**Construction and practice of college students' physical education curriculum system from the perspective of interdisciplinary**

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**Abstract:** With the continuous development of higher education, the importance of physical education in the all-round development of college students is becoming increasingly evident. Scientific sports training can enhance students 'physical fitness and also improve their mental health and social adaptability. However, traditional physical education curricula suffer from issues such as single-functionality and uniform evaluation standards, making it difficult to meet society's demand for versatile talents. This paper constructs a curriculum system for college student physical education, aiming to achieve interdisciplinary integration between physical education and related subjects, thereby cultivating well-rounded, multifaceted talents.

**Key words:** interdisciplinary; physical education; curriculum system; construction strategy

**foreword**

This article explores the construction and practice of a multidisciplinary perspective on college students 'physical education curriculum system. It analyzes the significance of physical education in the comprehensive development of college students, elucidates the concept of interdisciplinary education and its application in physical education, and constructs a theoretical model for the physical education curriculum system. Based on this, it delves into the interdisciplinary integration of course objectives, interdisciplinary planning of course content, interdisciplinary innovation in teaching methods and means, and interdisciplinary establishment of evaluation systems. Practical strategies are provided, including measures for interdisciplinary development of faculty, ways to integrate and share teaching resources across disciplines, methods for building cooperation and practical platforms both inside and outside the campus, and approaches to cultivating students' interdisciplinary learning abilities. This article leverages a multidisciplinary perspective to promote innovation and development in physical education curricula, fostering well-rounded, versatile talents.

1. **The importance of physical education in the overall development of college students**

According to recent data on the physical fitness of college students, a long-term decline in their physical health has been observed. The specific manifestations of this decline include reduced lower limb strength, decreased lung capacity, diminished exercise endurance, and lower explosive power. Conversely, other indicators, such as blood pressure and blood sugar levels, have shown an upward trend. The health and growth of college students

Concerning the century-long plan for the country, therefore, physical health must be given due attention and improved from multiple aspects. From the perspective of health promotion, scientific exercise training can strengthen heart and lung functions, activate immune system functions, and more effectively alleviate cervical and lumbar spine strain caused by prolonged desk work, prevent metabolic syndrome and chronic disease risks, and build a solid physiological foundation for continuous academic exploration and career development. In terms of psychological adjustment, regular physical activities exhibit unique emotional guidance value, improving anxiety states through the secretion mechanism of endorphins, while also forging students' resilience and positive thinking patterns[1]. The coordination in team sports further deepens peer group harmony, hones social skills, and cultivates a sense of teamwork. The competitive spirit and rule awareness embedded in physical education courses essentially form a rehearsal platform for social adaptation, enabling student groups to develop initial professional ethics by adhering to norms and engaging in healthy competition. This multifaceted capability, when transferred to the workplace environment, significantly enhances decision-making flexibility and crisis management efficiency, ultimately achieving an integrated improvement in cognitive development and behavioral optimization.

**Second, the theoretical basis of the construction of college students' physical education curriculum system from the perspective of interdisciplinary**

**(1) Interdisciplinary education concept**

In contemporary educational innovation, the boundaries of traditional subject knowledge are being transcended, and the reform of physical education is evolving from a single dimension to a multi-domain collaborative approach. In higher education, the innovation in the physical education curriculum system is no longer limited to the teaching of sports skills. Instead, it leverages the construction of multidimensional knowledge graphs to transform the paradigm of education. This transformation deeply integrates research findings from fields such as educational neuroscience, social behavior analysis, and exercise physiology. It uses cognitive development theory to reconstruct classroom interaction models, optimizes team sports design based on group dynamics, and personalizes training programs by integrating principles of biomechanics. This three-dimensional teaching strategy enhances students 'athletic performance and, by creating real-world problem scenarios, guides them to apply interdisciplinary knowledge to address complex issues such as sports injury prevention and team cohesion building. This teaching practice achieves the goal of integrating moral, intellectual, physical, aesthetic, and labor education, making physical education a key platform for breaking down knowledge silos and cultivating interdisciplinary talents, effectively responding to the contemporary society's demand for well-rounded individuals[2].

1. **Analysis of the intersection between physical education and related disciplines**

Physical education exhibits significant multidimensional interdisciplinary integration, with its knowledge system forming an organic connection with multiple academic fields. At the educational level, motivation theory is employed to analyze students 'behavioral performance and skill acquisition in physical education, providing theoretical support for curriculum goal setting and tiered teaching strategies. From a psychological perspective, researchers focus on the emotional management mechanisms and pathways to mental resilience in sports settings, using empirical studies to reveal the dual impact of key factors such as anxiety regulation and self-efficacy enhancement on adolescents' physical and mental development[3]. When the research scope extends to sociology, the group participation characteristics and cultural symbolism of sports activities make them crucial vehicles for analyzing the acquisition of social norms and the formation of collective behavior patterns. Interdisciplinary work in biomedicine focuses on optimizing human movement functions, combining biomechanical analysis and nutritional metabolism rules to establish a precise guidance framework involving monitoring of exercise load and dietary nutrition interventions. This construction of an interdisciplinary knowledge network broadens the connotations and extensions of physical education, forming a scientifically adaptive and dynamic talent cultivation system.

1. **Theoretical model of physical education curriculum system construction**

The construction of a physical education curriculum system should be centered on interdisciplinary integration, emphasizing practical application when integrating diverse disciplinary methodologies. Under the framework of pedagogy, the principles of curriculum design should establish a three-dimensional goal system, focusing on addressing the issue of single evaluation criteria in traditional courses. By combining research findings from developmental psychology, gamification teaching and differentiated practice design can enhance adolescents' intrinsic motivation to participate in sports activities. Drawing on social interaction theory, group collaboration projects can be created, integrating sports competitions with role-playing to improve social adaptability. Incorporating indicators from exercise physiology to establish an individualized assessment system, personalized training intensity and nutritional ratios can be formulated based on biofeedback data. A dynamic monitoring system that includes physical fitness monitoring, skill growth curves, and psychological adaptation assessments should be established. Using an iterative optimization model for adjusting teaching strategies, a self-renewing course development loop is formed, achieving an organic unity between student-centered educational goals and curriculum practices.

**3. Construction of college students' physical education curriculum system from the perspective of interdisciplinary**

**(1) Interdisciplinary integration of curriculum objectives**

The multidimensional collaborative design of the curriculum system has transcended the traditional boundaries of physical education, leveraging interdisciplinary knowledge to build a framework for the growth of versatile talents. From an educational perspective, it focuses on fostering learners 'autonomous development mechanisms, linking the acquisition of sports skills with lifelong sports awareness, and forming a scientific and personalized health management model. Psychologically, it integrates sports intervention models with cognitive-behavioral theories, focusing on designing strategies for emotional guidance and enhancing self-efficacy. From a sociological perspective, it emphasizes group interaction norms and social development, using structured sports activities to cultivate a sense of contract and leadership qualities. The foundation of sports science is integrated with biomechanical analysis and physiological adaptation principles, systematically planning physical fitness monitoring indicators and customized exercise prescriptions. This organic integration of multidisciplinary knowledge maps reconstructs the value dimensions of physical education, forming a multi-dimensional and three-dimensional educational goal matrix that includes a biopsychosocial model, effectively supporting the development of students' core competencies[4].

1. **Interdisciplinary design of course content**

Innovations in the curriculum system require breaking down disciplinary barriers to achieve an organic integration of knowledge across multiple fields. In constructing the motor skills module, principles of biomechanics can be used to explain the mechanisms of action formation. For example, the operational mechanisms of the musculoskeletal system can be analyzed to understand technical movement essentials, dynamic models of metabolic processes can be employed to illustrate physiological responses during exercise, and educational psychology principles can be applied to build tiered teaching frameworks. Courses should be arranged in a spiral progression based on the cognitive development patterns of adolescents. To address the psychological characteristics of contemporary students, sports prescriptions incorporating mindfulness training and context-based physical challenges can be developed, establishing a bidirectional promotion mechanism between sports participation and mental health. At the social practice level, team collaboration challenge competitions or sports culture-themed workshops can be designed, using role-playing and surveys to deepen understanding of the social functions of sports. Simultaneously, an applied sports nutrition module can be constructed, combining principles of energy metabolism with dietary planning to form a curriculum that integrates theory and practice. This multidimensional knowledge integration strategy not only enhances the professional depth of the course but also achieves comprehensive educational goals through innovative teaching methods.

1. **Interdisciplinary innovation of teaching methods and means**

The improvement and efficiency enhancement of modern sports education cannot be achieved without breakthroughs in interdisciplinary collaborative innovation. Analytical learning and team collaboration models from the field of educational psychology have been integrated into ball game training, using designed situational task chains to enhance students 'adaptability on the field and spark collective wisdom. Behavioral shaping theory and positive psychological intervention techniques have been incorporated into classroom design, allowing teachers to establish a "challenge points system" and positive feedback mechanisms, effectively alleviating students' psychological barriers in high-risk movements. Empowered by digital technology, smart sports have opened up new avenues; VR equipment can create immersive three-dimensional training environments, while real-time biomechanical feedback from fitness trackers helps teachers tailor training programs. When sociological scenario construction meets sports cultural education, role-switching simulated match officiating allows students to deeply understand the humanistic essence of competitive rules through embodied experiences. This innovative practice, which breaks traditional classroom boundaries, is reshaping the ecological landscape of sports education.

1. **Interdisciplinary construction of evaluation system**

To ensure the quality of physical education, it is essential to establish a multi-dimensional composite evaluation mechanism. By leveraging sports science, we can use quantitative indicators such as physical fitness monitoring data and motor skill assessments to objectively reflect the development dynamics of students 'physiological functions. In terms of teaching practice, a dual-track evaluation model should be established, incorporating non-intellectual factors like learning attitudes into the formative assessment system, which records classroom participation and skill acquisition progress. Regular psychological assessment tools can be used to track students' emotional management, stress resistance, and self-efficacy, revealing the psychological intervention effects of sports training. Regular observations of social adaptation indicators, such as leadership performance in team collaboration and conflict resolution skills, form a key dimension of social development assessment. On this basis, an intelligent evaluation model built through the integration and analysis of multi-source data can track students' development trajectories in real-time, generating personalized feedback reports that provide data support for optimizing teaching strategies, thereby achieving positive interaction and iterative upgrades between the curriculum system and teaching practices.

**Fourth, the practice strategy of college students' physical education curriculum system from the perspective of interdisciplinary**

**(1) Interdisciplinary construction of the teaching staff**

Teachers, as key implementers of curriculum reform, determine the depth and breadth of teaching innovation through their interdisciplinary capabilities. Building a composite teacher team requires implementing tiered training strategies: the primary task is to develop integrated training courses that help physical education teachers deeply understand sports physiology, educational psychology, and curriculum design principles. Regularly organizing interdisciplinary academic salons can promote cross-disciplinary dialogue. On this basis, a "dual-teacher collaboration" mechanism can be established, fostering a research community between physical education teachers and professionals in biomedicine, social education, and other fields. By jointly developing school-based curricula and collaborating on scientific research, this approach can drive the updating and iteration of teaching concepts. In terms of talent recruitment, emphasis should be placed on attracting new forces with interdisciplinary backgrounds, such as those in sports rehabilitation or sports psychology. Leveraging their hybrid academic advantages to activate the genes of teaching innovation, it is also essential to improve evaluation and reward mechanisms, incorporating interdisciplinary teaching achievements into professional title review indicators. Special funds should be set up to support teachers in conducting interdisciplinary practices, building a dynamically evolving ecosystem for teaching ability growth, and cultivating a faculty reserve that combines academic depth with practical wisdom for curriculum reform.

1. **Interdisciplinary integration and sharing of teaching resources**

The cross-sector integration and collaborative sharing of teaching resources are crucial for deepening curriculum reform. To achieve this, the first step is to reorganize school-based resources, integrating sports literature from the library with interdisciplinary materials like psychology and sociology into a thematic system. This will create a multi-disciplinary resource retrieval system. Additionally, the technical capabilities of laboratories and multimedia centers should be integrated to develop a 3D virtual sports simulation training system and an immersive digital exhibition hall for sports cultural heritage, thereby promoting innovative teaching methods. It is also essential to break down inter-school barriers by leveraging regional university sports teaching consortia to facilitate the sharing of core elements such as course materials and teacher training. By utilizing smart education cloud platforms, we can create high-quality MOOCs that integrate sports and health sciences, promoting the cross-regional dissemination of quality educational resources. Furthermore, it is important to establish mechanisms for integrating social resources, such as linking with intelligent training equipment from sports technology companies and biomechanics data monitoring platforms, and incorporating community-specific sports venues and local sports activities. This will form a deeply integrated resource ecosystem of industry, academia, research, and application, effectively enhancing the practical depth and openness of courses through multi-dimensional resource activation and utilization.

1. **Construction of cooperation and practice platforms inside and outside the university**

By establishing a multidimensional interactive platform for practical education, we effectively bridge the gap between theoretical knowledge and practical application. On campus, we focus on developing interest-driven sports clubs and professional training camps, guiding students from diverse backgrounds to form interdisciplinary teams. We systematically conduct projects such as competitive event management and athletic performance evaluation, while promoting cross-disciplinary collaboration. We also organize themed sports cultural festivals and rehabilitation technology workshops to integrate knowledge in sports medicine and health management. Off-campus, we collaborate with local sports industry entities, setting up industry-university-research collaborative innovation bases in professional clubs and public fitness centers. This allows students to deeply engage in practical tasks like event execution and posture correction. In partnership with top-tier hospitals' sports medicine departments, we create clinical training modules that emphasize the emergency handling of sports injuries and the design of rehabilitation plans. We also focus on expanding high-level exchange channels in global sports governance and cutting-edge sports technology, selecting outstanding students to participate in international sports management summits and innovation and entrepreneurship incubation events. Our goal is to cultivate industry leaders with strategic vision and a sense of social responsibility, forming a tiered, full-cycle capability development system.

1. **The cultivation of students' interdisciplinary learning ability**

Enhancing students 'interdisciplinary literacy is a core task in the transformation of physical education. In teaching practice, teachers should guide students to adopt a knowledge integration perspective. For instance, in football tactics analysis classes, biomechanics principles can be integrated to optimize passing and receiving techniques, psychological adjustment skills can be used to enhance team resilience, and interdisciplinary courses such as' Sports Industry Economics 'and' Sports Injury Rehabilitation 'can be offered to build a diverse knowledge system. Additionally, interdisciplinary research projects on themes like' Campus Sports Culture Construction 'can be organized, requiring study groups to integrate theories from multiple fields, such as management and communication, to propose solutions. The' Interdisciplinary Innovation Program 'has shown significant success. By establishing a special credit recognition mechanism, students who complete interdisciplinary portfolios can earn credit substitutions, and cross-disciplinary learning role models are regularly selected. This dual incentive model effectively breaks down the cognitive barriers between traditional disciplines, fostering students' compound thinking and cultivating new talents capable of meeting the challenges of the intelligent sports era.

**epilogue:**

This article explores the construction and practice of college students 'physical education curriculum from an interdisciplinary perspective, presenting key strategies such as interdisciplinary integration of course objectives, interdisciplinary design of course content, interdisciplinary innovation in teaching methods and means, and interdisciplinary development of evaluation systems. It also emphasizes the significance of practical strategies including interdisciplinary development of faculty teams, interdisciplinary integration and sharing of teaching resources, collaboration and practice platform building both inside and outside the campus, and the cultivation of students' interdisciplinary learning abilities. As interdisciplinary education continues to develop, the physical education curriculum system will become increasingly comprehensive, providing stronger support for nurturing well-rounded, versatile talents.

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