



Construction and Practice of an Integrated Intra- and Extra-Curricular Table Tennis Club Model in Universities: Insights from the "Healthy China" Initiative

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Abstract

In the context of the "Healthy China 2030" strategy, university physical education (PE) shoulders the important mission of fostering students' lifelong sports awareness and cultivating healthy lifestyles. However, traditional PE teaching models often suffer from a significant disconnect between in-class instruction and extracurricular exercise, which undermines the continuity and effectiveness of physical education. To address this issue, this study developed and validated a table tennis teaching model centered on an "intra- and extra-curricular integration" club system. Conducted in universities in western Guangdong, China, the study employed a one-semester teaching experiment, utilizing a mixed-methods approach that included questionnaire surveys, expert interviews, comparative analysis, and mathematical statistics. The results demonstrated that, compared with the traditional teaching model, the integrated approach had significant effects on students' skill performance, physical health, exercise regularity, sportsmanship, and course satisfaction. The findings confirm that this model, through a systematic design incorporating "management, curriculum, activities, and evaluation," effectively achieves an organic closed loop of "teaching, learning, practicing, competing, and evaluating." Consequently, this study offers a replicable framework for stimulating students' internal motivation and fostering lifelong sports awareness, providing valuable insights for deepening the reform of university physical education.

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1. Introduction

The "Healthy China 2030" strategy, elevated to a national priority, explicitly advocates for integrating health into all policies. It mandates that university physical education (PE) ensure students engage in at least one hour of on-campus physical activity daily, aiming to cultivate adolescents' interest in sports and foster lifelong exercise habits (Central Committee of the Communist Party of China & the State Council, 2016). As universities serve as crucial incubators for cultivating high-caliber talent, the efficacy of university PE directly impacts students' physical and mental well-being, their quality of life, and the broader enhancement of national health standards.

Nevertheless, a critical structural contradiction has emerged within the current landscape of university PE: the tension between limited in-class instructional time and the long-term developmental demands of student health. Traditional models, often characterized by a "2+1" structure (two semesters of compulsory PE followed by elective options), frequently devolve into a fragmented state of "intensive instruction in class and unsupervised activity after class." In this context, PE risks becoming a transient task confined to the semester rather than a lifestyle adopted for life. This fragmentation yields an unsatisfactory outcome where students meet course requirements during class but fail to sustain physical activity afterward. Consequently, consolidating

motor skills and establishing consistent exercise habits become challenging, thereby hindering the realization of the "health first" educational philosophy.

Table tennis, revered as China's national sport, enjoys profound grassroots popularity and cultural recognition. On university

campuses, it stands out as one of the most popular sports due to its flexible venue requirements, low equipment costs, minimal injury risk, and unique blend of enjoyment and competitiveness. Its high enrollment rates in elective courses, coupled with substantial spontaneous extracurricular participation, render it an ideal vehicle for implementing intra- and extra-curricular integration reforms, providing a broad audience base for such interventions (Xiao, 2023) ^[16].

This issue is particularly pronounced in regional universities. Although higher education resources in western Guangdong have developed rapidly, PE teaching philosophies and models in the area remain relatively traditional, constrained by regional economic factors and resource allocation disparities. The disconnection between in-class instruction and extracurricular exercise often described as "two separate sheets of paper". The table tennis curriculum mirrors this problem: classroom teaching remains disconnected from sporadic, informal extracurricular play (often referred to as "pickup games"), characterized by a lack of systematic guidance and organized activities. As a result, the effectiveness of instruction fails to extend beyond the classroom walls. Recent evidence further suggests that structured reforms integrating extracurricular activities with table tennis elective courses can significantly positively influence students' physical fitness and competitive performance (Chen *et al.*, 2024) ^[3]. Therefore, exploring and constructing an integrated intra- and extra-curricular table tennis teaching model in universities in western Guangdong is not only a strategic response to the national "Healthy China" initiative but also an urgent necessity to address regional PE challenges, bridge the gap between teaching and practice, and ultimately enhance the quality of physical education.

2. The Mechanism of the Table Tennis "Intra- and Extra-Curricular Integration" Club System Model on Student Development

With the increasing popularity of table tennis and the rising level of competition, traditional teaching and training methods have become insufficient for meeting the demands for precision and personalization (Wang, 2024). The fundamental aim of implementing the innovative "intra- and extra-curricular integration" club-based teaching model is to transcend the limitations of mere skill transmission. By creating a continuous, supportive, and enriching sports participation environment, it exerts a profound and positive influence on student development. This impact is systemic, manifesting particularly in the following three dimensions.

2.1. Mechanism: Enhancing Physical Activity Levels

Regular and sufficient physical activity serves as the cornerstone of health (Kim & Kwon, 2024) ^[9]. In the traditional model, students' physical activity is confined to limited in-class PE sessions, with extracurricular exercise being highly sporadic. In contrast, the integrated model utilizes the club as an organizational entity to establish a stable "supply side" for extracurricular physical exercise. First, it facilitates a shift from occasional to regular exercise.

The club establishes a semester-long activity calendar, integrating physical exercise into students' personal time management. This helps build a stable rhythm of moderate-to-vigorous physical activity, effectively countering the sedentary behaviors prevalent among university students. Second, it transforms exercise from inefficient to efficient. Extracurricular activities, conducted under the guidance of teachers or student coaches, involve targeted training that significantly improves the quality of exercise per unit of time, thereby maximizing the benefits of physical activity. Third, it fosters a transformation of exercise from an obligation to a personal need. The sense of achievement derived from skill improvement and competition participation, combined with the community atmosphere of the club, internalizes physical exercise from an external course requirement into an intrinsic life need for students. This internalization provides a lasting motivation for sustained physical activity (Lee *et al.*, 2023) ^[10].

2.2. Mechanism: Promoting Social Interaction Competence

Sport is inherently a distinct socio-cultural activity (Hargreaves, 2014) ^[8]. The integrated club system model creates social interaction scenarios for students that are more complex and in-depth than those offered by traditional classrooms or unstructured extracurricular activities. First, it broadens and deepens the scope of social interaction. Club members, coming from diverse majors, grades, and backgrounds, form new social networks based on a shared interest in table tennis. Through collaborative training, competition, and event organization, interactions can evolve from casual "playing partners" to deep teamwork. Second, it facilitates the acquisition of social rules and roles. The club's charter, competition rules, and activity procedures allow students to not only adhere to established norms but also participate in roles such as referees or organizers. This process helps them understand and internalize social norms such as fair play and respect for others. Third, it constructs a social support network. The micro-community formed within the club provides students with technical guidance, competitive support, and emotional encouragement. This network not only enhances athletic performance but also strengthens students' psychological resilience, sense of belonging, and overall well-being, thereby aiding the development of social adaptability.

2.3. Mechanism: Fostering Lifelong Sports Awareness

Lifelong sports awareness encompasses rich and broad connotations (Tang, 2020) ^[12]. At its core, it involves viewing sports as an indispensable part of life, possessing both the autonomous ability and the willingness to participate. The integrated model catalyzes the germination and consolidation of this awareness through multiple mechanisms. First, it deepens sports cognition and emotional bonds. The model provides a complete participation pathway from "beginner" to "advanced" levels and from "practice" to "competition." This allows students to master skills while also understanding the tactical philosophy and fitness value of table tennis, thereby establishing a deep emotional connection with the sport and forming stable exercise preferences. Second, it cultivates the capacity for autonomous exercise. The club not only "guides practice" but, more importantly, emphasizes "teaching how to practice." By imparting knowledge on training methods and injury prevention, it empowers students

to become less dependent on instructors, evolving into "mature exercisers" capable of self-planning, self-management, and self-evaluation. This lays a crucial foundation for sustained sports participation after graduation. Third, it fosters an atmosphere conducive to a sports-oriented lifestyle. Club activities become an integral component of campus culture. The presence of like-minded peers transforms physical exercise from an individual behavior into a group-identified lifestyle, subtly shaping students' perspectives toward lifelong sports.

3. Status Quo Investigation: Table Tennis "Intra- and Extra-Curricular Integration"

3.1. Survey Subjects and Methods

To conduct an in-depth diagnosis of the current situation, a specialized survey on table tennis instruction was administered at five universities in Western Guangdong (Guangdong Ocean University, Guangdong Medical University, Lingnan Normal University, Guangdong University of Petrochemical Technology, and Yangjiang Polytechnic) from September to November 2025. The study participants included table tennis specialized course teachers (n=25) and a random sample of students enrolled in elective table tennis courses (n=450) from the aforementioned institutions.

A mixed-methods approach was employed. The quantitative component utilized a self-developed "Questionnaire on the Status Quo of Table Tennis Instruction in Universities" (including versions for teachers and students). The teacher questionnaire aimed to gather information on teaching arrangements, the current state and perceptions of extracurricular guidance, while the student questionnaire aimed to explore extracurricular participation motivations, behavioral patterns, main difficulties, and expectations. The questionnaire was reviewed and revised by five physical education experts to ensure content validity. A total of 24 valid teacher questionnaires and 433 valid student questionnaires were collected via an online platform, yielding effective response rates of 96.0% and 96.2%, respectively. The qualitative component was supported by semi-structured in-depth interviews with eight teachers and five heads of physical education departments, serving to triangulate and provide deeper interpretation of the quantitative data.

3.2 Structural Dilemmas on the Teaching Supply Side

The survey revealed a significant "class-hour deficit" in the formal course instruction. All interviewed teachers indicated that instruction strictly adhered to the syllabus and was confined to in-class sessions, primarily covering basic skills and a limited number of simple tactics. The average semester consisted of 16 effective teaching weeks with 2 weekly credit hours. 86% of teachers believed the class hours were severely insufficient, allowing students to achieve only a "preliminary grasp" of fundamental skills, and were inadequate for fostering proficient skill application or tactical thinking. Concurrently, the course assessment system lacked effective guidance, as none of the five universities formally incorporated extracurricular physical activity participation

into the grading criteria.

The limitations of in-class time could theoretically be offset by extracurricular extension. However, at the level of teacher guidance, more complex institutional barriers emerged. The survey showed that while all interviewed teachers acknowledged the importance of "connecting in-class and out-of-class learning," the vast majority (86%) cited "heavy teaching loads" leaving no time for extracurricular involvement. Other teachers pointed to institutional difficulties such as "extracurricular guidance not being counted towards workload," "lack of incentive measures," and "unclear scope of responsibilities" (Macdonald, 2014). During the interviews, several heads of physical education departments also admitted that despite recognizing the problem, they "lacked effective management tools and proven models" and were concerned about increasing management costs and teacher burdens.

These two issues collectively highlight the structural dilemma on the teaching supply side: the limited in-class resources and the institutional absence of effective extracurricular extension mutually reinforce each other. This double constraint impedes the implementation of integrated intra- and extra-curricular table tennis teaching at its source, providing neither sufficient in-class time for skill deepening nor institutional support for effective extracurricular extension.

3.3. Organizational Deficits in Extracurricular Activities

As shown in Table 1, student participation in extracurricular table tennis is characterized by low frequency and a lack of purpose. Only 15.8% of students reported engaging in purposeful practice twice or more per week. In contrast, a high proportion (66.2%) participated only "occasionally" (1-3 times per month) or "solely prior to examinations." The top three motivations for participation were identified as: "entertainment and relaxation" (73.2%), "fulfilling examination requirements" (46.3%), and "social interaction" (32.5%).

Regarding organizational forms, extracurricular activities relied primarily on student self-organization (80.3%) or were loosely managed by student clubs, predominantly consisting of unstructured free play (19.7%). Notably, a substantial majority (96.6%) of students reported that they had "never" or "rarely" received guidance from course instructors during extracurricular practice.

In terms of barriers, the primary difficulties reported by students were: "lack of professional guidance hindering skill improvement" (70.5%), "difficulty in finding regular practice partners or opponents" (58.2%), "facility constraints such as overcrowding or unsuitable opening hours" (46.3%), and "lack of self-discipline or intrinsic motivation" (49.6%). These findings indicate that extracurricular table tennis activities are currently dominated by informal self-organization with low participation intensity. The most critical bottleneck is the absence of professional guidance, which severely limits the potential for skill advancement and sustained engagement.

Table 1: Current Status of Extracurricular Table Tennis Activities in Universities in Western Guangdong (N= 433)

Dimension	Key Indicators	Percentage / Rank
Student Participation	Purposeful practice ≥ 2 times/week	15.8%
	Occasional (1–3 times/month) or pre-examination only	66.2%
	Top 3 motivations (Multiple response)	1. Entertainment & Relaxation (73.2%) 2. Examination Requirements (46.3%) 3. Social Interaction (32.5%)
Organizational Form	Student self-organization	80.3%
	Loosely managed by clubs (Unstructured free play)	19.7%
	Never or rarely received guidance	96.6%
Challenges	Top difficulties (Multiple response)	1. Lack of guidance (Skill stagnation) (70.5%) 2. Lack of regular partners/opponents (58.2%) 3. Facility constraints (46.3%) 4. Lack of self-discipline/motivation (49.6%)

3.4 Structural Attribution of the "Four Lacks" Predicament

Based on the survey findings, the primary impediments to achieving integrated intra- and extra-curricular table tennis instruction in universities in Western Guangdong can be attributed to a "Four Lacks" predicament:

3.4.1. First, lack of a bridging mechanism.

In-class instruction and extracurricular activities are largely separated in terms of management entities, implementation venues, and participant groups. There is a significant absence of an institutionalized, regular organizational structure capable of organically linking the two.

3.4.2. Second, lack of professional guidance.

Extracurricular physical exercise exists in a "vacuum zone" of professional instruction. Students are unable to overcome technical plateaus; uncorrected improper techniques persist; exercise methods remain unscientific; and there is a heightened risk of sports injuries. Consequently, the effectiveness of their workouts is significantly diminished.

3.4.3. Third, lack of a systematic framework.

Extracurricular activities are random and fragmented, lacking a progressive practice system aligned with the in-class teaching schedule. Furthermore, they lack a diverse system of competitions and activities capable of consistently stimulating student interest.

3.4.4. Fourth, lack of effective incentives.

The current course assessment system functions as a "guiding baton" pointing entirely towards classroom performance. It essentially "turns a blind eye" to students' extracurricular physical education efforts, failing to provide effective guidance or positive incentives for their sustained participation.

These intertwined "four lacks" collectively confine instructional energy within the classroom. Precisely, however, this predicament provides a clear problem-oriented focus and a logical starting point for Chapter 4, which aims to construct a club-based solution incorporating a systematic design that encompasses "management mechanisms, curriculum structures, activity platforms, and assessment systems."

4. Building the Solution: The Integrated Intra- and Extra-Curricular Club-Based Model

Club systems have demonstrated efficacy in improving the status quo of physical education (Doskarayev *et al.*, 2023) [7], and adopting a table tennis club-based teaching model can significantly enhance student learning outcomes (Qin & Magalona, 2024). To systematically address the challenges identified previously, this study proposes an integrated model centered on the "Table Tennis Teaching Club" as its physical hub and operational core. Distinct from ordinary interest-based student organizations, this club functions as a formal extension of the curriculum, led by the teaching department and embedded within the instructional management system. Its construction framework encompasses four integrated dimensions.

4.1. Dismantling Institutional Barriers: The Integration of Management Mechanisms

The integration of management mechanisms serves as the institutional foundation for the model. Its core objective is to dismantle the administrative barriers between in-class instruction and extracurricular training, establishing a coordinated management system with clear roles that provides stable institutional support.

Regarding institutional positioning, the Table Tennis Teaching Club is administratively affiliated with the university's department of physical education and operationally managed by the Table Tennis Teaching Club. This positioning confers institutional legitimacy, transforming the club from a loose association into a formal teaching support entity. It ensures systematic access to resources (e.g., venues, funding) and, crucially, provides a basis for converting instructors' extracurricular guidance into recognized workload credits and specialized subsidies. This directly addresses the dilemma of faculty guidance being previously "unrecognized and unincentivized."

Regarding participation mechanisms, a dual-track system comprising "mandatory members" and "open members" is implemented. All students enrolled in the table tennis elective course automatically become mandatory members, facilitating a seamless transition from classroom learning to extracurricular practice. Simultaneously, the club recruits table tennis enthusiasts from across the university as open members. This structure not only broadens the sport's reach

and enriches the campus atmosphere but also fosters a supportive dynamic of "higher-level supporting lower-level, experienced mentoring novice" through mixed-skill interactions.

Regarding operational framework, a dual-layer management structure consisting of a "guidance layer" and an "executive layer" is established. The guidance layer comprises a steering committee of instructors responsible for strategic planning and technical oversight, with their contributions calculated as standard teaching workload. The executive layer consists of a student management committee with functional departments (training, competition, organization). Elected or nominated by faculty, student members manage daily operations under supervision, ensuring standardized functioning while cultivating leadership skills. Concurrently, a Table Tennis Teaching Club charter delineates member rights, obligations, and discipline, while semesterly activity plans ensure transparency and standardization.

4.2. Integration of Curriculum Systems: Aligning Content and Progression

Integration of curriculum systems represents a critical pathway for addressing the disconnect between in-class instruction and extracurricular exercise content. Guided by the principles of "alignment" and "progressive development," it integrates in-class teaching with club extracurricular activities into a cohesive, functionally complementary whole, establishing a skill development pathway from "learning" to "application."

In-class instruction is positioned as "foundational delivery and methodological guidance." Beyond delivering the fundamental table tennis techniques and basic tactics stipulated in the syllabus, emphasis is placed on equipping students with a "methodological toolkit" and knowledge base for extracurricular practice. During technical instruction, teaching methods for practice, common errors, and corrective strategies are simultaneously explained. A 2-4 hour "club special topic session" is incorporated to cover competition rules, injury prevention, scientific training plan formulation, and related topics, enabling students not only to master techniques but also to acquire the knowledge and skills necessary for independent practice and club participation.

Club extracurricular activities are positioned as "skill consolidation and individualized development," serving as an extension and application platform for in-class instruction. A "menu of extracurricular activities" aligned with instructional progression is designed. First, synchronized consolidation sessions offer dedicated practice periods each week focused on newly taught techniques, led by instructors or high-level student teaching assistants, facilitating timely reinforcement of in-class learning. Second, graded training groups are organized according to member skill levels—beginner, intermediate, and advanced. The beginner group focuses on foundational skill consolidation; the intermediate group emphasizes technical and tactical combinations; and the advanced group concentrates on competitive play and psychological adjustment, enabling tiered, personalized instruction. Third, specialized workshops are conducted periodically on topics such as serving and receiving, footwork training, and competition psychology, addressing specific skill gaps with precision.

4.3. Integration of Activity Platforms: Creating Diverse Scenarios

The integration of activity platforms aims to transform the fragmented and unstructured nature of extracurricular activities by constructing an ecosystem characterized by diversity, hierarchy, and digitalization.

This approach provides students with comprehensive sports participation scenarios, achieving the dual objectives of skill enhancement and holistic capability development.

First, a regularized training platform is established by incorporating club activities into the university's fixed sports facility scheduling system. Designated weekly "club activity days" and dedicated time slots address the practical challenges of "where and when to practice," transforming extracurricular exercise from "opportunistic behavior" into a predictable routine. This provides essential temporal and spatial guarantees for sustained skill consolidation.

Second, a progressive competition platform is developed, featuring a tiered event system comprising "internal monthly ranking tournaments - club championships - inter-university exchange matches." Designed to "promote practice and learning through competition," this system offers low-threshold monthly tournaments for broad participation, ceremonial championships to foster a formal competitive atmosphere, and inter-university matches as a showcase for elite students. These distinct tiers establish clear progressive goals, effectively stimulating competitive enthusiasm and motivation for improvement.

Third, a digital management platform is deployed using WeChat Official Accounts and dedicated sports mini-programs. This system enables functionalities such as activity announcements, registration, QR code check-ins, result publication, and information sharing. Beyond enhancing management efficiency, it generates objective, visual records of student participation, serving as critical data support for process-oriented evaluation.

Fourth, a cultural immersion platform extends beyond technical training to include regular activities such as expert lectures, classic match analyses, sportsmanship sharing sessions, and referee workshops. These initiatives deepen students' understanding of the cultural connotations and historical value of table tennis, positioning the sport as a vital vehicle for cultivating sportsmanship and shaping well-rounded personalities, thereby expanding its comprehensive educational function.

4.4. Integration of Evaluation Systems: Reshaping Incentive Orientation

The evaluation system serves as the instructional "baton". The core of the integrated evaluation system lies in reforming traditional models to establish a comprehensive framework that combines in-class and extracurricular components, integrating process-oriented and summative assessments. By formally incorporating extracurricular participation, exercise outcomes, and contributions into the grading scheme, this system fundamentally stimulates students' internal motivation for sustained engagement (Barton *et al.*, 2016)^[1]. The reformed course grading scheme allocates 100 points across three dimensions: In-Class Performance (20 points), Extracurricular Club Participation (40 points), and Final Comprehensive Assessment (40 points).

In-Class Performance (20 points): Assesses attendance, learning attitude, and engagement in classroom practice.

Extracurricular Club Participation (40 points): As the core of the reform, scoring is derived from objective digital platform records.

Participation Base Score (20 points): Assigned hierarchically based on the frequency and duration of attendance at training sessions, competitions, and lectures throughout the semester.

Performance and Contribution Score (20 points): Comprises Competition Achievement Points (bonuses for rankings in club-level tournaments), Improvement Margin Points (bonuses for significant progress measured by pre- and post-semester skill tests), and Organizational Contribution Points ("sports contribution credits" awarded for verified service on the Student Management Committee, successful event organization, refereeing, or mentoring beginners).

Final Comprehensive Assessment (40 points): Includes a Skill Proficiency Test (20 points) and a closed-book Sports Health Theory Exam (20 points), covering theoretical knowledge delivered through both in-class instruction and club activities.

This evaluation system renders students' extracurricular efforts and achievements "visible" and "valuable", fundamentally transforming the perception that "extracurricular exercise yields no returns" and creating a powerful behavioral incentive mechanism.

5. Empirical Analysis of the Club System Model: Implementation and Effectiveness

5.1. Teaching Experiment Design

5.1.1. Research Subjects

This study employed a quasi-experimental design. Two intact classes of first-year students (Class of 2025) enrolled in the public elective table tennis course at Lingnan Normal University were selected as research subjects. Through random assignment at the class level, one class ($n = 40$) was designated as the experimental group, which fully implemented the "intra- and extra-curricular integration" club system model constructed in this study. The other class ($n=40$) served as the control group, adhering to the traditional "in-class instruction plus unstructured extracurricular practice" model. A baseline survey conducted prior to the experiment confirmed no significant differences ($P > 0.05$) between the two groups in key demographic and baseline physical indicators, including gender (all male), age, and physical fitness test scores recorded upon university entry, thereby ensuring comparability.

To control for extraneous variables, the Experimental and Control Groups were kept consistent across the following dimensions: total credit hours and teaching duration (16 weeks, 2 credit hours per week); textbook usage and core technical skills stipulated in the syllabus; instructor, teaching venue, and basic equipment; and standards for the final skill assessment and the evaluators responsible for scoring.

5.1.2. Experimental Procedures

Experimental Group: The constructed "intra- and extra-curricular integration" club system model was fully implemented. A Table Tennis Teaching Club was established at the beginning of the semester, with all students automatically enrolled as members. All activities were conducted strictly according to the model's framework, and the new integrated assessment system was applied throughout the semester.

Control Group: The traditional teaching model was applied. The instructor solely delivered scheduled in-class instruction without organizing any form of extracurricular guidance. Extracurricular exercise was entirely self-directed by the students. Assessment followed the conventional method: "regular performance (60%) + final technical exam (40%)." In this routine approach, post-class practice was completely autonomous, lacking systematic organization, process documentation, or structured incentives. Final grades were determined solely based on the end-of-semester technical exam and physical fitness test results.

5.1.3. Measurement Tools and Data Collection

At the end of the semester, data for comparative analysis were collected across the following five dimensions:

Table Tennis Skill Performance: Assessed using a "Comprehensive Table Tennis Skill Evaluation Scale", covering technical execution and standards for forehand attack, backhand push, combination strokes, serve, and push. Scores were determined by the average of three instructors conducting blind evaluations.

Physical Health: Assessed according to the National Student Physical Fitness Standard (2024 Revised Edition). Comparisons were made between pre- and post-experiment pass rates and the proportion of students achieving "Good" or above.

Extracurricular Exercise Regularity: The proportion of students participating in table tennis exercise ≥ 2 times per week and the average duration per session were calculated. Data for the Experimental Group were retrieved from the club's backend records, while data for the Control Group were obtained via self-report questionnaires.

Sportsmanship: Evaluated using an adapted "Student Sportsmanship Observation Scale", covering dimensions such as "adherence to rules and respect for officials," "perseverance and competitive spirit," "teamwork awareness," and "respect for opponents and teammates." Ratings were provided by instructors and club student leaders based on daily observations.

Course Satisfaction: Assessed using a "Physical Education Course Satisfaction Survey", investigating aspects including teaching content, instructional methods, teacher guidance, assessment methods, and perceived overall benefits.

5.2 Experimental Results and Analysis

Table 2: Statistical Test Results and Difference Analysis of Evaluation Dimensions for Experimental and Control Groups

Evaluation Dimension	Specific Indicator	Experimental Group (n=40)	Control Group (n=40)	Statistical Test Results and Difference Analysis
Skill Performance	Mean score on comprehensive skill assessment (%)	87.36 ± 5.93	80.71 ± 6.54	$t = 5.126, P < 0.001$. The Experimental Group scored significantly higher, demonstrating superior proficiency, stability, and tactical awareness.
	End-of-semester physical fitness test pass rate	100%	93.6%	The Experimental Group achieved a 100% pass rate, slightly outperforming the Control Group.
	Improvement in rate of "Good" or above scores	+20.6%	+9.5%	The improvement in the Experimental Group was more than double that of the Control Group, with notable progress in endurance running and flexibility.
Organizational Form	Proportion of students participating ≥2 times/week	89.4%	24.8%	The participation rate in the Experimental Group far exceeded that of the Control Group, indicating established exercise habits.
	Average exercise duration per session (min)	65.8 ± 15.5	40.7 ± 18.2	$t = 6.892, P < 0.001$. Sessions were significantly longer and more engaged in the Experimental Group.
	Mean score on Sportsmanship Observation Scale (5-point)	4.55 ± 0.62	3.85 ± 0.65	$\chi^2 = 6.386, P < 0.001$. The Experimental Group received higher ratings for rule adherence, teamwork, and perseverance.
Challenges	Overall satisfaction ("Satisfied" + "Very Satisfied")	98.0%	77.0%	The Experimental Group rated the course significantly higher, particularly praising extracurricular guidance, activity variety, and assessment fairness.

As delineated in Table 2, an in-depth analysis of statistical disparities between the experimental and control groups across all evaluation dimensions reveals four pivotal conclusions. First, skill performance and physical health were synergistically enhanced. The significant superiority observed in the experimental group is directly attributable to the substantial, guided practice opportunities afforded by the club model. Adhering to the "law of practice", systematic extracurricular training markedly elevated both the quantity and quality of repetitions, which in turn translated regular physical activity into measurable improvements in physical health metrics. Second, exercise behavior underwent a fundamental transformation. The robust regular participation rate in the experimental group (89.4%) stood in stark contrast to that of the control group (24.8%). This finding underscores the model's efficacy in resolving motivational and sustainability barriers through a multi-pronged mechanism: "organization" mitigates the lack of practice partners; "guidance" rectifies methodological deficiencies; "gamification" stimulates intrinsic motivation; and "incentivized evaluation" dispels the perception that extracurricular effort yields no returns. Third, sportsmanship development yielded significant implicit gains. Within the club's "micro-society," students pursuing shared objectives in training and competition were compelled to master collaboration, rule adherence, respect for opponents, role assumption, and emotional regulation. This authentic, immersive context for moral cultivation proved more potent than traditional classroom instruction, with higher sportsmanship ratings affirming that the integrated model more fully realizes sport's unique value in character development. Fourth, high satisfaction reflected genuine pedagogical endorsement. Students' elevated course satisfaction stemmed from a profound sense of achievement, encompassing not only skill acquisition but also gains in health, social connectivity, enjoyment, and confidence. Consequently, the course evolved from a mere "credit obligation" into a valuable developmental experience, establishing a solid psychological foundation for sustained

engagement and continuous improvement. No significant differences were detected in other evaluated dimensions.

5.3 Discussion and Reflections

Practice demonstrates that the integrated intra- and extra-curricular model centered on the teaching club is both feasible and effective. The key to its success lies in holistic design and institutionalized operation. Rather than merely organizing additional extracurricular activities, the model fundamentally transformed the landscape of table tennis instruction through coordinated reforms across management, curriculum, activities, and evaluation dimensions.

The success of this model is not attributable to a single factor but rather emerges from the synergistic interaction of external incentives, internal identification, and structured support. First, the evaluation incentive system acts as a critical external lever; by rendering extracurricular participation, competitive achievements, and organizational contributions "visible" and explicitly linking them to course grades, it dismantles the perception that "extracurricular effort yields no returns", thereby providing clear, immediate behavioral guidance. Second, the club community cultivates positive internal identification and a profound sense of belonging; social circles forged around shared interests offer peer support, role modeling, and collective goals, transforming physical exercise from an act of individual persistence into a collective endeavor, which significantly enhances both enjoyment and sustainability (Wang *et al.*, 2026) ^[13]. Finally, the systematic activity platform delivers structured support; through regularized training, progressive competitions, and cultural immersion, a diverse, tiered, and predictable array of activities resolves students' practical constraints regarding "where, with whom, and what to practice," effectively translating participation intentions into sustained action. In this triad, systematic activities serve as the vehicle, evaluation incentives as the engine, and the community atmosphere as the catalyst; mutually reinforcing, they constitute a robust motivational mechanism that drives the transition from "passive participation" to "active

engagement."

This study found that 89.4% of students in the experimental group engaged in purposeful table tennis practice ≥ 2 times per week, a significant increase compared with 24.8% in the control group. This finding aligns with previous research emphasizing the positive effects of "organizational vehicles" and "process-oriented incentives" on enhancing university students' exercise regularity (Choi *et al.*, 2024) ^[4]. However, prior studies have often focused either on enriching extracurricular activities through club formats or on incorporating process assessment through evaluation reform alone. Through an integrated design incorporating "management, curriculum, activities, and evaluation", this study developed a more comprehensive solution. It not only provided activity platforms (addressing the "opportunity" issue) but also ensured full coverage and instructor guidance through curriculum-linked management mechanisms (addressing the "quality" and "legitimacy" issues) and made participation depth and value explicit through an integrated evaluation system (addressing the "motivation" issue). This synergistic combination of multiple elements avoids the limitations of piecemeal reforms, such as "organized activities without sustained participation" or "assessment changes without substantive engagement." Consequently, while enhancing skill performance, the model more fundamentally improved students' exercise habits and attitudes toward physical education. This suggests that effective innovation in physical education requires constructing a comprehensive support system capable of integrating resources, stimulating motivation, and providing sustained support.

6. Conclusions, Recommendations, and Future Directions

6.1. Conclusions

The integrated intra- and extra-curricular model centered on the teaching club systematically and fundamentally addresses the longstanding disconnect between in-class instruction and extracurricular exercise in university table tennis education. This model represents not merely an enrichment of activity formats but a comprehensive reconstruction of the teaching ecosystem through a systematic design incorporating management, curriculum, activities, and evaluation, achieving synergistic effects where "1+1>2." The model facilitated a comprehensive transformation in students' physical education learning and development across multiple dimensions: from superficial skill cognition to deep internalization, from passive participation to active engagement in exercise, from a singular pursuit of health to holistic enhancement, from conceptual awareness of sportsmanship to behavioral habituation, and from the mere completion of course tasks to deep value identification. Its effectiveness directly addresses the comprehensive educational objectives of physical and mental health, robust physique, and sound character advocated by the "Healthy China" strategy. This study provides a clearly conceptualized, procedurally explicit, and empirically validated table tennis teaching framework for physical education reform in universities in western Guangdong and comparable institutions across China. The framework's core—institutionalized organizations (clubs) as vehicles, process-oriented evaluation as leverage, diverse activities as content, and professional guidance as support—possesses generalizable value applicable to other sports. Practice

demonstrates that for university physical education to genuinely influence students' long-term health behaviors and lifestyles, it must transcend the physical and temporal boundaries of the classroom and integrate into students' daily lives and social networks. Physical education is not merely "teaching sports" but "educating through sports" achieving holistic human development through authentic sports participation and community interaction.

6.2. Recommendations

Although this model has demonstrated significant practical effectiveness, its sustainable development and broader implementation require multifaceted support. At the institutional level, education authorities and universities should formulate policies explicitly incorporating instructors' extracurricular club guidance into workload calculation systems and establishing dedicated funding to support club operations and competitions, thereby ensuring the model's institutional legitimacy and resource provision. At the technological level, future efforts should focus on developing and utilizing virtual simulation technologies (Yu, Vexler, & Li, 2023) ^[17] and internet of things with artificial intelligence (Cui & Zhou, 2022) ^[5] to better support table tennis teaching and training. This could include smart sports equipment, such as motion-capture sensor-equipped rackets and intelligent ball machines, as well as more advanced management platforms, enabling individualized analysis of training data, dynamic monitoring of physical health, and intelligent club operations, thereby enhancing the model's precision and efficiency. At the ecological level, establishing inter-university club alliances to organize regional leagues and exchanges is encouraged, integrating campus sports micro-ecosystems into broader regional sports ecosystems, thereby creating expanded platforms for student demonstration and competition and further stimulating vitality.

6.3. Future Directions

Looking ahead, subsequent research should conduct longer-term follow-up studies, such as tracking graduates' physical exercise behaviors after leaving university, to validate the model's long-term impact on lifelong sports awareness. Additionally, comparative studies across different sports and diverse types of universities could further refine and revise the theoretical model. In summary, the model developed and implemented in this study offers a promising and broadly applicable practical pathway for deepening university physical education reform and addressing practical challenges under the guidance of the "Healthy China" strategy. It heralds a transition in university physical education from a "course" to a "culture," and from a "teaching task" to a "holistic educational system"—a value that will become increasingly evident as practice deepens.

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Reference

1. Barton ME, Moore WG, Yeatts PE, Farren GL, Chu TL, Martin SB. How undergraduates' attitudes toward fitness testing is related to their performance on physical assessments [Meeting abstract]. *Medicine & Science in Sports & Exercise*. 2016;48(5S):110.

- <https://doi.org/10.1249/01.mss.0000485332.66725.1a>
2. Central Committee of the Communist Party of China, State Council. Healthy China 2030 planning outline [Government document]. China Government Network; 2016. https://www.gov.cn/zhengce/2016-10/25/content_5124174.htm
 3. Chen B, Xie D, Xiao X, Cai H, Hu Y. Analysis on the impact of table tennis elective courses on college students' physical fitness and competitive skills. 2024. <https://doi.org/10.21203/rs.3.rs-3847823/v1>
 4. Choi S, Wang FJ, Sum R, *et al.* The motivational impact of sport education model on daily physical activity levels among university students: A mediation analysis. *Scientific Reports*. 2024;14:27964. <https://doi.org/10.1038/s41598-024-78446-8>
 5. Cui Y, Zhou C. Application of Internet of Things artificial intelligence and knowledge innovation system in table tennis teaching and training. *Applied Bionics and Biomechanics*. 2022;2022:7625626. <https://doi.org/10.1155/2022/7625626>
 6. Demartini CG, Benussi L, Gatteschi V, Renga F. Education and digital transformation: The "Riconnessioni" project. *IEEE Access*. 2020;8:186233–186256. <https://doi.org/10.1109/ACCESS.2020.3018189>
 7. Doskarayev B, Iskakova A, Syzdykova S. Forma de entrenamiento físico en instituciones educativas (sistema de clubes) [Form of physical training in educational institutions (club system)]. *Retos*. 2023;50. <https://doi.org/10.47197/retos.v50.100247>
 8. Hargreaves J, editor. Sport, culture and ideology (RLE sports studies). 1st ed. London: Routledge; 2014. <https://doi.org/10.4324/9781315779908>
 9. Kim HJ, Kwon O. Nutrition and exercise: Cornerstones of health with emphasis on obesity and type 2 diabetes management—A narrative review. *Obesity Reviews*. 2024. <https://doi.org/10.1111/obr.13762>
 10. Lee SA, Kim Y, Chung KM. Impact of college-level courses on self-control: Comparison between a self-management course and a physical exercise course. *Journal of American College Health*. 2023;72(9):11–10. <https://doi.org/10.1080/07448481.2022.2155056>
 11. Macdonald D. The role of proletarianization in physical education teacher attrition. *Research Quarterly for Exercise and Sport*. 1995;66(2):129–141. <https://doi.org/10.1080/02701367.1995.10762220>
 12. Tang W. Analysis and research of computer physique evaluation technology on students' lifelong sports consciousness. *Journal of Physics: Conference Series*. 2020;1648:032081. <https://doi.org/10.1088/1742-6596/1648/3/032081>
 13. Wang P, Li Z, Song Y, Gao X, Wang X, Shi C. The effect of perceived social support on college students' physical education class engagement: A moderated mediation model. *Current Psychology*. 2026;45:102. <https://doi.org/10.1007/s12144-025-08628-8>
 14. Wang X. Application of intelligent algorithm in table tennis training data analysis and personalized guidance. In: 2024 International Conference on Interactive Intelligent Systems and Techniques (IIST). Bhubaneswar, India; 2024. p. 473–477. <https://doi.org/10.1109/IIST62526.2024.00122>
 15. Weifeng Q, Magalona JC. Capability, opportunity, and motivation level in table tennis through club mode teaching. 2024. <https://doi.org/10.5281/zenodo.13292425>
 16. Xiao B. Intervention effect of online and offline physical education model on anxiety disorder of undergraduates. *CNS Spectrums*. 2023;28(Suppl. 2):S114. <https://doi.org/10.1017/S1092852923005400>
 17. Yu J, Vexler YA, Li R. RETRACTED: Technology teaching of college table tennis players based on virtual simulation technology. *International Journal of Electrical Engineering & Education*. 2023;60:2365–2378. <https://doi.org/10.1177/0020720920986089>

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