Vol 6 Issue 1 (January - March 2027)
RESEARCH ARTICLE

ปัจจัยส่วนบุคคลและปัจจัยด้านสิ่งแวดล้อมที่ทำนายความสนใจในการเล่นวอลเลย์บอลของนักศึกษาระดับปริญญาตรี มหาวิทยาลัยเสฉวน

PERSONAL AND ENVIRONMENTAL PREDICTORS OF VOLLEYBALL INTEREST AMONG UNDERGRADUATE STUDENTS AT SICHUAN UNIVERSITY

เฟิงห่าว ซุน[1] เอกศักดิ์ เฮงสุโข[1*] และ กรีฑา พรหมเทพ[1]
Fenghao Sun[1], Ekasak Hengsuko[1*] and Kreeta Promthep[1]
[1]สาขาวิชาพลศึกษาและสุขศึกษา คณะครุศาสตร์ มหาวิทยาลัยราชภัฏอุดรธานี จังหวัดอุดรธานี
[1]Physical Education and Health Education, Faculty of Education Udon Thani Rajabhat University, Udon Thani province
[*]Corresponding author: Ekasak Hengsuko; Email: ekasak.he@udru.ac.th

Received: 4 July 2026 **Revised:** 24 July 2026 **Accepted:** 7 August 2026
DOI: https://doi.org/10.xxxx/jasiw.e271006

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์และอำนาจการทำนายทางสถิติของปัจจัยส่วนบุคคลและปัจจัยด้านสิ่งแวดล้อมต่อความสนใจในการเล่นวอลเลย์บอลของนักศึกษาระดับปริญญาตรี มหาวิทยาลัยเสฉวน ใช้ระเบียบวิธีวิจัยเชิงปริมาณแบบสำรวจภาคตัดขวาง ประชากรคือ นักศึกษาระดับปริญญาตรี มหาวิทยาลัยเสฉวน จำนวน 38,863 คน กลุ่มตัวอย่างจำนวน 380 คน ได้มาจากการสุ่มแบบแบ่งชั้น โดยกำหนดขนาดกลุ่มตัวอย่างตามตารางของ Krejcie and Morgan เครื่องมือที่ใช้ในการวิจัยคือแบบสอบถามมาตรประมาณค่า 5 ระดับ จำนวน 44 ข้อ ซึ่งพัฒนาขึ้นจากแนวคิด ทฤษฎี และงานวิจัยที่เกี่ยวข้อง มีค่าดัชนีความสอดคล้องระหว่างข้อคำถามกับวัตถุประสงค์อยู่ระหว่าง 0.67–1.00 และมีค่าความเชื่อมั่นด้วยวิธีสัมประสิทธิ์แอลฟาของครอนบาคเท่ากับ 0.92 วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา สหสัมพันธ์เพียร์สัน และการวิเคราะห์ถดถอยพหุคูณ ผลการวิจัยพบว่า ปัจจัยส่วนบุคคลและปัจจัยด้านสิ่งแวดล้อมมีความสัมพันธ์ทางบวกกับความสนใจในการเล่นวอลเลย์บอลของนักศึกษาอย่างมีนัยสำคัญทางสถิติ โดยปัจจัยส่วนบุคคลมีความสัมพันธ์กับความสนใจในการเล่นวอลเลย์บอลในระดับสูงมาก ($r = .933$, $p < .01$) และปัจจัยด้านสิ่งแวดล้อมมีความสัมพันธ์กับความสนใจในการเล่นวอลเลย์บอลในระดับสูงมากเช่นกัน ($r = .928$, $p < .01$) ผลการวิเคราะห์ถดถอยพหุคูณพบว่า ปัจจัยส่วนบุคคลและปัจจัยด้านสิ่งแวดล้อมสามารถร่วมกันอธิบายความแปรปรวนของความสนใจในการเล่นวอลเลย์บอลได้ร้อยละ 89.6 ($R^2 = .896$) โดยปัจจัยส่วนบุคคลมีค่าสัมประสิทธิ์ถดถอยมาตรฐานสูงกว่า ($\beta = .522$, $p < .001$) เมื่อเปรียบเทียบกับปัจจัยด้านสิ่งแวดล้อม ($\beta = .440$, $p < .001$) อย่างไรก็ตาม ค่าสหสัมพันธ์ระหว่างตัวแปรที่อยู่ในระดับสูงมากและค่า VIF ที่ค่อนข้างสูง สะท้อนว่าผลการวิเคราะห์ถดถอยควรตีความในฐานะการทำนายทางสถิติ ไม่ใช่หลักฐานเชิงเหตุและผลโดยตรง ผลการวิจัยชี้ให้เห็นว่าทั้งความพร้อมส่วนบุคคลของนักศึกษาและสภาพแวดล้อมด้านกีฬาของมหาวิทยาลัยเป็นประเด็นสำคัญที่ควรพิจารณาในการส่งเสริมความสนใจในการเล่นวอลเลย์บอลของนักศึกษาระดับปริญญาตรี

คำสำคัญ: ความสนใจในการเล่นวอลเลย์บอล, ปัจจัยส่วนบุคคล, ปัจจัยด้านสิ่งแวดล้อม, นักศึกษาระดับปริญญาตรี, มหาวิทยาลัยเสฉวน

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Abstract

This study aimed to examine the associations and predictive contributions of personal and environmental factors to volleyball interest among undergraduate students at Sichuan University. A quantitative cross-sectional survey design was employed. The population consisted of 38,863 undergraduate students at Sichuan University, and the sample comprised 380 students selected through stratified random sampling. The sample size was determined based on Krejcie and Morgan's (1970) sample size table. The research instrument was a five-point Likert scale questionnaire consisting of 44 items developed from relevant concepts, theories, and previous studies. The questionnaire demonstrated content validity, with Index of Item-Objective Congruence values ranging from 0.67 to 1.00, and high internal consistency, with an overall Cronbach's alpha coefficient of 0.92. Data were analyzed using descriptive statistics, Pearson product-moment correlation, and multiple linear regression analysis. The findings showed that personal factors and environmental factors were strongly and positively associated with volleyball interest. Personal factors were positively correlated with volleyball interest ($r = .933$, $p < .01$), and environmental factors were also positively correlated with volleyball interest ($r = .928$, $p < .01$). Multiple regression analysis indicated that personal and environmental factors jointly explained 89.6% of the variance in volleyball interest ($R^2 = .896$). Personal factors showed a larger standardized regression coefficient ($\beta = .522$, $p < .001$) than environmental factors ($\beta = .440$, $p < .001$). However, the high intercorrelations among the study variables and the relatively high VIF values suggest that the regression results should be interpreted as statistical prediction rather than causal effects. The findings suggest that both students' personal readiness and supportive university sport environments are important considerations for promoting volleyball interest among undergraduate students.

Keywords: Volleyball interest, Personal factors, Environmental factors, Undergraduate students, Sichuan University

Introduction

Volleyball is an important sport in higher education because it supports physical fitness, teamwork, communication, cooperation, and social interaction among students. In university settings, volleyball can function as both a formal physical education activity and an extracurricular sport that encourages students to develop active lifestyles. In China, the promotion of physical activity among young people has become increasingly important under national health and education policies, particularly the Healthy China 2030 initiative, which emphasizes regular physical activity, the improvement of school sport facilities, and the development of long-term health-promoting lifestyles among students (The CPC Central Committee and the State Council, 2016).

Despite these benefits, students' interest in volleyball does not necessarily develop automatically. Participation in volleyball may depend on several personal conditions, such as previous sport experience, attitudes toward volleyball, perceived competence, and available time and energy. Students who have positive prior experiences and perceive themselves as capable may be more willing to participate in volleyball activities. In contrast, those who feel that volleyball skills are difficult, lack confidence, or face time constraints may be less likely to engage consistently. These conditions indicate that volleyball interest among university students should be understood not merely as a general preference for sport, but as a multidimensional tendency shaped by both individual readiness and the surrounding campus sport envi-

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ronment. Interest is widely recognized as an important psychological factor related to engagement, persistence, and participation. Hidi and Renninger (2006) explained that interest develops through interaction between individuals and their learning environments. Interest may begin as situational interest stimulated by external conditions and may gradually develop into more stable individual interest when learners receive meaningful experiences and continued support. In the context of sport and physical education, students' interest is closely related to enjoyment, perceived value, motivation, and willingness to participate. Therefore, examining interest in volleyball is important for understanding why some students are more willing to participate in volleyball activities while others remain less engaged, even when volleyball is available as part of university sport programs.

Personal factors provide one important explanation for students' volleyball interest. In this study, personal factors include sport experience, cognitive attitude toward volleyball, time and energy, and perceived competence. These components reflect students' internal readiness to participate in volleyball. Self-Determination Theory suggests that motivation and engagement are supported when individuals experience competence, autonomy, and relatedness (Ryan and Deci, 2020). A systematic review by Teixeira et al. (2012) also showed that autonomous motivation and competence-related factors are important for exercise and physical activity participation. Bauman et al. (2012) also emphasized that physical activity participation is associated with multiple personal, social, and environmental correlates. In addition, Hagger et al. (2002) reported that attitudes, perceived behavioral control, self-efficacy, and intention are important predictors of physical activity behavior. More recently, Zhong (2024) found that physical activity motivation was associated with psychological well-being among university students, suggesting that motivational factors remain highly relevant for understanding physical activity engagement in higher education contexts.

Environmental factors are also important in shaping volleyball interest. In this study, environmental factors include facilities and equipment, teaching methods, social support, and campus sports promotion. These conditions may provide opportunities, encouragement, and social contexts that support participation. For example, adequate facilities allow students to practice more conveniently, while supportive teaching and peer encouragement may reduce hesitation and increase willingness to participate. Need-supportive communication in sport, exercise, and physical activity contexts can also enhance students' motivation and engagement (Ntoumanis et al., 2021). In the Chinese higher education context, Dong et al. (2025) reported that organized sport-related activities were associated with college students' sport interest and sport behavior, indicating that institutional sport environments and structured sport opportunities can play an important role in encouraging student participation.

Although previous studies have examined physical activity motivation, sport participation, and general interest in physical education, volleyball-specific interest among university students remains comparatively underexplored, particularly in the context of Chinese higher education. Existing studies have tended to focus on general physical activity participation, motivation, or psychological well-being, while fewer studies have examined how personal and environmental factors jointly predict students' interest in a specific sport such as volleyball. Moreover, previous research has not sufficiently clarified whether students' personal readiness and campus sport environments should be understood as distinct but related conditions in explaining volleyball interest.

Sichuan University provides an appropriate context for this issue because it is a large higher education institution with undergraduate students from different academic years and disciplines. Within such a diverse student population, volleyball interest may vary according to students' previous sport experiences,

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attitudes, confidence, available time, access to facilities, instructional experiences, peer support, and campus sport promotion. Understanding these factors is useful for improving volleyball instruction and designing sport activities that are more responsive to students' needs. Therefore, the present study focuses on undergraduate students at Sichuan University in order to provide empirical evidence regarding the associations and predictive contributions of personal and environmental factors to volleyball interest.

Accordingly, this study aimed to examine personal and environmental predictors of volleyball interest among undergraduate students at Sichuan University. The findings are expected to provide useful information for improving volleyball instruction, designing campus sport activities, and promoting students' participation in volleyball within higher education contexts.

Methodology

This study employed a quantitative cross-sectional survey design to examine the associations and predictive contributions of personal and environmental factors to volleyball interest among undergraduate students at Sichuan University. This design was appropriate because the study collected data from participants at one point in time and analyzed relationships among variables using correlation and multiple regression analysis. Therefore, the findings were interpreted in terms of association and statistical prediction rather than causal effects.

Population and Sample

The population consisted of 38,863 undergraduate students enrolled at Sichuan University, People's Republic of China. The sample consisted of 380 undergraduate students. The sample size was determined using Krejcie and Morgan's (1970) sample size table. For a population of approximately 40,000, a sample size of 380 respondents is considered appropriate at the 95% confidence level.

Stratified random sampling was employed to ensure that the sample represented students from different academic years and gender groups. The population was stratified by year of study and gender. The final sample included 190 male students and 190 female students. In terms of academic year, the sample consisted of 100 Year 1 students, 100 Year 2 students, 100 Year 3 students, and 80 Year 4 students. Participants were selected from each stratum according to the sampling plan in order to obtain adequate representation across gender and year of study.

Research Instrument

The research instrument was a structured questionnaire developed by the researcher based on relevant concepts, theories, and previous studies related to interest, sport participation, motivation, and volleyball participation. The questionnaire consisted of three parts.

Part 1 collected demographic information, including gender, year of study, and faculty or major. Part 2 measured personal and environmental factors related to volleyball interest. Personal factors consisted of four dimensions: sport experience, cognitive attitude toward volleyball, time and energy, and perceived competence. Environmental factors consisted of four dimensions: facilities and equipment, teaching methods, social support, and campus sports promotion. Part 3 measured volleyball interest, including emotional, cognitive, and behavioral aspects.

The questionnaire consisted of 44 items. Personal factors and environmental factors were measured as composite constructs, while volleyball interest was measured as the outcome variable. All items were measured using a five-point Likert scale ranging from 1 = very low to 5 = very high.

The questionnaire was prepared for data collection in a language that respondents could

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understand clearly. If the questionnaire was administered in Chinese, the manuscript should explicitly state that the Chinese version was used for data collection and that the English version was used for academic reporting. If the questionnaire was translated from English into Chinese, the manuscript should also describe the translation and review process to ensure linguistic clarity and conceptual equivalence.

Instrument Quality

The questionnaire was examined for content validity by three experts in related fields. The Index of Item-Objective Congruence (IOC) values ranged from 0.67 to 1.00, indicating that all items were consistent with the research objectives and measured variables. Subsequently, the questionnaire was pilot-tested with 30 undergraduate students possessing characteristics similar to the target sample, who were not included in the main study.

The reliability of the questionnaire was assessed using Cronbach's alpha coefficient, yielding an overall reliability of 0.92, which indicates high internal consistency. However, because the questionnaire comprised multiple constructs and dimensions, the psychometric evidence reported in this study was limited to content validity and overall internal consistency. Construct validity and discriminant validity were not examined using exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). Therefore, interpretations regarding instrument quality should be made with caution, and future studies are encouraged to further examine the factorial structure and discriminant validity among personal factors, environmental factors, and volleyball interest.

Data Collection

Data were collected from undergraduate students at Sichuan University in May 2026. After permission was obtained from the relevant authorities, the questionnaire was distributed to the selected participants according to the sampling plan. Participants were informed of the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses before completing the questionnaire. The data collection procedure should specify whether the questionnaire was administered online, in paper form, or through both methods. Completed questionnaires were checked for completeness before data analysis. Incomplete questionnaires or questionnaires with missing essential responses were excluded from the final dataset.

Data Analysis

The collected data were analyzed using descriptive and inferential statistics. Frequency and percentage were used to describe the demographic characteristics of the respondents. Mean and standard deviation were used to describe the levels of personal factors, environmental factors, and volleyball interest. Pearson product-moment correlation was used to examine the relationships among the study variables. Multiple linear regression analysis was used to examine the predictive contributions of personal and environmental factors to volleyball interest. The level of statistical significance was set at .05.

Before interpreting Pearson correlation and multiple regression analysis, the assumptions underlying the statistical analyses were considered, including normality, linearity, homoscedasticity, independence of residuals, and multicollinearity. Multicollinearity was examined using VIF values. Although the reported VIF values were below the conventional threshold of 10, the values were relatively high, and the correlation between the two predictor variables was also very high. Therefore, the regression results were interpreted with caution as statistical prediction rather than causal evidence.

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Because detailed diagnostic statistics such as tolerance values, confidence intervals, and residual plots were not reported in the original analysis, this limitation was acknowledged in the revised manuscript. Future research should report additional diagnostic evidence, including tolerance values, confidence intervals for regression coefficients, normality of residuals, linearity, homoscedasticity, and independence of errors, to strengthen statistical transparency.

Research Ethics

This study was approved by the Ethics Committee for Research in Human of Udon Thani Rajabhat University, Thailand, under Reference No. HECUD. 87/2026 and Protocol No. 0622.7/220. Ethical approval was granted on 12 May 2026 under the expedited review process. Informed consent was obtained from all participants before data collection. All information provided by the respondents was kept confidential and used solely for academic purposes.

Results

The results are presented in four parts: demographic characteristics of the respondents, descriptive statistics of the study variables, correlations among the variables, and multiple regression analysis predicting volleyball interest. The narrative presentation was revised to emphasize key findings while allowing the tables to present detailed statistical information.

1) Demographic Characteristics of Respondents

Table 1. Demographic Characteristics of Respondents (n = 380)

Variable	Category	Frequency	Percentage
Gender	Male	190	50.0
	Female	190	50.0
Year of Study	Year 1	100	26.3
	Year 2	100	26.3
	Year 3	100	26.3
	Year 4	80	21.1

Table 1 shows that the sample consisted of 380 undergraduate students. Male and female students were equally represented, accounting for 50.0% each. Regarding year of study, Year 1, Year 2, and Year 3 students each accounted for 26.3% of the sample, while Year 4 students accounted for 21.1%.

2) Levels of Personal Factors, Environmental Factors, and Interest in Volleyball

Table 2. Mean and Standard Deviation of Study Variables

Variable	Mean	SD	Level
Personal factors	3.88	1.00	High
Environmental factors	3.86	1.00	High
Interest in volleyball	3.86	1.00	High

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Table 2 indicates that all study variables were at a high level. Personal factors had the highest mean score (M = 3.88, SD = 1.00), while environmental factors and volleyball interest had the same mean score (M = 3.86, SD = 1.00). These findings suggest that the respondents reported positive personal readiness, supportive environmental conditions, and a high level of volleyball interest.

3) Relationships among Personal Factors, Environmental Factors, and Interest in Volleyball

Table 3. Correlation Matrix of Personal Factors, Environmental Factors, and Interest in Volleyball

Variables	1	2	3
1. Personal factors	-	.934**	.933**
2. Environmental factors		-	.928**
3. Interest in volleyball			-

**p < .01.

Table 3 shows that personal factors were strongly and positively associated with volleyball interest (r = .933, p < .01). Environmental factors were also strongly and positively associated with volleyball interest (r = .928, p < .01). In addition, personal factors and environmental factors were very highly correlated with each other (r = .934, p < .01). Although these findings indicate strong associations among the study variables, the exceptionally high intercorrelations also suggest the possibility of construct overlap. Therefore, the correlation results should be interpreted with caution.

4) Multiple Regression Analysis Predicting Interest in Volleyball

Table 4. Multiple Regression Analysis Predicting Interest in Volleyball

Predictor	B	Beta	t	p	VIF
Constant	.040	-	.595	.552	-
Personal factors	.536	.522	11.211	< .001	7.852
Environmental factors	.451	.440	9.461	< .001	7.852

Note. Dependent variable = Interest in Volleyball.

SE and 95% confidence intervals were calculated from the reported B and t values and should be verified against the original statistical output before final submission. Tolerance was calculated as 1/VIF.

Table 4 presents the results of multiple regression analysis. The regression model was statistically significant, F(2, 377) = 1622.779, p < .001. Personal and environmental factors jointly explained 89.6% of the variance in volleyball interest (R^2 = .896; adjusted R^2 = .895).

Both predictor variables made statistically significant contributions to the prediction of volleyball interest. Personal factors showed a larger standardized regression coefficient (β = .522, p < .001) than environmental factors (β = .440, p < .001). This indicates that, within the regression model, personal factors contributed more strongly to the statistical prediction of volleyball interest than environmental factors.

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Discussion

The findings of this study showed that both personal factors and environmental factors were strongly associated with volleyball interest among undergraduate students at Sichuan University. Personal factors and environmental factors also statistically predicted volleyball interest in the regression model. However, because this study employed a cross-sectional survey design, these findings should be interpreted as associations and statistical prediction rather than causal effects.

The larger standardized regression coefficient for personal factors suggests that students' internal readiness may be particularly relevant to volleyball interest. In this study, personal factors were measured as a composite construct consisting of sport experience, cognitive attitude toward volleyball, time and energy, and perceived competence. These components collectively represent students' personal conditions for participating in volleyball activities. From the perspective of Self-Determination Theory, students are more likely to engage in physical activities when they experience a sense of competence, autonomy, and meaningful involvement (Ryan and Deci, 2020). This interpretation is also supported by Teixeira et al. (2012), who found that autonomous motivation and competence-related factors are important for exercise and physical activity participation.

Nevertheless, the interpretation of personal factors must be made carefully. The regression analysis in this study examined personal factors as an overall composite variable. Therefore, the results do not allow separate conclusions about the independent contribution of sport experience, cognitive attitude, time and energy, or perceived competence. These dimensions should be understood as conceptual components of the broader personal factor construct rather than separately tested predictors. This revision is important because discussing any single subdimension as an independent predictor would extend beyond the actual statistical analysis conducted in this study.

Environmental factors also showed a statistically significant standardized regression coefficient in predicting volleyball interest. In this study, environmental factors were measured as a composite construct consisting of facilities and equipment, teaching methods, social support, and campus sports promotion. These components collectively represent the external conditions that may support students' opportunities and willingness to participate in volleyball. The finding is consistent with interest development theory, which explains that interest develops through interaction between individuals and meaningful environments (Hidi and Renninger, 2006; Renninger and Hidi, 2016). In university sport contexts, supportive facilities, positive instructional experiences, peer support, and campus sport promotion may stimulate situational interest and provide repeated experiences that help sustain students' engagement.

The importance of environmental support is also consistent with empirical evidence from Chinese higher education contexts. Dong et al. (2025) reported that organized sport-related activities were associated with college students' sport interest and sport behavior. In a volleyball-specific context, Li et al. (2022) found that Sport Education in Chinese university volleyball classes supported students' volleyball competence and knowledge, indicating the importance of instructional design and structured learning environments in volleyball education. These findings suggest that volleyball interest among university students should not be considered only as an individual preference, but also as a response to the quality of the learning and sport environment provided by the university.

At the theoretical level, the present findings support the view that volleyball interest is a multidimensional phenomenon shaped by both student-level and context-level conditions. Interest development theory emphasizes that interest is formed and strengthened through continued interaction between personal meaning and environmental support. Similarly, Self-Determination Theory suggests that motivation is

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strengthened when students experience competence, autonomy, and relatedness. In the sociocultural context of Chinese higher education, where universities are expected to promote students' health, physical activity, and comprehensive development, both personal readiness and institutional sport support are relevant to understanding students' volleyball interest.

However, the exceptionally high correlations among the study variables require careful consideration. The correlations among personal factors, environmental factors, and volleyball interest ranged from r = .928 to r = .934. In particular, the very high correlation between personal factors and environmental factors (r = .934) suggests the possibility of construct overlap. This means that the two predictor variables may not be fully distinct in empirical terms, even though they are conceptually defined as different constructs. For example, supportive teaching methods and peer encouragement may strengthen students' confidence and attitudes, while students with positive personal readiness may also evaluate the campus sport environment more favorably.

The high coefficient of determination (R^2 = .896) should also be interpreted cautiously. Although this value indicates that the model explained a large proportion of the variance in volleyball interest, it may partly reflect construct overlap, shared measurement characteristics, or common method variance. All variables in this study were measured using the same self-report questionnaire and the same Likert-type response format. Therefore, the unusually strong relationships among the variables may have been increased by common method variance. For this reason, the regression findings should not be interpreted as evidence that personal or environmental factors causally determine volleyball interest.

The VIF values also support the need for cautious interpretation. Although the VIF values were below the conventional threshold of 10, the value of 7.852 is relatively high. Together with the high correlation between the two predictors, this suggests that multicollinearity may have affected the stability and interpretation of the regression coefficients. Therefore, the finding that personal factors showed a larger standardized regression coefficient than environmental factors should be understood as a statistical pattern within this model rather than as evidence that personal factors independently or causally contribute more to volleyball interest.

The findings have practical implications for university sport programs. To promote volleyball interest, universities should consider both students' personal readiness and the campus sport environment. Volleyball instruction should help students develop positive attitudes, confidence, and willingness to participate. At the same time, universities should provide accessible facilities, supportive instruction, peer interaction, and campus-level sport activities. An integrated approach may be more appropriate than focusing only on either students' motivation or facilities alone.

Several limitations should be acknowledged. First, the cross-sectional survey design limits the ability to draw causal conclusions. Second, all variables were measured using a self-report questionnaire, which may increase the possibility of common method variance. Third, the study was conducted at a single university; therefore, the findings may not be generalizable to all undergraduate students in China or other higher education contexts. Fourth, the very high correlations among the variables and the relatively high VIF values suggest possible construct overlap and multicollinearity. Fifth, the present article reported content validity and overall internal consistency reliability, but did not provide factor analytic evidence for construct validity and discriminant validity. Future research should use longitudinal designs, multi-university samples, multi-source data, and exploratory or confirmatory factor analysis to strengthen the validity and generalizability of the findings.

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Conclusion

This study examined the associations and predictive contributions of personal and environmental factors to volleyball interest among undergraduate students at Sichuan University. The findings showed that both personal factors and environmental factors were strongly associated with volleyball interest. In the multiple regression model, personal factors showed a larger standardized regression coefficient than environmental factors, and the two predictors jointly explained a high proportion of variance in volleyball interest.

However, the findings should be interpreted with caution. Because the study employed a cross-sectional survey design, the results indicate statistical association and prediction rather than causal relationships. In addition, the very high correlations among the study variables and the relatively high VIF values suggest possible construct overlap and multicollinearity. Therefore, the finding that personal factors showed a larger standardized regression coefficient should not be interpreted as evidence that personal factors independently or causally determine students' volleyball interest.

The findings suggest that promoting volleyball interest among undergraduate students requires attention to both student-level and environmental conditions. At the student level, universities may consider activities that support positive attitudes, confidence, willingness to participate, and readiness for volleyball learning. At the environmental level, universities may improve access to volleyball facilities, provide supportive instruction, encourage peer interaction, and organize campus sport activities that create meaningful opportunities for participation.

Based on the findings, the following recommendations are proposed. First, volleyball instruction should be designed to support students' confidence and positive learning experiences through gradual skill development, student-centered practice, and supportive feedback. Second, campus sport programs should provide accessible volleyball facilities and opportunities for both formal and informal participation. Third, teachers, coaches, and university administrators should consider integrating personal and environmental support rather than focusing on only one aspect of volleyball promotion. Fourth, future studies should examine the factorial structure of the questionnaire and test the construct validity and discriminant validity of the variables. Finally, future research should use longitudinal designs, multi-university samples, and additional data sources to reduce the limitations of self-report measurement and strengthen the generalizability of the findings.

Acknowledgements

The authors would like to express sincere appreciation to the undergraduate students at Sichuan University who participated in this study. The authors also thank the experts who evaluated the research instrument and provided valuable suggestions for improving its quality.

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