

The Influence of Body Image on University Students' Physical Exercise Behavior: The Mediating Role of Body Esteem

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Abstract: This study explores the impact of body image on university students' physical exercise behavior, with a particular focus on the mediating role of body esteem. A questionnaire survey was conducted to collect data on body image, body esteem, and exercise behavior among Chinese university students. Structural equation modeling (SEM) and the Bootstrap method were used for statistical analysis. The results indicate that a positive body image not only directly promotes physical exercise behavior but also exerts an indirect effect by enhancing body esteem. This study highlights the crucial role of body esteem in encouraging physical exercise participation and provides theoretical support for health behavior interventions. Based on the findings, it is recommended that strategies such as physical education, body positivity training, and social support be implemented to enhance university students' body esteem, thereby increasing their engagement in physical exercise. Future research could further investigate potential mediating or moderating factors, such as social support, exercise self-efficacy, and cultural beauty standards, to develop a more comprehensive understanding of the mechanisms influencing students' exercise behavior.

1. Research Background

Body image refers to an individual's subjective perception and attitude toward their appearance,

body shape, and physical abilities. This concept encompasses cognitive, emotional, and behavioral dimensions [1]. In today's society, social media and popular culture continuously shape and reinforce aesthetic standards, making body image concerns increasingly prominent among university students [2]. Studies have shown that many students experience dissatisfaction and anxiety about their bodies in their pursuit of an ideal appearance, which can have profound effects on their mental health and behavioral patterns [3].

A positive body image is crucial for psychological well-being. Baceviciene, Jankauskiene [4] found that individuals with a positive body image tend to have higher self-esteem, healthier eating habits, and better overall mental health. Similarly, Hausenblas and Fallon [5] suggested that engaging in physical exercise is an effective way to improve body image. Regular exercise not only enhances physical fitness but also increases body satisfaction, contributing to better psychological well-being [6]. In contrast, a negative body image can lead to anxiety, depression, and unhealthy exercise behaviors, such as excessive exercise or exercise avoidance [7].

Although physical exercise has been shown to improve body image and mental health, the psychological mechanisms underlying university students' exercise behavior remain unclear. In particular, how body image influences exercise behavior through psychological factors such as body esteem requires further investigation [8]. Given that university students are in a critical stage of self-identity development and habit formation, understanding the relationship between body image, body esteem, and exercise behavior can provide valuable insights for promoting healthy behaviors and mental well-being among this population [9].

This study aims to examine how body image influences university students' exercise behavior through psychological factors. By doing so, it seeks to provide a scientific basis for intervention strategies that help students develop a healthy body image, establish regular exercise habits, and enhance their overall quality of life.

2. Research Hypotheses

2.1 Relationship between Body Image and Exercise Behavior

Extensive research has indicated a complex relationship between body image and exercise behavior [10]. A positive body image often enhances individuals' motivation and interest in exercise, whereas a negative body image may lead to exercise avoidance. Specifically, individuals who are satisfied with their body shape are more likely to engage in physical activity to maintain or enhance their appearance [11]. In contrast, those with a negative body image may experience exercise-related anxiety and reduce their participation due to fear of being judged [12].

Arigo, Butryn [13] found a positive correlation between body image and exercise behavior, suggesting a bidirectional influence. Physical activity can help improve negative body image, while body image, in turn, affects the likelihood of exercise participation. Furthermore, different types of exercise have varying effects on body image. For example, aerobic exercise and strength training are particularly effective in improving body image, as they enhance muscle tone and physical appearance [14]. Additionally, group-based sports may provide greater benefits for body image than individual activities due to the social support and positive reinforcement they offer [15]. Based on this, the following hypothesis is proposed:

H1: There is a significant positive correlation between body image and exercise behavior among university students.

2.2 Relationship between Body Image and Body Esteem

Previous studies have shown that body image is a strong predictor of self-esteem [16]. Body esteem, as a key component of overall self-esteem, is influenced by individuals' perceptions of their bodies. A positive body image contributes to higher self-esteem, while a negative body image may lead to diminished self-worth [17]. Empirical evidence supports this relationship. For example, Keshk, Fahim [18] found a significant positive correlation between self-esteem scores and body image concern measures.

Gillen [19] further demonstrated that individuals with a positive body image not only report higher self-esteem but also lower levels of depression. Similarly, Ouyang, Wang [20] surveyed 1,000 university students and found that a positive body image enhances self-esteem and contributes to its stability. Overall, body image plays a crucial role in university students' psychological well-being, affecting both their self-perception and their overall self-esteem. This provides a strong theoretical foundation for further exploring the relationship between body image and self-esteem. Based on these findings, the following hypothesis is proposed:

H2: There is a significant positive correlation between body image and body esteem among university students.

2.3 Relationship between Body Esteem and Exercise Behavior

Body esteem refers to an individual's overall evaluation of their body appearance, function, and shape, encompassing body satisfaction, body identity, and self-acceptance [21]. It is not only a vital component of psychological well-being but also plays a crucial role in shaping exercise behavior. Research suggests that individuals with higher body esteem are more likely to participate in physical activities and perform better in exercise settings [22].

Those with high body esteem tend to have a more positive perception of their body image and are less affected by external judgments, making them more willing to engage in exercise. These individuals often display greater confidence during workouts and are less prone to anxiety or self-consciousness [23]. In contrast, those with low body esteem may feel dissatisfied with their appearance and experience embarrassment or fear of being judged when exercising in public, leading to lower participation in physical activity [10].

Moreover, exercise itself can enhance body esteem. Regular physical activity improves physical fitness, helps shape an ideal body figure, and increases overall body satisfaction [24]. Additionally, the release of endorphins during exercise can reduce anxiety and depression, further contributing to improved body esteem [25]. Based on these findings, the following hypothesis is proposed:

H3: There is a significant positive correlation between body esteem and exercise behavior among university students.

2.4 The Mediating Role of Body Esteem in the Relationship between Body Image and Exercise Behavior

Recent research has increasingly focused on the psychological pathways through which body image influences mental health and behavioral patterns. A positive body image not only promotes psychological well-being but also encourages greater participation in physical exercise [7]. However, this relationship is not purely direct-body esteem may act as a key mediator [26].

Although body image has a direct impact on exercise behavior, growing evidence suggests that this effect is largely mediated by body esteem [27]. Body esteem influences exercise motivation and

behavior patterns, with individuals who have high body esteem demonstrating greater confidence in their physical abilities. Even if they perceive certain physical imperfections, they are more likely to engage in exercise as a means of improving their health and body function [28]. In contrast, individuals with low body esteem may avoid exercise due to a lack of confidence, leading to a negative cycle where body image concerns worsen over time [26].

Additionally, Prichard, Kavanagh [7] found that university students' self-esteem is influenced by multiple factors, including family, academic performance, and body esteem. Their study revealed that students with higher self-esteem—particularly in family and academic domains—were more likely to participate in sports, whereas those with lower self-esteem exhibited lower levels of exercise engagement.

It is also important to note that exercise itself can enhance body esteem, which, in turn, reinforces positive body image. Regular physical activity helps shape an ideal body, enhances physical capabilities, and strengthens self-identity, contributing to greater body esteem [28]. This suggests that exercise is not only a result of body image and body esteem but also a key factor in improving them. Based on this, the following hypothesis is proposed:

H4: Body esteem mediates the relationship between body image and exercise behavior among university students.

In summary, body image plays a significant role in shaping university students' exercise behavior. Those with a more positive body image are more likely to engage in regular exercise, while body esteem may serve as a crucial mediating factor. Existing research suggests that individuals with higher body esteem exhibit greater self-confidence and exercise motivation, leading to increased physical activity participation. However, there is still a lack of systematic studies examining how body image influences exercise behavior through body esteem, particularly regarding the underlying psychological mechanisms.

Therefore, this study aims to investigate the impact of body image on exercise behavior among Chinese university students. By constructing a research model to test the mediating role of body esteem (Figure 1), this study seeks to provide new theoretical and practical insights into enhancing university students' exercise motivation and engagement.

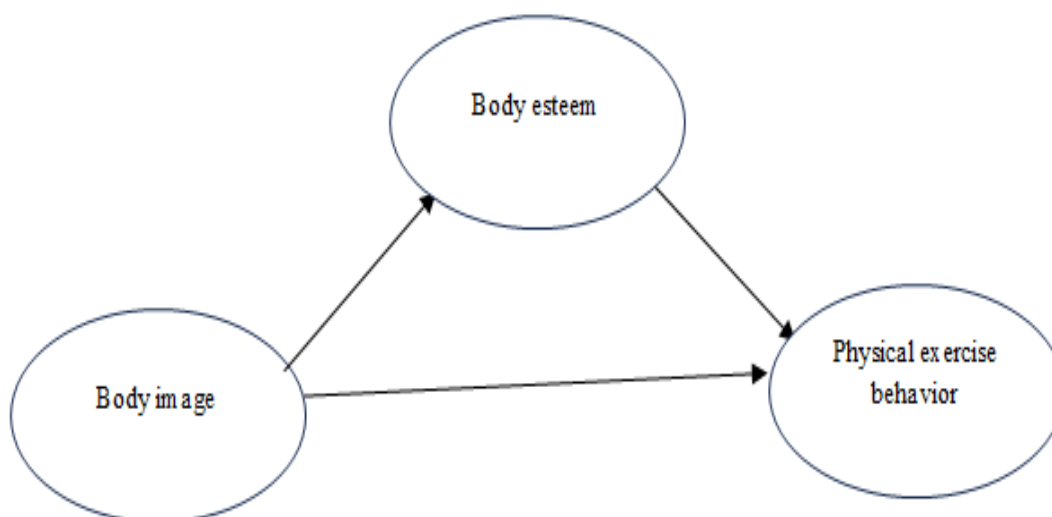


Figure 1: Research Model

3. Research methods

3.1 Participants

This study recruited 900 university students from six universities in China, representing three distinct economic regions (Eastern, Central, and Western). The sample included three public and three private universities. Data collection was conducted via the Wenjuanxing application from November 20 to December 20, 2024, with each university receiving 150 questionnaires. After screening and eligibility verification, 793 valid responses were obtained, yielding an effective response rate of 88.11%.

3.2 Data Collection Method

During implementation, six instructors distributed the questionnaire via email to students from the six selected universities. The email included details on the study's objectives, participation guidelines (voluntary, anonymous, and confidential), and an online link to the Wenjuanxing platform. The link provided access to measurement tools, response instructions, and an informed consent statement in accordance with ethical guidelines. The instructors then forwarded the email to students, ensuring that participants had sufficient information before deciding to take part. All responses were collected through the online platform without time constraints, and only students who agreed to the specified conditions were eligible to participate.

3.3 Questionnaire Design and Measurement Tools

3.3.1 Questionnaire Design

The questionnaire consisted of four main sections. The first section gathered demographic information, including gender, age, academic year, and major, recorded using Arabic numerals. The second section assessed university students' physical exercise behavior, while the third measured body image. The fourth section examined the mediating variable, body esteem. Apart from demographic information, all variables were assessed using a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with higher scores indicating greater agreement with the corresponding constructs [29].

3.3.2 Measurement Tools

Physical exercise behavior was evaluated using the measurement tools developed by [30, 31], which include three items assessing exercise intensity, duration, and frequency. This study employs a measurement tool adapted from [32-34] to assess university students' body image through five items. Body esteem was measured with a revised version of the scales developed by [21, 35], including seven items to assess students' body esteem levels. These measurement tools have been widely applied in relevant studies and are appropriate for this research context.

4. Data Analysis

SPSS 27.0 was used for descriptive statistics, correlation analysis, and preliminary regression analysis [36]. Prior to analysis, data were screened and cleaned to identify and remove errors or outliers. Once the preliminary results confirmed the suitability of the data for structural equation

modeling (SEM), AMOS version 28 was employed to conduct SEM analysis. Additionally, path analysis was performed to test and validate the proposed research hypotheses.

5. Research Results and Discussion

5.1 Direct Relationship Analysis

As shown in Table 1, the findings support H1, indicating a significant positive relationship between body image and physical exercise behavior ($\beta = 0.089$, $p = 0.044$, $p < 0.05$). Similarly, H2 is also confirmed, as the data reveal a statistically significant relationship between body image and body esteem ($\beta = 0.198$, $p < 0.001$). In addition, H3 is supported, showing that body esteem is significantly and positively associated with physical exercise behavior ($\beta = 0.228$, $p < 0.001$). The β coefficient of 0.228 suggests a moderate effect, further validating the theoretical assumption that individuals with higher body esteem are more likely to engage in physical exercise actively.

The results of H1 align with previous studies [7, 10, 26, 37], while the findings of H2 are consistent with those of [17, 20]. Likewise, the conclusion of H3 corresponds with the results of [38-41], reinforcing the theoretical framework of this study.

Table 1: SEM Analysis Results

Path	Std. Estimate	Estimate	S.E.	C.R.	P
BI→PEB	0.089	0.139	0.069	2.016	0.044
BI→BSE	0.198	0.190	0.038	4.993	***
BSE→PEB	0.228	0.372	0.078	4.786	***
*** $p < 0.001$					

One possible explanation for the results in Table 1 is the increasing emphasis on body management and appearance standards in modern society. Among university students, an ideal body shape is often perceived as a key factor in personal attractiveness, self-confidence, and social acceptance. With the rise of social media, film culture, and fitness trends, students have become more conscious of their physical appearance, motivating them to participate in physical exercise to improve or maintain their body image. In pursuit of self-improvement, exercise is regarded as an essential means of body management.

Individuals with a positive body image tend to have higher body esteem, leading to greater self-acceptance and satisfaction with their appearance and abilities. This positive perception not only enhances self-esteem but also reduces anxiety and insecurity related to body dissatisfaction. As a result, individuals with higher body esteem are more likely to engage in physical activities to reinforce their positive self-concept.

From the perspective of the Theory of Planned Behavior, higher body esteem can strengthen intrinsic motivation, making physical exercise not just a response to external pressures but a means of self-fulfillment. Overall, a reciprocal relationship may exist between positive body image and physical exercise-enhanced body image boosts body esteem, which in turn encourages active participation in exercise. Meanwhile, continued physical exercise further strengthens body esteem and self-recognition.

5.2 Mediating Effect Testing

As shown in Table 2, the hypothesis H4 is supported. The positive β value confirms the mediating effect, with an indirect effect of 0.045, and a bootstrap confidence interval of [0.019, 0.081], which does not include zero, indicating statistical significance. At the same time, the direct effect (0.089) is not significant, suggesting that body esteem fully mediates the relationship between body image and physical exercise behavior. This finding further validates H4 and aligns with previous research [7, 26, 27].

Table 2: Mediation Analysis

Path	Effect	Std. Estimate	95% CI		p	Result
			Lower	Upper		
BI→BSE→PEB	Direct Effects	0.089	-0.002	0.182	0.057	Not Supported
	Indirect Effects	0.045	0.019	0.081	0.000	Supported
	Total Effects	0.134	0.042	0.225	0.003	Supported

One possible explanation for the results in Table 2 is that body image, which reflects an individual's perception and evaluation of their physical characteristics, directly influences emotional experiences and self-esteem levels. A positive body image is often associated with higher body esteem, which enhances confidence in one's physical abilities and increases motivation to exercise. Thus, body esteem plays a crucial mediating role between body image and physical exercise behavior.

Self-efficacy is a key factor influencing behavior. Individuals with higher body esteem tend to have stronger exercise self-efficacy, believing in their ability to complete exercise-related tasks and gain positive experiences. This increased sense of self-efficacy helps establish and maintain regular exercise habits. Conversely, individuals with lower body image may lack confidence or fear external judgment, leading to reduced participation in exercise.

Additionally, societal beauty standards vary by gender and cultural background, and individuals may experience different levels of aesthetic pressure. A positive body image is often associated with higher social acceptance and self-worth, further strengthening body esteem and encouraging physical exercise. Health behaviors are influenced by both intrinsic motivation and external environmental factors, and body esteem serves as an intrinsic motivator in exercise decisions. Higher body esteem enables individuals to recognize the benefits of physical activity, such as increased confidence, improved physique, and greater social recognition, thereby enhancing their willingness to exercise and reinforcing their self-identity.

6. Conclusion

This study examines the impact of body image on physical exercise behavior among Chinese university students, focusing on the mediating role of body esteem. The findings indicate that a positive body image not only directly promotes exercise participation but also exerts an indirect influence through enhanced body esteem. Specifically, individuals with a more positive body image tend to hold favorable evaluations of their appearance and physical abilities, leading to increased body esteem. This, in turn, strengthens exercise self-efficacy, fostering confidence in exercise participation and the maintenance of regular exercise habits.

This study highlights the critical role of body esteem in shaping university students' exercise

behavior and provides theoretical support for health behavior interventions. Based on these findings, strategies such as physical education programs, body positivity training, and social support initiatives are recommended to enhance students' body esteem and encourage active engagement in exercise. Future research should explore additional mediating or moderating factors, such as social support, exercise self-efficacy, and cultural beauty standards, to provide a more comprehensive understanding of the mechanisms influencing university students' exercise behavior.

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