Construction and Practice of a Stratified Teaching Model for College Aerobics Courses under the Background of Sports-Education Integration

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Abstract: *Under the background of deepening reform in contemporary higher education, the concept of sports-education integration emphasizes the organic integration of sports and education to promote students' all-round development. As a sports activity that combines fitness, artistry, and expressiveness, the aerobics course in higher education institutions urgently requires innovation in its teaching model to adapt to students' diverse learning needs. Based on the core concept of sports-education integration, this study systematically constructs a stratified teaching model for the aerobics course in higher education institutions by establishing students' ability dimensions and hierarchy division standards, designing hierarchical course objectives and teaching content, and building matching teaching methods and evaluation systems. Empirical research shows that the stratified teaching model can effectively enhance students' skill levels, cognitive abilities, and comprehensive qualities, while providing theoretical support and practical pathways for the reform of physical education courses in higher education institutions.*

Keywords: *sports-education integration; aerobics course; stratified teaching model; ability dimensions; dynamic assessment*

Introduction

As a crucial vehicle for achieving the goal of holistic education, physical education courses in higher education institutions must respond to the higher demands for talent cultivation in the new era. Traditional aerobics courses, with their uniform teaching content and methods, struggle to accommodate the significant differences in students' individual abilities and developmental needs, thereby limiting the full realization of the courses' educational function. The proposal of the sports-education integration concept provides theoretical guidance for the reform of aerobics courses, emphasizing the coordinated development of cognition, emotion, and ability through sports. In this context, exploring the construction and practice of a stratified teaching model is not only a practical necessity for optimizing the teaching process but also an imperative choice for deepening the integration of physical education and holistic educational goals. This study aims to provide a theoretical basis and practical solutions for the reform and innovation of college aerobics courses through systematic model construction and empirical validation.

1. The Theoretical Relationship Between the Sports-Education Integration Concept and College Aerobics Courses

1.1 The Contemporary Connotation and Core Principles of Sports-Education Integration

As a modern educational concept, the core principle of sports-education integration lies in transcending the limitations of traditional physical education, which solely focuses on skill acquisition and physical training, by positioning sports as an indispensable component of the holistic educational process. This concept emphasizes achieving the coordinated development of learners across multiple dimensions—cognition, emotion, volition, and social adaptability—through physical activities, aiming to cultivate individuals with sound character and comprehensive competencies. Its contemporary connotation reflects a critical reflection on and transcendence of the previously fragmented relationship between "sports" and "education," advocating for the organic integration of physical movement with

intellectual development, character building, and cultural inheritance within educational activities to promote the harmony and optimization of the whole person. It focuses on individuals' inner experiences, value identification, and meaning generation during sports participation, pursuing the dialectical unity of motor skill acquisition, healthy behavior formation, and humanistic quality enhancement.

1.2 The Educational Value and Contemporary Orientation of College Aerobics Courses

College aerobics courses, with their unique form of exercise that integrates fitness, artistry, and expressiveness, carry significant educational value in the context of higher education. These courses not only effectively enhance students' physical coordination, sense of rhythm, and cardiopulmonary function but also play an important role in shaping graceful posture, cultivating aesthetic appreciation, strengthening willpower, and fostering team spirit. The practice of aerobics inherently involves the pursuit of precision, consistency, and creativity, which helps students develop qualities such as concentration, perseverance, and a commitment to excellence. In the context of the new era, the orientation of college aerobics courses has shifted from being merely a skill-based class or physical activity to becoming an important vehicle for promoting students' holistic development[1]. College aerobics courses should proactively address the demands of high-level talents for healthy lifestyles, sound physical and mental states, and comprehensive cultural literacy, thereby evolving into a comprehensive educational platform that integrates physical education, aesthetic education, and psychological education, ultimately achieving a transformation from instrumental value to ontological value.

1.3 The Intrinsic Unity Between Sports-Education Integration and Aerobics Course Reform

There exists a profound theoretical connection and intrinsic unity between the concept of sports-education integration and the reform of college aerobics courses. At the conceptual level, the objective of holistic education through sports advocated by sports-education integration provides a clear value orientation and philosophical foundation for aerobics course reform, guiding the shift of course objectives from singular skill acquisition to the cultivation of students' comprehensive competencies. At the content and methodology level, sports-education integration demands a breakthrough from traditional teaching models, which prompts aerobics courses to explore teaching strategies and evaluation systems that better stimulate student agency and creativity while accommodating individual differences, such as the introduction of stratified teaching. At the goal level, both aim to dismantle the mind-body dualism and pursue the integrated development of students' knowledge, abilities, attitudes, and values through sports participation. Consequently, aerobics course reform becomes a concrete pathway and micro-level practice for implementing the concept of sports-education integration. Its successful advancement will substantially enrich and deepen the practical expression of sports-education integration in college physical education, collectively pointing toward the return to the essence of education and the ultimate concern for holistic human development.

2. Systematic Construction of the Stratified Teaching Model for College Aerobics Courses

2.1 Theoretical Basis and Fundamental Principles for Constructing the Stratified Teaching Model

The construction of the stratified teaching model is deeply rooted in the core principles of modern educational psychology and instructional theory. Its theoretical foundation primarily stems from three aspects: Gardner's Multiple Intelligences Theory reveals that students possess significant inherent predispositions and acquired developmental differences in intelligence dimensions such as bodily-kinesthetic, musical-rhythmic, and spatial intelligence. This fundamentally demonstrates the irrationality of uniform instruction and necessitates the implementation of differentiated teaching provision[2]. Bloom's Mastery Learning Theory, conversely, indicates that most learners can achieve mastery of the learning content provided they are given suitable instructional conditions and sufficient learning time. This offers optimistic theoretical support for enhancing overall teaching effectiveness by providing "appropriate conditions" through stratification. Vygotsky's concept of the Zone of Proximal Development precisely defines the effective scope of instructional intervention—namely, the interval between a student's actual developmental level and their potential developmental level. The essence of stratified teaching is to identify and target the "Zone of Proximal Development" of different student groups for precise instructional scaffolding.

Based on the aforementioned theoretical consensus, the construction and operation of this model

must adhere to a series of fundamental principles. The principle of recognizing intrinsic differences is the starting point; it requires the systematic identification of intra-individual and inter-individual differences among students in areas such as skill foundation, cognitive style, learning motivation, and performance potential. The principle of dynamic development permeates the entire process; a student's level assignment is not a static label but rather a dynamic process involving periodic diagnosis and fluid adjustment based on their learning trajectory, thereby corresponding to the continuity of development. The principle of learner agency emphasizes stimulating students' metacognitive abilities and learning autonomy during the stratification process, guiding them to participate in goal setting, process monitoring, and outcome reflection. The principle of instructional optimization is the ultimate goal, aiming to maximize the developmental benefits of teaching interventions for each specific student group through the precision of resource allocation, method selection, and evaluation feedback.

2.2 Establishment of Student Ability Dimensions and Tier Classification Criteria

Scientifically establishing student ability dimensions and constructing objective tier classification criteria are crucial prerequisites for ensuring the transition of stratified teaching from concept to standardized practice. The ability assessment for college aerobics courses must transcend the narrow perspective of focusing solely on movement replication accuracy and instead build a three-dimensional comprehensive evaluation model integrating skills, cognition, and performance. The skill dimension forms the foundation, encompassing basic physical attributes (such as flexibility, strength, and endurance), the standardization of movement techniques, the coordination of combined movements, and dynamic control ability. The cognitive dimension relates to the understanding of sports principles, including the mastery of aerobics-specific terminology, biomechanical principles of movement, musical rhythm structure, basic choreography rules, and knowledge of exercise physiology and safety. The performance dimension points towards higher-order comprehensive competencies, involving expressiveness of movement, artistic impact, creative thinking, stage presence, and the effectiveness of communication and coordination within collective collaboration[3].

Based on this three-dimensional model, an initial assessment should be conducted using a composite diagnostic toolkit, such as standardized skill tests, theoretical cognition questionnaires, and observational creative tasks (for example, short choreography based on a given theme). Through comprehensive analysis of the data, the student population can be preliminarily divided into three tiers with operational definitions: Students in the foundational tier typically exhibit significant weaknesses across multiple dimensions and require systematic reinforcement of basic movements, development of essential physical fitness, and establishment of fundamental concepts. Students in the improving tier have stably mastered the basic elements; the teaching focus for them should shift towards the smooth connection of movement combinations, refinement of technical details, and understanding of preliminary choreography logic. Students in the development tier possess relatively high comprehensive abilities; teaching for them should be dedicated to the automatization of complex techniques, the exploration of personalized artistic styles, and undertaking choreography projects with a certain degree of innovation. The classification criteria should combine objective descriptiveness with developmental orientation and provide clear pathway guidance for cross-tier mobility.

2.3 Hierarchical Design of Course Objectives and Teaching Content

The systematic hierarchical design of course objectives and teaching content constitutes the core link in transforming the stratified teaching model from a conceptual framework into specific teaching practice. This design requires deconstructing the macro educational objectives of the course into a cluster of hierarchical goals that are vertically connected and horizontally complementary. The teaching objectives for the foundational tier are anchored in building fundamental abilities, focusing on the automated mastery of basic postures, core steps, and standard arm positions, the comprehensive development of basic physical fitness, and the accurate understanding of core concepts such as safety regulations and professional terminology. The objectives for the improving tier advance to the integration and application of abilities, requiring students to proficiently and standardly complete combination routines of medium complexity, possess preliminary abilities in movement analysis and identifying common errors among peers, and be able to participate in simple formation design and changes. The objectives for the development tier are positioned at the transcendence and creation of abilities, guiding students to stably demonstrate high-difficulty technical movements, independently or cooperatively complete choreography that is complete and artistic, and provide in-depth interpretation and defense of their works from aesthetic and cultural perspectives.

Teaching content is reconstructed and sequentially arranged according to this objective system, forming a spiraling staircase of cognition and skills. The teaching content for the foundational tier primarily consists of standardized demonstration, segmented teaching, and extensive repetitive and imitative practice, emphasizing movement accuracy and the formation of muscle memory. The teaching content for the improving tier introduces more complex technical combinations, exercises with variable rhythms, and systematically integrates basic principles of choreography and aesthetic rules, encouraging students to make minor personalized adjustments based on imitation. The teaching content for the development tier is entirely project-based and inquiry-oriented, focusing on learning advanced techniques, in-depth analysis of routines from different stylistic schools, and complete creative practice encompassing conception, choreography, rehearsal, and performance based on specific themes or music, thereby facilitating the transition from "learner" to "proficient practitioner" and even "innovator."

2.4 Multidimensional Construction of Teaching Methods and Evaluation System

The implementation efficacy and sustainability of stratified teaching ultimately depend on teaching methods and an evaluation system that are highly synergistic with its philosophical core and hierarchical objectives. The selection and application of teaching methods must demonstrate distinct level-specific appropriateness. For students in the foundational tier, teaching primarily employs direct instruction, frequently utilizing demonstration-imitation methods, segmented practice methods, verbal cueing, and synchronized practice, supplemented by extensive use of assistive equipment and immediate, specific positive feedback to establish correct motor schemata and learning confidence. For students in the improving tier, teaching strategies shift towards guided discovery, more frequently adopting task-driven methods, problem-based learning, and small-group cooperative learning, setting challenges such as "how to improve the fluency of this combination" or "design two formation changes" to promote interaction and knowledge construction among students. For students in the development tier, the teacher's role evolves into that of a resource coordinator and senior consultant; the teaching environment is designed to focus on inquiry-based learning, project-based learning, and autonomous practice, requiring students to lead the creative process, solve complex problems, and engage in critical reflection within a framework established by the teacher.

Correspondingly, the construction of the evaluation system must thoroughly abandon the traditional paradigm of single standardization and shift towards a multidimensional evaluation system that combines process and summative assessment, complements quantitative and qualitative measures, and considers both absolute level and relative progress. This system needs to comprehensively cover the accuracy of skill achievement, the depth of cognitive understanding, the quality of expressive creativity, and the degree of progress relative to the individual's starting point. The evaluation subjects should be diversified, integrating teacher assessment, student self-assessment, and peer assessment within groups, and may incorporate video-based movement analysis evaluation, portfolio-based assessment of choreographic works, or oral defense. The function of evaluation transforms from mere screening and selection to being centered on diagnosis, motivation, and development, providing each tier of students with personalized feedback reports that delineate their growth trajectory. This genuinely empowers students' continuous autonomous development, realizing the deep educational aim pursued by sports-education integration: achieving the complete person through sports[4].

3. Implementation Process and Efficacy Research of the Stratified Teaching Model

3.1 Organization and Dynamic Implementation Process of the Stratified Teaching Model

The implementation of the stratified teaching model begins with a systematic organizational process. During the course initiation phase, a comprehensive initial diagnosis is conducted by integrating various tools such as standardized skill assessments, theoretical literacy questionnaires, and observations of creative potential to create a multi-dimensional profile of students' ability baselines. Based on pre-established tier classification criteria, students are preliminarily assigned to one of three teaching tiers: foundational, improving, or development. The key organizational tasks at this stage involve ensuring the reliability and validity of the diagnosis, as well as clearly interpreting and communicating the tier assignment results to help students understand their own positioning and developmental pathway.

The teaching implementation process is characterized by significant dynamism and interactivity. It is not a fixed, rigid tier structure but rather a fluid cycle that undergoes continuous fine-tuning based on

formative assessment data. Throughout the teaching cycle, instructors continuously track each student's progress rate and ability evolution through classroom observations, learning portfolios, periodic skill demonstrations, and completion of specific tasks. The boundaries between tiers are designed to be permeable; when students demonstrate stable capabilities in any dimension — cognition, skill, or performance — that exceed the standards of their current tier, a tier mobility mechanism is activated. This dynamic adjustment not only accommodates the asynchronous development characteristics of individual students but also serves as an ongoing motivational mechanism, maintaining an appropriate level of learning tension and challenge[5].

3.2 Empirical Investigation and Analysis of Teaching Implementation Effects

The evaluation of the stratified teaching model's effectiveness should be established on a foundation of empirical data and systematic analysis. A feasible research design adopts a quasi-experimental research method, establishing an experimental class that implements the stratified teaching model and a control class that maintains traditional uniform instruction within the college aerobics course. Following a complete teaching cycle of intervention, pre-test and post-test data are collected. Quantitative data can encompass skills assessment scores (subdivided into basic movements, combination routines, and creative ability), relevant indicators from physical fitness tests, records of course participation, and results from learning experience questionnaires.

The analytical perspective must consider both the overall effect and heterogeneity across tiers. At the overall level, differences between the experimental class and the control class in comprehensive skills scores, theoretical achievement, and learning engagement levels can be examined. Deeper analysis focuses on changes within each tier: the extent of improvement in foundational tier students regarding mastery of basic skills and learning confidence; the progress of improving tier students in the fluency of movement connections, rationality of technical application, and simple choreography ability; and the breakthroughs of development tier students in the stability of high-difficulty techniques, artistic expressiveness, and the quality of complex project completion. Qualitative materials, such as students' learning reflection journals, interview records, and analysis of creative works, can provide rich contextual interpretation for the quantitative results, revealing the internal mechanisms through which stratified teaching influences individual learning processes, such as the clarity of goal setting, the balance between challenge and support, and the shifts in self-efficacy.

3.3 Reflection and Optimization Pathways in the Practice of the Stratified Teaching Model

The practical implementation of the stratified teaching model is accompanied by continuous reflection and necessary strategic adjustments. Reflection first touches upon the precision of diagnosis and stratification; the completeness of the initial assessment tools, along with the scientific rigor and operational feasibility of the tier standard setting, forms the foundation for the model's successful implementation. In practice, it may be observed that the placement of some students near tier boundaries is ambiguous, or that individual students exhibit significant tier misalignment across different ability dimensions. This necessitates a more refined and comprehensive evaluation system.

The suitability of teaching resources and teacher workload constitute another important dimension for reflection. Stratified teaching places higher demands on teachers' instructional design capabilities, classroom organization skills, and ability to provide immediate feedback to students across different tiers[6]. Concurrently, it may require the development or integration of more teaching resources targeted at different tiers, such as differentiated video tutorials, supplementary practice plans, and evaluation rubrics. Based on the aforementioned reflections, optimization pathways can focus on the following aspects: developing more intelligent diagnostic and progress tracking tools to enhance the efficiency of stratification and dynamic management; constructing a shared resource repository supporting stratified teaching to reduce teachers' lesson preparation burden; strengthening professional development support for teachers' differentiated instruction capabilities; and exploring the design of more flexible, cross-tier collaborative learning tasks to promote positive interaction and knowledge transfer between tiers, thereby injecting greater flexibility and vitality into the structured foundation and driving the continuous improvement of the model.

Conclusion

This study systematically constructed a stratified teaching model for college aerobics courses,

clarifying its theoretical foundation, tier classification criteria, teaching objectives and content design, as well as multidimensional evaluation methods. Through dynamic diagnosis and targeted intervention, the stratified teaching model effectively addresses individual student differences and promotes the synergistic development of skill acquisition and comprehensive competencies. The study further confirms that this model possesses significant advantages in enhancing teaching effectiveness and stimulating student learning motivation. Future exploration should focus on developing intelligent diagnostic tools, improving the stratified teaching resource repository, and enhancing teachers' differentiated instruction capabilities. Concurrently, the applicability of the stratified teaching model should be validated across a wider range of disciplinary fields to promote the continuous development of college physical education towards greater precision and humanization.

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