clinically significant eating disorders [19]. In the study conducted by Benau et al., no significant relationship was found between gender and eating disorders [7]. Similarly, in the present study, no gender differences were detected in EAT-26 scores.

It is well known that adolescent athletes are at higher nutritional risk due to the need to meet both their growth requirements and increased energy demands associated with training [20]. From an ontogenetic perspective, the development of eating disorders or disordered eating behaviors typically occurs during the transition from childhood to adulthood, highlighting the importance of specifically investigating adolescent athletes as a high-risk group [21]. In the present study, no significant difference was found between adolescent and adult athletes in terms of EAT-26 scores. However, in line with the literature, a weak but significant correlation was identified between age and eating attitudes. The higher prevalence of alexithymia and body image disturbances observed in adolescent athletes may be related to the rapid psychological and physical changes that characterize this developmental period. Adolescents are in a phase of identity formation, during which social media reinforces ideal body images, further complicating this process. Moreover, the sports environment, which inherently emphasizes the relationship between body weight, body composition, and performance, presents an additional risk factor. This pressure may be particularly detrimental for individuals with poor emotional expression skills, potentially increasing their susceptibility to body dissatisfaction and disordered eating behaviors.

On the other hand, based on the findings of this study, it can be inferred that body image disturbances may emerge before the development of eating disorders among adolescent athletes. This suggests that monitoring changes in body image perception could provide an opportunity for early intervention, potentially preventing the progression to more severe disordered eating behaviors. To address this risk, regular screenings for body image disturbances should be implemented as part of routine health assessments for adolescent athletes. These screenings could involve self-report questionnaires on body dissatisfaction, such as the Body Image Scale (BIS), alongside nutritional assessments by sports nutritionists to ensure a healthy dietary intake. Moreover, incorporating education on healthy body image and the risks of disordered eating into training programs and providing psychological support are crucial steps to prevent further progression [3]. Similarly, a study conducted by Goltz et al. reported a 30.8% prevalence of eating disorders among male athletes and demonstrated a significant relationship between disordered eating behaviors and body dissatisfaction [1]. Furthermore, athletes with body dissatisfaction have been shown to have higher body fat percentages. For instance, research indicates that athletes in aesthetic and weight-class sports often report higher body fat percentages when they experience body dissatisfaction, despite

efforts to reduce body fat through extreme dieting or excessive exercise [1,22]. This suggests that body dissatisfaction may not necessarily correlate with healthy body composition standards but may instead indicate an unhealthy focus on weight control. These findings suggest that the pressure to meet the strict body requirements of a particular sport may lead to the development of disordered eating behaviors, even if the individual does not initially experience severe body dissatisfaction.

It is well established that body image perceptions are shaped by a lifelong interplay of individual, cultural, contextual, and situational factors [23]. On the individual level, people possess different body types, metabolic profiles, and salient identities, all of which influence how they perceive themselves [24]. At the social level, institutions and communities surrounding individuals also shape these perceptions [25]. Moreover, sociocultural influences, such as mainstream media and dominant cultural norms, further modify body image perceptions [26]. In addition to these factors, sport-specific norms and expectations may significantly influence athletes' self-perception of their bodies [23]. Zancu et al. examined the relationships between alexithymia, body image, and disordered eating in fashion models and student athletes. Their findings indicated that fashion models exhibited lower levels of alexithymia and negative affect compared to athletes and controls, while also showing higher body image investment [27]. Unlike Zancu et al., who primarily focused on body image and emotional factors in fashion models and athletes, our study extends this perspective by examining gender differences and developmental stages (adolescents vs. adults) among athletes. This distinction highlights the necessity of considering both biological and psychosocial factors when assessing body image concerns and eating behaviors in sports contexts.

A meta-analysis demonstrated that lean sport athletes report higher levels of body image concerns compared to athletes in non-lean sports [15]. Several studies have also shown that focusing on the body as the source of emotional distress may translate into greater concern about body shape, especially muscularity, among male athletes compared to their female counterparts [28,29]. However, studies conducted by Zaccagni et al. and Benau et al. found that female athletes reported higher levels of body dissatisfaction than male athletes [7,30]. Similarly, in a study conducted by Gualdi-Russo et al. involving 960 Italian university athletes, female athletes were found to have higher levels of body dissatisfaction [31]. In contrast, in the present study, male athletes had significantly higher scores in the Body Change subscale. Previous research has suggested that male athletes may experience greater concerns related to muscular appearance [28,29]. Therefore, muscularity-related concerns should be considered as a specific parameter when assessing body image perceptions in future studies. In this study, no significant gender differences were detected in Negative Perception of the Body, Positive Perception of the Body, or Evaluation Sensitivity subscales. This finding suggests that sociocultural pressures related to body image and varying cultural beliefs and societal structures may affect male and female athletes differently. The absence of expected gender differences in body image and eating attitudes in this study may be related to the evolving sociocultural dynamics among young athletes in Türkiye. In recent years, male athletes have also been increasingly exposed to appearance-related concerns, muscularity ideals, and the pressure to maintain a 'fit' body as portrayed on social media. This shifting cultural landscape could potentially narrow the gender gap in body image concerns.

In a study conducted by Baceviciene et al. involving 1,003 athletes, 488 of whom were male, it was observed that adolescent female athletes reported more frequent self-induced vomiting, laxative misuse, and excessive exercise along with poorer healthy eating habits compared to adult female athletes [19]. Furthermore, adolescent female athletes reported a greater desire to achieve stereotypical body ideals and expressed more pressure from family, peers, and coaches to attain a stereotypical body image compared to adult female athletes. Consequently, it was shown that adult female athletes possessed a significantly more positive body image compared to adolescents. Among male athletes, age was found to have no effect on body image. However, higher dietary restriction, frequency of self-weighing,

unhealthy eating habits, and excessive weight obsession were found to be more prevalent in adult male athletes compared to adolescent male athletes [19]. In a study conducted by Toselli et al., it was observed that adolescent female volleyball athletes exhibited higher body image concerns compared to adolescent male volleyball athletes [32]. This pattern is also seen in other sports where body image is a central factor, such as gymnastics, figure skating, and swimming. In these sports, the emphasis on aesthetics, body shape, and performance often leads to greater body image anxiety. Female athletes in sports that require high levels of physical appearance control are particularly vulnerable to body dissatisfaction and related eating disorders [15]. In this study, scores on the sub-factors of the Body Image Scale, including Negative Perception of the Body and Evaluation Sensitivity, were found to be higher in adolescent athletes. Monitoring the changes in body image-related mood among athletes during adolescence is crucial for reducing potential health problems and injury risks.

In a study conducted by Harms et al. with 298 combat sports athletes over the age of 18, it was reported that alexithymia scores decreased with age, and no differences were found between genders [33]. Similarly, a study by Benau et al. also found no gender differences in alexithymia scores [7]. Another study conducted by Proença Lopes et al. with 253 participants showed that individuals exhibiting alexithymic and borderline alexithymic traits were younger. The same study demonstrated that alexithymia was more prevalent among individuals whose weekly training time exceeded 5 hours [34]. Although no significant gender differences in alexithymia scores were found in this study, adolescent athletes had higher alexithymia scores. A study by Gori et al. identified a positive correlation between body image anxiety and alexithymia [6]. Consistent with previous evidence, it was found that poor emotional expression is associated with higher levels of body dissatisfaction [35,36]. In this study, the TAS was found to have a negative correlation with age and a weak positive relationship with the Body Image Scale and its sub-factors. The EAT-26 showed a negative correlation with age and a moderate positive correlation with the total score of the BIS (r=0.362) and the Negative Perception of the Body (r=0.341), as well as a weak positive relationship with some sub-factors of the Body Image Scale. These results suggest that difficulties in emotional expression, regardless of gender, may play a role in body image disturbances and that adolescent athletes may be at greater risk. Body dissatisfaction arises when individuals feel that their internal view of their body image does not match what they perceive as the 'ideal body' and is often associated with the desire to be thinner. Therefore, negative body perception is considered a risk factor for disordered eating and is common among athletes exhibiting symptoms of disordered eating. Body dissatisfaction and negative body perception can frequently lead to intentional food intake restriction and/or excessive exercise as attempts to alter body appearance [37]. It is also important to emphasize that the combination of systematic and strenuous physical exercise with disordered eating behaviors represents a strong risk factor for progression to serious cases in the future [1]. In this context, our study found a moderate positive correlation between the EAT-26 and the BIS, as well as the Negative Perception of the Body scores of the BIS.

Since the study was designed cross-sectionally, causality inference could not be made. In this context, future studies need to incorporate follow-up periods where tests are repeated over time. Additionally, the impact of the stress factor on eating behavior was not assessed. Future research should include qualitative and longitudinal studies that more thoroughly evaluate factors such as sport-specific pressures, social media usage, and family support on body image and alexithymia.

## CONCLUSION

Given the potential impacts of sports on body image, it is important to screen athletes psychosocially from an early age and encourage them to seek support when needed. In line with the recommendations of the World Health Organization, promoting nutritional counseling and programs aimed at reducing the risk of eating disorders, developing self-esteem, and fostering a positive

body image is valuable. Additionally, monitoring the development of alexithymia in athletes and intervening early is necessary. In this regard, we believe it is important to inform athletes, their families, and coaches about eating disorders, body image, and alexithymia for early diagnosis, control, and necessary intervention before progressing to severe cases.

***Acknowledgements***
All research done by the authors.

***Ethics Committee Approval***
The study was approved by the local ethics committee (decision date=07.05.2021, decision number=751) and performed according to Helsinki declaration criteria.

***Conflict of Interest***
The authors declared no conflicts of interest with respect to authorship and/or publication of the article.

***Financial Disclosure***
The authors received no financial support for the research and/or publication of this article.

***Author Contributions***
Consept: AO, SE; design: AO, SE; supervison: SE; materials: AO, SE; data collection and/or processing: AO, SE; analysis and interpreta-tion: SE; literature review: AO, SE; writing manuscript: AO; critical reviews: SE. All authors contributed to the final version of the manuscript and discussed the results and contributed to the final manuscript.

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