

ORIGINAL RESEARCH

The effect of cognitive behavioral physical activity on social appearance anxiety in male customers of fitness centers: the mediating role of athlete identity

Mehmet Öztaş^{1,*}, Mustafa Vural², Gülsen Tosun Tunç³

¹Department of Sports Management, Faculty of Sport Sciences, Tokat Gazi Osman Pasa University, 60000 Tokat, Türkiye

²Department of Sports Management, Faculty of Sport Sciences, Ağrı İbrahim Çeçen University, 04100 Ağrı, Türkiye

³Department of Sports Management, Faculty of Sport Sciences, Aksaray University, 68100 Aksaray, Türkiye

***Correspondence**

mehmet.oztas@gop.edu.tr

(Mehmet Öztaş)

Abstract

Background: Cognitive-behavioral physical activity interventions focus on improving thought patterns and behaviors, offering significant benefits in reducing social appearance anxiety and enhancing overall mental well-being. Additionally, a strong athlete identity positively influences men's resilience to social pressures, promoting higher participation in physical activities and reducing anxiety related to body image. **Methods:** This study aims to explore the impact of cognitive-behavioral physical activity (CBPA) on social appearance anxiety (SAA) among male fitness center customers, considering the mediating role of athlete identity (AI). A convenience sampling technique was employed, targeting 700 male participants aged 20–45 from various fitness centers in Türkiye. The final sample consisted of 886 participants after removing incomplete or erroneous data. Data were collected using three main scales: the Social Appearance Anxiety Scale (SAAS), the Cognitive Behavioral Physical Activity Scale (CBPA) and the Athletic Identity Measurement Scale (AIMS). These tools measure participants' anxiety related to appearance, engagement in physical activities, and the strength of their athlete identity, respectively. Data analysis was performed using Structural Equation Modeling (SEM) with the IBM SPSS AMOS 24 software to examine the theoretical model and assess the relationships between CBPA, AI and SAA. **Results:** The findings show that CBPA has significant direct and indirect effects on SAA. While CBPA has indirect effects on SAA through athlete identity, its direct effect is strong. **Conclusions:** In particular, it was determined that CBPA strengthens athlete identity, which may increase social appearance anxiety. These findings suggest that cognitive and behavioral approaches to physical activity play an important role in helping individuals manage social anxiety. Future intervention programs may develop effective strategies to manage social anxiety by targeting the strengthening of athlete identity and the use of cognitive behavioral techniques. This study makes important contributions to the field of sports psychology and body perception.

Keywords

Physical activity; Social appearance; Athlete identity; Fitness center

1. Introduction

Adopting a healthy lifestyle and increasing physical activity is important for individuals to improve their overall health and quality of life. The struggles in working life and daily ordinary actions make men's lives increasingly stagnant; men, who have become more passive with the developing technology, turn to fitness centres to stay socially, psychologically and physically vigorous and to protect their health. "Fitness", which means physical fitness, primarily refers to exercises to become more fit and fit. Individuals come to fitness centers with motivations such as happiness, socialization, enjoyment of life, commitment to exercise and health. In addition, cognitive behavioral actions, such as seeing, listening, remembering and solving

existing problems, are also performed in these environments [1, 2]. Moreover, these centers often serve as social hubs, fostering a sense of community and belonging among their members.

Looking at the origins of cognitive and behaviorism, it is known that these concepts come from the learning theory. This theory helps us to understand the complexities of the learning process by defining what and how individuals learn. Cognitive behaviorism is considered under three main headings: "behaviorism, cognitivism and constructivism". Cognitive-behavioral theory can be conceptualized as a general category of theories or a set of theories developed from the writings, empirical studies and experiences of cognitively and behaviorally oriented psychologists [3, 4]. Physical activity is a concept

that begins with the existence of human beings in the world and ensures the continuity of life. In this context, due to the interaction between physical and psychological structure, an individual can have a positive mental structure as well as being perfect in appearance and psychology. Individuals can engage in physical activity their lifestyle in order to lead a healthy life [5, 6]. In addition to improving mental health, exercise and physical activity also help reduce social appearance anxiety and improve quality of life [7, 8]. According to cognitive behavioral theory, psychological the psychopathology of disorders and the underlying distress of a person's mental suffering managing through avoidance, moving away or engaging in comprehensive safety behaviors Involvement limits people's ability to engage in valued activities. this too causes a person's life satisfaction to decrease and negative mental health problems [9]. Social appearance anxiety is recognised as a consequence of negative body image, especially in relation to men's body and appearance [10, 11]. In Western social culture, a fit and well-trained physique is recognised as an important investment, especially in male athletes. Today, it is known that men are more interested in their appearance than women, and in the past, beauty and attractiveness were considered the most important individual characteristics in many societies [12, 13]. Athlete identity can be considered a psychological phenomenon and a social role. It can be seen that individuals with a strong athlete personality achieve higher success in sports activities compared to individuals with a weak athlete personality. So much so that growth continues; In individuals with a high perception of athlete identity, courage and strength are strong, motivation for success and self-esteem increases, athletic performance gains positive momentum [14], participation in physical activity and sports [15], and it was determined that there was an increase in commitment [16]. In recent years, concerns about body image and appearance have become more prominent with the effect of social media and digital platforms. Studies have shown that social media use has negative effects on individuals' body perception, which may increase social appearance anxiety [11, 13]. In addition, promoting physical activity and sports through social media is considered as a strategy that can help men cope with social appearance anxiety [17]. In addition, social support systems and environments also play an important role in individuals' coping with social appearance anxiety [18]. We can say that especially male athletes do not feel very comfortable in terms of social appearance in society. In this respect, it is very important for men to cope with social appearance anxiety.

When the literature on the subject is reviewed, there are many studies examining the relationships between athlete identity and psychological and behavioral variables using the athlete identity scale [19]. Strong and robust athlete identity has both positive and negative aspects [20]. High athlete identity has positive and negative consequences. Athlete identity perception has a central position in athletes by representing a strong structure, and despite its psychological benefits, it also has physical and psychological (extreme sports commitment and training) negative effects. Negativity can lead to the end of an athlete's sports life, such as being excluded from the team or experiencing injuries. A decrease is seen in the personal value perceptions and identities of athletes who experience

emotional disorders [21]. One of the most important positive aspects is that it minimises men's social appearance anxiety along with their self-identity and makes them more positive and stronger against the environment they are in [22]. While a man who evaluates himself positively physically is self-confident in bilateral relationships, successful in his work and has almost no social appearance anxiety, a man who does not like himself and thinks that he has many flaws is constantly unhappy, restless, worthless, insecure and experiences high social appearance anxiety in different life stages [8]. In this context, the aim of this study is to determine whether cognitive-behavioural physical activity has an effect on social appearance anxiety in male fitness centre customers and to examine the relationship between them. Cognitive-behavioural approaches have the potential to reduce social appearance anxiety by changing individuals' thought patterns and behaviours [23]. Athlete identity refers to individuals' relationships with sport and how they construct their self-perceptions in this process. It is thought that athlete identity affects individuals' level of participation in physical activity and social appearance anxiety. Studies have revealed that men with high athlete identity are more resistant to social pressures and show more commitment to physical activity [24, 25]. The findings can help male customers in fitness centers manage social appearance anxiety and increase their participation in physical activity in both theoretical and practical terms. It may also contribute to the identification of strategies to improve programs implemented in fitness centers. In conclusion, this research aims to provide important findings to understand the effect of cognitive-behavioral physical activity on social appearance anxiety.

2. Materials and methods

2.1 Research model and participants

A convenience sampling technique, a non-probability sampling type, was used to determine the participants of the study. In determining the sample size, suggestions such as the individual-item ratio in factor analysis should be taken into consideration, the sample size should be determined accordingly, there should be at least 10 individuals for each item, and the ratio of the number of samples to the number of items should never be lower than five [26]. In some sources, it is suggested that the sample size should be at least 100 [27] or at least 300 [28] in factor analysis studies. This study utilized a convenience sampling method, which was chosen because of its practicality and accessibility in the research context. However, this approach inherently carries the risk of sample bias, potentially limiting the generalizability of the findings to a broader population of male fitness center users. To address this, the limitations of the sampling method are explicitly acknowledged and readers are cautioned about the potential impacts on the representativeness of the results.

Considering the number of datasets, at least 700 individuals were targeted to participate in the study. The study was designed based on voluntary and ethical principles, and questionnaires were distributed to approximately 1000 people. After removing missing and erroneous data, the sample

group of the study consisted of 886 male fitness customers between the ages of 20–45. Demographic characteristics (age, economic status, marital status, physical activity level and athlete status) were asked in the data stream, and the specified scales were used. Data were collected from individuals who are members of various fitness centres in Türkiye or who use fitness centres on a daily basis. During the collection of data, data on demographic characteristics were collected to obtain information through questionnaire forms given to individuals. These data were not included in the inclusion criteria.

This study included male individuals between the ages of 20–45 who were members or regular users of fitness centers in Türkiye. Participants were required to complete the questionnaire completely and answer questions regarding their physical activity levels. Individuals under 20 years of age or over 45 years of age, non-users of fitness centers, incomplete or inconsistent questionnaire completion, health problems that limit physical activity, and those who refused to participate were excluded from the study. In this study, the data collection process was conducted over a specific period. The sample was collected between October 2024 and November 2024, and the data collection process was completed during this period. During this time, questionnaires were distributed to regular users at various fitness centers in Turkey, and responses were collected from volunteer participants. The timeframe clarifies the context of the study and indicates the period in which the data were collected.

2.1.1 Sample questions

How many years have you been doing sports at the fitness centre?

How many days or how many hours of physical activity do you do per week?

2.1.2 Research questions

√How do different levels of cognitive behavioral physical activity (CBPA) affect the social appearance anxiety (SAA) of male fitness center users through the mediating role of athlete identity (AI)?

√To what extent does athlete identity mediate the relationship between cognitive behavioral physical activity and social appearance anxiety in male fitness center participants?

√What specific interventions or strategies can be developed within fitness centers to utilize cognitive behavioral physical activity (CBPA) to reduce social appearance anxiety (SAA) through enhancing athlete identity (AI)?

√How do individual differences in athlete identity (AI) influence the direct and indirect effects of cognitive behavioral physical activity (CBPA) on social appearance anxiety (SAA)?

2.2 Data collection and ethics

The survey method was used as a data collection technique for this research. One of the data collection methods used in quantitative research is the questionnaire. The questionnaire is a method of preparing question lists to be answered by the people from whom the information is to be collected. First, questions related to the research subject were identified or created. All questions in the questionnaire must be directly

related to the research problem and subject and must be consistent within themselves. The variables for these questions should also be determined, and the target group that answers the questions should be identified. Thus, information about the attitudes and opinions of the target group can be obtained [29]. This article complies with the journal's writing, publication principles, research and publication ethics and journal ethics rules. The responsibility for any violations that may arise regarding the article belongs to the authors. It has been decided to be ethically appropriate by the Ethics Committee of Ağrı İbrahim Çeçen University Graduate Education Institute.

2.3 Data collection tools

2.3.1 Social appearance anxiety scale

The Social Appearance Anxiety Scale (SAAS), developed by [30] and adapted into Turkish by [31], is used to measure appearance anxiety in individuals in social situations. The higher the score obtained from the scale, the higher the social appearance anxiety of the individual. Both exploratory and confirmatory factor analyses showed that the scale was parallel to the original form in terms of construct validity.

2.3.2 Cognitive behavioral physical activity questionnaire

The “Cognitive Behavioral Physical Activity Scale (CBPA)”, developed by [32] and adapted to Turkish and Turkish populations by [33], was used to measure the participants' participation in physical activity. This scale aims to reveal the behaviors and attitudes of individuals towards physical activity. After the permission to adapt the athlete identity scale was obtained from B W Brewer, the original scale was first translated into Turkish by the researchers to create the Turkish form translated. Then, three sports psychology and one English expert's opinions on translation suggestions were received. Recommendations from experts in line with this, the necessary corrections were made by taking into account the translation suggestions of the three-quarters partnership, and the scale was finalized.

2.3.3 Athletic identity measurement scale

It consists of seven items and three subdimensions created by [34] to determine the sportsmanship level of individuals. It was adapted for Turkish by [35]. The internal consistency coefficients of the scale sub-dimensions were between 0.66 and 0.88. It consists of three sub-dimensions: social identity, sports restrictions and negative affectivity. A high score on this scale indicates that the role of being an athlete is predominant. The translation and retranslation methods were used to create the Turkish form of the statements on the scale. This was carried out by three people with good command of English. After the process, a pilot study was conducted by re-evaluating the statements of four experts in the field. The results obtained from these applications for the detection and elimination of possible errors. The scale was finalized before the research in the context of the information obtained.

2.4 Data analysis

After checking the data collected from the participants for any errors or missing data, the data were computerized. The data will be scanned to detect input errors and missing data, and preliminary analyses will be performed to identify outliers. In preliminary analyses, the arithmetic mean and standard deviation values were examined and the normal distribution of the data was evaluated using skewness and kurtosis values. For normally distributed data, skewness and kurtosis values should be between +2 and -2 [36]. In addition, Mardia's multivariate kurtosis coefficient was used to test multivariate normality [37]. In the analysis of the data, the Structural Equation Modeling technique was used through the IBM SPSS AMOS 24 program (IBM Corporation, Armonk, NY, USA.) to statistically test the theoretical model created theoretically with the data obtained and to determine how well the theory and research findings match [38]. Structural Equation Modeling (SEM) is a multivariate statistical technique used to test models describing linear and nonlinear relationships that are theoretically thought to exist between variables [26]. The assumptions of SEM analysis will be checked by examining the normal distribution of variables and the relationships between variables and by testing the validity and reliability of the measurement models in SEM (structural equation modeling) through CFA (confirmatory factor analysis) [39]. Structural Equation Modeling (SEM) is a statistical technique used to analyze complex relationships among observed and latent variables, combining elements of factor analysis and multiple regression. It is particularly valuable for testing mediation, as it allows researchers to assess direct and indirect effects within a comprehensive model while accounting for measurement errors.

The goodness-of-fit measures used to evaluate the suitability of the structural equation model were Chi-Square/Degree of Freedom (χ^2/df), Root Mean Square Error (RMR), Root Mean Square Error (SRMR), Root Mean Square Error of Approximation (RMSEA) and Goodness of Fit Index (GFI), which are absolute fit indices. The incremental fit indices are the Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), also called the Tucker Lewis Index (TLI) and Adjusted Goodness of Fit Index (AGFI). The Comparative Fit Index (CFI) was used among the simplicity fit indices [40]. IBM SPSS Statistics 28.0.1 (IBM Corporation, Armonk, NY, USA.) and IBM SPSS AMOS 24 package programs were used for data analysis. In this study, the significance level was determined as $p < 0.01$.

3. Results

The demographic characteristics of the study sample are presented in the table above. Participants' ages ranged from 20 to over 35 years, with the largest group being 20–25 years old (35%). The majority of participants reported a good economic status (44%) and were single (62%). In terms of physical activity levels, most participants engaged in exercise 2–3 days per week (55%), followed by those who exercised once a week (21%). Regarding athlete status, the largest group had 4–6 years of experience (49%), with a significant portion reporting 1–3 years (25%) and 7 or more years (26%) of involvement in

athletic activities (Table 1).

TABLE 1. Table showing the demographic characteristics of the respondents.

Demographics	n	%
Age (yr)		
20–25	245	35.0
25–30	202	29.0
30–35	135	19.0
35 years and over	118	17.0
Economic status		
low	175	25.0
center	215	31.0
good	310	44.0
Marital status		
single	432	62.0
married	268	38.0
Physical activity level (d)		
1 d	148	21.0
2–3 d	381	55.0
4 and more days	171	24.0
Athlete status (yr)		
1–3	176	25.0
4–6	342	49.0
7 and more years	182	26.0

The participants' level of social appearance anxiety (mean = 4.64) was higher than the other scales, while their cognitive-behavioral physical activity (mean = 3.19) and athlete identity (mean = 3.30) levels were moderate. Furthermore, Cronbach's α values for all three scales were above 0.70, supporting the reliability of these scales and consistency of the results (Table 2).

TABLE 2. Reliability statistics of the scales mean and Cronbach's α values.

Scales	Mean	Cronbach's α
Cognitive behavioral physical activity scale	3.19	0.72
Athlete identity scale	3.30	0.79
Social appearance anxiety scale	4.64	0.85

According to this model analysis, individuals' cognitive-behavioral physical activity level (CBPA) is an important factor that affects social appearance anxiety (SAA), both directly and through athlete identity (AI). Considering the effect of CBPA on AI (M1) and the role of AI on SAA (M2), CBPA indirectly affects SAA (IE1) and athlete identity mediates this process. This result suggests that cognitive and behavioral

attitudes towards physical activity may affect individuals' social appearance anxiety through their perceptions of athletic identity (Table 3).

TABLE 3. Table of intermediation models.

Models info		
Mediators models	M1	AI ~ CBPA
Full model	M2	SAA ~ AI + CBPA
Indirect effects	IE1	CBPA → AI → SAA
Sample size	N	700

CBPA: Cognitive Behavioral Physical Activity; AI: Athlete Identity; SAA: Social Appearance Anxiety; M1: effect of CBPA on AI; M2: role of AI on SAA; IE1: CBPA indirectly affects SAA; N: sample size.

Athlete identity (AI) plays a mediating role in the relationship between cognitive-behavioral physical activity level (CBPA) and social appearance anxiety (SAA). CBPA had both a direct effect on SAA (effect coefficient 0.38) and an indirect effect through AI. The positive effect of CBPA on AI (0.51) and the positive effect of AI on SAA (0.36) suggest that positive attitudes toward physical activity strengthen individuals' perception of athlete identity, which may increase social appearance anxiety. These results suggest that the effect of physical activity attitudes on social appearance anxiety can be examined directly and indirectly and that athlete identity plays an important mediating role in this relationship (Fig. 1).

The indirect, direct, and total effects of the mediating role of athlete identity on the effect of cognitive-behavioral physical activity on social appearance anxiety are presented in Table 4.

(1) Indirect effect (0.223)

The effect of CBPA on SAA through AI was 0.223. This indicates that a one-unit increase in CBPA increases AI and, as a result, AI increases SAA. The significance of indirect effects emphasizes the importance of AI in the design of interventions or strategies (Table 4).

(2) Component effects: CBPA → AI (0.491)

This result indicates that CBPA has a fairly strong effect on AI. This high value suggests that increasing CBPA has a significant effect on AI, thus strengthening the indirect effect. AI → SAA (0.455): the effect of AI on SAA is also significant. This indicates that increases in AI have the potential to increase the SAA. Considering these two components together reveals the critical role of AI as an intermediate variable (Table 4).

(3) Direct effect (0.464)

The direct effect of CBPA on SAA was also quite strong. This indicates that CBPA has both indirect (through AI) and direct effects on SAA. Therefore, both the direct strengthening of CBPA and AI support may be needed to increase this impact (Table 4).

(4) Total effect (0.687)

The total effect shows the overall effect of CBPA on SAA. A high value emphasizes that the impact of CBPA on SAA is significant, and that both pathways (direct and indirect) should be considered in this relationship. Positive confidence intervals (Lower and Upper) indicate that the effects are reliable, and the probability of drawing an incorrect conclusion is low.

This also supports the applicability of the findings to a wider context (Table 4).

4. Discussion

This study comprehensively analyzed the effects of cognitive behavioral physical activity (CBPA) on social appearance anxiety (SAA) through athlete identity (AI). These findings show that CBPA has significant effects on SAA through both direct and indirect pathways. This reveals a complex relationship in which body image, physical activity and anxiety levels intersect, and provides important implications for future interventions. However, the convenience sampling method used in this study is limited in representing a broader population, which may restrict the generalizability of the findings. Additionally, limiting the study to male fitness center users in Türkiye may necessitate conducting research with different sample groups and in various countries to better understand the relationship between social appearance anxiety and cognitive behavioral physical activity in diverse demographic groups.

4.1 The effect of cognitive behavioural physical activity on athlete identity

According to the results of the study, the effect of cognitive-behavioral physical activity on athlete identity (0.491) was quite strong. It has been stated that CBPA improves athlete identity and causes individuals to identify themselves more as athletes, which may be directly related to social appearance anxiety. This finding indicates that participation in physical activity increases an individual's perception of athletic identity [20]. In particular, cognitive behavioral approaches may encourage individuals to perform physical activities in a more conscious and goal-oriented manner while strengthening their perception of themselves as athletes [41]. This relationship can be considered as a reflection of the strong link between athlete identity and social appearance anxiety. Individuals who adopt an athlete's identity gain more physical visibility and begin to evaluate their physical abilities and bodies in a social context. This may increase social appearance anxiety because individuals begin to focus more on the expectations of being perceived as athletes [42]. Furthermore, self-comparison theory provides a useful framework for understanding this phenomenon. Athletes with a high athletic identity may frequently compare themselves to peers or societal ideals, leading to increased dissatisfaction with their appearance if they perceive themselves as falling short [43]. These comparisons can be particularly pronounced in fitness settings, where physical appearance is often visible and central to the group dynamics. Additionally, the dual role of athletic identity as both a motivator and stressor is supported by research suggesting that individuals who closely tie their self-worth to athletic performance or physique may experience greater anxiety when they perceive their image or performance as inadequate.

4.2 The relationship between athlete identity and social appearance anxiety

The effect of athlete identity on social appearance anxiety (0.455) was one of the key findings of this study. Individuals

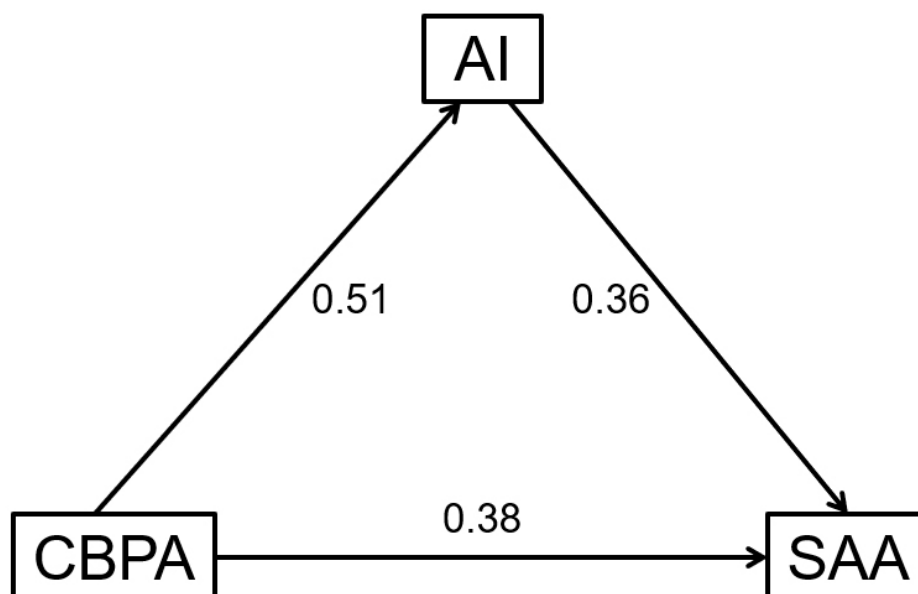


FIGURE 1. Statistical path diagrams. CBPA: cognitive behavioral physical activity; AI: athlete identity; SAA: social appearance anxiety.

TABLE 4. Indirect, direct and total effects of the mediating role of athlete identity on the effect of cognitive behavioral physical activity on social appearance anxiety.

Type	Effect	Estimate	SE	95% C.I.		β	z	p
				Lower	Upper			
Indirect	CBPA \rightarrow AI \rightarrow SAA	0.223	0.0225	0.179	0.267	0.184	9.93	<0.001
Component								
	CBPA \rightarrow AI	0.491	0.0275	0.437	0.545	0.514	17.81	<0.001
	AI \rightarrow SAA	0.455	0.0380	0.381	0.530	0.358	11.96	<0.001
Direct	CBPA \rightarrow SAA	0.464	0.0364	0.393	0.535	0.382	12.76	<0.001
Total	CBPA \rightarrow SAA	0.687	0.0336	0.621	0.753	0.566	20.43	<0.001

CBPA: Cognitive Behavioral Physical Activity; AI: Athlete Identity; SAA: Social Appearance Anxiety; C.I.: Confidence Interval; SE: Standard Error.

Note. Confidence intervals computed with method: Standard (Delta method).

Note. Betas are completely standardized effect sizes.

In this study, the significance level was determined as $p < 0.01$.

with an athlete identity tend to focus more on their physical appearance as well as their physical performance. This may lead to increased social expectations and pressure towards their appearance [44]. Athlete identity directly affects individuals' perceptions of their bodies, which may lead them to experience more anxiety regarding how they look in social settings [45]. Research has shown that this relationship between athlete identity and social appearance anxiety is particularly evident in young athletes and women. Female athletes often have to cope with social expectations regarding their physical appearance and physical performance [46]. In this context, as athlete identity develops, individuals may become more concerned about their physical appearance and social acceptability. The findings highlight the mediating role of athletic identity in the relationship between CBPA and social appearance anxiety. This aligns with prior research that emphasizes the protective role of athletic identity in mitigating social pressures, as it

fosters a sense of self-worth and reduces the internalization of societal appearance standards [47]. However, the current study expands on this by demonstrating that athletic identity not only buffers against appearance-related concerns, but also enhances psychological well-being through consistent engagement in CBPA. In contrast, some studies have suggested that a strong athletic identity can exacerbate social appearance anxiety in certain contexts, particularly when athletes feel pressure to conform to specific body ideals or maintain a competitive image [48]. These divergent findings underline the complex interplay between athletic identity and social pressure, suggesting that the impact of athletic identity may vary depending on cultural, social and sport-specific contexts.

4.3 The direct effect of cognitive behavioural physical activity on social appearance anxiety

The direct effect of CBPA on social appearance anxiety (0.464) was another important finding of this study. This strong relationship indicates that cognitive-behavioral physical activity has a direct effect on SAA. Cognitive behavioral approaches allow individuals to consciously monitor and evaluate their body perception and physical conditions. In this process, individuals may gain awareness of their physical appearance, which may increase their social appearance anxiety [41]. Cognitive behavioral approaches help individuals learn how to respond to internal and external stimuli during physical activity. This may lead individuals to think more about their physical appearance and create anxiety regarding how they are perceived in social settings. For example, athletes' attempts to conform to social standards regarding body shape and physical performance may increase their social anxiety levels [49]. A practical strategy for integrating Cognitive Behavioral Physical Activity (CBPA) in fitness or sports settings is to focus on personal performance rather than appearance. For instance, coaches and trainers can design programs in which athletes set personal performance goals (such as improving strength, endurance or flexibility) instead of focusing on achieving a certain body shape or size. This approach reduces emphasis on appearance and promotes a healthy performance-oriented mindset. Example: in a fitness class, instead of setting weight loss or body fat percentage targets, trainers could encourage athletes to track improvements in their endurance (*e.g.*, running a specific distance in less time) or strength (*e.g.*, lifting heavier weight). By measuring the progress in these areas, athletes may feel more accomplished and less likely to fall into social comparisons related to body image. This approach is supported by research showing that when athletes focus on internal factors, such as skill improvement, they experience lower levels of body dissatisfaction.

4.4 Total impact and applications

As a result, the total effect of cognitive-behavioral physical activity on social appearance anxiety (0.687) was quite high. This shows that CBPA has both direct and indirect effects on SAA through athletic identity. Such a high total effect suggests that CBPA may be an important tool in designing intervention programs to reduce social appearance anxiety [41]. Strengthening athlete identity and using cognitive behavioral techniques can help individuals effectively manage their social anxiety levels. Positive confidence intervals indicate that the findings were statistically significant and reliable. This confirms that CBPA has significant direct and indirect effects on SAA. In particular, a better understanding of the relationship between athlete identity and social appearance anxiety is critical for both sports psychology research and interventions for physical activity.

5. Conclusions

This study used a sample of 886 male fitness center participants to examine the impact of cognitive behavioral physical activity

(CBPA) on social appearance anxiety (SAA), focusing on the mediating role of athlete identity (AI), with the aim of understanding how CBPA influences social anxiety both directly and indirectly through perceptions of athletic identity.

By comprehensively analyzing both the direct and indirect effects of cognitive behavioral physical activity on social appearance anxiety through athlete identity, this study clearly reveals how these factors interact with each other. These findings suggest that individuals' participation in physical activity strengthens their athlete identity, which in turn may significantly increase their social appearance anxiety. While athlete identity causes individuals to focus more on social expectations about their bodies, cognitive-behavioral approaches encourage individuals to perform physical activities in a conscious and goal-oriented manner. While the results underline the role of athlete identity in social appearance anxiety, cognitive behavioral physical activity has both direct and indirect effects on individuals' social anxiety levels. The high total effect of cognitive behavioral physical activity on social appearance anxiety (0.687) indicated that this type of physical activity is an important factor in individuals' anxiety management processes. In addition, the positive confidence intervals confirm that these findings are statistically reliable and provide a solid basis for the applicability of interventions. Future intervention programs and strategies should focus on developing a healthy athlete's identity and should be supported by cognitive behavioral techniques. Such programs can help individuals manage their social concerns and strengthen their physical and psychological health. Especially for groups that are more sensitive to social pressures, such as male athletes, interventions to be developed in light of these findings can make important contributions to sport psychology and body perception studies.

In conclusion, this complex relationship between cognitive-behavioral physical activity, athlete identity and social appearance anxiety suggests that individuals' participation in physical activity has profound effects on both physical and psychosocial health. These results provide important contributions to the literature in the field of sports psychology, and may guide the design of intervention programs to manage individuals' social anxiety. Future research could expand the applicability of these findings by exploring similar dynamics in female populations or across different cultural backgrounds. Investigating how cultural factors influence the relationship between athletic identity, physical activity and body perception could provide valuable insights into the design of interventions that are more universally effective.

AVAILABILITY OF DATA AND MATERIALS

Due to the limitations specified in the ethics committee approval, the data collected for this research cannot be shared with third parties.

AUTHOR CONTRIBUTIONS

MV, MÖ—designed the research study; carried out the research. MÖ, GTT—provided help and advice on the research.

MV—analysed the data. All authors wrote the article. All authors contributed to the editorial changes in the manuscript. All authors read and approved the final version of the article.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This article complies with the journal's writing, publication principles, research and publication ethics, and journal ethics rules. The responsibility for any violations that may arise regarding the article belongs to the authors. It has been decided to be ethically appropriate by the Ethics Committee of Ağrı İbrahim Çeçen University Graduate Education Institute. 2024 date and number 334. Participants were assured that they could withdraw from the study at any stage, and they voluntarily agreed to participate.

ACKNOWLEDGMENT

We would like to thank my family and colleagues for their moral support.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- [1] Finkelstein-Fox L, Park CL, Kalichman SC. Health benefits of positive reappraisal coping among people living with HIV/AIDS: a systematic review. *Health Psychology Review*. 2020; 14: 394–426.
- [2] Shang Y, Xie HD, Yang SY. The relationship between physical exercise and subjective well-being in college students: the mediating effect of body image and self-esteem. *Frontiers in Psychology*. 2021; 12: 658935.
- [3] Andrews B. *Cognitive-behavioral therapy: a guide to the theory and practice*. Wiley: New York. 2011.
- [4] O'Donnell ML, Lau W, Fredrickson J, Gibson K, Bryant RA, Bisson J, *et al*. An open label pilot study of a brief psychosocial intervention for disaster and trauma survivors. *Frontiers in Psychiatry*. 2020; 11: 483.
- [5] Karaman Çam M, Ayyıldız Durhan T, Türkmen E, Kurtipek S, Akgül BM, Güngör NB, *et al*. Left over from sports: leisure motivation in predicting quality of life in male athletes. *Journal of Men's Health*. 2024; 20: 120–131.
- [6] White RL, Vella S, Biddle S, Sutcliffe J, Guagliano JM, Uddin R, *et al*. Physical activity and mental health: a systematic review and best-evidence synthesis of mediation and moderation studies. *International Journal of Behavioral Nutrition and Physical Activity*. 2024; 21: 134.
- [7] Kucuk H, Soyler M, Ceylan T, Ceylan L, Sahin FN. Effects of acute and chronic high-intensity interval training on serum irisin, BDNF and apelin levels in male soccer referees. *Journal of Men's Health*. 2024; 20: 120–125.
- [8] Hagger MS, Chatzisarantis NLD, Biddle SJH. A meta-analytic review of the theories of reasoned action and planned behaviour in physical activity: predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology*. 2007; 24: 3–32.
- [9] Efendi F, Indarwati R, Aurizki GE. Effect of trauma-focused cognitive behavior therapy on depression and the quality of life of the elderly in Indonesia. *Working with Older People*. 2020; 24: 149–157.
- [10] Martin JJ, Klüber A, Kulinna PH, Fahlman M. Social physique anxiety and muscularity and appearance cognitions in college men. *Sex Roles*. 2006; 55: 151–158.
- [11] Tiggemann M, Slater A. NetGirls: the Internet, Facebook, and body image concern in adolescent girls. *International Journal of Eating Disorders*. 2021; 54: 930–937.
- [12] Morrison KR, Doss BD, Perez M. Body image and disordered eating in romantic relationships. *Journal of Social and Clinical Psychology*. 2009; 28: 281–306.
- [13] Perloff RM. Social media effects on young women's body image concerns: theoretical perspectives and an agenda for research. *Sex Roles*. 2014; 71: 363–377.
- [14] Horton Robert S, Mack Diane E. Athletic identity in marathon runners: functional focus or dysfunctional commitment? *Journal of Sport Behavior*. 2000; 23: 101–119.
- [15] Anderson CB, Mâsse LC, Zhang H, Coleman KJ, Chang S. Contribution of athletic identity to child and adolescent physical activity. *American Journal of Preventive Medicine*. 2009; 37: 220–226.
- [16] Ogilvie BC, Howe M. Career crisis in sport. In Orlick T, Partington JY, Salmela JH (eds.) *Proceedings of the 5th world congress of sport psychology* (pp. 176–183). Coaching Association of Canada: Ottawa. 1982.
- [17] Kumar HK, Singh V. Influence of social media on eating disorders and body image. *IAHRW International Journal of Social Sciences Review*. 2023; 11: 486–489.
- [18] Attridge, MD, Morfitt RC, Roseborough DJ, Jones ER. Internet-based cognitive-behavioral therapy for college students with anxiety, depression, social anxiety, or insomnia: four single-group longitudinal studies of archival commercial data and replication of employee user study. *JMIR Formative Research*. 2020; 4: e17712.
- [19] Hayes CJ, Petrie TA, Moore WG. Athletic identity and psychological distress: the moderating roles of social support and self-compassion. *Journal of Issues in Intercollegiate Athletic*. 2023; 16: Article 9.
- [20] Lochbaum M, Cooper S, Limp S. The athletic identity measurement scale: a systematic review with meta-analysis from 1993 to 2021. *European Journal of Investigation in Health, Psychology and Education*. 2022; 12: 1391–1414.
- [21] Hale BD, Waalkes D. Athletic identity, gender, self-esteem, academic importance, and drug use: another validation of the AIMS. *North American Society for the Psychology of Sport and Physical Activity annual conference*. Clear water Beach: FL, USA. 1994.
- [22] Haslam SA, Boen F, Fransen K. *The new psychology of sport and exercise: The social identity approach*. 1st ed. SAGE Publications: London. 2020.
- [23] Beck JS. *Cognitive-behavioral therapy: basics and beyond*. Guilford Press: New York. 2011.
- [24] Edison BR, Rizzone K. Benefits of sport and athletic identity. In Christino MA, Pluhar EI, Micheli LJ (eds.) *Psychological considerations in the young athlete: a multidisciplinary approach* (pp. 1–19). Springer: Cham. 2023.
- [25] Dorsch TE, Smith AL, Blazo JA, Coakley J, Côté J, Wagstaff CR, *et al*. Toward an integrated understanding of the youth sport system. *Research Quarterly for Exercise and Sport*. 2022; 93: 105–119.
- [26] Aksu G, Eser MT, Güzeller CO. Exploratory and confirmatory factor analysis and structural equation model applications. *Detay Yayıncılık: İstanbul*. 2017.
- [27] MacCallum RC, Widaman KF, Zhang S, Hong S. Sample size in factor analysis. *Psychological Methods*. 1999; 4: 84–99.
- [28] Norusis MJ. *PASW statistics 18 advanced statistical procedures*. Prentice Hall Press: Toronto. 2010.
- [29] Kaptan S. *Scientific research techniques: ways to correct thesis*. Rehber Yayınevi: Ankara. 1973.
- [30] Hart TA, Flora DB, Palyo SA, Fresco DM, Holle C, Heimberg RG. Development and examination of the social appearance anxiety scale. *Assessment*. 2008; 15: 48–59.
- [31] Doğan T. Turkish adaptation of the social appearance anxiety scale (SSAS): validity and reliability study. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*. 2010; 39: 151–159. (In Turkish)
- [32] Schembre SM, Durand CP, Blissmer BJ, Greene GW. Development and validation of the cognitive behavioral physical activity questionnaire. *American Journal of Health Promotion*. 2015; 30: 58–65.

- [33] Eskiler E, Küçükbiş F, Gülle M, Soyer F. The cognitive behavioral physical activity questionnaire: a study of validity and reliability. *Journal of Human Sciences*. 2016; 13: 2577–2587.
- [34] Brewer BW, Cornelius AE. Norms and factorial invariance of the athletic identity measurement scale (AIMS). *The Academic Athletic Journal*. 2001; 15: 103–113.
- [35] Öztürk P, Koca C. Investigation of psychometric features of the Turkish form of the athlete identity scale. *Sports Science Journal* 2013; 24: 1–10. (In Turkish)
- [36] George D, Mallery P. *IBM SPSS Statistics 23 step by step*. 14th edn. Routledge Taylor and Francis: New York. 2016.
- [37] Raykov T, Marcoulides GA. *An introduction to applied multivariate analysis*. Routledge: London. 2008.
- [38] Hair JF, Sarstedt M, Hopkins L, Kuppelwieser VG. Partial least squares structural equation modeling (PLS-SEM): an emerging tool in business research. *European Business Review*. 2014; 26: 106–121.
- [39] Kline RB. *Principles and practice of structural equation modeling*. 4th edn. The Guilford Press: New York, NY. 2016.
- [40] Bollen KA. *Structural equations with latent variables*. Wiley Interscience Publication: Chapel Hill. 1989.
- [41] Martin Ginis KA, Lindwall M. Body image and exercise. In Eklund RC, Tenenbaum G (eds.) *Encyclopedia of sport and exercise psychology* (pp. 55–75). Sage Publications: New York. 2013.
- [42] Hausenblas HA, Mack DE. Social physique anxiety and eating disorder correlates among female athletic and nonathletic populations. *Journal of Sport Behavior*. 1999; 22: 502–513.
- [43] Reel JJ, Conviser JH, Tierney AS. Body image and disordered eating among athletes. In DR Marks, AT Wolanin, KM Shortway (eds.) *The Routledge handbook of clinical sport psychology* (pp. 77–94). Routledge/Taylor & Francis Group: New York. 2022.
- [44] Kerr G, Berman E, de Souza MJ. Disordered eating in women's gymnastics: perspectives of athletes, coaches, parents, and judges. *Journal of Applied Sport Psychology*. 2006; 18: 28–43.
- [45] Thompson RA, Sherman RT. *Eating disorders in sport*. Routledge: New York. 2014.
- [46] Krane V, Choi PYL, Baird SM, Aimar CM, Kauer KJ. Living the paradox: Female athletes negotiate femininity and muscularity. *Sex Roles*. 2004; 50: 315–329.
- [47] Parker PC, Perry RP, Coffee P, Chipperfield JG, Hamm JM, Daniels LM, *et al*. The impact of student-athlete social identity on psychosocial adjustment during a challenging educational transition. *Psychology of Sport and Exercise*. 2021; 56: 101979.
- [48] Gerada A. *The longitudinal association between body image dissatisfaction, social anxiety, and fear of negative evaluation in adolescents [doctoral thesis]*. University of Ottawa. 2020.
- [49] Cash TF, Pruzinsky T. *Body image: a handbook of theory, research, and clinical practice*. Gilford Press: New York. 2004.

How to cite this article: Mehmet Öztaş, Mustafa Vural, Gülşen Tosun Tunç. The effect of cognitive behavioral physical activity on social appearance anxiety in male customers of fitness centers: the mediating role of athlete identity. *Journal of Men's Health*. 2025; 21(2): 121-129. doi: 10.22514/jomh.2025.029.