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The relationship between body image and mental health among male athletes engaged in official competitions: using simple linear regression

A relação entre a imagem corporal e a saúde mental entre atletas masculinos envolvidos em competições oficiais: usando regressão linear simples

La relación entre la imagen corporal y la salud mental en atletas masculinos que participan en competiciones oficiales: utilizando regresión lineal simple

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Abstract
This study aimed to examine the relationship between body image and mental health among male athletes engaged in official competitions, using simple linear regression analysis. The study sample consisted of 139 male athletes who were selected from various official sports events. Standardized and validated instruments were employed: a body image scale to assess athletes' perceptions and attitudes towards their bodies and a mental health scale covering dimensions such as severe depression, anxiety and insomnia, psychosomatic health, and social functioning. Pearson's correlation analysis revealed significant positive associations between body image dimensions and mental health indicators, with the total body image score showing a moderate positive correlation with overall mental health ($r = .46$, $p < .01$). Simple linear regression results indicated that body image significantly predicted mental health outcomes, accounting for approximately 21% of the variance ($R^2 = .208$, $F(1,137) = 36.02$, $p < .001$). These findings suggest that more positive body image is associated with better mental health among competitive male athletes. Based on these results, sports organizations and mental health professionals should implement targeted interventions to enhance body image perception among athletes, which may contribute to improved psychological well-being and performance.
Keywords: body image, mental health, athletes, simple linear regression, competitive sports.

Resumo
Este estudo teve como objetivo examinar a relação entre a imagem corporal e a saúde mental entre atletas masculinos envolvidos em competições oficiais, utilizando análise de regressão linear simples. A amostra do estudo consistiu em 139 atletas masculinos selecionados de vários eventos esportivos oficiais. Foram utilizados instrumentos padronizados e validados: uma escala de imagem corporal para avaliar as percepções

e atitudes dos atletas em relação aos seus corpos e uma escala de saúde mental abrangendo dimensões como depressão grave, ansiedade e insônia, saúde psicossomática e funcionamento social. A análise de correlação de Pearson revelou associações positivas significativas entre as dimensões da imagem corporal e os indicadores de saúde mental, com o escore total de imagem corporal mostrando uma correlação positiva moderada com a saúde mental geral ($r = .46$, $p < .01$). Os resultados da regressão linear simples indicaram que a imagem corporal previu significativamente os desfechos de saúde mental, explicando aproximadamente 21% da variância ($R^2 = .208$, $F(1,137) = 36.02$, $p < .001$). Esses achados sugerem que uma imagem corporal mais positiva está associada a uma melhor saúde mental entre atletas masculinos competitivos. Com base nesses resultados, organizações esportivas e profissionais de saúde mental devem implementar intervenções direcionadas para melhorar a percepção da imagem corporal entre os atletas, o que pode contribuir para o bem-estar psicológico e o desempenho aprimorado.
Palavras-chave: imagem corporal, saúde mental, atletas, regressão linear simples, esportes competitivos.

Resumén
Este estudio tuvo como objetivo examinar la relación entre la imagen corporal y la salud mental en atletas masculinos que participan en competiciones oficiales, utilizando análisis de regresión lineal simple. La muestra del estudio consistió en 139 atletas masculinos seleccionados de varios eventos deportivos oficiales. Se emplearon instrumentos estandarizados y validados: una escala de imagen corporal para evaluar las percepciones y actitudes de los atletas hacia sus cuerpos y una escala de salud mental que abarca dimensiones como depresión severa, ansiedad e insomnio, salud psicosomática y funcionamiento social. El análisis de correlación de Pearson reveló asociaciones positivas significativas entre las dimensiones de la imagen corporal y los indicadores de salud mental, mostrando la puntuación total de imagen corporal una correlación positiva moderada con la salud mental general ($r = .46$, $p < .01$). Los resultados de la regresión lineal simple indicaron que la imagen corporal predijo significativamente los resultados de salud mental, explicando aproximadamente el 21% de la varianza ($R^2 = .208$, $F(1,137) = 36.02$, $p < .001$). Estos hallazgos sugieren que una imagen corporal más positiva se asocia con una mejor salud mental entre los atletas masculinos competitivos. Con base en estos resultados, las organizaciones deportivas y los profesionales de la salud mental deberían implementar intervenciones específicas para mejorar la percepción de la imagen corporal entre los atletas, lo que podría contribuir a un mayor bienestar psicológico y rendimiento.
Palabras clave: imagen corporal, salud mental, atletas, regresión lineal simple, deportes competitivos.

1. Introduction

Individuals' perceptions of their bodies reflect how they view their physical appearance as being shaped by the interaction of personal and social factors. This perception is not limited to visual awareness, but also includes the feelings and thoughts that an individual holds towards their body. These perceptions are influenced by factors, such as personal experiences, cultural beliefs, and environmental influences, making them dynamic and subject to change throughout different life stages. Moreover, the way individuals perceive their bodies plays a role in shaping their behavior. KUZU et al. (2022) observed that a positive body image is associated with better psychological functioning, which can affect self-confidence, social integration, and even health and fitness. Thus, body image becomes an integral part of personal identity, reflecting ongoing interactions between individuals and their environments (Kuzu et al., 2022). Ouyang et al. (2020) indicated that body image, self-efficacy, and self-esteem significantly influence sports participation among university students(Ouyang et al., 2020).

The concept of body image among athletes acquires a more complex dimension, as it is linked not only to self-perception of physical appearance, but also to physical performance and motor competence. Athletes are often more aware of their bodies due to the intensive nature of their training and the specific demands of their sports, making their body image influenced by factors such as fitness level, body composition, and the expectations of coaches and audiences. Webb et al. (2024) found that higher body mass index and body fat were associated with body dissatisfaction(Webb et al., 2024). Furthermore, the aesthetic and physical standards specific to each sport impose certain perceptions about the ideal body shape, which differ between sports that

require physical strength, such as weightlifting, and those that depend on agility and coordination, such as gymnastics or swimming. Berengüí et al. (2024) indicated that athletes in aesthetic sports (such as rhythmic gymnastics) are more likely to develop eating disorders and body dissatisfaction than athletes in non-aesthetic sports(Berengüí et al., 2024). As a result, athletes may be more susceptible to fluctuations in body image based on their sports performance, impacting their self-confidence and motivation and potentially influencing their continued participation in sports. Nabilah and Nugraha (2023) reported that body image significantly contributes to athletic performance by 21.7%(Nabilah Rizki Utami Haryono & Nugraha, 2023).

Body image also plays an essential role in the psychological and physical balance of athletes, affecting not only self-confidence and self-esteem, but also overall mental and physical health. Negative perceptions of physical appearance may lead athletes to adopt unhealthy behaviors, such as following strict diets or excessive exercise, increasing the risk of eating disorders, anxiety, and depression (McManama O'Brien et al., 2021). Conversely, a positive body image contributes to better psychological adaptation, providing athletes with stronger motivation for performance and achievement. Soulliard et al. (2019) found positive relationships between positive body image and certain sports variables, such as sports confidence, flow state, and self-reported sports performance, as well as greater commitment to balanced healthy behaviors(Soulliard et al., 2019). Thus, developing a balanced body image among athletes is a fundamental factor in supporting their psychological and physical well-being, which positively reflects their sports careers and ability to maintain high performance levels(Gualdi-Russo et al., 2022).

In this context, negative body image may lead to psychological issues such as anxiety, depression, and low self-confidence, whereas positive body image can enhance psychological adaptation and sports motivation (Jiménez-Morcillo et al., 2024). Despite the growing interest in studying athletes' mental health, the relationship between body image and mental health requires further research. Therefore, this study aimed to explore the nature of this relationship, seeking to understand the impact of body image on athletes' mental health and to identify the associated factors. Despite a growing interest in the mental health of athletes, the specific relationship between body image and mental health among athletes engaged in official competitions remains underexplored. Therefore, this study sought to address the following research question:

1. What is the nature of the relationship between body image and mental health among male athletes engaged in official competitions?
2. To what extent does body image predict mental health outcomes in this population?
3. Are there significant differences in the strength of the association between the sub dimensions of body image and mental health?
4. What is the statistical significance of the correlation and simple linear regression coefficients between body image and mental health among male athletes?

2. Method

2.1. Participants

The study sample comprised 139 male athletes selected from various official sports events randomly selected for the year 2025 in the city of Setif. The average age of the participants was 23 years and the mean training age was 6 years. A total of 166 questionnaires were returned, and 27 incomplete questionnaires were excluded from the overall sample. The remaining 139 questionnaires were validated and completed.

Table 1. Research Participants.

		N	Percentage
Gender	individual	59	42,44
	Team	80	57,55
Type	Swimming	10	7,19
	Karate	6	4,31
	Judo	8	5,75
	Box	13	9,35
	Volleyball	11	7,91
	Basketball	15	10,79
	Football	34	24,46
	Handball	20	14,38
	Body building	20	14,38
	Sprint	2	1,43
	Total	139	100

2.2. **Tools:**

The Body Image

A scale developed by Hamzaoui Zahia (2016) was used in this study(Jiménez-Morcillo et al., 2024). This scale consists of 37 items distributed across three dimensions, Physical Body Image (1,2,3,4,5,6,7,8,9,10,11,12,13), Perceived Body Image (17,22,14,15,16,18,19,20,21,23,24,28), Social Body Image (25, 26, 27, 29,30, 31, 32, 33,34,35,36,37) Respondents were required to select the option that best described them from the three possible choices. For positive items, the responses were scored as follows: “yes” (3), “Sometimes” (2), and “No” (1).

The Mental Health Scale:

This scale was developed by Goldberg and Williams and is considered one of the most widely used instruments for assessing mental health. The scale is available in four versions; in this study, the 28-item version was used, based on the translation by Wadi (1999). This version comprises four dimensions: severe depression, anxiety and insomnia, psychosomatic health, and social functioning effectiveness (Wadi, 1999). The scale consists of seven positive and 21 negative items. The respondents selected answers that were applicable to them from the three alternatives. For the positive items, the responses were scored as follows: “Always” (3), “Sometimes” (2), and “Never” (1). For negative items, the scoring is reversed: “Always” (1), “Sometimes” (2), and “Never” (3). Accordingly, the total score ranged from 28 to 84, with a score of 28 indicating low mental health and a score of 84 indicating high mental health.

2.3. **Psychometric proprieties**

Validity:

Internal consistency validity was assessed by calculating the correlation coefficient between each item’s score and the total score on the Body Image Scale, as shown table:

Table 2. Correlation Coefficient between Each Item and with Total Score of each scale

Item	R	Item	R	Item	R	Item	R
Body image							
1	0.142	**11**	0.898**	**21**	0.760**	**31**	0.958**
2	0.034	**12**	0.867**	**22**	0.223	**32**	0.969**
3	0.193	**13**	0.830**	**23**	0.868**	**33**	0.969**
4	0.897**	**14**	0.550**	**24**	0.731**	**34**	0.969**
5	0.929**	**15**	0.815**	**25**	0.920**	**35**	0.933**
6	0.729**	**16**	0.918**	**26**	0.958**	**36**	0.938**
7	0.550**	**17**	0.146	**27**	0.920**	**37**	0.654**
8	0.963**	**18**	0.876**	**28**	0.760**		
9	0.837**	**19**	0.715**	**29**	0.223		
10	0.969**	**20**	0.969**	**30**	0.914**		
			Mental Heath				
01	0.394*	**08**	0.628**	**15**	0.156	**22**	0.505**
02	0.544**	**09**	0.575**	**16**	0.468**	**23**	0.469**
03	0.275	**10**	0.247	**17**	0.608**	**24**	0.555**
04	0.424*	**11**	0.524**	**18**	0.562**	**25**	0.507**
05	0.391*	**12**	0.528**	**19**	0.348	**26**	0.693**
06	0.589**	**13**	0.053	**20**	0.213	**27**	0.668**
07	0.029	**14**	0.659**	**21**	0.491**	**28**	0.742**

Based on the table, items that did not show a significant correlation with the total score were removed: 1, 2, 3, 17, 22, and 28 for the body image scale and 3, 7, 10, 13, 15, 19, and 20 for the mental health scale.

Reliability

The reliability of the Body Image Scale was evaluated using Cronbach's alpha coefficient, which reached 0.973, indicating excellent internal consistency. Additionally, split-half reliability was assessed, and the correlation coefficients for odd and even items were 0.942 and 0.951, respectively. After adjusting for the test length using the Guttman split-half coefficient, the value was 0.989, confirming a very high level of reliability for the scale.

The reliability of the Mental Health Scale was assessed after removing items that did not meet the validity requirements. Cronbach's alpha coefficient was calculated and found to be 0.881, indicating excellent internal consistency reliability. Additionally, split-half reliability was evaluated by calculating the correlation between the total scores of odd and even items. Cronbach's alpha values for the even and odd items were 0.783 and 0.767, respectively, with variances of 0.13 and 0.24. The Spearman-Brown formula was applied to adjust the test length. As the number of items was odd, the value for "unequal length" was used, resulting in a coefficient of 0.924. These results demonstrate that the scale had a high degree of internal consistency and split-half reliability.

2.4. **Statistical analysis:**

This study utilized a range of statistical methods to verify the psychometric properties of the research instruments and to analyze the sample data. To ensure the psychometric validity of the tools, the correlation coefficient between each item and the total scale score was calculated to confirm the internal consistency validity, with items lacking significant correlation being removed. Reliability was evaluated using Cronbach's alpha coefficient for internal consistency as well as the split-half method, with results corrected using the Guttman or Spearman-Brown formula. For the analysis of the study data, descriptive statistics (means and standard deviations) were used to

describe the sample characteristics. Pearson's correlation analysis was used to examine the strength and direction of the relationship between body image, mental health, and their subdimensions. Finally, simple linear regression analysis was conducted to test the ability of body image to predict mental health among male athletes participating in official competitions.

3. Results:

Table 3. Descriptive Statistics for Study Variables

Variable	N	Mean	SD	Minimum	Maximum
Body Image	139	61	93	88,17	6,048
Mental Health	139	30	60	51,23	5,573

Table 4. Model Summary for Simple Linear Regression

Model	R	R^2	Adjusted R^2	Std. Error
1	0.456	0.208	0.202	4.977

Table 5. Pearson Correlations between Body Image and Mental Health Dimensions

	Severe Depression	Anxiety and Insomnia	Psychosomatic Health	Social Functioning	Mental Health Total
Physical Body Image	.45**	.28**	.12	.18*	.40**
Perceived Body Image	.44**	.16	.09	.35**	.38**
Social Body Image	.37**	.25**	.15	.27**	.38**
Body Image Total	.49**	.27**	.14	.31**	.46**

Table 5 presents the Pearson correlation coefficients between the body image subscales and total scores, and between the mental health subscales and total scores. All correlations between total body image and mental health, as well as most subscale correlations, were positive and statistically significant at the $p < .01$ level.

Table 6. ANOVA for Simple Linear Regression

Model	Sum of Squares	Df	Mean Square	F	p
Regression	892.44	1	892.44	36.02	<.001
Residual	3394.20	137	24.78		
Total	4286.64	138			

Table 7. Regression Coefficients for Predicting Mental Health from Body Image

Predictor	B	SE	β	t	p	95% CI for B
Constant	14.16	6.19	-	2.29	.024	[1.92, 26.40]
Body Image	0.42	0.07	0.46	6.00	<.001	[0.28, 0.56]

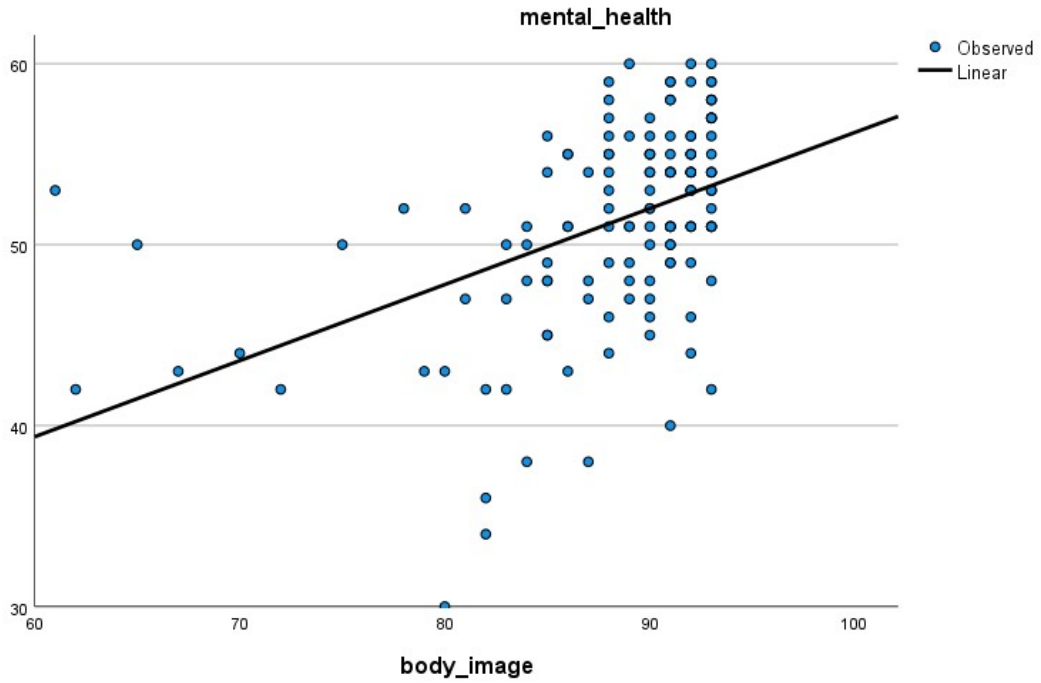

Figure 1. Scatter plot showing the linear relationship between body image and mental health among athletes. The regression line indicates a positive association.

The descriptive statistics in Table 3 offer an overview of the main study variables, including their means and standard deviations, providing insight into the general distribution and central tendency of the body image and mental health scores within the sample. Table 5 presents the Pearson correlation coefficients between the body image subscales and total scores, and between the mental health subscales and total scores. The analysis revealed that all correlations between the total body image score and the total mental health score, as well as most correlations between the subscales, were positive and statistically significant at the $p < .01$ level. This finding indicated a robust positive association, suggesting that higher body image scores are consistently linked to better mental health outcomes among athletes. The Model Summary for simple linear regression (Table 4, Model Summary) demonstrates how well body image predicts mental health. The results showed that body image was a significant predictor of mental health, and the model explained a meaningful proportion of the variance in mental health scores. Table 6, which presents the ANOVA results for the regression model, confirms that linear regression is statistically significant. This finding supports the idea that body image contributes significantly to the prediction of mental health. Table 4 provides the regression coefficients, showing that the coefficient for body image was positive and statistically significant. This means that as body image scores increase, mental health scores are also expected to increase, further confirming the positive relationship between these two variables. Figure 1 illustrates the linear relationship between body image and mental health, using a scatter plot. The regression line displayed in the figure visually reinforces the positive association found in the statistical analyses; athletes with higher body image scores tended to report higher mental health scores.

4. Discussion

This study aimed to examine the relationship between body image and mental health among male athletes participating in official competitions, using simple linear regression analysis. The significance of this study lies in its need to understand how athletes' perceptions of their bodies influence various aspects of their mental health, including depression, anxiety, psychosomatic health, and social functioning. A sample of 139 male athletes from various official sports was

assessed using standardized and validated measures of body image and mental health. This study seeks to fill a knowledge gap regarding the predictive role of body image in mental health within competitive sports environments and offers practical recommendations based on the results to enhance athletes' psychological well-being.

The results indicated a strong positive association between body image and overall mental health among the athletes. Athletes who are more satisfied with their body image tend to exhibit higher levels of mental health, reflected in lower rates of depression, anxiety, and sleep disturbances, as well as improved social functioning. Positive body image among athletes is linked to feelings of satisfaction and self-confidence, which enhances self-esteem and self-respect and increases confidence in abilities and self-satisfaction. Positive self-perception is often associated with psychological benefits, such as strengthening social relationships and improving psychological well-being among youths (Capaldi et al., 2021).

Athletes undergo continuous training that improves their physical appearance, further boosting their self-confidence and motivation to control their appearance and physical and skill performance. These training programs are scientifically based, and aim to develop psychological traits and mental health abilities. Conversely, dissatisfaction with body image may lead to negative outcomes, such as feelings of shame about appearance, which can hinder young people from overcoming depression and anxiety, and may increase levels of insomnia. Lucibello et al. (2023) indicated that many young people who feel ashamed of their bodies provide negative self-assessments of general and psychological health(Lucibello et al., 2023). In the sports context, research has shown that performance-related pressure among young athletes can result from unrealistic expectations and social comparisons, leading to performance anxiety and deterioration of mental health(Langlois-Pelletier et al., 2020). Athletes may adopt nearly unattainable body image standards, influenced by celebrity images in media and social platforms such as Instagram. Failing to meet these standards increases negative social comparisons and body dissatisfaction, which heightens the likelihood of depression and anxiety and negatively affects mental health(Chartrand et al., 2020).

These findings also indicate that male athletes with positive body image tend to have lower levels of severe depression. Jankauskiene et al. (2020) found that student athletes with a positive body image displayed lower levels of severe depression, as positive body image enhanced self-esteem and reduced negative comparisons with others, alleviating feelings of inadequacy and appearance-related anxiety(Jankauskiene et al., 2020). Ouyang et al. (2020) also found that body image is positively and significantly associated with self-efficacy, self-esteem, and participation in sports (Ouyang et al., 2020). Positive body image reduces negative thoughts and enhances an athlete's sense of self-worth, making them feel self-confident and better able to overcome depression. Research has shown that individuals with a positive perception of their bodies tend to exhibit higher levels of self-confidence, especially in sports (Taskia et al., 2022). By contrast, a negative view of body image may contribute to the onset and persistence of depression, even leading to the resignation of the condition. noted that body image concerns are common among elite athletes and represent a significant risk factor for poor mental health, including symptoms of depression(Rice et al., 2016).

Regarding freedom from insomnia and anxiety, this study found a strong, statistically significant, positive relationship between body image and freedom from insomnia and anxiety among athletes in official competitions. The more positive the athletes' views on their body image, the higher their levels of freedom from insomnia and anxiety. This relationship is attributed to the fact that athletes with a positive view of their bodies feel self-confident and satisfied with their feelings, which reduces appearance-related anxiety and negative thoughts about feelings of inadequacy. Li et al. (2023) demonstrated that exercise self-efficacy and perfectionism partially mediate the positive effects of mindfulness on competitive anxiety(Li et al., 2023). Engaging in sports activities also

contributes to reducing cortisol (the stress hormone) levels, leading to lower anxiety and improved sleep quality(Mustafa et al., 2023). Recent studies(Liu et al., 2025; Paduch-Jakubczyk et al., 2024) have confirmed that exercise enhances the release of endorphins and serotonin, which helps improve mood and relaxation, thereby improving sleep quality and reducing insomnia. Exercise is also classified as a "non-photic zeitgeber," which is capable of resetting daily rhythms and serves as a non-pharmacological means for the prevention and treatment of circadian rhythm disorders and improving sleep(Shen et al., 2023).

Athletes seeking to improve their body image often follow healthy lifestyles and avoid harmful habits such as excessive late-night activities, which leads to reduced insomnia and anxiety. Good sleep enhances physical health and athletic performance, whereas sleep disorders contribute to performance problems in athletes (Bender & Lambing, 2024). Regarding the psychosomatic health dimension, the results showed no statistically significant relationship between body image and psychosomatic health in athletes participating in official competitions. This may be because psychosomatic health is influenced by multiple factors other than body image such as genetic factors. Previous studies have indicated that genes significantly affect athletic performance, accounting for approximately 50-80% of the differences between individuals(Puthucheary et al., 2011). Moreover, athletes' psychosomatic health is affected by lifestyle choices and competitive pressures (Lundqvist et al., 2023; Tossici et al., 2024). Regarding social functioning effectiveness, the results indicated a strong, statistically significant, positive relationship between body image and social functioning effectiveness among athletes in official competitions. Athletes with a positive body image have high self-confidence(Dara Gati Mustikaning et al., 2022), making it easier for them to engage in social activities and communicate with others without fear or hesitation (Zartaloudi et al., 2023). Those dissatisfied with their body image often suffer from social anxiety and excessive shyness, leading to the avoidance of situations. The greater the body dissatisfaction, the more individuals worry about their appearance in front of others and the lower their self-esteem(Aysha et al., 2024); individuals with a negative body image tend to have higher levels of social anxiety(Muharram et al., 2023).

Previous studies have shown that low body satisfaction is associated with higher levels of social anxiety, which hinders integration in social contexts(Putri & Aprianty, 2023), as negative self-perception may lead individuals to withdraw from their social environments (Agnus Susan Thomas et al., 2022). Aysha et al. (2024) confirmed that as body dissatisfaction increases, anxiety about others' views of one's body increases, and self-esteem decreases, reinforcing feelings of isolation and anxiety(Mo & Bai, 2023).

5. Conclusion

In summary, this study provides valuable evidence that positive body image is significantly associated with better mental health among competitive athletes. These findings underscore the importance of addressing body image issues to promote psychological well-being and optimal performance in sports settings. However, the study's limitations, such as its cross-sectional nature, limited demographic details, and lack of a qualitative perspective, suggest that further research is required to deepen our understanding and broaden the applicability of these results. These recommendations emphasize the importance of broadening future research and practical efforts in this field. Researchers should strive to include athletes of diverse sports, sexes, and competitive levels to ensure that their findings are generalizable. Adopting longitudinal and mixed-method designs, such as combining long-term studies with qualitative interviews, will provide deeper and more causal insights into how body image and mental health interact over time. To obtain more accurate results, it is also essential to account for confounding variables such as BMI, injuries, training intensity, and sociocultural factors. Including non-athlete comparison groups can help clarify whether the observed relationships are unique to the athletes. Finally, sports organizations

and mental health professionals are encouraged to collaborate in developing targeted interventions that promote positive body image and support mental health among athletes.

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