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The Nexus Between Sport Participation and Self-Confidence Among Vietnamese University Students: A Cross-Sectional Analysis

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ABSTRACT

Mental health challenges and declining self-confidence have become increasingly salient among university students in Asian higher education, where academic and social pressures may intensify psychological strain. Using a cross-sectional survey design, this study examines the association between sport participation and self-confidence among Vietnamese university students, while accounting for key demographic characteristics. Drawing on perspectives from sport psychology and public health, sport participation is conceptualized in terms of engagement "dose" and participation context. Data from 606 undergraduates indicate that higher levels of sport participation are positively associated with self-confidence, with meaningful differences observed across gender, academic year, training-companion groups, and willingness to pay for sport participation. Although the overall explained variance of the model was modest, the findings still indicate that sport participation is associated with students' self-confidence in the university context. This study contributes context-specific evidence from Vietnam to the literature on sport participation and student well-being and offers practical implications for the design of campus-based sport initiatives aimed at supporting confidence development and holistic well-being in Asian higher education.

Araştırma makalesi

Vietnamlı Üniversite Öğrencileri Arasında Spor Katılımı ile Özgüven Arasındaki İlişki: Kesitsel Bir Analiz

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ÖZET

Asya'daki yükseköğretim bağlamında üniversite öğrencileri arasında ruh sağlığına ilişkin güçlükler ve öz-güvendeki azalma giderek daha belirgin hâle gelmektedir; çünkü akademik ve sosyal baskılar psikolojik yükü artırabilmektedir. Kesitsel bir anket tasarımı kullanan bu çalışma, temel demografik özellikleri dikkate alarak Vietnamlı üniversite öğrencilerinde spor katılımı ile öz-güven arasındaki ilişkiyi incelemektedir. Spor psikolojisi ve halk sağlığı perspektiflerinden hareketle, spor katılımı katılım "dozu" ve katılım bağlamı açısından kavramsallaştırılmıştır. 606 lisans öğrencisinden elde edilen veriler, daha yüksek düzeyde spor katılımının öz-güven ile pozitif yönde ilişkili olduğunu; ayrıca cinsiyet, sınıf düzeyi, antrenman arkadaşı grupları ve spora katılım için ödeme istekliliği açısından anlamlı farklılıklar bulunduğunu göstermektedir. Modelin açıkladığı toplam varyans sınırlı olsa da bulgular spor katılımının üniversite bağlamında öğrencilerin öz-güveni ile ilişkili olduğunu göstermektedir. Bu çalışma, spor katılımı ve öğrenci iyi oluşu literatürüne Vietnam bağlamına özgü kanıt sunmakta; ayrıca Asya yükseköğretiminde öz-güven gelişimini ve bütüncül iyi oluşu desteklemeyi amaçlayan kampüs temelli spor girişimlerinin tasarımına yönelik pratik çıkarımlar sunmaktadır.

Introduction

In contemporary society, health and well-being remain top concerns for people of all ages, especially for university students. This life stage is often stressful, challenging, and marked by significant lifestyle changes (Dangore & Bhivgade, 2023). Accumulating evidence also indicates increasing levels of stress, anxiety, and related mental health concerns among students across higher education contexts (Lipson et al., 2022; Truong et al., 2024). Analyses from the Healthy Minds Study (2013-2021), for example, document a rising trend in mental health problems among university students, while help-seeking or treatment increased more modestly than the rise in mental health problems (Lipson et al., 2022). These patterns heighten the need to identify sustainable, campus-relevant mechanisms that can strengthen students' psychological resources and support adaptive functioning during the university years.

In health and sport research, sport is typically conceptualized as a subset of physical activity, characterized by structured rules, competitive elements, and rich social dimensions such as clubs or team participation (Eather et al., 2023; Eime et al., 2013). Beyond physical benefits, structured engagement in sport can provide repeated cycles of goal pursuit, performance feedback, and social interaction, experiential conditions that are theoretically well-suited to shaping self-evaluative beliefs. Empirical work suggests that physical activity and sport-based programs can produce meaningful improvements in psychological health and self-perceptions, including perceived competence and self-worth (De Lacerda et al., 2024; Yang et al., 2024). Related evidence in university samples further indicates that regular participation is positively associated with self-efficacy (Liu et al., 2024), suggesting that engagement may translate into more adaptive beliefs about one's capabilities.

To clarify how sport participation may relate to self-confidence, this study draws on two complementary perspectives. Social Cognitive Theory posits that beliefs about capability, including confidence-related judgments, develop through mastery experiences, vicarious learning, and social persuasion within feedback-rich social environments (Bandura, 1977). Sport settings can repeatedly supply such inputs through structured practice, performance comparison, and reinforcement, thereby providing salient cues for competence appraisal. Means–End Theory complements this mechanism-based account by emphasizing that individuals value experience attributes (means) to the extent that they enable meaningful end-states (ends) (Gutman, 1982). From this perspective, participation attributes such as sport type and participation "dose" may function as the means through which students accumulate valued psychological outcomes, including self-confidence and well-being. Taken together, these

frameworks suggest that not only whether students participate, but also how they participate may matter for confidence-related outcomes.

Although the role of sport participation has been increasingly recognized as a determinant of students' psychosocial health, the extant literature exhibits several notable limitations. First, most prior studies have primarily focused on broader constructs such as self-esteem or self-efficacy, whereas self-confidence as a distinct psychological outcome has received relatively less attention (Bayat et al., 2019; Yang et al., 2024). However, self-confidence is conceptually distinct from self-esteem and is not interchangeable with self-efficacy, even though these constructs are related (Bandura, 1977; Bayat et al., 2019). In the university context, self-confidence is particularly consequential because it underpins readiness to face academic and social challenges and persistence in the face of setbacks. Second, while some initial evidence has linked physical activity to confidence, these findings largely stem from Western contexts or from specialized athletic populations, leaving a gap in systematic investigations among university students within Asian educational systems (Park et al., 2021; Yapar et al., 2025). Third, much of the existing research relies on cross-sectional data and has not accounted for the dose–response relationship of physical activity, overlooking exercise intensity and sport modality measured through standardized indicators such as METs (Herrmann et al., 2024). These limitations collectively motivate a more context-sensitive and measurement-sensitive examination of the sport participation–self-confidence relationship.

Addressing these gaps, the present study focuses on Vietnamese university students and pursues three aims. First, it foregrounds self-confidence as a focal psychological outcome of sport participation. Second, it extends the literature to an Asian higher education context that remains underrepresented in this research stream. Third, it incorporates participation "dose" (frequency, duration, and MET-standardized intensity) alongside sport type to provide a more nuanced assessment of participation–confidence associations (Herrmann et al., 2024). By integrating Social Cognitive Theory and Means–End Theory, the study contributes a theory-anchored account of why and how participation attributes may matter, while offering practical implications for campus-based sport initiatives designed to support students' holistic development. Based on these foundations, this study addresses two research questions:

RQ1. How is sport participation related to students' self-confidence?

RQ2. How do levels of self-confidence differ across student groups based on demographic characteristics and participation-related factors?

Methods

Sample

A cross-sectional survey was conducted among undergraduate students enrolled at universities in Ho Chi Minh City, Vietnam. Eligible participants were (a) currently registered as undergraduate students, (b) aged 18 years or older, and (c) willing to provide informed consent prior to completing the questionnaire. Participants were recruited using a multi-site convenience sampling approach. An online survey link was distributed to the Departments of Physical Education at 12 universities located in Ho Chi Minh City. These departments assisted in disseminating the survey to their undergraduate students. A total of 606 valid responses were retained for analysis after data screening. The resulting sample size meets commonly recommended thresholds for regression and group comparison analyses in behavioral research, allowing for the detection of small-to-moderate effects.

Table 1 summarizes the demographic characteristics of the participants. The sample showed a relatively balanced gender distribution, with a slight predominance of female students. Participants were evenly represented across academic years. Regarding academic performance, the majority reported grade B, while smaller proportions fell into the higher (grade A) and lower (grade C–D) GPA categories.

Table 1. Demographic Characteristics of the Participants (n = 606)

Variable	Category	%
Gender	Male	45.5
	Female	54.5
Academic year	Freshman	24.9
	Sophomore	25.9
	Junior	22.9
	Senior	26.2
Grade Point Average (GPA)	A (from 8.5 to 10.0)	22.8
	B (from 7.0 to 8.4)	59.4
	C&D (from 4.0–6.9)	17.8

Measurement

The sport participation items were self-developed for this study and informed by the International Physical Activity Questionnaire (IPAQ) framework for activity classification and MET-based scoring. Students were asked to report on the sport(s) they engaged in, including the type of sport and the amount of training per session. The dose of participation was recorded through frequency (sessions per week) and duration (minutes per session); from these, the total MET–minutes/week was calculated based on the MET values assigned to each activity

(Herrmann et al., 2024). In addition, other supplementary variables were included to further explore information, such as monthly expenditure on sport and physical activity, and training partners.

Self-confidence was treated as the outcome variable in this study and measured using the Self-Confidence Scale (SCS; 33 items, 5-point Likert), originally developed in 2007 by Akın and later applied in student contexts (Bayat et al., 2019). The scale consists of two subdimensions: internal self-confidence and external self-confidence. Final scores were computed such that higher values indicated higher levels of self-confidence. After finalizing the survey instrument, a standard translation–back-translation procedure was implemented (Brislin, 1970). Content validity was assessed by a panel of experts in the field. A pilot test was then conducted with 50 university students to ensure clarity, cultural equivalence, and reliability of the measurement scales. In the pilot sample, internal consistency was acceptable: SCS-total ($\alpha = .979$), internal self-confidence ($\alpha = .998$), and external self-confidence ($\alpha = .978$), with Corrected Item-Total Correlation > .30. According to Nunnally and Bernstein (1994) and Hair et al. (2019), an observed variable is considered acceptable when the corrected item–total correlation exceeds .30 and the scale's alpha coefficient is greater than .70 (Hair, 2019; Nunnally & Bernstein, 1994). However, it should be noted that the high Cronbach's alpha values observed in the pilot study, particularly for the internal self-confidence subscale, may indicate a high level of conceptual homogeneity among the items measuring the same psychological construct. At the same time, these values may also suggest some degree of item redundancy. Accordingly, the pilot findings were reviewed prior to the main data collection to examine potential overlap in item meaning and wording. Based on this review, minor wording refinements were made to improve clarity and reduce possible redundancy before the questionnaire was administered in the main survey. Reliability analysis based on the main sample ($n = 606$) produced Cronbach's alpha coefficients within acceptable ranges, supporting the reliability of the scale for use in the present study.

Data analysis

Analyses were conducted in SPSS v25. First, metabolic equivalent of task (MET) values was assigned to each activity using either the 2024 Adult Compendium of Physical Activities (Herrmann et al., 2024) or the IPAQ convention (walking = 3.3 METs, moderate = 4.0 METs, vigorous = 8.0 METs). E-sports was treated as a sport in the local context and was assigned a Compendium-based MET value close to resting (approximately 1.3–1.5 METs) given its

sedentary/low-intensity nature. Next, weekly energy expenditure was computed for each activity as: MET–minutes/week = MET_i×minutes/session×sessions/week

The total MET–minutes/week was calculated by summing MET–minutes/week across all reported activities. Using IPAQ-based thresholds adapted for this study, students were categorized into three PA Levels:

Low: did not meet criteria for moderate or high activity (typically < 600 MET–minutes/week).

Moderate: meeting any of the following: (a) vigorous activity ≥ 3 days, ≥ 20 min/day; (b) moderate activity or walking ≥ 5 days, ≥ 30 min/day; or (c) any combination of activities ≥ 5 days, accumulating ≥ 600 MET–minutes/week.

High: meeting either of the following: (a) vigorous activity ≥ 3 days, accumulating ≥ 1500 MET–minutes/week; or (b) any combination ≥ 7 days, accumulating ≥ 3000 MET–minutes/week.

Physical activity was operationalized using IPAQ-based PA levels (low, moderate, high). PA levels were used to examine associations with self-confidence via hierarchical linear regression and to facilitate group-based comparisons. MET–minutes/week were computed to derive the IPAQ categories and to describe overall activity dose in the sample. Categorical covariates were dummy-coded, with gender coded as 0 = female and 1 = male. Group differences in self-confidence were examined using one-way ANOVA with $\alpha = .05$.

Results

Sport Activities

The analysis indicated substantial variation in students' engagement across different types of sports activities. Walking and jogging emerged as the most common forms of participation, with 74.1% of students reporting involvement at least once per week. Moderate levels of participation were observed in volleyball, martial arts, badminton, and swimming, with reported rates ranging from 41.1% to 48.5%. In addition, more than one-third of students reported participation in activities such as social dance, cycling, yoga, and e-sports, reflecting a diversified pattern of sport involvement among the sample.

Table 2. Descriptive Statistics of Physical Activity

Variable	Category	%	Variable	Category	%
Top 10 of sport	Walking/ Running	74.1%	**Session duration**	Under 30 minutes	13.2%
	Volleyball	48.5%		30 to 60 minutes	50.7%
	Martial arts	46.4%		61 to 120 minutes	27.2%
	Badminton	43.6%		Over 120 minutes	8.9%
	Swimming	41.1%	**Monthly willingness to**	<100 USD	85.6%
	Social dance	39.8%		100–200 USD	9.7%

	Cycling	37.5%	**pay for sport activities (WTP)**	201–300 USD	2.1%
	E-sports	37.3%		>300 USD	2.5%
	Billiards	36.1%	**Training Companions**	Alone	23.6%
	Yoga	35.6%		Friends/Team	62.9%
Time of day for sport participation	Morning	29.2%		Roommates/ Classmates	4.1%
	Afternoon	28.1%		Family member	5.3%
	Evening	38.6%		Dating/Partner	2.3%
	Early morning	4.1%		Others	1.8%

As summarized in Table 2, students' sport participation was characterized by a preference for evening activity (18:00–23:59), reported by 38.6% of students, whereas early morning participation was least common (4.1%). Session durations were predominantly moderate, with 50.7% of students exercising for 30–60 minutes per session. Monthly willingness to pay for sport activities was generally low, with 85.6% of students reporting expenditures below USD 100. Regarding social context, participation most frequently occurred with friends or teammates (62.9%), while training with romantic partners (2.3%) or other companions (1.8%) was relatively uncommon.

Physical Activity (PA) Levels

Descriptive results showed that 18.15% of students were classified as having low PA (n = 110), 20.30% as moderate PA (n = 123), and 61.55% as high PA (n = 373). For analytical purposes, PA level was also treated as an ordinal variable and summarized using mean scores, with higher values indicating greater overall participation. An independent-samples t-test revealed a significant gender difference in PA levels, $t(602.22) = -7.11$, $p < .001$, with a mean difference of 0.43 points (95% CI [0.31, 0.55]), indicating higher PA levels among male students.

Table 3. Comparison of Physical Activity Levels by Gender

Variable	Group	*n*	*M*	*SD*	*t*	*p*
Gender	Female	330	2.24	0.83	–7.11	< .001
	Male	276	2.67	0.65		

In addition, ANOVA results also indicated no significant differences in PA levels across academic years, $F(3, 602) = .53$, $p = .660$. Descriptively, freshmen reported $M = 2.38$, $SD = 0.85$; sophomores $M = 2.48$, $SD = 0.78$; juniors $M = 2.46$, $SD = 0.78$; and seniors $M = 2.41$, $SD = 0.71$.

Self-Confidence

The results showed a significant difference in self-confidence between male and female students, $t(604) = -4.32$, $p < .001$. The mean difference was 0.32, with a 95% confidence

interval of [0.18, 0.47], suggesting that male students reported higher overall self-confidence than female students.

Table 4. Comparison of Self-Confidence by Gender

Variable	Group	*n*	*M*	*SD*	*t*	*p*
Gender	Female	330	3.26	0.89	–4.32	< .001
	Male	276	3.59	0.94		

Comparison of Self-Confidence by Academic Year

Self-confidence varied across academic years, with mean scores ranging from 3.21 among sophomores to 3.56 among seniors (Table 5). One-way ANOVA revealed a significant difference in self-confidence across academic years, $F(3, 602) = 3.92$, $p = .009$. Post-hoc comparisons (Scheffé) indicated that senior students reported significantly higher self-confidence than sophomores ($\Delta M = 0.34$, $p = .012$).

Comparison of Self-Confidence by GPA Group

A one-way ANOVA was conducted to examine differences in self-confidence across GPA groups. Levene's test indicated that the assumption of homogeneity of variances was met ($p = .090$). The omnibus ANOVA did not reach statistical significance at the .05 level, $F(2, 603) = 2.83$, $p = .060$. Descriptively, students with higher GPA tended to report slightly higher self-confidence, with mean scores of 3.58 for group A, 3.36 for group B, and 3.38 for group C&D (Table 5).

Comparison of Self-Confidence by WTP Group

A one-way ANOVA revealed significant differences in self-confidence across WTP groups, $F(3, 602) = 4.17$, $p = .006$, with a small effect size ($\eta^2 \approx .02$). Next, Welch was conducted and remained significant, $F(3, 30.43) = 3.53$, $p = .026$. Games–Howell post-hoc comparisons indicated that students with a moderate WTP (USD 100–200 per month) reported significantly higher self-confidence than those with WTP below USD 100 ($p = .028$). No significant differences were observed between the remaining WTP groups (Table 5).

Comparison of Self-Confidence by Training Companion Groups

A one-way ANOVA was conducted to examine differences in self-confidence across training companions' group. The results showed a significant effect of training companions on self-confidence ($F(5, 600) = 3.61$, $p = .003$). Post-hoc comparisons (Tukey HSD) indicated that students who usually exercised with "others" reported significantly lower self-confidence compared to those training with roommates/classmates and dating partners. Overall, students training with close social ties reported higher self-confidence, whereas those exercising with less defined companions reported the lowest levels (Table 5).

Table 5. Comparison of Self-Confidence by Academic Year, GPA, WTP, and Training Companions

Variable	Group	*n*	*M*	*SD*	*F*	*p*
Academic Year	Freshman	151	3.47	0.94	3.92	.009
	Sophomore	157	3.21	0.97		
	Junior	139	3.41	0.90		
	Senior	159	3.56	0.80		
GPA	A (from 8.5 to 10.0)	138	3.58	0.83	2.83	.060
	B (from 7.0 to 8.4)	360	3.36	0.93		
	C&D (from 4.0–6.9)	108	3.38	1.01		
WTP	<100 USD	519	3.37	0.91	4.17	.006
	100–200 USD	59	3.73	0.91		
	201–300 USD	13	3.05	0.23		
	>300 USD	15	3.80	1.10		
Training Companions	Alone	143	3.29	0.94	3.61	.003
	Friends/team	381	3.46	0.90		
	Roommates/classmates	25	3.50	0.89		
	Family member	32	3.37	1.08		
	Dating/Partner	14	3.98	0.70		
	Others	11	2.58	1.12		

Relationship Between Sport Participation and Students' Self-Confidence

A hierarchical multiple regression was conducted with self-confidence as the dependent variable. In Step 1, PA level significantly and positively predicted self-confidence, explaining 3.6% of the variance, $R^2 = .036$, $F(1, 604) = 22.81$, $p < .001$. In Step 2, adding gender, academic year, and GPA significantly improved model fit, $\Delta R^2 = .031$, F-change$(3, 601) = 6.56$, $p < .001$, yielding a total $R^2 = .067$, $F(4, 601) = 10.78$, $p < .001$. PA level remained a significant positive predictor in the adjusted model ($B = 0.171$, $p < .001$), indicating that students reporting higher sport participation also reported greater self-confidence.

Table 6. Regression Analysis Predicting Self-Confidence

Covariates	Nonstandardized regression coefficient (*SE*)
Intercept	2.850 (0.188)***
PA level	0.171 (0.049)***
Gender	0.305 (0.080)***
Academic year	0.083 (0.034)*
GPA	–0.104 (0.058)

Note. Unstandardized coefficients reported. *SE* in parentheses. *$p < .05$, **$p < .01$, ***$p < .001$.

Gender had a significant positive association with self-confidence ($B = 0.305$, $SE = 0.080$, $p < .001$), indicating that male students reported higher self-confidence than female students. Academic year was also positively related to self-confidence ($B = 0.083$, $SE = 0.034$, $p = .015$). GPA showed a small negative, non-significant association ($B = –0.104$, $SE = 0.058$, $p = .072$). Given the coding, the negative sign indicates a weak tendency for students with better academic performance to report slightly higher self-confidence; however, this effect did not reach

statistical significance. Collinearity diagnostics were acceptable (*VIF* = 1.00–1.18), and the Durbin-Watson statistic (1.89) suggested no problematic first-order autocorrelation. Overall, the results indicate a statistically significant positive association between sport participation and self-confidence after controlling for gender, academic year, and GPA; however, the explained variance was modest ($R^2 = .067$), suggesting that self-confidence might be shaped by multiple additional factors.

Discussion

This study provides empirical evidence of a positive relationship between sport participation and university students' self-confidence. Rather than merely reflecting behavioral engagement, regular participation in sport appears to be one of several factors associated with students' psychological self-perceptions. This finding aligns with prior research suggesting that sustained physical activity is associated with enhanced self-esteem and perceived competence (Liu et al., 2024) and extends this evidence to a university context in which academic and social demands are simultaneously present. From a theoretical perspective, the findings can be interpreted through both Social Cognitive Theory and Means–End Theory. In particular, repeated participation in sport may foster self-confidence through mastery experiences, performance feedback, and social reinforcement, all of which support positive self-evaluative judgments over time (Bandura, 1977). Importantly, a means–end perspective further clarifies this mechanism by conceptualizing sport participation as a means through which students pursue valued psychological end states, such as confidence, self-efficacy, and emotional well-being. In this sense, behavioral attributes of participation (e.g., regular engagement, sustained effort, and social interaction) function as pathways linking concrete activities to abstract psychological outcomes. Differences observed across demographic and academic characteristics provide additional insight into this process. First and foremost, this study observed a gender difference in physical activity levels, indicating that male students reported higher overall participation, which may partially explain their higher self-confidence through greater exposure to mastery experiences and social reinforcement. In Vietnam, traditional gender roles may contribute to unequal encouragement and opportunities for sport participation. Evidence suggests that male students are more often encouraged to engage in outdoor and physically demanding activities, whereas females may receive less encouragement and fewer opportunities for such participation (Truong et al., 2025). However, this result contrasts with some earlier findings from Western sport contexts that reported no gender differences in self-confidence (Perry & Williams, 1998), suggesting that gendered patterns of confidence may reflect cultural norms as well as evolving

access to and experiences within sport participation. In addition, differences in self-confidence across academic years suggest a developmental pattern in which senior students reported higher confidence than sophomores. This finding may reflect cumulative academic, social, and experiential gains over time, whereby prolonged exposure to university life and repeated engagement in sport provide greater opportunities for competence development and self-regulatory growth. From a means–end perspective, sustained participation across academic years may strengthen the linkage between sport-related attributes (e.g., persistence, effort) and valued psychological end states such as confidence and perceived capability.

The association between GPA and self-confidence was small and did not reach statistical significance. Given that GPA was coded ordinally (1 = A, 2 = B, 3 = C&D), the negative coefficient suggests a weak tendency for students with stronger academic performance to report slightly higher self-confidence; however, this pattern should be interpreted cautiously. Future research may further examine how academic demands and mental health pressures interact with sport participation and confidence development among university students (Liang & Feng, 2024). Beyond academic characteristics, the social context of sport participation also emerged as an important factor. Students who trained with close social ties, such as classmates or dating partners, reported higher self-confidence than those exercising with “others”. This finding aligns with Social Cognitive Theory, which emphasizes the role of social persuasion and vicarious experiences in confidence development, and highlights the importance of supportive interpersonal environments in translating participation into psychological benefits. Differences associated with willingness to pay (WTP) for sport participation further underscore the role of engagement intensity and commitment. Students with moderate levels of WTP (USD 100–200 per month) reported higher self-confidence than those with very low expenditure, suggesting that moderate financial investment may reflect greater involvement, perceived value, or access to structured sport opportunities. From a means–end perspective, such investment may strengthen the perceived utility of sport participation as a means to achieve valued psychological outcomes, whereas very low or very high expenditure levels may reflect constrained access or selective participation patterns that do not yield comparable benefits.

From a practical standpoint, these findings highlight the potential value of sport participation as more than a recreational pursuit within higher education. Universities may consider positioning structured and inclusive sport programs as one potentially useful component of a broader strategy to support students’ psychosocial development. Interventions that account for students’ academic stage, promote socially supportive participation contexts, and reduce

gender-based participation barriers may be particularly effective in fostering confidence development. By facilitating regular participation opportunities that emphasize skill development, social interaction, and enjoyment, institutions can create environments that support confidence formation alongside academic achievement. Although the cross-sectional design limits causal interpretation, the findings suggest that sport participation may represent one potentially meaningful factor associated with students' positive psychological development, including self-confidence, in the university context. Another limitation of this study is that key psychological mechanisms proposed by theory, such as mastery experiences and academic stress, were not directly measured. In addition, the use of multiple group comparisons may increase the risk of Type I error. Therefore, future longitudinal and intervention-based studies are recommended to address these limitations by clarifying causal mechanisms and further exploring additional psychosocial outcomes, such as emotional regulation, social connectedness, and the social context of participation, thereby elucidating how sport participation and academic demands jointly shape students' self-confidence.

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