

Rethinking Sports Professional Education in China's TVET System: Differentiation, Competency, and Institutional Coordination

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Abstract

China's sports job market is no longer limited to traditional physical education teaching and elite sports training. Booming fitness services, sports rehabilitation, event operation, health promotion and digital sports services have spawned numerous technical sports posts, while domestic sports education systems have not updated accordingly. Sports majors offered by normal universities, comprehensive universities and vocational colleges lack clear positioning and distinctive boundaries. This study explores the positioning optimization of China's vocational sports education within the modern TVET system, based on policy documents, academic studies and comparative analysis of vocational education models in five developed countries. It finds that the core advantage of vocational sports education lies in task-based teaching, systematic workplace practice and standardized competency certification rather than academic credentials. Instead of simply simplifying undergraduate courses, vocational sports education should align curriculum, training and certification with industrial standards, strengthen interdisciplinary training and employer participation. The research puts forward targeted optimization strategies to support the reform of sports vocational education and cultivate professional talents for the sports industry.

Keywords

Sports vocational education, sports professional education, three-track structure, occupational competency, industry-education integration.

1. Introduction

The implementation of China's national fitness strategy, rising public health awareness, and expanding sports consumption have continued to drive the upgrading of the sports industry and have substantially changed the structure of workforce demand. Traditional sports programs have largely focused on preparing school physical education teachers and reserve competitive-sport athletes, emphasizing disciplinary theory and sport-specific skills. Such a model is increasingly unable to meet the shortage of versatile, practice-oriented personnel created by the rapid expansion of sports services. National strategies including the Healthy China 2030 initiative and the construction of a world-class sports nation have accelerated industry transformation, driving stronger market demand for interdisciplinary talents. Such professionals are expected to deliver hands-on technical services and work efficiently across integrated sports, public health, social service and technological scenarios [1, 2].

The rapid diversification of sports vocational roles has posed a notable challenge for educational development, as the growing diversity of professional job roles fails to clarify differentiated instructional responsibilities across different education tiers. China's ongoing vocational education reform has redefined TVET as an independent education category with unique training orientations, instead of treating it merely as a subordinate, lower-tier component of academic education. As stipulated in the National Implementation Plan for Vocational Education Reform, vocational education reform prioritizes industry adaptation and high-skilled talent cultivation as its core development goals. Nevertheless, the practical connotations of categorized development remain ambiguous in sports vocational education. While vocational colleges commonly deliver courses in fitness guidance and sports rehabilitation, their curriculum design often merely condenses undergraduate teaching content. Such teaching arrangements overemphasize theoretical classroom learning while providing insufficient practical training related to real workplace scenarios and operational workflows.

This structural dilemma is particularly prominent due to the overlapping developmental trajectories of China's three major sports education systems. Traditionally, normal universities focus on cultivating professional physical education teachers for basic education. Comprehensive universities undertake a wider range of sports talent training tasks, covering competitive sports, sports management and academic research, and gradually expanding into applied sports sectors. In contrast, vocational colleges are positioned to train frontline technical practitioners for the sports industry. Although these three educational tracks feature clear orientation differences in institutional design, their practical training programs show severe boundary blurring. Various types of colleges offer overlapping course modules, leading to graduate competition for identical employment positions. Worse still, many vocational sports programs blindly follow undergraduate curriculum frameworks instead of designing courses based on actual occupational demands and practical work tasks [4]. Meanwhile, employers across fitness services, sports rehabilitation, event operation and community sports sectors consistently highlight the urgent market demand for talents with solid practical operational capabilities [5, 6].

Accordingly, the core challenge lies far beyond the expansion of sports majors in vocational colleges. The key issue is whether these vocational programmes can form unique educational value that differentiates them from duplicated university curricula. Multiple practical flaws expose the inadequacies of current sports vocational training. Most courses fail to centre on industry-specific competency standards, while emerging vocational fields including sports data analysis and intelligent fitness are integrated into teaching systems at a slow pace. Furthermore, existing school-enterprise collaboration remains superficial, limited to short-term internships and corporate visits, without deep, continuous involvement of enterprises in curriculum delivery and student evaluation [7, 8]. In addition, the connection between course teaching and vocational qualification certification remains inconsistent and unstandardized. Collectively, these problems obscure the unique attributes of sports vocational education, making it hard for students, employers and educational institutions to distinguish its professional positioning and training characteristics.

Contemporary vocational education research has gradually shifted its research focus from educational scale expansion to core topics including categorical educational positioning, institutional boundary division, and the adaptive connection between talent training and industrial upgrading [9–11]. Based on such existing research findings, this study explores three interrelated research dimensions. It first analyzes how the tripartite sports education system shapes the positioning of vocational sports education. It further discusses the core competencies and institutional mechanisms required to adapt vocational training to the evolving sports job market. Finally, it explores how international TVET practices can provide localized references for China's educational reform, rather than being copied and applied

mechanically. This research aims to construct a systematic development path that integrates professional orientation, competency benchmarks, curriculum design, on-site practical training, qualification certification and industry-university collaborative governance.

2. Literature Review

Research into sports talent development has grown rapidly alongside ongoing industrial restructuring in the sports sector and iterative reforms of the national vocational education system. Scholars generally reach a consensus on the general trend of educational transformation: traditional training models centered on campus physical education teaching and elite athletic training can no longer match the diverse occupational demands of modern sports sectors, covering fitness services, sports rehabilitation, event operation and digital sports industries. Nevertheless, existing studies lack consistent and actionable guidance for institutional reform practices. Current academic discussions often treat curriculum optimization, employability improvement, qualification certification and school-enterprise cooperation as isolated research topics. Insufficient systematic research has been conducted on the internal logical links between institutional positioning, vocational job attributes and targeted training design [9–11].

2.1. Sports Industry Transformation and Sports Vocational Education

A core feature of high-quality vocational education lies in its tight integration of technical expertise, practical operational ability and industry job requirements [3, 12]. In a systematic review of China's TVET policies, Chen and other researchers [13] pointed out that vocational education has assumed an increasingly critical role in driving industrial upgrading and cultivating national professional talents. This shift is particularly vital for sports vocational education, as the sports industry's job categories have become increasingly diversified in recent years. Traditional training schemes that only focus on fixed sports technical skills can hardly meet current market needs. Modern sports practitioners are required to possess comprehensive capabilities, including client communication, digital tool application, basic health service literacy and adaptive competence to fit various workplace environments.

Domestic academic research has already recognized the drawbacks of the existing training model. Li [14] proposed that higher vocational sports curricula should be further aligned with frontline industry work scenarios. Similarly, Chen and Cao [15] found that disconnection between school teaching and real industry practice greatly limits students' post-graduation occupational adaptability. In this context, Yunnan's local "3+2" segmented training model provides a valuable reference. Different from conventional curriculum design that stacks independent teaching modules, this model integrates competency standards, vocational certification and practical training as a unified whole [16]. Likewise, the national "1+X" certificate reform has sparked in-depth discussions on the synergistic integration of vocational posts, course systems and qualification certification mechanisms [17, 18].

The above research outcomes verify that industrial transformation is reshaping the core developmental logic of sports vocational education. The fundamental difference between vocational and academic education does not lie in a simple dichotomy of theoretical learning and practical training, as vocational students also need solid professional theoretical knowledge. The essential distinction lies in the core logic of curriculum construction. Occupation-oriented vocational teaching formulates and arranges teaching content based on real workplace tasks, industry competency standards and practical professional problems. Once this core orientation is missing, sports vocational programmes will lose their unique characteristics and become indistinguishable from general academic majors.

2.2. Type Positioning of Sports Programs and Industry-Education Integration

The categorical positioning of educational programs extends far beyond the hierarchical level of academic credentials. It fundamentally determines talent training goals, the proportional allocation of classroom instruction and on-the-job training, evaluation criteria, teacher competency requirements and graduates' career development directions. Existing research on sports vocational education advocates orienting talent training toward practical professional roles covering fitness guidance, health service support, sports event operation and mass sports management, with practical training and vocational certification serving as core approaches to improving students' employability [16, 19]. Nevertheless, how vocational sports majors can sustain their unique applied positioning amid the expanding applied training programmes offered by other types of universities remains underexplored.

Against this backdrop, the tripartite structure of China's sports education system carries significant analytical value. Most current studies focus on individual vocational colleges or independent curriculum reforms, which fail to elaborate on the widespread institutional homogenization phenomenon. On one hand, many vocational sports programmes borrow curriculum designs from undergraduate education. On the other hand, comprehensive universities have gradually stepped into applied sports fields that were previously dominated by vocational training. Rather than triggering vicious market competition, this overlapping development forces educational institutions to rely on substantive training characteristics, instead of institutional attributes, to define their programme positioning.

Industry-education integration is widely regarded as the core solution to differentiated vocational talent cultivation. Scholars have emphasized the necessity of building close linkages between curriculum systems, vocational certificates, practical training sessions and the construction of dual-qualified teaching teams [20, 21]. In practice, however, the depth of school-enterprise cooperation varies drastically across institutions. Short-term student internships represent only shallow industrial participation in education. In contrast, in-depth collaboration involves enterprises in formulating vocational competency standards, designing practical training tasks, arranging on-site instructors and participating in student ability assessment. Relevant empirical studies confirm that most existing sports vocational programmes have not achieved such in-depth cooperative training, especially in emerging fields including sports rehabilitation, intelligent fitness and sports technological services [22].

2.3. International TVET Experience and Implications

Although vocational education systems across the globe feature unique governance mechanisms and historical development paths, they share several core characteristics applicable to sports vocational education development. These common traits include industry-aligned competency benchmarks, abundant on-the-job learning opportunities, active employer engagement, and industry-recognized qualification systems that extend beyond campus credentials. UNESCO's official TVET development strategy stresses the importance of bridging education and labor market demands, framing graduate employability as a comprehensive result of systematic knowledge learning and cross-institutional collaborative operation [12]. Similarly, studies focusing on sports graduate employment verify that hands-on practical experience and versatile transferable skills are key determinants of successful career development [19].

The five typical national TVET models analyzed in this research adopt distinct approaches to coordinate education and industrial training. Germany's renowned dual vocational system integrates enterprise-based practical training into its formal vocational education framework, forming a standardized institutional training mechanism [23,24]. Australia relies on systematic competency-based training packages and a unified national qualification framework to realize the organic connection between teaching content and ability evaluation [28, 29 31]. In the

American education system, authoritative industry associations and accreditation bodies such as NSCA and CAATE dominate the formulation of professional training standards and talent cultivation specifications [32, 33]. Despite differing institutional traditions, Japan's specialized vocational colleges also prioritize long-term, stable practical cooperation with industrial and professional institutions [30, 34]. By comparison, the UK unifies standardized qualification frameworks with employability-oriented training concepts throughout higher and vocational sports education [19]. Rather than being copied mechanically for domestic reform, these international models demonstrate that the uniqueness of vocational education stems from systematic institutional linkage among competency standards, curriculum design, workplace training and qualification certification.

2.4. Research Gap

Three gaps follow from the literature. First, sports vocational education is often discussed without placing it within the full three-track structure, which makes it difficult to explain why curricular overlap persists. Second, reform proposals frequently address curriculum, practice, certificates, or industry cooperation separately, although these elements operate as a system. Third, the implications of digitalization and the growing health-service orientation of the sports industry have not been fully incorporated into discussions of vocational positioning [22]. This study responds by treating institutional differentiation as the starting point and by examining competency, curriculum, workplace learning, qualifications, and governance as connected components of a vocational education model.

3. Research Methods

This study adopts a mixed analytical approach comprising literature review, policy document analysis and cross-national comparative analysis to explore how sports professional education can be accurately positioned within China's three-tier sports education system. Current empirical research concerning functional division among different types of sports education institutions remains insufficient, with most existing studies focusing only on individual colleges or isolated educational cases. To fill this research gap, this paper synthesizes authoritative policy provisions and mainstream academic findings to summarize persistent structural dilemmas in local sports vocational education, while constructing a targeted reform framework for future development [9, 12].

The research data and reference materials adopted in this paper fall into three major categories. The first category covers academic literature focusing on vocational education development, sports vocational talent training, industry-education integration, competency-oriented teaching reform and sports industry talent cultivation. The second category includes official reports and strategic documents released by international institutions and national skill governance bodies, mainly from UNESCO and authoritative Australian vocational education organizations. The third category consists of China's normative policy files regarding vocational education upgrading, sports industry high-quality development and the national "1+X" vocational certificate system [3, 26]. This study conducts comparative analysis of all collected materials, focusing on their respective definitions of educational orientation, occupational competency standards, practical training arrangements and the participation mechanism of external industry stakeholders.

Five economies, namely the United Kingdom, Germany, Australia, the United States and Japan, are selected as comparative research cases. This case selection does not aim to rank the quality of different national vocational education systems. Instead, these typical cases represent diversified institutional models that link sports vocational training with competency benchmarking, curriculum formulation, on-site practical training, industrial engagement and qualification certification systems [19, 24, 28–35]. By referencing these international

dimensions, this paper further analyzes the operational characteristics and functional positioning of China's three-track sports education system, with a particular focus on the core training responsibilities and developmental orientation of vocational colleges [16, 27]. It is worth noting that the research framework established in this paper is interpretive and institution-focused, and is not designed to quantitatively evaluate the operational performance of individual vocational colleges.

4. Results and Discussion

The cross-national comparison undertaken in this study reveals a core structural contradiction within China's contemporary sports professional education system. The domestic sports labor market is undergoing profound transformation, featuring growing professional segmentation and a service-driven development trend. In contrast, the institutional role division of local sports education still retains the legacy of the traditional training model, which previously prioritized physical education teacher training and competitive sports talent cultivation. In this context, simply introducing new elective or professional courses cannot build a distinct, independent vocational education positioning. The crux of high-quality sports vocational reform lies in innovative instructional design. Specifically, vocational programmes must rebuild their teaching logic centered on real occupational tasks, on-the-job performance requirements, standardized industry competency criteria and long-term interactive cooperation with employing enterprises.

4.1. Positioning and Constraints of Sports Education in China's TVET System

The sports industry has seen robust growth in job vacancies across sports rehabilitation, fitness guidance, event operation and sports technical services in recent years [22]. Even with such booming market demand, boundary overlap still persists among China's three major sports education pathways. Normal universities have long focused on cultivating professional physical education teachers, forming a stable disciplinary orientation in teacher training. Comprehensive universities integrate sports scientific research, industry management and competitive sports training, while continuously expanding their coverage of applied sports majors. Vocational colleges, in theory, are tasked with cultivating frontline technical sports practitioners. However, their unique training advantages are greatly diminished, as most vocational courses merely simplify undergraduate disciplinary systems without targeted adjustment for practical occupational scenarios [20, 27].

Such institutional homogenization brings two prominent problems to talent cultivation. In terms of curriculum design, different types of educational institutions adopt highly similar teaching frameworks, even though their graduates are positioned for different career paths. In terms of market recognition, employers can hardly distinguish students' practical operational competencies simply based on their institutional backgrounds. As comprehensive universities keep scaling up applied sports training programmes, market homogenization competition has intensified. Under such circumstances, vocational colleges must highlight their educational uniqueness through differentiated teaching design and evaluation mechanisms, rather than relying on major categorization to build market competitiveness [21].

Furthermore, modern sports industry employers raise comprehensive requirements beyond basic professional technical skills. Frontline sports practitioners are required to master client communication, service coordination, basic health and fitness data analysis, digital platform operation, as well as adaptive capabilities to fit commercial and community service scenarios. Nevertheless, the quality of professional training in emerging fields including rehabilitation assistance, intelligent fitness and sports technology varies drastically across different colleges [22]. Accordingly, sports vocational education needs to balance professional specialization and interdisciplinary integration. Students are required to master precise vocational technical skills

while adapting to the interdisciplinary development trend integrating sports services, public health and digital technology.

Global TVET practices further validate the above viewpoints. Competency-oriented education models do not neglect theoretical knowledge teaching. Instead, they visualize industry practical performance standards and take these core criteria as the fundamental basis for curriculum formulation and student ability evaluation [12]. For China's sports vocational education reform, this indicates a clear development direction: clarifying the unique training positioning of each educational track, and constructing vocational teaching systems that fully align with the work procedures and competency requirements of frontline technical sports positions.

4.2. Changing Competency Demands under Sports Industry Transformation

Ongoing industrial upgrades in the sports sector have reshaped the competency framework for sports-related occupations. While professional sports technical skills remain a fundamental job requirement, they can no longer fully support graduates' overall employability in the modern job market. Contemporary sports vocational roles call for diversified comprehensive capabilities. Sports rehabilitation work demands safe operational skills and effective communication with clients and industry practitioners; fitness posts integrate skill guidance, personalized service and public health popularization; event management requires strong coordination and on-site problem-solving capacities; and emerging smart fitness services further raise thresholds for digital system operation and data analysis literacy. In short, modern sports vocational competencies feature interdisciplinary composite attributes instead of single technical proficiency.

This trend aligns with research released by the Australian Industry and Skills Committee, which categorized customer service awareness, health promotion capabilities, digital literacy and occupational adaptability as core competencies for future sports, fitness and recreational practitioners [28]. Although domestic sports education has made tentative adjustments to adapt to such changes, the cultivation quality of core emerging capabilities, including rehabilitation assistance, intelligent sports equipment operation and sports data analysis, remains inconsistent across different educational institutions [22]. It is inappropriate to fill this capability gap by simply offering fragmented technical courses. Digital teaching can only exert practical vocational value when integrated with real workplace scenarios. For instance, enabling students to collect and analyze fitness data, optimize service procedures and assist in event operation management allows digital skills to serve actual vocational needs.

The shift toward competency-based training also drives innovative reform in assessment mechanisms. Traditional written examinations are insufficient to comprehensively evaluate students' professional performance, which is the core training goal of vocational education. Diversified evaluation methods, including practical task tests, corporate project practice, simulated service scenarios, academic portfolios and industry-led assessments, can better bridge the gap between classroom teaching and post-graduation job demands. In this regard, the integrated development of vocational posts, curriculum systems and qualification certificates is far more than a routine administrative arrangement. It serves as a systematic educational mechanism to anchor occupational training goals throughout curriculum design, daily teaching and comprehensive ability evaluation.

4.3. Comparison of International Sports Vocational Education Models

Despite adopting distinct institutional mechanisms across the five selected countries, cross-national comparison identifies a unified developmental logic for sports vocational education. Sound professional sports training systems are consistently built on mutually supportive interactions between industry competency standards, hands-on training arrangements, external industry involvement and standardized qualification certification. Table 1 outlines the

core characteristics of these international models that offer practical insights for China’s educational reform.

Table 1. Comparison of International Sports Vocational Education Models

Country	Core system feature	Implementation in sports	Institutional feature	Implication for China
United Kingdom	RQF and employability orientation	Universities cooperate with sports organizations and professional clubs in practical teaching Schools and enterprises jointly train students through sustained workplace learning	Emphasis on occupational and transferable skills	Develop sports competency standards and strengthen job–course–certificate alignment
Germany	Dual vocational education system	Curricula designed through competency units and qualification certification	High enterprise participation and strong practice orientation	Strengthen school–enterprise co-training and internship systems
Australia	AQF and competency-based education	Clinical practice and professional internships embedded in training	Close linkage among curriculum, qualification, and assessment	Integrate competency-based curricula with certificate systems
United States	Industry certification and professional associations	Practice with sports associations, clubs, and medical institutions	Clear professional qualifications and industry standards	Develop authoritative sports vocational qualification systems
Japan	Specialized training colleges and industry collaboration		Long-term practice and parallel credential + qualification pathways	Strengthen practical teaching and participation of industry organizations

Source: Compiled from UNESCO (2022), Minten and Forsyth (2014), Deissinger (2015), AISC (2021), Umegaki (2014), SkillsIQ (2022), NSCA (2020), CAATE (2020), MEXT (2003), OECD (2010), and related sources [12, 19, 24, 28–35].

The UK system anchors curriculum design and learning outcomes in national qualification frameworks and graduate employability demands. Sports majors routinely establish long-term partnerships with local sports clubs and social organizations to help students accumulate practical experience and develop versatile transferable skills throughout their studies [19]. In contrast, Germany’s dual vocational education system embeds corporate participation into formal teaching mechanisms. This design integrates on-the-job training as a core, continuous part of talent cultivation, instead of arranging internships merely as a final-stage supplementary module [24]. Australia’s vocational system adopts a standardized construction mode, where systematic competency units, specialized training packages and unified qualification frameworks build formal, binding connections between course content, ability evaluation and authorized vocational credentials [28, 31].

Professional industry bodies play a dominant guiding role in the United States. Authoritative certification and accreditation institutions, represented by NSCA and CAATE, set unified norms for professional knowledge systems and practical training standards for sports practitioners [32, 33]. Though situated in a different institutional context, Japan's specialized vocational colleges also prioritize in-depth, long-term cooperation with sports institutions, medical organizations and other professional industry bodies to support practical teaching [30, 34]. These international experiences indicate that China does not need to blindly copy any single foreign model. Instead, the key reform direction is to provide solid institutional guarantees for occupational standard formulation, practical teaching implementation, qualification certification and industry engagement. Only in this way can these core elements truly guide daily teaching practices, rather than staying as empty policy propositions.

4.4. Strategies and Pathways for Sports Vocational Education in China

Effective reform of sports vocational education must start with clarifying its core educational functions. As vocational colleges primarily cultivate skilled technical talents for frontline sports industries, their curriculum systems should be precisely tailored to actual occupational scenarios and job demands. Instead of carrying out isolated, fragmented curriculum adjustments, colleges need to implement systematic and coordinated reforms covering multiple educational dimensions to build a unique vocational training system.

4.4.1. Development Strategies

Industry-oriented competency standards serve as the fundamental basis for integrated educational reform. At present, many vocational courses fail to align closely with real job requirements, making it difficult for employers to accurately evaluate students' practical professional capabilities [20]. The vocational education practices of the United Kingdom and Australia prove that standardized competency and qualification frameworks can explicitly define talent cultivation goals and learning outcomes [19, 31]. For China's sports vocational education, targeted competency standards can be gradually formulated for core professional fields including physical conditioning training, sports rehabilitation assistance, event operation management and public fitness services. These standards should focus on guiding curriculum design and student ability assessment, rather than forming redundant administrative formalities.

Substantive workplace training is another indispensable component of high-quality vocational talent cultivation. Short-term internships only allow students superficial exposure to industry environments, offering limited opportunities for repeated practical operation, targeted professional feedback and gradual improvement of job responsibilities. In contrast, deep school-enterprise cooperation can greatly enhance teaching effectiveness. When sports clubs, fitness enterprises, rehabilitation institutions and event operation teams participate in the whole teaching process — including competency standard formulation, practical task design and assessment criterion establishment — practical training can truly match vocational cultivation goals. Germany and Japan's vocational systems adopt different institutional models for on-the-job training, yet both verify the importance of continuous, long-term industry participation in talent training [24, 30, 34].

Scientific qualification certification systems help consolidate the professional positioning of vocational graduates and connect educational output with industry recognition. The professional certification mechanism in the United States fully demonstrates how authoritative social institutions can standardize talent training specifications and objectively reflect practitioners' professional competencies [32, 33]. China's sports vocational certification system can be further optimized by straightening out the internal logical relationship between professional course learning, practical ability evaluation and vocational qualification accreditation. The core goal of certification reform is not to pursue a higher quantity of student

certificates, but to ensure each credential can accurately reflect students' employable professional skills.

Additionally, vocational teaching content needs to keep pace with industrial technological iteration. Modern sports industries have integrated emerging technologies such as sports data analysis, intelligent fitness systems and wearable monitoring devices into daily service scenarios, forming new professional competency requirements [35]. Vocational colleges should set up systematic practical courses to help students master these emerging technologies and apply them in professional sports service scenarios. Interdisciplinary teaching should be problem-oriented and closely combined with actual vocational tasks. For instance, integrating exercise physiology knowledge, client communication skills and digital monitoring technology into fitness service practice is far more effective than simply stacking irrelevant courses in the teaching schedule.

Furthermore, sustainable educational reform requires sound multi-stakeholder governance mechanisms to ensure long-term effectiveness after curriculum optimization. Government departments are responsible for formulating top-level policies and standardized qualification frameworks; industry associations summarize professional characteristics and refine occupational competency standards; various enterprises provide updated industry practice resources and practical training bases; and vocational colleges undertake the overall planning of teaching systems and comprehensive student development. For regional sports education development, cross-institutional cooperation platforms can effectively solve the problem of insufficient industry resources for single colleges, enabling full coverage of diverse sports industry sectors.

4.4.2. Development Pathway Model

This study proposes a targeted Sports Vocational Education Development Pathway Model, which takes occupational competency cultivation as the core reform orientation, rather than treating competency building as a single independent reform module. Centered on industrial competency standards, the model consists of five interrelated and mutually supportive components: standardized occupational competency benchmarks, in-depth school-enterprise integration, specialized sports vocational qualification systems, clustered major construction with interdisciplinary training, and multi-subject collaborative governance. These five dimensions address different shortcomings of current sports vocational education, and their synergistic interaction determines the overall reform effectiveness [9, 12]. Isolated reform measures face obvious limitations: competency standards without practical workplace training tend to be too theoretical; on-the-job training lacking unified evaluation standards results in uneven training quality; certificates decoupled from curriculum teaching lose practical industry value; and interdisciplinary courses divorced from vocational scenarios fail to improve students' core professional abilities.

The construction of this model draws lessons from global mature TVET experience without mechanically copying foreign institutional systems. The UK's Regulated Qualifications Framework and Australia's Australian Qualifications Framework provide references for explicit, outcome-oriented talent training; Germany's dual system highlights the value of sustained enterprise participation; American professional certification systems reflect the guiding role of industry professional standards; and Japanese specialized vocational colleges prove the significance of long-term in-depth cooperation with professional institutions. China's reform should absorb these universal developmental principles and localize them according to the practical situation of its vocational education system and sports labor market characteristics.

This model also provides a clear path for differentiated development of sports education. The uniqueness of vocational colleges does not lie in simplifying academic courses or avoiding

majors offered by comprehensive universities. Instead, their core competitiveness is reflected in the vocational orientation of teaching design, including targeted knowledge screening, practical skill training and job-oriented ability evaluation. Under the existing three-track sports education system, this differentiated development logic is more feasible and sustainable than rigidly dividing disciplinary boundaries among different types of educational institutions.

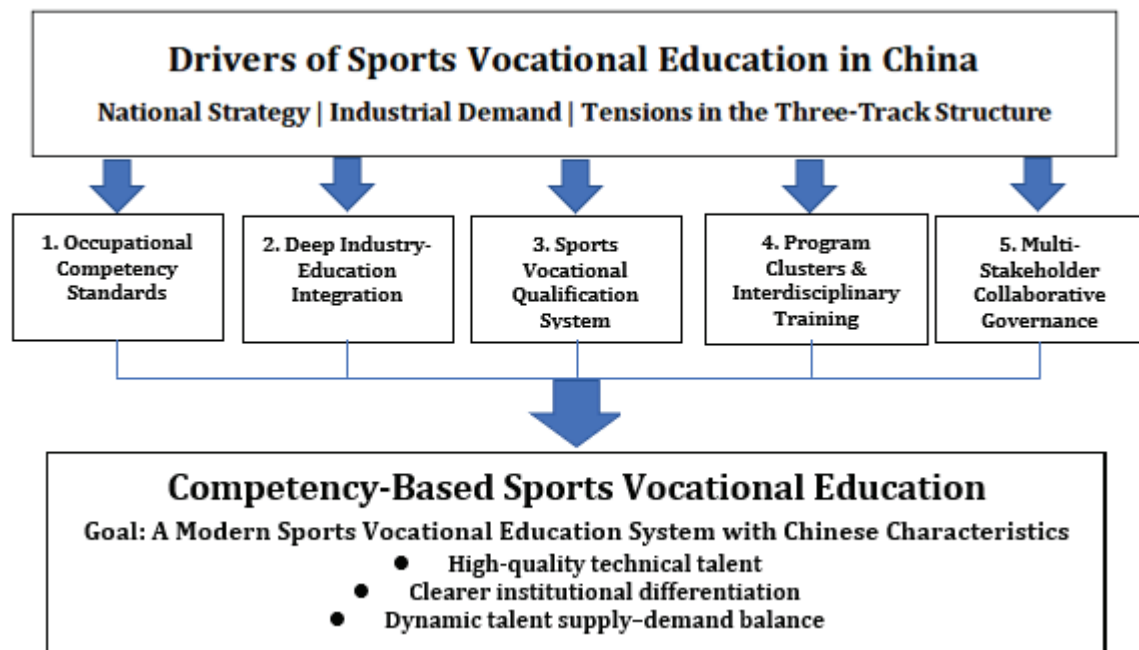


Figure 1. Development Pathway Model for Sports Vocational Education in China

5. Conclusions and Recommendations

5.1. Conclusions

This research confirms that the core dilemma of contemporary sports vocational education lies not in insufficient major settings, but in the ambiguous functional division of different sports education categories. Within China's three-tier sports education system, vocational colleges are positioned to cultivate skilled workers for frontline technical sports positions. Nevertheless, many vocational teaching plans still adopt curriculum frameworks and assessment modes similar to undergraduate programmes. This phenomenon erodes the most essential feature of vocational education: the systematic, organic connection between knowledge learning and real occupational practice.

Ongoing industrial upgrading further exacerbates this educational mismatch. Modern sports service roles covering fitness guidance, sports rehabilitation, event operation, public health promotion and digital sports operation require integrated capabilities combining professional sports expertise, hands-on operational skills, service awareness, interpersonal communication and digital application literacy. Through systematic analysis, this paper summarizes three fundamental structural defects in current talent cultivation. First, course systems are not fully aligned with industry competency requirements. Second, existing school-enterprise cooperation fails to deliver continuous and high-quality on-the-job training resources. Third, the linkage mechanism between curriculum teaching and vocational qualification certification remains immature. These drawbacks are not isolated issues; collectively, they reveal the incomplete institutional construction of sports vocational education's practical training system. Cross-national comparison of international TVET systems offers feasible solutions to fix these institutional deficiencies. Despite huge differences in national conditions and educational

systems across the five researched countries, all high-quality sports vocational training systems share four core elements: standardized occupational competency criteria, continuous practical training mechanisms, in-depth industry participation and authoritative qualification certification systems. These institutional arrangements effectively strengthen the docking between vocational education and labor market demands. Accordingly, China's sports vocational education reform should focus on building competency-based educational characteristics. Instead of merely expanding major categories, colleges need to optimize curriculum design and improve institutional operation mechanisms to realize substantive vocational education transformation.

5.2. Policy Recommendations

First, relevant policy support should be launched to promote the iterative formulation and improvement of occupational competency standards for mainstream sports service posts. Such industry benchmarks can serve as the fundamental guideline for curriculum compilation and student ability evaluation. Educational institutions should achieve differentiated development through refined talent training objectives and practical teaching arrangements. This approach helps reduce redundant and homogeneous majors across different educational tiers while avoiding rigid and artificial institutional segmentation.

In addition, the effectiveness of school-enterprise integration should be measured by implementation depth rather than the quantity of signed cooperation contracts. High-value industry collaboration requires sports enterprises and professional associations to participate in the whole teaching cycle, including the formulation of occupational competency standards, customized curriculum development, on-site practical guidance and comprehensive student assessment. Building long-term, stable practical training partnerships with sports clubs, fitness operators, rehabilitation institutions and event management organizations enables students to engage in repeated hands-on practice with real industry tasks, thereby consolidating their vocational skills.

Curriculum optimization must keep pace with the digital transformation and health service upgrading of the modern sports industry. Teaching content related to sports data analysis, intelligent fitness equipment operation, public health promotion and wearable device application should be integrated into real vocational service scenarios. Such practical embedding is far more effective than offering these emerging technologies as independent, theory-only courses. Meanwhile, the connection between professional courses, practical performance evaluation and vocational qualification certificates should be further standardized. This can ensure that graduate credentials can truly reflect students' practical vocational capabilities and deliver reliable competency recognition for employers.

Finally, multi-stakeholder governance mechanisms need further improvement. Government departments, industry associations, employing enterprises and vocational colleges undertake distinct functional roles in talent cultivation and cannot be substituted for one another. Establishing a sustainable collaborative coordination system helps dynamically update industry competency standards, identify emerging sports vocational positions, maintain high-quality practical training resources, and regularly assess whether graduates' professional competencies can adapt to the evolving demands of the sports labor market.

5.3. Limitations and Future Research

This research adopts literature review, policy interpretation and cross-institutional comparative analysis as its core research methods, without incorporating questionnaire surveys, in-depth interviews or quantitative statistical analysis. Due to this methodological limitation, the study is unable to quantify the prevalence and universality of the summarized educational dilemmas across different individual vocational colleges. Additionally, this

international comparative analysis focuses primarily on macro-level institutional frameworks of various countries. In fact, significant disparities may exist within each national vocational system, as well as across different sports service occupational categories.

Several worthy research dimensions are not covered in this paper. This study fails to explore regional developmental gaps in China's sports vocational education, differentiated training characteristics among different types of vocational institutions, and graduate employment performance data. On this basis, follow-up research can adopt mixed research methods, integrating typical case studies, interviews with industry employers and college teachers, graduate tracking surveys and empirical employment data. Such diversified research approaches can effectively verify whether competency-oriented educational reforms are capable of enhancing students' workplace adaptability and long-term career development quality. Furthermore, targeted comparative research focusing on specific sports vocational posts, including fitness guidance, sports rehabilitation and event operation management, can help screen the universal applicability of the proposed reform pathway and identify indicators that require industry-specific customized optimization.

From a long-term perspective, how to maintain the independent and unique educational positioning of sports vocational education amid continuous industrial iteration remains a core research topic. Subsequent exploration of this issue should rely on long-term longitudinal data covering curriculum implementation effects, vocational certification recognition, practical training quality and graduate employment trends, rather than simply relying on continuous expansion of major settings and student enrollment scales.

Acknowledgements

This work was financially supported by the university-level research project of Guangdong University of Business and Technology (Grant No. GDGSGY2025058). The authors sincerely appreciate the university's funding support and academic resources that facilitated the completion of this present research project.

References

- [1] General Administration of Sport of China. (2021). Progress report on the implementation of the outline for building a leading sports nation. General Administration of Sport of China. (In Chinese)
- [2] Liu, H., & Li, M. (2022). Discussion on the rise of healthy Chinese sports industry and the training mode of compound sports talents. *Journal of Healthcare Engineering*, 2022, 6943285. <https://doi.org/10.1155/2022/6943285>
- [3] Ministry of Education of the People's Republic of China. (2019). National implementation plan for vocational education reform. Ministry of Education of the People's Republic of China. (In Chinese)
- [4] Wang, X., & Pu, X. B. (2025). Research on the development path of football industry colleges in higher vocational sports institutions under vocational education reform. *Contemporary Sports Technology*, 15(21), 161–164. (In Chinese)
- [5] Lan, M. P., Li, X. K., & Guo, Y. Y. (2020). Analysis of demand for sports vocational talents in Guangxi based on sports industry development. *Guangxi Education*, (3), 51–57. (In Chinese)
- [6] Huan, C. D., & Shen, L. L. (2023). Current status, deficiencies and optimization of resource integration in sports industry colleges: An analysis of 42 sports industry colleges. *Journal of Hebei Sport University*, 37(3), 25–31. (In Chinese)
- [7] Li, J., Liu, J., Hu, C., et al. (2023). Vocational and technical education practice under the guidance of competency-based education. *International Journal of Learning and Teaching*, 9(3), 261–265.

- [8] Zhu, X., & Tang, H. V. (2025). Industry-education integration policies in China's vocational education: A bibliometric analysis of current status and development trends. *International Journal of Sociologies and Anthropologies Science Reviews*, 5(3), 309–322.
- [9] Xu, G. Q. (2020). Establishing vocational education as a distinct educational type: A fundamental requirement for building a modern vocational education system. *Journal of East China Normal University (Educational Sciences)*, 38(1), 1–11. (In Chinese)
- [10] Xiong, B. Q. (2022). The breakthrough point of vocational education reform: From level-based education to type-based education. *People's Tribune*, (8), 23–29. (In Chinese)
- [11] Zhang, R. L., Jin, L. J., & Wang, Z. W. (2025). Integrated reform of education, science and technology, and talent to promote new quality productive forces in sports: Logic, barriers and pathways. *Journal of Shanghai University of Sport*, 49(1), 76–87. (In Chinese)
- [12] UNESCO. (2022). Transforming technical and vocational education and training for successful and just transitions: UNESCO strategy 2022–2029. UNESCO Publishing.
- [13] Chen, P., Schmidtke, C., & Jin, X. (2024). Chinese technical and vocational education and training, skill formation, and national development: A systematic review of educational policies. *Vocation, Technology & Education*, 1(3), e24. <https://doi.org/10.54844/vte.2024.0677>
- [14] Li, G. H. (2025). Strategies for talent cultivation in higher vocational sports-service education in the new era. *Contemporary Sports Technology*, 15(20), 60–63. (In Chinese)
- [15] Chen, J. Y., & Cao, X. (2024). Talent cultivation pathways for sports majors in vocational colleges from the perspective of integration of sports and education. *Sports Vision*, (11), 149–151. (In Chinese)
- [16] Huang, Z. L., Wang, Y. Y., & Duan, Y. L. (2025). Practical strategies for the '3+2' articulated higher vocational-undergraduate training model in sports vocational education in Yunnan: The case of physical education. *Contemporary Sports Technology*, 15(13), 125–129. (In Chinese)
- [17] Wei, M. B., Wang, H., Wang, Z. Q., et al. (2021). Discussion on the cultivation of interdisciplinary talents in sports massage. *Modern Vocational Education*, (41), 62–63. (In Chinese)
- [18] Pu, X. A., & Ou, F. R. (2020). An empirical study of the '1+X' certificate system for sports majors in private vocational colleges. *Bulletin of Sport Science & Technology*, 28(9), 6–7, 33. (In Chinese)
- [19] Minten, S., & Forsyth, J. (2014). The careers of sports graduates: Implications for employability strategies. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 15, 94–102.
- [20] Chen, X. Q. (2022). Talent cultivation strategies for higher vocational sports majors from the perspective of industry-education integration. *Journal of Hubei Open Vocational College*, 35(18), 23–24, 33. (In Chinese)
- [21] Xie, M. Z., & Pi, J. J. (2021). Talent cultivation strategies for sports majors in local universities from the perspective of industry-education integration. *Sport Fashion*, (4), 186–188. (In Chinese)
- [22] Ma, D., Zhang, T. Y., Liu, Z. J., et al. (2023). Construction and implementation pathways of a compound talent cultivation model for the ice and snow sports industry. *Sports Culture Guide*, (9), 41–47. (In Chinese)
- [23] Song, B., Xi, J., Li, S., et al. (2024). Integration and learning: A case study of international higher physical education talent cultivation. *Frontiers in Education*, 8, 1291586. <https://doi.org/10.3389/feduc.2023.1291586>
- [24] Deissinger, T. (2015). The German dual system of vocational education and training: Its institutional configuration, strengths, and challenges. *Journal of Vocational Education & Training*, 67(2), 189–199.

- [25] Abelha, M., Fernandes, S., Mesquita, D., et al. (2020). Graduate employability and competence development in higher education: A systematic literature review using PRISMA. *Sustainability*, 12(15), 5900. <https://doi.org/10.3390/su12155900>
- [26] General Administration of Sport of China. (2021). National statistical bulletin of the sports industry. General Administration of Sport of China. (In Chinese)
- [27] Lai, J., & Li, M. (2008). Comparison of training objectives between sports vocational and technical education and undergraduate sports education in China. *Journal of Physical Education*, 15(7), 50–52. (In Chinese)
- [28] Australian Industry and Skills Committee. (2021). Sport, fitness and recreation: National industry insights report. Australian Government.
- [29] Malek, M. H., Nalbone, D. P., Berger, D. E., et al. (2002). Importance of health science education for personal fitness trainers. *Journal of Strength and Conditioning Research*, 16(1), 19–24.
- [30] Umegaki, A. (2014). Current status of physical education and sports coaching in Japan: Focusing on the social development. *Japanese Journal of Sport Education Studies*, 34(1), 45–52.
- [31] SkillsIQ. (2022). SIS sport, fitness and recreation training package: Companion volume implementation guide. SkillsIQ.
- [32] National Strength and Conditioning Association. (2020). NSCA certification handbook. National Strength and Conditioning Association.
- [33] Commission on Accreditation of Athletic Training Education. (2020). Standards for accreditation of professional athletic training programs. Commission on Accreditation of Athletic Training Education.
- [34] Ministry of Education, Culture, Sports, Science and Technology. (2003). FY2003 white paper on education, culture, sports, science and technology. Government of Japan.
- [35] OECD. (2010). Learning for jobs. OECD Publishing.
- [36] Breitbach, A. P., & Richardson, R. (2015). Interprofessional education and practice in athletic training. *Athletic Training Education Journal*, 10(2), 170–182.