

Bottlenecks and Breakthrough Paths in the Development of China's "Three Major Ball Sports" under the Reform of Sports-Education Integration

Junkai Zhu

Physical education Department of Shanghai Maritime University, Shanghai, 201306, China

Smu_2018@163.com

Abstract: This study investigates the critical bottlenecks and breakthrough pathways for the development of football, basketball, and volleyball (collectively known as the "Big Three" sports) in China within the context of sports-education integration. Through documentary analysis and in-depth interviews, the research identifies tripartite systemic barriers hindering the development of these sports: conceptual misconceptions, resource misallocation, and institutional deficiencies. Conceptually, the development is constrained by the deep-rooted belief of prioritizing academic achievements over athletic development, misaligned objectives between sports and education systems, and excessive safety concerns. Resource-wise, challenges include unequal funding distribution, shortage of qualified coaches, and inadequate sports facilities. Institutionally, the problems manifest as barriers in the dual-track management system, fragmented competition structures, and insufficient evaluation and incentive mechanisms. To address these challenges, the study proposes establishing a multi-stakeholder collaborative governance framework. This involves strengthening top-level institutional design, creating a dedicated development fund for sports-education integration, improving school-based incentive mechanisms, mobilizing social resources, and facilitating the engagement of professional sports organizations in school programs. These integrated measures aim to establish a synergistic ecosystem where conceptual, resource, and institutional elements interact positively, thereby promoting the sustainable development of the "Big Three" sports.

Keywords: "Three Major Ball Sports", Integration of Sports and Education, Development Bottlenecks, Breakthrough Pathways.

1. Introduction

In recent years, China's accelerated transition toward a sports powerhouse has propelled the integration of sports and education from conceptual discussions into implementation. The introduction of policies such as the **Opinions on Deepening the Integration of Sports and Education to Promote the Healthy Development of Adolescents** marks a new phase of systematic advancement in this reform. Within this context, the "Big Three" ball sports—basketball, football, and volleyball—have been entrusted with a critical mission to achieve high-quality development. This is due to their unique value in fostering team spirit, shaping character, and enhancing social adaptability, as well as their role as key indicators of a nation's competitive sports foundation. However, significant gaps persist between the current state of these sports and the reform objectives, particularly in terms of their penetration in schools, the refinement of competition systems, and the quality of talent cultivation.

Academic interest in sports-education integration and the development of the "Big Three" ball sports has grown steadily. Macro-level studies affirm the necessity and complexity of such integration, while sport-specific research tends to focus on describing current conditions and identifying challenges. International comparative analyses primarily draw lessons from mature models in Europe and the United States. Nevertheless, existing research exhibits notable shortcomings: it often emphasizes macro-policy interpretations or case studies, lacking a systematic diagnosis of mid-level institutional bottlenecks; methodologically, it relies heavily on document analysis and questionnaires, with limited use of

qualitative interviews to capture the in-depth perspectives of diverse stakeholders, thereby hindering a thorough understanding of underlying causes; and proposed solutions tend to be generalized, failing to establish actionable pathways that directly address identified bottleneck mechanisms.

Therefore, during this critical period of deepening sports-education integration, systematically investigating the bottlenecks, causes, and solutions for the development of the "Big Three" ball sports is of paramount importance. Such research will not only enrich the theoretical foundations of sports-education integration and provide scholarly support for sustainable development, but also offer evidence-based insights for governmental policy refinement, practical improvements in.

2. Development bottlenecks of China's "three major ball games" in the integration of sports and education

2.1. Bottlenecks in Conceptual Cognition: The Challenges of Value Conflicts and Ideological Barriers

The sustained advancement of sports-education integration reform relies not only on institutional design and resource allocation but is also profoundly constrained by conceptual perceptions across societal, systemic, and school levels. Currently, deeply rooted cognitive barriers—stemming from traditional culture, departmental functions, and pragmatic concerns—constitute the primary underlying bottleneck for

the development of the "Big Three" ball sports. Cognitive biases and conflicts directly undermine policy implementation effectiveness and the endogenous motivation for program development, manifesting in three key dimensions.

First, at the societal and familial levels, the traditional cultural inertia of "emphasizing literary accomplishments over physical prowess" generates substantial resistance. Influenced by the examination-oriented education system and the historical notion that "academic excellence leads to official career," scholastic achievement is widely regarded as the central pathway for student development, while physical activities are marginalized as supplementary pursuits. Parental concerns that children's participation in time-intensive programs like the "Big Three" may impede academic performance create collective anxiety. This significantly curtails students' engagement in systematic training and competitions, thereby eroding the broader foundation necessary for program development.

Second, misaligned objectives between the sports and education systems hinder the convergence of value orientations. The education system prioritizes "fostering virtue through education" and students' holistic development, emphasizing the "popularization" and "educational" dimensions of sports. In contrast, the sports system concentrates on "winning medals" and cultivating elite athletic talent, with a focus on "excellence" and "competitive results." This divergence in core values impedes effective collaboration in promoting the "Big Three," and inconsistent standards in event organization create confusion for grassroots schools.

Third, a "safety-first" conservative mindset among school administrators severely restricts the implementation of the highly physical "Big Three" sports. Fearful of potential disputes arising from sports injuries, many schools adopt risk-averse strategies, such as reducing training intensity, minimizing physical contact, and exercising caution in organizing off-campus competitions. This overly cautious administrative culture dilutes the spirit of perseverance and competitive ethos inherent in these sports, leading to a "greenhouse effect" in nurturing reserve talent—where players are sheltered from authentic competitive environments.

In summary, conceptual and cognitive bottlenecks form a complex network shaped by sociocultural norms, systemic functional divisions, and managerial apprehensions. The tendency to privilege academic achievement over physical development weakens societal support, misaligned system objectives obstruct synergy, and safety concerns limit program depth. These conceptual constraints often prove more deeply entrenched than tangible resource shortages, representing fundamental challenges that must be prioritized and systematically addressed in the ongoing reform of sports-education integration.

2.2. Bottlenecks in Resource Allocation: Structural Imbalance and Inadequate Effective Supply

The implementation of sports-education integration reforms and the sustainable development of the "Big Three" ball sports require stable and sufficient resource support. However, the current resource allocation system exhibits structural imbalances and insufficient effective supply, creating rigid constraints. This bottleneck manifests not only

in limited overall resource availability but also in multidimensional deficiencies—including inequitable distribution, lack of professional expertise, and inadequate facility accessibility—that severely hinder improvements in training quality and the expansion of participation.

Specifically, funding, teaching personnel, and facilities represent three core obstacles. Firstly, inadequate and unevenly distributed financial resources present the most immediate challenge. Physical education typically receives a disproportionately small share of school budgets, while the "Big Three" sports—characterized by large participation numbers, rapid equipment depreciation, high facility standards, and substantial competition costs—face particularly acute financial demands. Most schools can only sustain basic instructional programs, lacking resources for systematic extracurricular training and competitions. A deeper concern is the "Matthew Effect" in fund distribution, where resources flow disproportionately to a few high-achieving schools, while ordinary institutions—especially those in rural and underdeveloped areas—receive minimal support, thereby exacerbating developmental disparities.

Secondly, a severe shortage of specialized teachers and coaches constrains quality improvement. The "Big Three" sports require composite instructors who understand both physical education pedagogy and advanced training methodologies. However, general physical education teachers often lack specialized training experience needed for cultivating competitive athletes, while professional coaches frequently struggle to adapt to educational environments. This talent gap results in insufficient scientific training approaches, low success rates in talent development, and consequent resource wastage.

Finally, the supply-demand imbalance in sports facilities limits program scalability. This issue is particularly acute in urban schools with high population density. Due to historical planning limitations, many older campuses face severe space shortages, with single venues serving thousands of students and per capita space falling far below national standards. Additionally, outdated facilities, poor maintenance, and safety concerns prevent effective high-quality training. Facility shortages not only compress training time and space but also restrict the participant base, narrowing talent identification opportunities.

In summary, resource allocation bottlenecks form an interconnected systemic problem: funding constraints affect program initiation and sustainability, teaching quality impacts developmental depth, and facility limitations restrict program scale. Together, these elements create substantial barriers that undermine the policy vision of sports-education integration. Overcoming these resource constraints and transitioning from basic "availability" to "quality," and from "targeted support" to "universal benefit," constitutes the material prerequisite for promoting the substantive development of the "Big Three" ball sports.

2.3. Institutional and Managerial Bottlenecks: The Absence of Systemic Coordination

The success of sports-education integration hinges on profound institutional coordination and innovation between the education and sports systems, rather than mere juxtaposition. However, persistent systemic barriers remain in critical areas such as governance structures, competition frameworks, and evaluation mechanisms. These institutional bottlenecks create invisible barriers that lead to resource

fragmentation, pathway obstruction, and vitality suppression, trapping the "Big Three" ball sports in a state of "integration without synergy" that severely constrains their sustainable development.

Specific challenges manifest in three interconnected dimensions: (1) Management Systems: The "dual-track" administrative structure constitutes the primary institutional barrier to holistic student-athlete development. The education and sports systems maintain separate governance frameworks, student registration protocols, and athlete registration mechanisms. Talented students seeking to participate in high-level sports system competitions (e.g., U-series tournaments) frequently encounter complex "dual registration" requirements and may even lose eligibility due to ambiguous institutional affiliations. This institutional division perpetuates the "academic-training conflict," forcing students and families to make difficult choices between educational pursuits and athletic careers, ultimately leading to talent attrition. (2) Competition Structures: Underdeveloped and poorly articulated competition systems block upward mobility for reserve talents. While school-based leagues achieve broad coverage, their competitive standards, organizational consistency, and officiating quality remain uneven, limiting their capacity for early talent identification and development. Meanwhile, professional competitions organized by the sports system (such as U-series tournaments), despite higher competitive levels, remain substantially disconnected from school leagues, lacking effective credential recognition and promotion-demotion linkage mechanisms. This "two-layer phenomenon" prevents promising school athletes from transitioning to higher competitive platforms, undermining motivation for long-term systematic training. (3) Evaluation and Incentive Mechanisms: Pervasive gaps in evaluation systems result in insufficient endogenous motivation among stakeholders. The current school evaluation paradigm prioritizes academic advancement rates, making it difficult to quantify and incorporate achievements in "Big Three" development into assessment systems. Physical education teachers and coaches see their professional advancement and performance evaluations primarily tied to teaching hours and competition rankings, while their long-term systematic talent cultivation efforts lack scientific assessment and corresponding recognition. For students, except for a limited number of elite athletes who gain academic advantages through high-level sports teams, most committed trainees lack stable expectations and incentives. This systematic misalignment diminishes stakeholder enthusiasm for sports-education integration.

In conclusion, institutional and managerial bottlenecks represent the most rigid, deep-seated structural challenges in sports-education integration reform. The "dual-track" system creates division at the source, fragmented competition structures obstruct developmental pathways, and inadequate evaluation mechanisms erode motivational foundations. These three elements mutually reinforce each other, forming an institutional network that impedes the healthy development of the "Big Three" ball sports. Resolving this impasse necessitates advancing reform into deep-water areas, breaking down departmental barriers through top-level design, and establishing integrated management, competition, and evaluation systems to fundamentally clear the critical pathway for sustainable development of the "Big Three" ball sports.

3. In-Depth Analysis of Bottleneck Causes: The Interplay of Structure, History, and Interests

The developmental challenges facing the "Big Three" ball sports within the sports-education integration framework represent not merely an accumulation of conceptual, resource, and institutional constraints, but rather a systemic issue deeply embedded in the specific structure, historical trajectory, and interest distribution of China's youth sports system. Understanding these underlying drivers is fundamental to developing effective breakthrough strategies. The perpetuation of these bottlenecks stems from a deep-seated mechanism characterized by systemic structural entanglement, path dependence, and solidified interest structures.

First, the systemic structural dilemma manifests through the interlocking and mutual reinforcement of conceptual, resource, and institutional constraints, creating a self-perpetuating negative cycle. Cognitive biases undermine societal support, subsequently influencing resource allocation and institutional design, while resource scarcity and institutional barriers in turn reinforce the perception of sports' marginal importance. This structural lock-in necessitates comprehensive analysis and coordinated reform.

Second, strong path dependence maintains the entrenched separation between traditional specialized training models and mainstream education. The historically successful "end-to-end" cultivation model centered on amateur sports schools has established self-contained management systems, training philosophies, and competition structures that persist through institutional, organizational, and cognitive inertia. This results in persistent conflicts between high-level training integration and general education across curriculum scheduling, academic requirements, and administrative cultures.

Finally, entrenched interest structures present pragmatic resistance to reform. Sports-education integration essentially involves redistributing power and reconfiguring interest alignments. Sports departments fear diminished authority in talent selection, education departments worry about disrupted teaching, some schools resist assuming additional reform risks, and certain parents avoid potential opportunity costs associated with sports training. When reforms challenge these entrenched interests, implementation gaps emerge between policy enthusiasm and practical execution.

In conclusion, the causes underlying the "Big Three" development bottlenecks extend beyond surface phenomena, emerging from the complex interplay of systemic structural constraints, historically formed path dependence, and multifaceted interest distributions. The structural framework defines the problem's parameters, path dependence provides historical momentum, and interest configurations determine reform complexity. Future breakthrough strategies must employ systems thinking: promoting top-level institutional innovation to overcome structural lock-in, implementing incremental reforms to transcend path dependence, and designing inclusive incentive mechanisms to balance stakeholder interests, ultimately guiding the system toward a new equilibrium of sustainable development.

4. Deepening and Innovating the Pathway of Sports-Education Integration: Building a Multi-stakeholder Collaborative Ecosystem

4.1. Conceptual Integration Pathway: Reshaping the Educational Values of Sports and Building Consensus on Holistic Development

Addressing current developmental bottlenecks requires overcoming cognitive barriers and reshaping societal recognition of sports' value. This necessitates elevating sports from mere "physical exercise" to a strategic vehicle for "fostering virtue through education" through systematic public communication and educational guidance. Policymakers and school administrators should lead this conceptual transformation by establishing the "Big Three" ball sports as crucial pathways for implementing the comprehensive education policy of "simultaneous development of moral, intellectual, physical, aesthetic, and labor education."

Specific implementation strategies include: establishing high-level school league systems with enhanced media promotion; inviting distinguished sports figures to campuses for knowledge sharing; and systematically presenting the developmental trajectories of outstanding student-athletes. These approaches will effectively demonstrate the educational philosophy of "cultivating civilized minds and robust physiques," gradually transform the traditional mindset of "emphasizing literary pursuits over physical development," and ultimately foster campus cultures and family environments that value sports participation and collective athletic activities.

4.2. Resource Integration Pathway: Mobilizing Social Forces and Establishing Open-Sharing Platforms

Confronting structural resource shortages necessitates innovative allocation mechanisms to transition from sole fiscal investment to a multi-stakeholder collaborative model. Professional clubs, sports enterprises, and other social entities should be actively guided to participate in school sports through naming-rights sponsorships, jointly establishing teams, deploying professional coaches, and donating equipment.

Furthermore, a digital resource-sharing platform should be established to integrate facilities from schools, communities, and clubs, enabling regional coordination and efficient utilization of venues, coaching staff, and curricula.

Finally, the government should create a dedicated fund for sports-education integration, transitioning from uniform funding approaches to implementing targeted support based on program performance and talent development outcomes, with prioritized allocation to under-resourced schools and promising reserve talents.

4.3. Institutional Coordination Pathway: Breaking Down Departmental Barriers and Creating Cohesive Talent Development Channels

Addressing the deep-seated institutional barriers in sports-education integration requires systemic breakthroughs

through top-level institutional design. The primary task involves establishing a regularized collaborative mechanism between education and sports departments to jointly formulate policies, unify competition systems, and integrate management procedures. The core initiative focuses on achieving data interoperability and institutional alignment between student academic records and athlete registration systems, implementing a "single registration, dual-system recognition" framework to eliminate eligibility barriers for student-athletes participating in cross-system competitions.

Building upon this foundation, a cohesive competition and talent development pipeline spanning elementary through high school levels should be constructed. Drawing inspiration from established models like the NCAA, a tiered system incorporating intramural leagues, interscholastic competitions, and regional selection mechanisms can be developed to effectively link competitive performance with educational advancement pathways. For instance, incorporating performance in provincial-level and above secondary school leagues into the evaluation criteria for university elite sports team admissions would provide institutionalized support for the continuous development of outstanding reserve talents.

4.4. Talent Cultivation Model Innovation Pathway: Emphasizing School Distinctiveness and Developing Composite Coaches

The effectiveness of all reform measures should ultimately be measured by the enhancement of talent cultivation quality. The primary task involves deepening the development of "Sports Traditional Characteristic Schools" to maximize their demonstration role in curriculum design, training systems, and competition frameworks. Subsequently, the "One School, One Brand" or "One School, Multiple Brands" model should be promoted, guiding schools to leverage their unique resources in focusing on one or two preeminent ball sports, thereby establishing distinctive athletic brands that enable resource concentration and program specialization.

The crucial challenge lies in resolving the shortage of composite coaches. A dual-path approach combining "internal cultivation and external recruitment" should be implemented: on one hand, establishing composite programs in Physical Education and Sports Training through collaboration with higher education institutions, while providing systematic training for in-service teachers; on the other hand, formulating flexible talent policies to attract retired athletes into school coaching positions, accompanied by pre-service training in education and psychology to facilitate their transition into the dual role of "teacher-coaches."

5. Conclusion

This study systematically examines the developmental challenges and breakthrough pathways for the "Big Three" ball sports within the context of sports-education integration. The findings reveal that the development bottlenecks primarily manifest across three interconnected dimensions: conceptual understanding, resource allocation, and institutional management. These elements form a self-reinforcing systemic predicament where cognitive biases constrain resource investment willingness, resource scarcity perpetuates rigid institutional structures, and institutional

barriers further entrench outdated perceptions.

To address this complex challenge, the study proposes establishing a multi-stakeholder collaborative governance framework. This requires enhanced top-level design from the government, including formulating detailed integration guidelines and establishing dedicated development funds. Schools should incorporate the "Big Three" ball sports into their medium-to-long-term development plans, improve incentive mechanisms for teachers and students, and actively expand social partnerships. Meanwhile, social organizations should leverage their professional expertise by contributing to coaching support, competition organization, and talent cultivation.

The study acknowledges certain limitations, particularly concerning the geographical coverage and representativeness of the interview sample. Future research could benefit from implementing large-scale questionnaire surveys, conducting cross-regional comparative analyses, and developing longitudinal case studies to better elucidate the dynamic mechanisms and long-term effects of sports-education integration. Such investigations would provide a more robust theoretical foundation for the sustainable development of the "Big Three" ball sports.

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