

A Study on The Present Situation and Development Countermeasures of Basketball in Secondary Vocational School in Huainan

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Abstract

This article aimed to examine the current situation of basketball participation in secondary vocational schools in Huainan City, analyze the factors influencing students' participation and the development of basketball activities, and propose strategies for promoting basketball activities in secondary vocational schools in Huainan City. The sample consisted of 302 students from secondary vocational schools in Huainan and 5 physical education teachers. They were selected by purposive sampling. The instruments for collecting data were questionnaires and semi-structured interview forms. The questionnaires were used to collect quantitative data from students regarding their participation in basketball activities, while interviews with physical education teachers were conducted to obtain additional information about teaching conditions and development issues. All research instruments were validated by experts using the Item-Objective Congruence (IOC) method. The questionnaire demonstrated acceptable reliability (Cronbach's alpha = 0.91). Data were analyzed by descriptive statistics and content analysis.

The research results indicated that basketball participation in secondary vocational schools in Huainan was generally positive, with most schools having basic teaching resources and students showing strong interest in participating; however, improvements in sports facilities, equipment, and increased class hours were still needed to enhance both curricular and extracurricular activities. Differences were found between teachers' and students' perceptions regarding teaching quality, feedback, and class size, with teachers tending to rate these aspects more positively, suggesting a perceptual gap and the need to improve communication and feedback. Interview findings revealed that inadequate sports facilities, limited basketball equipment, insufficient funding, and a shortage of specialized basketball instructors were key barriers to the development of basketball activities in secondary vocational schools. Teachers also emphasized the importance of increasing administrative support, improving facility management, and providing more inter-school basketball competitions. For development, a "competition and learning integration model" is recommended, focusing on enhancing general students' physical fitness, providing systematic training for talented players, and promoting inter-school cooperation and joint training to strengthen competitive basketball teams.

Keywords: Basketball Development, Vocational Education Students, Sports Participation

Introduction

In recent years, physical education has been widely recognized as an important component of education that promotes students' holistic development. School sports not only improve physical fitness but also cultivate teamwork, discipline, and social responsibility among students. Previous research has shown that participation in sports activities contributes significantly to students' physical health, motor skills, and social development (Bailey, 2006; Lin, 2024). Team sports such as basketball are particularly effective in promoting cooperation, communication, and strategic thinking among students. In China, basketball has been widely incorporated into school physical education programs and has been shown to improve students' physical fitness, psychological resilience, and teamwork abilities (Lin, 2024).

Despite these benefits, several studies have reported challenges in the implementation of physical education programs in vocational institutions. These challenges include outdated teaching methods, limited sports facilities, and insufficient student engagement. Traditional basketball teaching methods often rely on repetitive drills and teacher-centered instruction, which may reduce students' motivation and limit opportunities for active participation and collaborative learning (Wu & Tasnaina, 2025). Similarly, research on basketball instruction in secondary schools has indicated that conventional teaching approaches often fail to stimulate students' learning interest and restrict the development of teamwork, problem-solving ability, and independent participation (Li, Mahakhan, & Watchayakarn, 2025; Li et al., 2025). These findings suggest that although basketball is popular among students, effective instructional strategies for promoting participation and improving learning outcomes remain insufficient.

Secondary vocational education plays an important role in cultivating skilled talents for regional and national development. However, physical education programs in many vocational schools still face several constraints, including limited sports facilities, insufficient professional teachers, and a lack of innovative teaching approaches. Previous studies have also confirmed that regular participation in structured physical activity can significantly improve students' physical health and well-being (Bull et al., 2020; Wang et al., 2024). In Anhui Province, physical education curricula in many secondary vocational schools mainly focus on traditional sports activities, while basketball classes are often limited to basic skill training. As a result, students' motivation and participation in basketball activities remain relatively low.

Huainan City, a resource-based industrial city undergoing economic transformation, requires skilled workers who possess not only professional competence but also strong physical fitness, teamwork ability, and psychological resilience. However, empirical research focusing on basketball participation and development strategies in secondary vocational schools in Huainan City remains limited. Therefore, the findings of this study are expected to provide practical insights for improving basketball teaching practices and supporting the development of physical education in vocational schools.

Objectives

1. To examine the current situation of basketball participation in secondary vocational schools in Huainan City.
2. To analyze the factors affecting the development of basketball and students' participation in basketball activities.
3. To propose development strategies for promoting basketball activities in secondary vocational schools in Huainan City.

Literature review

Importance of Physical Education and School Sports

Physical education and school sports play an important role in promoting students' holistic development. Through structured physical activities, students can improve their physical fitness, motor skills, and overall health. In addition to physical benefits, participation in school sports also helps develop social skills, teamwork, discipline, and emotional well-being. Therefore, many education systems emphasize integrating sports activities into school curricula to support students' comprehensive development. Previous research has shown that physical education and school sports significantly contribute to students' physical, psychological, and social development. Bailey (2006) reported that physical education in schools positively influences students' physical health, cognitive development, social interaction, and emotional well-being, and encourages lifelong physical activity habits. Similarly, Walker et al. (2023) found that school-based physical activity programs can enhance students' physical health, social interaction, and classroom engagement. These findings highlight the importance of strengthening physical education programs and promoting sports participation among students in schools.

Basketball Development in School Physical Education

Basketball is one of the most popular team sports integrated into school physical education programs. Because of its simple rules and high level of interaction, basketball is widely used to promote students' physical fitness, coordination, and teamwork skills. Studies have shown that participation in basketball activities can significantly improve students' motor skills, physical fitness, and social interaction abilities (Lin, 2024). In addition to physical development, basketball education also contributes to students' psychological and social development. Through cooperation and competition during games, students can develop communication skills, teamwork, and problem-solving abilities in dynamic situations. Recent research has also emphasized the importance of improving basketball teaching methods in school physical education. For example, game-based teaching approaches have been found to significantly improve students' motivation, engagement, and learning outcomes in basketball classes compared with traditional teaching methods (Li et al., 2024). These findings highlight the importance of developing effective basketball teaching strategies to enhance students' participation and maximize the educational value of basketball in school physical education.

Sports Participation among Vocational Education Students

Sports participation is an important factor in promoting students' physical health and overall development in educational institutions, including vocational education. Although vocational education mainly focuses on technical and professional training, participation in sports activities helps improve physical fitness, reduce stress, and enhance students' social and interpersonal skills. Previous studies have emphasized the role of social support in

encouraging sports participation among students. Dong et al. (2025) found that support from family, peers, and teachers significantly influences adolescents' participation in physical activities. Higher levels of encouragement and interaction from these groups are associated with increased levels of sports participation among students. Similarly, Yaakop et al. (2025) reported that integrating physical education and sports activities into vocational education programs can promote students' physical fitness, motivation, and social development. However, the study also identified challenges such as limited facilities and insufficient curriculum time, which may reduce students' participation in sports.

Strategies for Promoting Basketball Activities in Schools

Promoting basketball activities in schools requires effective teaching strategies that encourage students' participation and improve learning outcomes. One important approach is the use of cooperative learning in basketball instruction. Research has shown that cooperative learning strategies can enhance students' motivation, teamwork, and skill development during physical education classes. Afif, Wali, and Sukoco (2022) reported that the application of a cooperative learning model in basketball learning significantly improved junior high school students' learning outcomes and participation compared with traditional teaching methods. In addition, innovative teaching approaches such as game-based learning and modified games have been widely recommended to promote basketball participation in schools. Li, Mahakhan, and Watchayakarn (2025) found that basketball teaching strategies that incorporate small games, skill-specific games, modified rules, and real-game situations can increase students' interest, improve basketball skills, and enhance participation in basketball learning activities. These strategies help create more engaging and effective basketball learning environments in school physical education programs.

Research Methodology

Research Design

This study employed a quantitative survey research design to investigate the current situation of basketball participation in secondary vocational schools in Huainan City, Anhui Province, China. The research also analyzed the factors influencing basketball development and proposed strategies to promote basketball activities in vocational schools.

Research Population and Sample

The population of this study consisted of basketball teachers and students from secondary vocational schools in Huainan City, Anhui Province, China. The sample included two groups:

1. Basketball teachers

A total of 29 basketball teachers from secondary vocational schools were selected using purposive sampling to provide information regarding basketball teaching practices and the development of basketball activities in schools.

2. Students participating in basketball activities

A total of 302 students from ten secondary vocational schools in Huainan City were selected using simple random sampling. The sample size was determined using Yamane's formula (Yamane, 1973).

Research Instrument

The research instrument was a structured questionnaire designed to collect data related to basketball participation and development in vocational schools. The questionnaire consisted of three parts:

1. General information of respondents
2. Factors influencing basketball participation, including
 - 2.1 Resources and facilities
 - 2.2 Student attitudes and interests
 - 2.3 Outcomes of basketball participation, including
 - 2.3 School support
3. Factors influencing basketball participation, including
 - 3.1 Level of participation in basketball activities
 - 3.2 Development of students' sports skills
 - 3.3 Development of basketball activities in schools

All items were measured using a five-point Likert scale.

Instrument Validation and Reliability

The questionnaire was validated by three experts using the Index of Item-Objective Congruence (IOC) method. The IOC values ranged from 0.80 to 1.00, indicating acceptable content validity. The reliability of the questionnaire was assessed using Cronbach's alpha coefficient, and the overall reliability coefficient was 0.91, indicating a high level of internal consistency and suitability for data collection.

Data Collection

Data were collected from ten secondary vocational schools in Huainan City after obtaining permission from school administrators. Questionnaires were distributed to the selected teachers and students, and the completed questionnaires were collected for analysis.

Data Analysis

The collected data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. These statistical methods were employed to describe the current situation of basketball participation among students and to examine the factors influencing the development of basketball activities in secondary vocational schools in Huainan City, Anhui Province, China.

Conceptual Framework

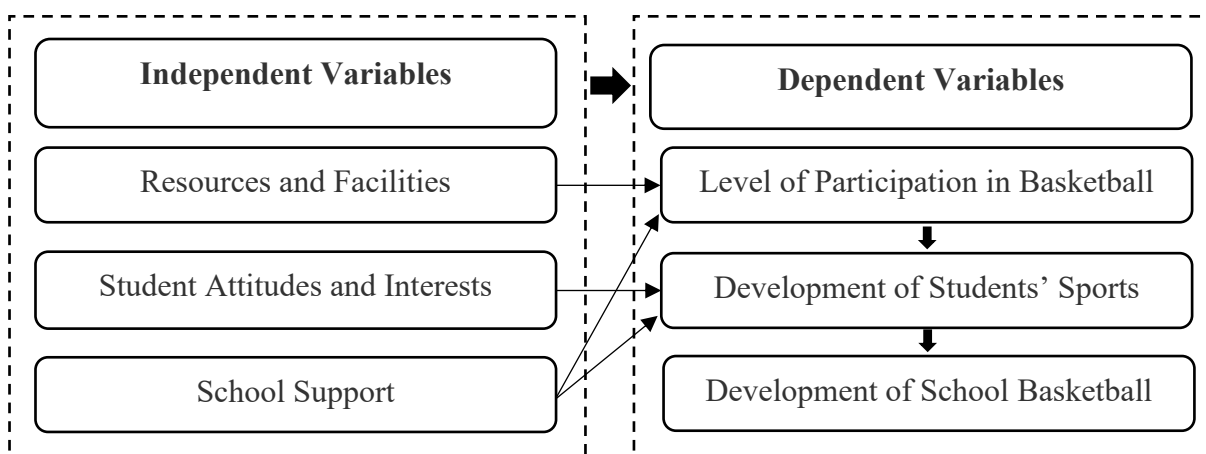


Figure 1: Conceptual Framework

The conceptual framework of this study presents the relationship between the independent variables and dependent variables. The independent variables include resources and facilities, student attitudes and interests, and school support. These factors are expected to influence the level of participation in basketball activities. Increased participation may lead to the development of students' sports skills and further support the development of basketball programs in schools.

Research Finding

1. Current Situation of Basketball Participation among Vocational School Students in Huainan.

To examine the current situation of basketball participation among students in secondary vocational schools in Huainan City, descriptive statistics were used to analyze students' participation levels. The results are presented in Table 1.

Table 1: Basketball Participation Levels among Students in Selected Vocational Schools in Huainan City

Participation Level	Anhui Mechanical Engineering School (%)	Danwai Information Industry School (%)	Shouxian Vocational School (%)
Never participated	32.08	14.67	20.35
Occasional participation	41.25	35.21	45.18
Regular participation	20.14	23.45	21.33
Professional training	6.53	26.67	13.14

Table 1 shows the distribution of basketball participation among students in three secondary vocational schools in Huainan City. The results indicate significant differences in participation levels among the schools. Anhui Mechanical Engineering School had the highest proportion of students who had never participated in basketball activities (32.08%), indicating relatively low engagement in sports activities. In contrast, Danwai Information Industry School demonstrated the highest rate of professional basketball training participation (26.67%), suggesting stronger support for basketball development. Shouxian Vocational School showed a moderate level of participation, with the largest proportion of students participating occasionally in basketball activities. These findings suggest that differences in school facilities, sports programs, and instructional support may influence students' participation in basketball activities.

2. Differences in Basketball Participation among Schools.

To further analyze the differences in basketball participation among the three schools, a chi-square test was conducted. The results are presented in Table 2.

Table 2: Chi-Square Test of Differences in Basketball Participation among Schools

Variable	X ²	DF	P-Value
Basketball participation level	48.350	6	<0.001

Table 2 presents the results of the chi-square analysis examining differences in basketball participation among students from the three vocational schools. The results revealed a statistically significant difference in participation levels among the schools ($X^2 = 48.350$, $p < 0.001$). This indicates that students' opportunities and engagement in basketball activities vary significantly across schools. These differences may be related to

variations in sports facilities, teaching resources, and institutional support for basketball programs. Schools with better sports infrastructure and organized basketball training programs tend to have higher participation levels.

3. Students' Interest, Satisfaction, and Motivation in Basketball Learning

A one-way ANOVA was conducted to examine differences in students' basketball learning interest, course satisfaction, and intrinsic motivation among the three schools. The results are presented in Table 3.

Table 3: Comparison of Basketball Learning Interest, Satisfaction, and Motivation among Schools

School	Learning Interest (Mean $\pm$ SD)	Course Satisfaction (Mean $\pm$ SD)	Intrinsic Motivation (Mean $\pm$ SD)
Danwai Information Industry School	3.27 $\pm$ 0.42	3.58 $\pm$ 0.67	3.41 $\pm$ 0.76
Shouxian Vocational School	3.08 $\pm$ 0.34	3.21 $\pm$ 0.54	3.12 $\pm$ 0.61
Anhui Mechanical Engineering School	2.83 $\pm$ 0.48	2.97 $\pm$ 0.63	2.85 $\pm$ 0.59
ANOVA Results: $F = 21.361-28.271$, $p < 0.001$			

Table 3 presents the comparison of basketball learning interest, course satisfaction, and intrinsic motivation among students from the three vocational schools. The results show that Danwai Information Industry School recorded the highest mean scores across all three dimensions, indicating that students in this school demonstrated greater enthusiasm and engagement in basketball learning. In contrast, Anhui Mechanical Engineering School reported the lowest scores, suggesting lower levels of interest and motivation among students. The ANOVA results revealed statistically significant differences among the three schools ($p < 0.001$). These findings indicate that school resources, teaching quality, and sports infrastructure may significantly influence students' learning experiences in basketball courses.

4. Factors Influencing Basketball Participation

Correlation analysis was conducted to examine the relationship between different engagement dimensions and basketball participation levels. The results are shown in Table 4.

Table 4: Correlation between Engagement Dimensions and Basketball Participation

Engagement Dimension	Correlation (r)	p-value
Activity participation	0.582	<0.001
Cognitive engagement	0.500	<0.001
Autonomous exploration	0.488	<0.001
Negative interest	-0.276	<0.001

Table 4 shows the correlation between different engagement dimensions and basketball participation. The results indicate that activity participation had the strongest positive correlation with basketball engagement ($r = 0.582$, $p < 0.001$), followed by cognitive engagement ($r = 0.500$, $p < 0.001$) and autonomous exploration ($r = 0.488$, $p < 0.001$). In contrast, negative interest showed a significant negative relationship with basketball

participation ($r = -0.276$, $p < 0.001$). These findings suggest that students' behavioral engagement plays a critical role in promoting basketball participation. Encouraging students to actively participate in sports activities may therefore be an effective strategy for increasing interest and engagement in basketball learning.

5. Predictive Factors Influencing Basketball Participation

Multiple regression analysis was conducted to identify key factors influencing basketball participation. The results are presented in Table 5.

Table 5: Multiple Regression Analysis of Factors Influencing Basketball Participation

Predictor Variable	β	t	p
Teaching competence	0.266	4.18	<0.001
Personal development	0.166	2.78	0.006
Intrinsic motivation	0.148	2.37	0.018

Table 5 presents the results of the multiple regression analysis examining factors influencing basketball participation. The model showed significant predictive power ($R^2 = 0.294$, $p < 0.001$), indicating that approximately 29.4% of the variance in basketball participation can be explained by the variables included in the model. Teaching competence emerged as the most influential factor ($\beta = 0.266$, $p < 0.001$), followed by personal development ($\beta = 0.166$, $p = 0.006$) and intrinsic motivation ($\beta = 0.148$, $p = 0.018$). These results suggest that improving teachers' instructional competence and enhancing students' motivation may significantly increase participation in basketball activities among vocational school students.

Conclusion

This study examined the current situation of basketball participation, analyzed the factors affecting basketball development and participation, and proposed strategies for promoting basketball activities in secondary vocational schools in Huainan City.

First, the results revealed that the overall level of basketball participation among students in secondary vocational schools in Huainan City remains relatively low. Although basketball is a popular sport among students, participation is often irregular and mainly occurs during physical education classes rather than through organized extracurricular activities. In addition, basketball teaching in many schools still focuses primarily on basic technical training, which limits students' enthusiasm and active engagement in basketball activities.

Second, several factors influencing the development of basketball and students' participation were identified. These factors include limitations in sports facilities, insufficient professional physical education teachers, and the continued use of traditional teaching methods that emphasize repetitive drills rather than interactive learning. In addition, students' motivation and interest in sports activities were found to be influenced by the quality of teaching methods, the availability of sports facilities, and opportunities for participation in organized basketball activities.

Third, based on the findings of this study, several development strategies were proposed to promote basketball activities in secondary vocational schools in Huainan City. These strategies include improving basketball facilities and sports environments, adopting innovative teaching approaches such as cooperative learning and game-based teaching methods, and increasing opportunities for students to participate in extracurricular basketball

programs and school competitions. Implementing these strategies can help enhance students' motivation, increase participation in basketball activities, and promote students' physical fitness and teamwork abilities.

Overall, this study provides useful insights for improving basketball teaching and promoting sports participation in vocational education settings. The findings may also contribute to the development of more effective physical education programs that support students' physical, social, and psychological development in secondary vocational schools.

Discussion

1. Current Situation of Basketball Participation in Secondary Vocational Schools in Huainan City

The findings revealed that most students in secondary vocational schools in Huainan City participated in basketball activities only occasionally, while relatively few students engaged in regular or systematic basketball training. This indicates that although basketball is popular among students, structured participation in school basketball programs remains limited.

This finding is consistent with Li, Mahakhan, and Watchayakarn (2025), who reported that basketball education in many schools still relies on traditional teaching approaches and lacks systematic training programs, resulting in limited student engagement in basketball learning. Similarly, Yaakop, Yusop, and Othman (2025) noted that physical education in vocational education institutions often faces constraints such as limited facilities, insufficient professional teachers, and inadequate support for sports development. These factors may explain the differences in participation levels observed among the vocational schools in this study.

2. Factors Affecting the Development of Basketball and Students' Participation

The results also indicated that several factors significantly influence students' participation in basketball activities, including teaching competence, intrinsic motivation, and opportunities for personal development. Among these factors, teaching competence appeared to be the most influential predictor of students' engagement in basketball activities.

This finding supports the study of Afif, Wali, and Sukoco (2022), which demonstrated that cooperative learning models in basketball instruction can significantly improve students' learning outcomes and participation in physical education classes. Similarly, Li et al. (2025) found that innovative teaching approaches such as game-based basketball instruction can enhance students' motivation and participation in school sports. In addition, providing meaningful physical activity opportunities in schools has been shown to improve students' physical health, social interaction, and learning engagement (Walker et al., 2023). Therefore, improving teaching quality and adopting more interactive teaching strategies may play a key role in increasing students' participation in basketball activities.

3. Development Strategies for Promoting Basketball Activities in Vocational Schools

Based on the questionnaire and interview findings, three major development strategies are proposed to promote basketball activities in secondary vocational schools in Huainan City.

First, an infrastructure development strategy should be implemented. The findings revealed that although most schools possessed basic basketball facilities, both students and teachers identified limitations in sports equipment, facility quality, and available practice space. Teacher interviews further indicated that inadequate facilities and limited financial support were major barriers to basketball development. Therefore, schools should improve sports infrastructure and provide sufficient basketball equipment to support both curricular and extracurricular activities.

Second, an instructional development strategy should be adopted to enhance students' learning experiences and participation. The results showed differences between teachers' and students' perceptions regarding teaching quality, feedback, and class organization, suggesting a need to improve instructional effectiveness. Physical education teachers should therefore employ innovative teaching approaches, such as cooperative learning and game-based teaching methods, to increase students' motivation and engagement in basketball learning. Previous studies have demonstrated that these approaches can effectively improve learning outcomes and participation in sports activities (Afif et al., 2022).

Third, an extracurricular and competition promotion strategy should be strengthened. The findings indicated that students had a strong interest in basketball participation but required more opportunities to engage in organized activities beyond regular physical education classes. Teacher interviews also emphasized the importance of inter-school cooperation and competitive opportunities. Therefore, schools should establish basketball clubs, organize inter-school tournaments, and develop joint training programs to encourage continuous participation and enhance students' basketball skills. Integrating structured sports programs into vocational education can further improve students' physical fitness, teamwork skills, and overall well-being (Yaakop et al., 2025).

Collectively, these findings support a three-dimensional development model consisting of infrastructure support, instructional innovation, and extracurricular participation enhancement. This model may serve as a practical framework for promoting sustainable basketball development in secondary vocational schools in Huainan City.

Suggestion

To translate the findings into practical improvements, secondary vocational schools should adopt effective strategies to promote basketball participation and enhance the quality of physical education programs.

1. Practical Recommendations

Based on the findings of this study, several recommendations can be proposed for improving basketball activities in secondary vocational schools. Schools should improve basketball facilities and provide adequate sports equipment to support students' participation in basketball activities. Physical education teachers should adopt more innovative teaching methods, such as cooperative learning and game-based instruction, in order to increase students' motivation and engagement in basketball classes. In addition, schools should organize extracurricular basketball activities and competitions to provide students with more opportunities to participate in sports and develop teamwork skills.

2. Suggestions for Future Research

Future studies should expand the research scope by including a larger number of vocational schools in different regions to obtain more comprehensive data. Researchers may also apply experimental or mixed-method research designs to examine the effectiveness of innovative basketball teaching methods on students' participation and learning outcomes. In addition, further research could explore the relationship between basketball participation and students' physical fitness, psychological development, and academic performance.

References

- Afif, R., Wali, C. N., & Sukoco, P. (2022). The effect of the cooperative learning model on basketball games to improve junior high school students' learning outcomes. *Journal Sport Area*, 7(2), 287-299.
[https://doi.org/10.25299/sportarea.2022.vol7\(2\).7808](https://doi.org/10.25299/sportarea.2022.vol7(2).7808)
- Bailey, R. (2006). Physical education and sport in schools: A review of benefits and outcomes. *Journal of School Health*, 76(8), 397-401.
<https://doi.org/10.1111/j.1746-1561.2006.00132.x>
- Bull, F. C., Al-Ansari, S. S., Biddle, S., et al. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, 54(24), 1451-1462.
<https://doi.org/10.1136/bjsports-2020-102955>
- Dong, M., Niu, M., Jiang, Z., Choi, Y., & Li, N. (2025). A study on the impact of sports participation support on the level of sports participation of urban junior high school girls in China. *Frontiers in Psychology*, 15, 1539415.
<https://doi.org/10.3389/fpsyg.2024.1539415>
- Li, Q., Mahakhan, P., & Watchayakarn, K. (2025). Guideline of teaching basketball method for secondary school students in Xishan District, People's Republic of China. *International Journal of Sociologies and Anthropologies Science Reviews*, 5(1), 553-562.
<https://doi.org/10.60027/ijssar.2025.5299>
- Li, X., Zhang, Y., Wang, J., et al. (2024). Pilot randomized controlled trial of a game-based intervention for teaching basketball in Chinese primary school physical education. *BMC Public Health*, 24, 20469.
<https://doi.org/10.1186/s12889-024-20469-x>
- Lin, J. (2024). Basketball-based physical education on students' physical fitness in a selected technical vocational college, Fujian, China. *Social Science and Humanities Journal*, 8(10), 5259-5286.
<https://doi.org/10.18535/sshj.v8i10.1387>
- Walker, T. J., Craig, D. W., Pfladderer, C. D., Robertson, M. C., Cuccaro, P., Fumero, K., & Bartholomew, J. B. (2023). Observed and perceived benefits of providing physical activity opportunities in elementary schools: A qualitative study. *Frontiers in Sports and Active Living*, 5, 1240382.
<https://doi.org/10.3389/fspor.2023.1240382>
- Wang, C., Zhang, Y., Liu, H., & Chen, X. (2024). Effects of structured physical activity programs on students' physical health and well-being: Evidence from school-based interventions. *BMC Public Health*, 24, 20469.
<https://doi.org/10.1186/s12889-024-20469-x>
- Wu, N., & Tasnaina, N. (2025). Developing a collaborative teaching program for basketball class in vocational college students. *International Journal of Sociologies and Anthropologies Science Reviews*, 5(4), 721-732.
<https://doi.org/10.60027/ijssar.2025.6668>
- Yaakop, N., Yusop, S. R. M., & Othman, N. N. J. N. (2025). The role and challenges of physical education and sports in STEM-oriented vocational education: A systematic review. *Journal of Public Administration and Governance*, 15(3).
<https://doi.org/10.5296/jpag.v15i3.23489>

