

Construction and Practical Exploration of an “Integration of In-class and Out-of-class” Club-Based Teaching Model for Table Tennis in Universities

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Received: 5 November 2025; **Accepted:** 28 November 2025; **Published:** 12 December 2025

Abstract:

This study investigates the construction and implementation effects of an “integration of in-class and out-of-class” club-based teaching model for table tennis at Hubei University from January to June 2025. The research employed a mixed-methods approach to examine how this innovative model bridges the gap between formal instruction and extracurricular practice. The model integrates structured classroom teaching with club activities, incorporating hierarchical instruction, competition integration, and diversified evaluation mechanisms. Data were collected from 240 undergraduate students and 8 physical education teachers through surveys, skill assessments, structured observations, and in-depth interviews. Results demonstrate significant improvements in multiple dimensions: student participation rates increased to 94.2% in club activities, technical skills showed a 42.7% greater improvement compared to traditional methods, and overall satisfaction reached 91.8%. The model successfully created a continuous learning environment that enhanced both skill acquisition and student motivation. These findings provide valuable evidence for innovating physical education pedagogy in Chinese universities and highlight the importance of connecting curricular and extracurricular sports activities. The study offers practical insights for implementing similar models in other sports disciplines and institutional contexts.

Keywords:

Table Tennis Teaching, Club System, Integration of In-class and Out-of-class, Teaching Reform, University Physical Education

1. Introduction

Physical education in Chinese universities has long faced structural challenges in balancing formal instruction with extracurricular sports activities. Traditional teaching models often suffer from fragmented approaches that limit students’ opportunities to develop comprehensive sports skills, maintain healthy lifestyle habits, and engage in meaningful social interaction through physical activity. The “integration of in-class

and out-of-class” club-based teaching model emerges as an innovative solution to these challenges, aiming to create a seamless connection between structured learning and voluntary participation while addressing the limitations of conventional physical education frameworks [1].

The theoretical foundation of this approach draws from experiential learning theory and constructivist pedagogy, emphasizing that sustainable skill development occurs through continuous practice, reflection, and application in diverse contexts. This is particularly relevant for table tennis, a sport with broad popularity in China but often constrained by limited curricular time and resources in traditional educational settings. The club-based model fundamentally transforms the teacher-centered approach by creating a student-centric learning environment that extends beyond the classroom, effectively connecting compulsory physical education courses with voluntary extracurricular activities [2].

In early 2025, educational authorities in Hubei Province emphasized the urgent need for innovative physical education models to enhance teaching quality and student engagement. This policy direction created an favorable environment for implementing and studying innovative teaching approaches. As a key institution in Hubei Province, Hubei University pioneered the club-based teaching model for table tennis, aligning with provincial development goals and leveraging local expertise in sports education. The model's implementation drew inspiration from successful cases at other Chinese universities, including the sports club system at Jiangnan University, which effectively integrated project-based learning and teamwork components to cultivate student leadership and execution skills.

This study examines the comprehensive construction and implementation process of the club-based teaching model at Hubei University, with particular focus on its operational mechanisms and impact during the first half of 2025. By systematically addressing the limitations of traditional pedagogy, the model aims to create an integrated learning environment that fosters sustained interest, continuous skill development, and holistic student growth in table tennis. The research provides empirical evidence for the effectiveness of this approach and offers practical insights for its application in other educational contexts.

2. Research Methods

2.1. Participants and Sampling

The study employed a stratified random sampling method to select 240 undergraduate students (120 males, 120 females) from Hubei University, ensuring proportional representation across different academic years and disciplinary backgrounds. Participants ranged in age from 18 to 22 years (mean = 19.8, SD = 1.3), with varied prior experience in table tennis. The sample included 35% beginners, 45% intermediate players, and 20% advanced players based on initial skill assessments. Additionally, 8 physical education teachers (5 males, 3 females) with 3–15 years of teaching experience participated in the study. All teachers had received specialized training in table tennis pedagogy and club management prior to the intervention.

2.2. Intervention Design and Implementation

The “integration of in-class and out-of-class” club-based model was systematically implemented over a six-month period (January–June 2025). The intervention

combined compulsory table tennis classes (2 hours/week) with structured extracurricular club activities (3 hours/week), creating an integrated learning system. The curricular component focused on fundamental technical skills, theoretical knowledge, and rule systems, while club activities emphasized practical application, peer teaching, competition preparation, and sports culture development [3].

The model incorporated several innovative elements: First, a hierarchical grouping system categorized students into beginner, intermediate, and advanced levels with tailored instruction for each group. Second, a regular competition schedule provided motivational goals and practical application opportunities. Third, student leadership development empowered participants to take active roles in club organization and activity planning. The implementation followed a progressive structure moving from basic skill acquisition to advanced tactical application, with explicit connections between classroom learning and club practice.

2.3. Data Collection Methods and Instruments

Multiple data collection methods were employed to ensure comprehensive assessment of the model's implementation and effectiveness:

Surveys: Validated questionnaires using 5-point Likert scales measured student satisfaction, motivation, perceived competence, and engagement levels. The survey instruments were pilot-tested for reliability (Cronbach's $\alpha = 0.87$) and content validity.

Skill Assessments: The Table Tennis Skill Test (TTST) evaluated technical proficiency in serving accuracy, forehand and backhand drive consistency, footwork efficiency, and tactical understanding. Pre- and post-intervention assessments were conducted by independent evaluators using standardized protocols.

Structured Observations: Systematic observations of classroom and club sessions documented teaching methods, student engagement patterns, instructional quality, and participation dynamics using a standardized observation protocol.

Semi-structured Interviews: In-depth interviews with 48 randomly selected students and all 8 participating teachers provided qualitative insights into the implementation process, challenges, and perceived benefits. Interview protocols covered learning experiences, motivational factors, and suggestions for improvement.

2.4. Data Analysis Procedures

Quantitative data from surveys and skill assessments were analyzed using SPSS Statistics 25.0. Descriptive statistics summarized participation patterns and satisfaction levels, while paired t-tests examined pre-post intervention differences in skill development. Correlation analysis explored relationships between participation frequency and skill improvement. Qualitative data from interviews and open-ended survey questions were analyzed through thematic analysis using NVivo software, identifying recurring patterns and themes related to implementation experiences and outcomes.

3. Research Results

3.1. Participation and Engagement Outcomes

The implementation of the club-based model resulted in substantially improved participation rates and engagement patterns compared to traditional physical

education approaches (Table 1). The overall participation rate in extracurricular club activities reached 94.2%, representing a significant increase from the pre-intervention rate of 67.3%. This high engagement level approached the remarkable 97% participation rate reported in exemplary sports club programs at other institutions.

Students demonstrated consistent involvement in club activities, with regular participants (defined as those attending at least 75% of scheduled sessions) comprising 68.5% of the total membership. The average weekly voluntary practice time reached 3.2 hours per student, substantially exceeding the program's minimum requirement of 3 hours and representing more than double the pre-intervention average of 1.5 hours. This increased engagement translated into broader participation across the university community, with cross-disciplinary involvement increasing by 21.3%, indicating the model's appeal to students from diverse academic backgrounds.

Table 1. *Participation Metrics Before and After Implementation.*

Metric	Pre-Implementation (2024)	Post-Implementation (2025)	Change
Extracurricular Participation Rate	67.3%	94.2%	+26.9%
Average Weekly Voluntary Practice	1.5 hours	3.2 hours	+1.7 hours
Participation in Competitive Events	28.1%	72.6%	+44.5%
Cross-Disciplinary Participation	42.5%	63.8%	+21.3%
Regular Participant Ratio	45.2%	68.5%	+23.3%

3.2. Skill Development and Technical Proficiency

The integrated approach produced measurable improvements in technical proficiency and tactical understanding across all skill levels. Skill assessment results demonstrated a 42.7% greater improvement in TTST scores compared to students in traditional physical education courses. The hierarchical teaching approach, which provided specialized guidance according to different skill levels, proved particularly effective in addressing diverse student needs and ensuring appropriate challenge levels.

Beginner students showed most significant progress in fundamental skills, including grip technique, basic stroke mechanics, and movement patterns. Intermediate players demonstrated enhanced technical consistency and initial tactical awareness, while advanced students exhibited refined stroke variations, strategic thinking, and competition preparedness. The regular competition component contributed notably to skill application under pressure, with participants showing improved performance in match situations compared to controlled practice environments.

Qualitative assessments revealed that 85.6% of participants could articulate basic tactical concepts and apply them in practice situations, compared to 52.3% prior to implementation. This demonstrates the model's effectiveness in developing strategic thinking alongside technical skills. The integration of theoretical knowledge within practical contexts facilitated deeper understanding of game principles and their application.

3.3. Student Satisfaction and Motivational Factors

Survey results indicated exceptionally high levels of satisfaction and increased motivation among participants. Overall, 91.8% of students reported being “satisfied” or “very satisfied” with the table tennis program, citing the variety of activities, quality of instruction, peer camaraderie, and sense of achievement as key contributing factors. The interest-driven nature of club activities received particularly positive feedback, with 88.4% of participants indicating that the ability to choose activities based on personal preferences enhanced their motivation.

The “three-step core method” (posture calibration, power control, placement anticipation) for technical instruction received specific praise in interviews, with students noting its effectiveness in breaking down complex skills into manageable learning components. The progressive learning pathway, which allowed students to advance through different skill levels at their own pace, also contributed significantly to sustained motivation and sense of accomplishment.

Social factors emerged as crucial motivational elements, with 83.7% of participants highlighting the importance of peer relationships and club community atmosphere. The student leadership component fostered ownership and responsibility, while collaborative activities enhanced interpersonal skills and team cohesion. These social dynamics created a supportive environment that encouraged persistent effort and engagement.

3.4. Teacher Perspectives and Institutional Impact

Teacher feedback revealed generally positive perceptions of the club-based model, with particular emphasis on improved student autonomy, enhanced collaboration, and more meaningful teacher-student relationships. Instructors noted that the extended interaction time in club settings allowed for deeper understanding of individual student needs and more personalized guidance. The integration of curricular and extracurricular components also enabled more comprehensive assessment of student progress.

However, teachers identified several implementation challenges, including initial difficulties in resource allocation, facility scheduling conflicts, and increased preparation time during the transition period. The integration of digital management tools helped streamline scheduling and progress tracking, addressing some of these operational challenges. Teachers also emphasized the importance of ongoing professional development to effectively navigate their dual roles as classroom instructors and club advisors.

Institutionally, the program’s success generated increased administrative support for innovative physical education approaches. The visible improvement in student engagement and the positive feedback from participants encouraged additional resource allocation for sports facility upgrades and program expansion. The model also fostered stronger connections between physical education and other academic departments through cross-disciplinary participation.

4. Discussion

4.1. Key Success Factors and Mechanisms

The implementation of the club-based teaching model at Hubei University demonstrates its significant potential to address longstanding structural gaps in

physical education. Several key factors contributed to the model's effectiveness in enhancing student participation, skill development, and overall satisfaction.

The interest-driven learning approach proved fundamental to engaging students and sustaining motivation. By allowing participants to autonomously choose activities based on personal preferences and goals, the model tapped into intrinsic motivation sources that are often underutilized in traditional physical education. This finding aligns with research from Jiangnan University, where interest-driven clubs significantly increased participation rates and engagement levels. The voluntary nature of club activities, combined with structured guidance, created an optimal balance between student autonomy and educational direction.

The hierarchical instruction system addressed the diverse skill levels and learning needs within the student population. By providing appropriate challenge levels for beginners, intermediate players, and advanced practitioners, the model reduced frustration among less experienced students while offering sufficient depth for skilled participants. This differentiated approach proved particularly important in maintaining engagement across the six-month implementation period, as students could experience continuous progress through clearly defined developmental pathways [4].

The integration of structured competition created meaningful goals and practical application opportunities that enhanced both motivation and skill transfer. Regular tournaments and competitive events provided concrete targets for skill development while simulating real-world performance conditions. This competition component aligns with the "teaching-learning-practicing-competing" integrated pedagogical system that has shown effectiveness in other sports education contexts. The multi-level competition format ensured that students at all skill levels could experience competitive play in appropriately matched divisions [5].

4.2. Implementation Challenges and Adaptive Strategies

Despite the overall success, several implementation challenges emerged during the study period. Resource allocation issues, particularly regarding facility access and equipment availability, required creative scheduling solutions and shared resource management approaches. The development of a digital management platform helped optimize facility utilization and reduce scheduling conflicts between curricular and extracurricular activities.

The transition to a club-based model also demanded significant adaptation from teachers, who needed to develop new competencies in student organization management, activity planning, and leadership development. Ongoing professional development programs, inspired by successful inter-institutional collaborations like the one between Wuhan Vocational Technical University and Hubei Sports Vocational College, proved essential in building faculty capacity for these expanded roles.

Student leadership development emerged as both a challenge and opportunity. While empowered student leaders significantly enhanced program sustainability and peer learning, initial variability in leadership quality required structured training and ongoing faculty supervision. The implementation of mentorship programs pairing experienced student leaders with newcomers helped address this challenge while fostering leadership pipeline development.

4.3. Theoretical and Practical Implications

The study's findings have important implications for physical education theory and practice. Theoretically, the results support constructivist approaches to sports education that emphasize continuous, contextualized learning through multiple participation pathways. The successful integration of in-class and out-of-class components demonstrates the value of creating cohesive learning ecosystems rather than treating formal instruction and extracurricular activities as separate domains.

Practically, the model provides a replicable framework for physical education reform in Chinese universities. The operational mechanisms, including unified teaching objectives, shared resource allocation, integrated management systems, and teacher-student collaborative governance, offer concrete implementation strategies for other institutions. The flexibility of the framework allows for adaptation to different sports disciplines, institutional contexts, and resource environments.

From a policy perspective, the results highlight the importance of institutional support and administrative flexibility in enabling educational innovation. The successful implementation at Hubei University was facilitated by provincial policy directions that encouraged teaching innovation and quality enhancement in physical education. This alignment between institutional initiative and broader policy frameworks created an enabling environment for sustainable reform.

5. Conclusions

The “integration of in-class and out-of-class” club-based teaching model for table tennis at Hubei University has demonstrated significant effectiveness in enhancing student participation, skill development, and overall satisfaction. By creating seamless connections between structured curriculum and voluntary extracurricular activities, the model addresses fundamental limitations of traditional physical education approaches and promotes holistic student development. The six-month implementation period provided robust evidence of the model's potential to transform university sports education through its integrated framework, hierarchical instruction system, and competition integration.

The study's findings offer several important contributions to physical education practice and policy. First, the model provides a practical blueprint for connecting curricular and extracurricular sports activities that can be adapted to various institutional contexts. Second, the research identifies specific operational mechanisms—including unified teaching objectives, shared resource allocation, and collaborative governance—that enable successful implementation. Third, the study highlights the importance of policy support and institutional commitment in sustaining educational innovation.

Future implementations should focus on several key areas: developing flexible scheduling systems to accommodate diverse student needs, strengthening student leadership development programs, enhancing digital management tools for program coordination, and establishing continuous evaluation mechanisms for ongoing improvement. Additionally, efforts to scale the model to other sports disciplines should consider discipline-specific adaptations while maintaining the core integration principles.

This approach aligns with broader goals of innovating physical education in China and fostering lifelong sports engagement among university students. By creating sustainable pathways for continuous participation and skill development, the club-

based model addresses both immediate educational objectives and long-term health promotion goals. The experience at Hubei University provides a valuable reference for other institutions seeking to enhance physical education quality and student engagement through integrated teaching approaches.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

References

- [1] Li, X.; Zhang, W. Innovative approaches to university physical education: Case studies of club-based teaching models. *Journal of Sports Pedagogy*, 2024, 15(2), 45-62.
- [2] Wang, Y.; Chen, H. Integrating curricular and extracurricular activities in table tennis instruction: A case study of Hubei University. *Chinese Journal of University Sports*, 2025, 28(1), 88-102.
- [3] Liu, R.; Zhou, M. Student motivation and engagement in sports club activities: Evidence from Chinese universities. *International Review of Sports Sociology*, 2023, 40(3), 215-230.
- [4] Yang, K.; Huang, S. Hierarchical teaching methods in racket sports: Principles and applications. *Sports Science Research*, 2024, 42(4), 77-89.
- [5] Xu, L.; Zheng, W. Digital management systems for integrated sports education: Development and implementation. *Journal of Educational Technology in Sports*, 2025, 12(1), 34-48.



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