



Perceived Inclusiveness of Swimming Facilities and Women's Swimming Participation Intention: The Mediating Roles of Body Image Anxiety and Perceived Safety

Jingyan Wang

School of Physical Education and Sports Science, Lingnan Normal University, No. 29 Cunjin Road, Chikan District, Zhanjiang, Guangdong 524048, China

* Corresponding Author: **Jingyan Wang**

Article Info

ISSN (online): 3107-3972

Impact Factor (RSIF): 8.08

Volume: 03

Issue: 05

Received: 08-07-2026

Accepted: 06-08-2026

Published: 04-09-2026

Page No: 15-23

Abstract

This study examined the influence of perceived swimming facility inclusiveness on women's swimming participation intention, with particular attention to the mediating roles of body image anxiety and perceived safety. A quantitative cross-sectional design was employed, and data were collected from 387 adult female swimming respondents in Zhanjiang, Guangdong Province, China. The proposed relationships were examined using partial least squares structural equation modeling (PLS-SEM). The results indicated that perceived swimming facility inclusiveness was positively associated with swimming participation intention and perceived safety, while negatively associated with body image anxiety. Body image anxiety was negatively associated with participation intention, whereas perceived safety showed a positive association. Furthermore, both body image anxiety and perceived safety significantly mediated the relationship between perceived facility inclusiveness and swimming participation intention, with both demonstrating partial mediation effects. These findings suggest that women's swimming participation is shaped not only by their perceptions of the physical and functional qualities of swimming facilities but also by psychological experiences related to body image and personal safety. Creating swimming environments that provide greater privacy, safety, and responsiveness to women's needs may therefore reduce psychological barriers and support stronger intentions to participate in swimming.

DOI: <https://doi.org/10.54660/GMPJ.2026.3.5.15-23>

Keywords: swimming facility inclusiveness, body image anxiety, perceived safety, swimming participation intention, women

1. Introduction

Regular participation in sport and physical activity is important for maintaining health, quality of life, and psychological well-being. Systematic reviews have consistently demonstrated positive associations between physical activity and quality of life and well-being among adults and older populations. However, participation in sport and physical activity is not determined solely by individual motivation or capability; rather, it is shaped by the interplay of psychological, social, and physical environmental factors (Rhodes *et al.*, 2020; Wiese *et al.*, 2018)^[24, 28]. Social support, social networks, and neighborhood characteristics, together with the availability, accessibility, and design of sport facilities and built environments, may influence opportunities for and levels of physical activity participation (McNeill *et al.*, 2006; Prochnow *et al.*, 2023)^[16, 20]. For women, gender norms, body image concerns, perceived safety, and facility environments may further create participation experiences that differ from those of men. A systematic review of environmental attributes associated with women's sport participation identified convenience, appropriate spaces and equipment, and perceived safety as relevant environmental factors, suggesting that sport facilities are not merely settings for activity but environments whose design and use may shape women's participation (Hanlon *et al.*, 2019)^[8]. Swimming presents distinctive bodily and spatial characteristics compared with many other forms of physical activity. Participation typically requires relatively form-fitting or body-revealing swimwear and the use of shared spaces such as changing

rooms, showers, and pools, thereby making issues of bodily exposure, social evaluation, privacy, and safety particularly salient for women. Howells and Grogan (2012)^[9] found that female swimmers' perceptions of their bodies involved appearance, muscularity, feminine body ideals, and the perspectives of others. Similarly, Porter *et al.* (2013)^[18] identified swimwear, bodily characteristics, self-observation, and others' responses as important components of female swimmers' body image experiences. These experiences may also be understood through the perspective of objectified body consciousness, whereby viewing one's body from an external observer's perspective can contribute to greater body surveillance and body shame (McKinley & Hyde, 1996)^[15]. Accordingly, BIA may represent an important psychological mechanism underlying women's participation in swimming, where bodily visibility is particularly pronounced.

Beyond body image, safety represents another important psychological dimension of women's sport participation. Timperio *et al.* (2015)^[27] found that perceived personal safety mediated the relationship between the social environment and women's leisure-time physical activity, indicating that environmental conditions may influence participation through individuals' subjective evaluations of safety. A meta-analysis similarly identified a meaningful association between perceived safety and physical activity (Rees-Punia *et al.*, 2018)^[22]. These concerns may be especially relevant in swimming environments because participation involves not only the use of public exercise spaces but also changing, showering, wearing swimwear, and sharing facilities with unfamiliar users. Consequently, the extent to which swimming facilities provide adequate privacy, appropriate spatial arrangements, and a supportive environment may shape women's perceptions of safety and their willingness to participate.

Research on aquatic leisure further suggests that women's swimming participation should be understood within its specific spatial and social contexts rather than solely in terms of individual preferences. Lenneis *et al.* (2022)^[14], for example, found that women-only swimming spaces provided Muslim women not only with opportunities for physical activity but also with experiences of comfort, safety, and belonging. Soltani (2021)^[26] similarly demonstrated that women's participation in aquatic leisure is shaped by intersecting influences related to gender, religion, culture, and the body. Research involving adult female migrants has further identified cultural and religious backgrounds, mixed-gender swimming environments, and swimwear requirements as potential influences on participation in swimming and water-safety programs (Willcox-Pidgeon *et al.*, 2021)^[295]. Collectively, these findings suggest that the extent to which swimming facilities accommodate women's needs for space, privacy, and comfortable use may facilitate or constrain participation.

Despite these insights, several gaps remain. First, research on sport facilities and women's participation has predominantly addressed general sport and physical activity environments, whereas quantitative evidence concerning inclusiveness within swimming facilities remains limited (Hanlon *et al.*, 2019)^[8]. Second, previous research on women's swimming has identified body image, swimwear, social scrutiny, safety, and belonging as important dimensions of participation (Howells & Grogan, 2012; Lenneis *et al.*, 2022; Porter *et al.*, 2013)^[9, 14, 18], but much of this literature has relied on qualitative approaches. Consequently, less is known about

how facility environments are associated with swimming participation through women's psychological perceptions. The relationship between facility conditions and participation may therefore involve multiple psychological pathways rather than a simple direct association.

To address these gaps, the present study introduces perceived swimming facility inclusiveness (PSFI), defined as women's overall perception of whether swimming facilities adequately address their needs in terms of spatial design, privacy, changing and showering environments, and female-friendly amenities. Swimming pools are not merely physical spaces for activity; users' evaluations of facility and environmental quality constitute an important dimension of facility performance (Lau *et al.*, 2021)^[13]. Women's experiences in swimming environments are also distinctly embodied and gendered. Bodily exposure associated with swimwear and the possibility of being observed by others may heighten attention to appearance and bodily presentation (Evans *et al.*, 2016)^[5]. Experimental evidence further indicates that wearing a swimsuit can increase self-objectification, body shame, and appearance anxiety while reducing intrinsic motivation among women (Dimas *et al.*, 2021)^[4]. Moreover, social characteristics of exercise environments can influence affective responses, enjoyment, self-efficacy, and future exercise intentions among women experiencing concerns about physical appearance (Raedeke *et al.*, 2007)^[21]. Safety perceptions may likewise be shaped by facility conditions, with evidence indicating that perceived facility safety is associated with users' overall sense of safety and may differ by gender (Kim *et al.*, 2023)^[10]. Accordingly, the present study considers body image anxiety (BIA) and perceived safety (PS) as parallel psychological mechanisms through which PSFI may be associated with women's subsequent swimming participation.

The primary behavioral outcome examined in this study is swimming participation intention (SPI). Behavioral intention reflects an individual's willingness and planned tendency to perform a particular behavior and represents an important proximal psychological antecedent of physical activity. Recent systematic evidence indicates that intention is closely associated with subsequent physical activity, although its translation into behavior remains contingent on individual and contextual factors (Rhodes *et al.*, 2022)^[23]. Feil *et al.* (2023)^[6] further demonstrated a substantial intention-behavior gap in physical activity, underscoring the importance of identifying the antecedents through which intentions are formed. More recent evidence suggests that factors such as daily barriers and social support may influence the translation of physical activity intentions into behavior (Knapova *et al.*, 2024)^[11], with similar discrepancies between intentions and subsequent behavior observed among women (Arigo *et al.*, 2022)^[3]. Examining SPI therefore provides a theoretically relevant means of understanding how facility environments and women's body- and safety-related psychological experiences are associated with their willingness to engage in future swimming.

Accordingly, this study examines the relationship between PSFI and SPI among women and investigates the mediating roles of BIA and PS. Rather than conceptualizing barriers to women's swimming participation as isolated factors, the study integrates facility-level conditions with individual psychological perceptions and examines two distinct pathways involving body image and safety. In doing so, the study seeks to extend current understanding of the

environmental and psychological mechanisms underlying women's participation in swimming and aquatic leisure, while providing empirical evidence relevant to the development of more inclusive, private, safe, and female-friendly swimming environments.

2. Methods

2.1. Research Design

This study employed a cross-sectional quantitative research design to examine the relationships among PSFI, BIA, PS, and SPI among adult women and to further assess the parallel mediating roles of BIA and PS. Respondents were adult women with prior swimming experience, and data were collected at the Swimming and Diving Hall of the Zhanjiang

Olympic Sports Center in Zhanjiang, Guangdong Province, China. An on-site questionnaire survey was administered, with eligible female facility users invited to participate in the study. Prior to completing the questionnaire, respondents were informed of the study purpose, anonymity of their responses, and voluntary nature of participation. Descriptive statistics were first used to summarize respondents' demographic characteristics and swimming participation profiles. Subsequently, partial least squares structural equation modeling (PLS-SEM) was employed to assess the reliability and validity of the measurement model, examine the structural relationships among the study variables, and test the parallel mediating effects of BIA and PS.

2.2. Research Framework

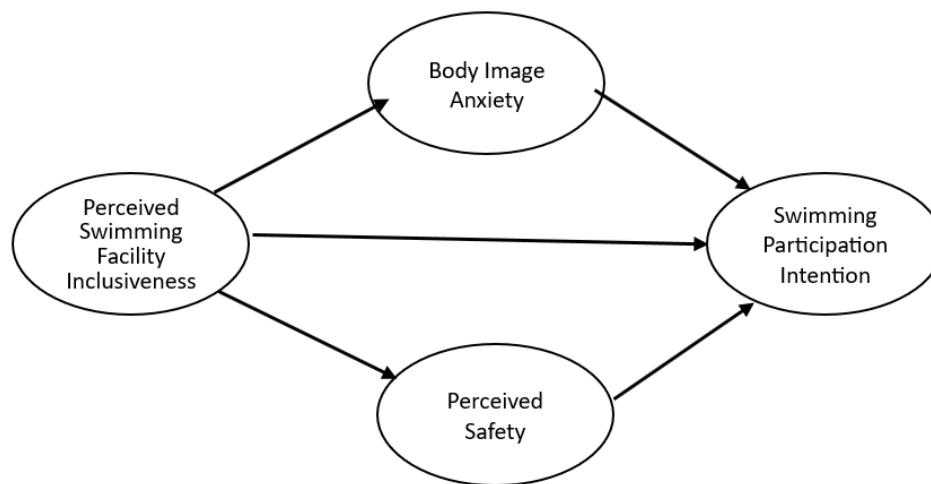


Fig 1: Research Framework

2.3. Research Instruments

The survey instrument was developed with reference to established measures and relevant literature and adapted to the context of women's swimming participation (Table 1). It comprised 17 items measuring four constructs: PSFI (4 items), BIA (5 items), PS (4 items), and SPI (4 items).

PSFI assessed women's perceptions of the spatial design, privacy, and overall female-friendliness of swimming facilities, with items developed based on the environmental attributes of sport facilities identified by Hanlon *et al.* (2019)^[8]. BIA assessed anxiety and discomfort associated with wearing swimwear, bodily exposure, and perceived evaluation by others in swimming settings. The items were contextualized based on the concept of objectified body consciousness proposed by McKinley and Hyde (1996)^[15] and previous research on body image among female swimmers (Howells & Grogan, 2012; Porter *et al.*, 2013)^[9, 18]. PS assessed women's overall sense of safety within swimming environments, drawing on relevant research by Timperio *et al.* (2015)^[27] and Park *et al.* (2026)^[17]. SPI was grounded in the concept of

behavioral intention within the Theory of Planned Behavior (Ajzen, 1991)^[1] and adapted to the swimming context with reference to the measurement of physical activity intention by Amireault *et al.* (2008)^[2]. All items were measured on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicated higher levels of the corresponding construct; specifically, higher BIA scores represented greater body image anxiety in swimming settings.

The questionnaire also included eight items assessing demographic characteristics and swimming participation behaviors. Demographic variables included age, educational attainment, marital status, and occupational status, while swimming-related variables included swimming frequency during the previous year, years of swimming experience, primary swimming venue, and usual swimming companions. These variables were collected to characterize the demographic composition and swimming participation profiles of the study sample and were used for descriptive statistical analysis.

Table 1: Measurement Items

Variables	Items
Perceived Swimming Facility Inclusiveness	The spatial design of the swimming facility meets the needs of female users. (PSFI1)
	The swimming facility provides adequate privacy for women. (PSFI2)
	The changing and shower facilities allow women to use them comfortably. (PSFI3)
	The swimming environment and facilities are female-friendly. (PSFI4)
Body Image Anxiety	When wearing a swimsuit, I am concerned that others may notice my body shape. (BIA1)
	At swimming venues, I worry that others may judge my physical appearance. (BIA2)
	I feel uncomfortable about my body when wearing a swimsuit in front of others. (BIA3)
	At swimming venues, I pay particular attention to how my body looks. (BIA4)
	Wearing a swimsuit sometimes makes me anxious about participating in swimming. (BIA5)
Perceived Safety	I feel safe when participating in activities at swimming venues. (PS1)
	I am not particularly concerned about being harassed or offended by others at swimming venues. (PS2)
	I feel comfortable using swimming facilities even when unfamiliar people are around. (PS3)
	I rarely worry about threats to my personal safety at swimming venues. (PS4)
Swimming Participation Intention	I intend to participate in swimming activities within the next three months. (SPI1)
	I plan to participate in swimming activities within the next three months. (SPI2)
	I intend to participate in swimming regularly within the next three months. (SPI3)
	I am willing to increase my opportunities to participate in swimming within the next three months. (SPI4)

2.4. Respondents

The respondents were adult female swimmers in Zhanjiang, Guangdong Province, China. The survey was conducted at the Swimming and Diving Hall of the Zhanjiang Olympic Sports Center from January 5 to May 31, 2026. Purposive sampling was employed to recruit women aged 18 years or older who were using the swimming facility during the survey period and voluntarily agreed to participate in the study. Data were collected primarily at the competition and training pools. To minimize the concentration of respondents within a single pool or time period, recruitment was conducted at both locations across different dates and times, with efforts made to maintain a balanced distribution between the two survey sites. Respondents were invited to complete the questionnaire after finishing their swimming activities. A total of 420 questionnaires were distributed. Following data screening, 33 questionnaires were excluded due to incomplete responses to key scale items, substantial missing data, patterned responding, apparent logical inconsistencies, or failure to meet the inclusion criteria. The final sample

comprised 387 valid questionnaires, yielding a valid response rate of 92.1%.

Regarding respondent characteristics (Table 2), the largest age group was 25–34 years (34.9%), followed by 35–44 years (25.1%), and 52.2% held a university degree. Slightly more than half were unmarried (51.4%), while 45.5% were married, and employed respondents constituted the largest occupational group (43.2%). Regarding swimming behavior, the most common frequency was one to three times per month (26.4%), followed by less than once per month (21.2%) and once per week (18.1%). Respondents with one to three years of swimming experience represented the largest group (31.8%), followed by those with four to six years of experience (19.6%). Public swimming pools (30.7%) and private or commercial swimming pools (29.2%) were the most frequently used venues. Friends or colleagues were the most common swimming companions (30.7%), followed by swimming alone (25.3%) and with family members (23.5%). Overall, the sample represented women with diverse demographic backgrounds and swimming experiences.

Table 2: Demographic Characteristics and Swimming Behaviors of Respondents

Variables	Categories	Frequency (n)	Percentage (%)
Age	18–24 years	63	16.3
	25–34 years	135	34.9
	35–44 years	97	25.1
	45–54 years	69	17.8
	≥55 years	23	5.9
Education	High school/vocational school or below	44	11.4
	Junior college	60	15.5
	University	202	52.2
	Postgraduate or above	81	20.9
Marital status	Unmarried	199	51.4
	Married	176	45.5
	Other	12	3.1
Occupation	Student	49	12.7
	Employee	167	43.2
	Self-employed/Freelancer	47	12.1
	Family caregiver	48	12.4
	Retired	34	8.8
	Other	42	10.9
	Never	38	9.8
Swimming frequency in the past year	Less than once per month	82	21.2
	1–3 times per month	102	26.4
	Once per week	70	18.1

	2–3 times per week	60	15.5
	≥4 times per week	35	9.0
Swimming experience	No experience	27	7.0
	<1 year	73	18.9
	1–3 years	123	31.8
	4–6 years	76	19.6
	7–10 years	54	14.0
	≥11 years	34	8.8
Primary swimming venue	Public swimming pool	119	30.7
	Private/commercial swimming pool	113	29.2
	School swimming pool	42	10.9
	Hotel/community swimming pool	45	11.6
	Natural water environment	38	9.8
	Other	30	7.8
Usual swimming companion	Alone	98	25.3
	Family members	91	23.5
	Friends/colleagues	119	30.7
	Swimming class/group members	57	14.7
	Other	22	5.7

2.5. Data Analysis

PLS-SEM was performed using SmartPLS. The measurement model was first assessed for reliability and validity based on factor loadings, composite reliability (CR), average variance extracted (AVE), and discriminant validity. The structural model was subsequently evaluated using path coefficients and the coefficient of determination (R^2). Bootstrapping was employed to test the proposed hypotheses and the parallel mediating effects of BIA and PS. Statistical significance was set at $p < .05$.

3. Results

3.1. Reliability and Validity

The measurement model demonstrated satisfactory reliability

and convergent validity across all constructs (Table 3). For PSFI, factor loadings ranged from 0.816 to 0.865, with a Cronbach's α of 0.865, CR of 0.908, and AVE of 0.712. For BIA, factor loadings ranged from 0.822 to 0.868, with a Cronbach's α of 0.900, CR of 0.926, and AVE of 0.714. For PS, factor loadings ranged from 0.835 to 0.869, with a Cronbach's α of 0.877, CR of 0.916, and AVE of 0.731. For SPI, factor loadings ranged from 0.849 to 0.889, with a Cronbach's α of 0.899, CR of 0.930, and AVE of 0.768. Overall, all factor loadings exceeded 0.700, CR values exceeded 0.700, and AVE values exceeded 0.500, confirming satisfactory internal consistency and convergent validity of the measurement model.

Table 3: Reliability and Convergent Validity of the Measurement Model

Variables	Items	Factor loading	Cronbach's α	C.R.	AVE
Perceived Swimming Facility Inclusiveness	PSFI1	0.844	0.865	0.908	0.712
	PSFI2	0.865			
	PSFI3	0.816			
	PSFI4	0.849			
Body Image Anxiety	BIA1	0.863	0.900	0.926	0.714
	BIA2	0.846			
	BIA3	0.868			
	BIA4	0.825			
	BIA5	0.822			
Perceived Safety	PS1	0.864	0.877	0.916	0.731
	PS2	0.852			
	PS3	0.869			
	PS4	0.835			
Swimming Participation Intention	SPI1	0.883	0.899	0.930	0.768
	SPI2	0.884			
	SPI3	0.849			
	SPI4	0.889			

Note: PSFI=Perceived Swimming Facility Inclusiveness; BIA=Body Image Anxiety; PS=Perceived Safety; SPI=Swimming Participation Intention; C.R.=Composite Reliability; AVE=Average Variance Extracted

Discriminant validity was assessed using the Fornell–Larcker criterion (Table 4). The square roots of the AVE values for BIA, PS, PSFI, and SPI were 0.845, 0.855, 0.844, and 0.876, respectively, all exceeding the absolute values of their

correlations with the other constructs. The inter-construct correlations ranged from -0.514 to 0.630 , indicating satisfactory discriminant validity among all constructs.

Table 4: Discriminant Validity: Fornell–Larcker Criterion

Variables	BIA	PS	PSFI	SPI
BIA	0.845			
PS	-0.300	0.855		
PSFI	-0.392	0.535	0.844	
SPI	-0.514	0.630	0.569	0.876

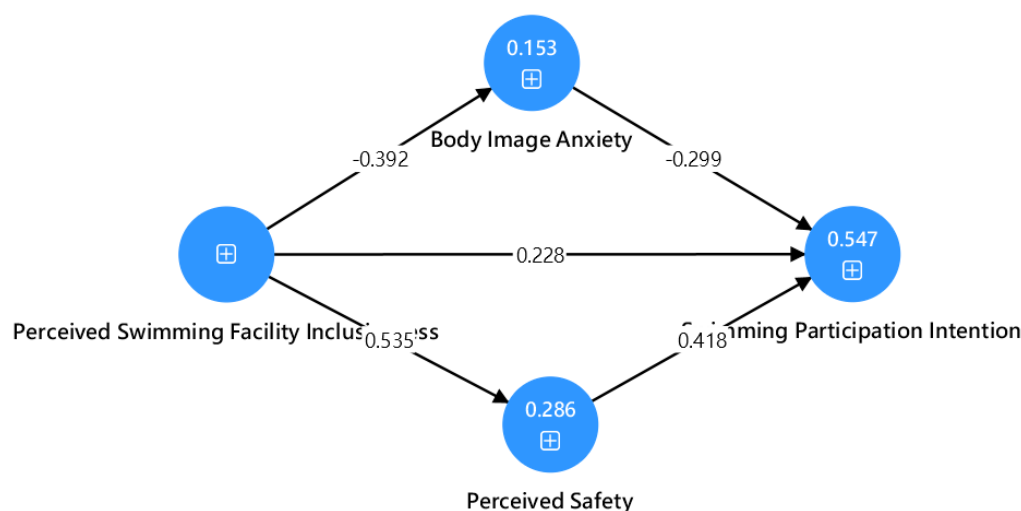
Note: PSFI=Perceived Swimming Facility Inclusiveness; BIA=Body Image Anxiety; PS=Perceived Safety; SPI=Swimming Participation Intention

3.2. Structural Model Analysis

The structural model results showed that PSFI had a significant negative effect on BIA ($\beta = -0.392$, $t = 10.003$, $p < .001$) and a significant positive effect on PS ($\beta = 0.535$, $t = 14.824$, $p < .001$). BIA had a significant negative effect on SPI ($\beta = -0.299$, $t = 7.941$, $p < .001$), whereas PS had a significant positive effect on SPI ($\beta = 0.418$, $t = 11.006$, $p < .001$). In addition, the direct effect of PSFI on SPI was significant ($\beta = 0.228$, $t = 6.091$, $p < .001$). The R^2 values for BIA, PS, and SPI were 0.153, 0.286, and 0.547, respectively,

indicating that the model explained 15.3%, 28.6%, and 54.7% of their variance.

The mediation analysis showed that the indirect effect of PSFI on SPI through BIA was significant ($\beta = 0.117$, $t = 6.224$, $p < .001$, 95% CI [0.082, 0.155]). The indirect effect through PS was also significant ($\beta = 0.224$, $t = 8.697$, $p < .001$, 95% CI [0.177, 0.276]). As the direct effect of PSFI on SPI remained significant, both BIA and PS partially mediated the relationship between PSFI and SPI.

**Fig 2:** Structural Model Analysis

4. Discussion

This study examined how PSFI influences women's SPI by integrating facility-related environmental factors with individual psychological perceptions. The findings showed that PSFI was positively associated with SPI both directly and indirectly through BIA and PS. These findings are consistent with previous research emphasizing the importance of physical and social environments for physical activity (McNeill *et al.*, 2006; Rhodes *et al.*, 2020; Prochnow *et al.*, 2023) [16, 24, 20] and support the view that women's sport participation may be influenced by facility safety, convenience, and environmental conditions (Hanlon *et al.*, 2019) [8]. Extending this evidence to swimming settings, the present study suggests that facility inclusiveness involves more than simply providing spaces for activity. Women's subjective experiences of spatial design, privacy, and female-friendly facilities may also be closely associated with their subsequent participation intentions.

Regarding the body image pathway, higher PSFI was associated with lower BIA, which in turn was associated with lower SPI. Swimming involves wearing swimwear and relatively high bodily visibility, potentially heightening women's awareness of their appearance and concerns about being observed and evaluated by others (Howells & Grogan, 2012; Porter *et al.*, 2013) [9, 18]. Previous research has also demonstrated a close and complex relationship between body

image and physical activity, with negative body-related experiences potentially constituting an important psychological barrier to women's sport participation (Sabiston *et al.*, 2019) [25]. Experimental evidence further indicates that wearing a swimsuit is associated with greater self-objectification, body shame, and appearance anxiety (Dimas *et al.*, 2021) [4]. Social physique anxiety has also been associated with physical activity behavior among male and female exercisers (Portman *et al.*, 2018) [19], while women's psychological responses during exercise may be influenced by peers' appearance and social comparison cues (Kroon *et al.*, 2023) [12]. Together with the present findings, this evidence suggests that BIA should not be viewed solely as an individual body-related attitude but also in relation to specific sport environments and social contexts.

PS also emerged as an important psychological mechanism linking PSFI to SPI. This finding is consistent with evidence associating perceived environmental safety with physical activity participation (Rees-Punia *et al.*, 2018) [22] and with research identifying women's safety perceptions as a psychological mechanism linking environmental conditions to leisure-time physical activity (Timperio *et al.*, 2015) [27]. Compared with many other sport settings, swimming involves changing, showering, wearing swimwear, and sharing spaces with unfamiliar users, all of which entail heightened privacy concerns. Women's assessments of

environmental safety may therefore be particularly salient in swimming settings. Research on women-only swimming spaces similarly indicates that safety, comfort, and belonging are important components of women's swimming experiences and that appropriate environments can provide spaces in which women feel more comfortable and a greater sense of belonging (Lenneis *et al.*, 2022)^[14]. Thus, swimming facility inclusiveness may extend beyond functional facility provision by reducing concerns about harassment, inappropriate behavior, or other environmental threats, thereby enhancing PS and, in turn, SPI.

Notably, both BIA and PS partially mediated the relationship between PSFI and SPI, suggesting two distinct but coexisting psychological processes through which women respond to swimming environments. BIA primarily reflects concerns about bodily observation and evaluation, whereas PS reflects whether an environment is perceived as safe to use. Previous research has shown that women with higher social physique anxiety may experience different emotional and psychological responses across exercise environments and that perceived threats of external evaluation may contribute to these responses (Focht, 2007)^[7]. Raedeke *et al.* (2007)^[21] also demonstrated that social environmental factors can influence psychological responses to exercise among women with high social physique anxiety. In contrast, research on women-only swimming highlights the spatial and social significance of safety and belonging (Lenneis *et al.*, 2022)^[14]. By incorporating both psychological pathways within the same model, the present study suggests that women's swimming participation may depend not only on personal motivation but also on whether they feel comfortable with their bodies in the environment and whether they perceive the space as safe to use. This finding extends previous research that has largely examined body image, safety perceptions, and sport environments separately.

Overall, this study integrates PSFI, BIA, PS, and SPI within a single analytical framework, supporting an environmental perception–psychological experience–participation intention perspective on women's swimming participation. Previous research has established that both the built environment and subjective perceptions of the environment are associated with physical activity (Rhodes *et al.*, 2020; Prochnow *et al.*, 2023)^[23, 20], while body image and sport participation among women are also interrelated (Sabiston *et al.*, 2019)^[25]. Building on this literature, the present findings suggest that PSFI may be associated with women's SPI through both body-related and safety-related psychological mechanisms. Nevertheless, participation intentions do not necessarily translate into actual behavior, and an intention–behavior gap has been documented in physical activity research (Rhodes *et al.*, 2022; Feil *et al.*, 2023; Knapova *et al.*, 2024)^[24, 6, 11]. Future research could therefore employ longitudinal designs to examine actual swimming participation and determine whether facility inclusiveness and the associated psychological mechanisms also explain women's sustained swimming behavior.

5. Theoretical Contributions

The primary theoretical contribution of this study lies in integrating the swimming facility environment and women's psychological experiences within a single analytical framework. Previous studies have largely examined sport

facilities and environmental conditions (Hanlon *et al.*, 2019; Rhodes *et al.*, 2020)^[8, 24], body image and social physique anxiety (Sabiston *et al.*, 2019)^[25], and perceived safety (Timperio *et al.*, 2015)^[27] separately, with limited attention to how these factors operate within women's swimming contexts. By introducing PSFI, this study incorporates spatial design, privacy, and female-friendliness into perceptions of the swimming environment, thereby extending the explanatory scope of existing research on sport environments.

Second, this study identifies BIA and PS as two parallel psychological pathways through which facility environments are associated with women's SPI. This environmental perception–psychological experience–participation intention framework extends previous research that has focused primarily on individual attitudes or isolated environmental factors and provides a more context-specific theoretical perspective for understanding women's participation in sport settings characterized by bodily exposure, privacy concerns, and safety considerations.

6. Implications

The findings have practical implications for the planning and management of swimming facilities. Beyond equipment quality and convenience, facility operators should consider women's privacy, safety, and spatial needs in facility design. This may include improving privacy in changing and shower areas, minimizing unnecessary bodily exposure, and establishing clear facility management and anti-harassment measures to create a more inclusive swimming environment. The findings also indicate that BIA and PS are closely associated with women's SPI. Efforts to promote women's swimming participation should therefore extend beyond program promotion and marketing to address appearance-related evaluation concerns and safety concerns within swimming environments. Female-friendly spatial design, clear codes of conduct, and a supportive environment may enhance women's comfort and sense of safety, thereby creating conditions more conducive to sustained swimming participation.

7. Limitations of the Study

This study has several limitations. First, the cross-sectional design captured data at a single point in time; therefore, the observed relationships reflect statistical associations and do not establish causality. Second, the sample was limited to female swimmers in Zhanjiang, Guangdong Province, China, and was recruited through purposive sampling. Caution is therefore warranted when generalizing the findings to other regions, cultural contexts, or swimming populations. Third, the study relied primarily on self-reported data, which may be subject to social desirability and common method bias. Finally, SPI was examined as the outcome variable without subsequent assessment of actual swimming behavior. Future research could employ longitudinal designs, recruit samples across different regions and facilities, and incorporate measures of actual swimming behavior to further assess the robustness and applicability of the proposed model.

8. Conclusion

This study examined the influence of PSFI on women's SPI and the mediating roles of BIA and PS. The findings indicate

that greater PSFI is associated with stronger SPI, both directly and indirectly through lower BIA and higher PS. These findings suggest that women's swimming participation is associated not only with individual psychological factors but also with their subjective perceptions of swimming facilities and the environments in which they are used. Accordingly, facility environments, body image, and safety perceptions should be considered jointly to provide a more comprehensive understanding of the mechanisms underlying women's SPI.

References

1. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991;50(2):179-211. doi:10.1016/0749-5978(91)90020-T.
2. Amireault S, Godin G, Vohl MC, P  russe L. Moderators of the intention-behaviour and perceived behavioural control-behaviour relationships for leisure-time physical activity. *Int J Behav Nutr Phys Act.* 2008;5:7. doi:10.1186/1479-5868-5-7.
3. Arigo D, Hevel D, Bittel K, Maher JP. Within-person examination of the exercise intention-behavior gap among women in midlife with elevated cardiovascular disease risk. *Psychol Sport Exerc.* 2022;60:102138. doi:10.1016/j.psychsport.2022.102138.
4. Dimas MA, Galway SC, Gammage KL. Do you see what I see? The influence of self-objectification on appearance anxiety, intrinsic motivation, interoceptive awareness, and physical performance. *Body Image.* 2021;39:53-61. doi:10.1016/j.bodyim.2021.05.010.
5. Evans AB, Allen-Collinson J, Evans S. From 'just a swimmer' to a 'swimming mother': women's embodied experiences of recreational aquatic activity with pre-school children. *Leisure Stud.* 2016;35(2):141-156. doi:10.1080/02614367.2014.962593.
6. Feil K, Fritsch J, Rhodes RE. The intention-behaviour gap in physical activity: a systematic review and meta-analysis of the action control framework. *Br J Sports Med.* 2023;57(19):1265-1271. doi:10.1136/bjsports-2022-106640.
7. Focht BC. Exercising in public and private environments: effects on feeling states in women with social physique anxiety. *J Appl Biobehav Res.* 2007;11(3-4):147-165. doi:10.1111/j.1751-9861.2007.00002.x.
8. Hanlon C, Jenkin C, Craike M. Associations between environmental attributes of facilities and female participation in sport: a systematic review. *Manag Sport Leis.* 2019;24(5):294-306. doi:10.1080/23750472.2019.1641138.
9. Howells K, Grogan S. Body image and the female swimmer: muscularity but in moderation. *Qual Res Sport Exerc Health.* 2012;4(1):98-116. doi:10.1080/2159676X.2011.653502.
10. Kim MO, Choi JK, Lee S. Understanding the relationships among facility safety perception, safety education frequency, and the sense of facility safety and infection anxiety of sports facility users. *Sports Sci.* 2023;41(3):221-230. doi:10.46394/ISS.41.3.26.
11. Knapova L, Cho YW, Chow SM, Kuhnova J, Elavsky S. From intention to behavior: within- and between-person moderators of the relationship between intention and physical activity. *Psychol Sport Exerc.* 2024;71:102566. doi:10.1016/j.psychsport.2023.102566.
12. Kroon R, Neumann DL, Piatkowski TM, Moffitt RL. How the physical appearance of companions affects females with high or low social physique anxiety: a virtual reality exercise study. *Virtual Real.* 2023;27(2):541-551. doi:10.1007/s10055-022-00676-w.
13. Lau E, Hou HC, Lai JHK, Edwards D, Chileshe N. User-centric analytic approach to evaluate the performance of sports facilities: a study of swimming pools. *J Build Eng.* 2021;44:102951. doi:10.1016/j.jobe.2021.102951.
14. Lenneis V, Agergaard S, Evans AB. Women-only swimming as a space of belonging. *Qual Res Sport Exerc Health.* 2022;14(1):37-52. doi:10.1080/2159676X.2020.1844790.
15. McKinley NM, Hyde JS. The Objectified Body Consciousness Scale: development and validation. *Psychol Women Q.* 1996;20(2):181-215. doi:10.1111/j.1471-6402.1996.tb00467.x.
16. McNeill LH, Kreuter MW, Subramanian SV. Social environment and physical activity: a review of concepts and evidence. *Soc Sci Med.* 2006;63(4):1011-1022. doi:10.1016/j.socscimed.2006.03.012.
17. Park LE, Ward DE, Naragon-Gainey K, Canning EA, Koefler N, Panlilio ZA, et al. Perceptions of safety and threat in the environment: the STEP scale. *Pers Soc Psychol Bull.* 2026;52(9):2880-2913. doi:10.1177/01461672251344359.
18. Porter RR, Morrow SL, Reel JJ. Winning looks: body image among adolescent female competitive swimmers. *Qual Res Sport Exerc Health.* 2013;5(2):179-195. doi:10.1080/2159676X.2012.712983.
19. Portman RM, Bradbury J, Lewis K. Social physique anxiety and physical activity behaviour of male and female exercisers. *Eur J Sport Sci.* 2018;18(2):257-265. doi:10.1080/17461391.2017.1417485.
20. Prochnow T, Curran LS, Amo C, Patterson MS. Bridging the built and social environments: a systematic review of studies investigating influences on physical activity. *J Phys Act Health.* 2023;20(5):438-459. doi:10.1123/jpah.2022-0403.
21. Raedeke TD, Focht BC, Scales D. Social environmental factors and psychological responses to acute exercise for socially physique anxious females. *Psychol Sport Exerc.* 2007;8(4):463-476. doi:10.1016/j.psychsport.2006.10.005.
22. Rees-Punia E, Hathaway ED, Gay JL. Crime, perceived safety, and physical activity: a meta-analysis. *Prev Med.* 2018;111:307-313. doi:10.1016/j.ypmed.2017.11.017.
23. Rhodes RE, Cox A, Sayar R. What predicts the physical activity intention-behavior gap? A systematic review. *Ann Behav Med.* 2022;56(1):1-20. doi:10.1093/abm/kaab044.
24. Rhodes RE, Zhang R, Zhang CQ. Direct and indirect relationships between the built environment and individual-level perceptions of physical activity: a systematic review. *Ann Behav Med.* 2020;54(7):495-509. doi:10.1093/abm/kaz068.
25. Sabiston CM, Pila E, Vani M, Th  gersen-Ntoumani C. Body image, physical activity, and sport: a scoping

- review. *Psychol Sport Exerc.* 2019;42:48-57. doi:10.1016/j.psychsport.2018.12.010.
26. Soltani A. Hijab in the water! Muslim women and participation in aquatic leisure activities in New Zealand: an intersectional approach. *Leisure Stud.* 2021;40(6):810-825. doi:10.1080/02614367.2021.1933143.
 27. Timperio A, Veitch J, Carver A. Safety in numbers: does perceived safety mediate associations between the neighborhood social environment and physical activity among women living in disadvantaged neighborhoods? *Prev Med.* 2015;74:49-54. doi:10.1016/j.ypmed.2015.02.012.
 28. Wiese CW, Kuykendall L, Tay L. Get active? A meta-analysis of leisure-time physical activity and subjective well-being. *J Posit Psychol.* 2018;13(1):57-66. doi:10.1080/17439760.2017.1374436.
 29. Willcox-Pidgeon SM, Franklin RC, Devine S, Leggat PA, Scarr J. Reducing inequities among adult female migrants at higher risk for drowning in Australia: the value of swimming and water safety programs. *Health Promot J Austr.* 2021;32(S1):49-60. doi:10.1002/hpja.407.

How to Cite This Article

Wang J. Perceived inclusiveness of swimming facilities and women's swimming participation intention: the mediating roles of body image anxiety and perceived safety. *Glob Multidiscip Perspect J.* 2026;3(5):15-23. doi:10.54660/GMPJ.2026.3.5.15-23.

Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution NonCommercial Share Alike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.