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Experimental Research on the Hierarchical Teaching Method in the Tennis Project of General Physical Education Courses in Universities

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Abstract: *Tennis teaching in public sports classes in colleges and universities has long been facing the real dilemma of significant individual differences among students and varying teaching effects. The tiered teaching method provides a new way of thinking to solve this problem through precise stratification, goal adaptation and dynamic adjustment. In this paper, we focus on the application of layered teaching method in the tennis program of public sports courses in colleges and universities. Based on the differences in students' physical quality, skill level and learning needs, we design layered strategies to optimize the teaching content and evaluation system. It is found that the tiered teaching method can effectively improve the efficiency of students' technical mastery, enhance the learning initiative and classroom participation, and promote the realization of personalized teaching goals. Through theoretical analysis and practical verification, the study demonstrates the feasibility and innovative value of the tiered teaching method in tennis teaching in public sports courses in colleges and universities, and provides a reference path for sports teaching reform.*

Keywords: *layered teaching method; college public physical education class; tennis program; teaching measures*

1. Introduction

Public sports courses in colleges and universities are an important carrier for cultivating students' sports habits and improving their comprehensive quality, while tennis has become a difficult teaching point due to its complex technology and high requirements for skill progression. The traditional "one-size-fits-all" teaching mode is difficult to meet the differentiated needs of students, which often leads to the loss of confidence of the weak and stagnation of the high-level students. Stratified teaching method takes teaching according to ability as the core, through scientific stratification and personalized teaching design, it provides theoretical support for cracking this contradiction. In recent years, the concept of stratification has been gradually promoted in the field of physical education, but its systematic application in the tennis program of public sports classes in colleges and universities still lacks empirical support [1]. This paper explores the practical path of stratified teaching method by combining the characteristics of public sports courses in colleges and universities, aiming to build a tennis teaching mode that takes into account efficiency and fairness, and to promote the transformation of physical education courses from "uniformity" to "precision".

2. Overview of layered teaching method

2.1. The concept and connotation of layered teaching method

Layered teaching method is an educational model that takes students' individual differences as the starting point and realizes differentiated teaching through scientific classification and dynamic adjustment. Its core lies in dividing the teaching objects into different levels according to the students' physical quality, skill level and learning needs, and matching the corresponding teaching objectives, contents and methods to form a stepped teaching path. In the tennis program of public sports courses in colleges and universities, the connotation of the tiered teaching method is reflected in "accurate identification" and "dynamic adaptation": the former emphasizes the objective division of student groups through physical fitness test, skill assessment and interest research; the latter requires the design

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of progressive technical training programs for different levels, for example, the basic level is based on the basic skills and learning needs of students. The latter requires the design of progressive technical training programs for different levels, for example, the basic level focuses on the standardization of forehand and backhand striking movements, while the higher level incorporates interception and tactical combination training. This method breaks the limitations of the traditional "uniform progress", transforms the concept of tailor-made teaching into an operable teaching framework, not only respects the law of students' technical progress, but also strengthens the flexibility and inclusiveness of the classroom, and transforms physical education from "standardization" to "individualization". It provides theoretical support for the transformation of physical education from "standardization" to "personalization".

2.2. Application status of layered teaching method in physical education teaching

Layered instruction has come a long way from being an exploration of the concepts, and into actual practice in sports, especially in ball and fitness programs that include the appropriate level of skill differentiation. For example, basketball instruction engages in different training groups according to the level of students' dribbling and shooting skill, and the intensity of passing and tactical drills is therefore created to develop the aforementioned skills; swimming courses follow tiers based on the ability of water, and the basic group also develop that air exchange and floating technique while the advanced group continues their stroke development by learning to increase stroke rate. In public sports courses at colleges and universities, there may be a track and field program that does utilize the same layered, or tiered instruction. For example, in the sprint training when they engage in the starting posture and rhythm control points, in this instance, it will be developed based upon the explosive force and stride frequency. The long-distance running group will develop interval running time and target speed according to the endurance difference. Practical situations exist for stratified teaching to mitigate potential physical risk/risk of injury and teach skill mastery far move efficiently by creating the correct match between skill acquisition and training difficulty to ability threshold. However, problems such as imperfect dynamic stratification mechanism and insufficient professionalism of teachers' stratification assessment still constrain its promotion, and further optimization of stratification standards and adaptability of teaching resources is needed [2].

3. Analysis of the Current Situation of Tennis Teaching in Public Sports Courses in Colleges and Universities

At present, the tennis teaching of public sports courses in colleges and universities generally adopts a unified teaching mode, with the teaching content and progress design based on the benchmark of "intermediate level", which makes it difficult for weak students to keep up with the technical points, and lacks challenge for high-level students to repeat the training. In the course structure, the technical action decomposition teaching dominates, for example, the allocation of lesson time for forehand striking is fixed, but the speed of students' mastery is polarized due to the difference in coordination ability, and some students form wrong power stereotypes due to irregular movements, which makes it difficult to correct them in the later stage. Tactical awareness and practical application are often compressed, and most of the classes stay at the baseline sparring practice, and it is difficult to systematically develop the content of net interception and doubles cooperation due to the limitation of class time. Teaching evaluation relies on the final skills assessment, for example, the number of successful forehand strokes accounts for too high a proportion of the total score, ignoring the learning attitude, progress and tactical understanding and other dimensions, which frustrates the motivation of students with a low starting point. In addition, there are significant constraints on the resources of teachers and venues. It is difficult for teachers to give timely feedback on individual problems in large classes, and the insufficient number of courts leads to long waiting time for students to rotate, which reduces the density of effective training. Some colleges and universities have tried to introduce the concept of tiering, but the lack of scientific tiering standards and dynamic adjustment mechanism has significantly reduced the effectiveness of teaching. Overall, the traditional teaching mode is difficult to adapt to the differentiated needs of students, and the differentiation of athletic performance has intensified, so it is urgent to reconstruct the classroom ecology through systematic reform.

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4. Implementation Measures of Layered Teaching Method in Tennis Program of Public Physical Education in Colleges and Universities

4.1. Accurate stratification of students, laying the foundation for teaching

Accurate stratification represents the initial aspect of stratified-style instruction in the tennis section of collegiate public sporting courses, and at its core is the act of disrupting the traditional model of uniformity in class structure and conducts multi-faceted assessments of students that appraise students' physical capability, level of skills, and motivation to learn. Prior to the stratification, physical fitness testing (i.e. reaction speed, core strength), skills diagnostics (i.e. stability of forehand and backhand strokes; success rates of serve), and interest questionnaire are summatively used to designate and identify students' tiers to avoid a single indicator bias of classification. In doctrine, a basic tier amalgrates standardization of movement (i.e. consolidate the power chain through the decomposition of swinging trajectory and low-speed multi-ball training), an advance tier improves the consistency of hitting and drop control and introduces hitting and baseline confrontation; and an advanced tier emphasizes tactical awareness and game application (i.e. judging the timing of interception in front of the net, what your strategy of attacking and defending transitions). The dynamic tiering mechanism should be carried out in all teaching processes. The stratification process should be adjusted adaptively based on the outcomes of stage-by-stage assessment, so that students can change among tiers through technical progression. Also, in the implementation of the tiering, the psychological construction should be considered, making explicit that the differences between tiered students are connected with stage developmental needs and not with ability labeling to avoid the potential frustration of learner motivation. Scientific tiering contributes data to further goal setting, content adjustment and evaluation refinement, ensuring that teachers use their resources efficiently and accurately to activate endogenous dynamics in the classroom [3].

4.2. Target level setting, clear learning direction

The objectives established in the layered teaching approach should become closely intertwined with the outcomes of accurate layering, culminating in a tiered technical progression pathway. At a basic level, the objective of the instructional focus on technical standardization and creation of foundational power chains is a core goal, for example in a group format improving the consistency of forehand swing trajectory via multi-ball slow feed, along with decomposition of lower limb stamping, and center of gravity transfer training; the objectives at an advanced level is aimed at technical stabilization, and connecting to match play; goals at this level include improving forehand and backhand success rate, with combination of the deep zone of baseline drop control training, combined or gradually integrated into the basic tactical combinations; at an advanced level, the focus is the technical application and strategy execution in match play situations, exploring accurate high-stress ball handling, and angle variation in front of the net around attack and defense.The higher level focuses on the application of techniques and execution of strategies in match scenarios, such as the precision of high-pressure ball handling, the differentiation of the angle of interception in front of the net, and the ability to change the tempo of attack and defense, and the goal orientation is to migrate from a single technique to a comprehensive confrontation. It is important to make sure the students' goals are continually evolving based on their ability assessment data so that the hierarchical focus does not become rigid. For example, once a group of original basic level students have fairly mastered baseline hitting (basic level fundamental skill), a goal could be set for them to work on mid-court transition ball training as an example to create a motivation to advance their skill level. Thus, teachers need to be able to structure goals that take the abstract (example: "increase the speed of the serve by 5%") and make it visual/task related like "a number of success rates for inside corner of the first shot", this could help increase the operability of student learning goals.

4.3. Adaptation of teaching content to meet individual needs

The content of the tiered teaching method should be adjusted according to the accurate tiering results, and differentiated training modules should be prepared based on the unskilled technical development of students in both tiers. The basic-tier teaching mainly involves reshaping the movement structure and strengthening the basic power chain. For example, the method of multi-ball slow feeding combined with mirror feedback is adopted to correct the typical problems of elbow lag and insufficient body rotation during forehand hitting. Meanwhile or after focusing on improving the efficiency of the hitting position, basic footwork coordination training will also be incorporated, such as the training

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method combining parallel steps and side-slide steps. The advanced-tier teaching mainly focuses on the cultivation of technical stability and tactical awareness. The design of teaching content emphasizes that novice players abandon the concept of force application during hitting throughout the inquiry-based mobile hitting training model. For example, control the landing points in the deep diagonal area of the forehand and connect it with the transition of the backhand straight line, while interspersing simple offensive and defensive conversion tasks, such as handling short balls after baseline rallies and following up with strokes. The upper-level tier teaching emphasizes the technical integration and strategic deployment in the context of match play. The teaching content includes the de-programming analysis of serve and net approaches, the identification of high-pressure ball - handling angles, and the cooperation of doubles rotation. As a specific example of simulation training, players at this level can practice "breaking the net and crossing" confrontation scenarios to improve their anticipation and line - changing ability during net - front interception. A dynamic adjustment mechanism should run through the entire teaching process. Teachers need to adjust the training intensity accordingly based on the data from stage - by - stage evaluation feedback. For example, after students reach the standard of continuously successful baseline shots, technical modules such as mid - court cutting balls and drop shots can be nested to enhance the diversity of techniques. The teaching content needs to be designed in an integrated and contextualized way [4]. For example, change the simple serve - speed variation training to the "key - point first - serve success - rate challenge", or incorporate the net - interception practice into the "break - point defense simulation" to enhance the real - world immersion experience in technical training.

4.4. Multiple evaluation system, motivate continuous progress

The evaluation system of the tiered teaching method requires overcoming the traditional result-oriented framework and establishing a dynamic evaluation system that is driven by the combination of the technical development trajectory and learning motivation. At the foundational evaluation level, the assessment will be focused on movement standardization and the integrity of the power chain, such as capturing the angle of shoulder-hip synchronization from the forehand swing by high-speed video cameras, joining with real-time feedback to the mirrors to correct the finer details of elbow lag or insufficient turn, etc.; at the advanced evaluation level, the assessment will have measures of tactical implementation effectiveness, for example, a heat map analysis of the distribution of the landing point of the mobile ball, when achieving the success percentage of the bottom line in the deep zone, then accomplishing the conversion efficiency of shallow balls to meet the ball in front of the ball, and simultaneously evaluating the reasonable adjustment of the steps while transitioning between attack and defense. The rationality of adjustment; the higher level reinforces technical application assessment in match situations, is engaged with the simulated confrontation data tracking system for counting score rate of serve-on-grid tactics, accuracy of high-pressure ball changeover, and speed of complement action in doubles rotation, creating a multi-dimensional profile of ability. Process evaluation will need to be woven into the stage tasks of each lesson, which may include converting the number of consecutive stable strokes in multi-ball training into instant points and the teacher's prompts to develop awareness for technical tuning. Student self-assessment and mutual assessments will enable the field to enable the subject's capacity to reflect, for example, record a video of the stroke and label key frames of the action, and compare the differences of the initial technical form to the current technical form, or we'll cross-grade in the group based on the roadmap to tactical execution. A dynamic evaluation system needs to align with a tiered mobility structure, e.g., when a basic level student moves to advanced, their motion contextualized score remains as the growth reference point for monitoring growth and a new tactical awareness score is introduced to reflect advanced characteristics [5]. Evaluation feedback needs to balance technical information with psychological encouragement, e.g., present “12% error rate reduction of hitting on the backhand drawn above the line” as “backhand diagonal defense stability reaches the tactical application threshold” gives the data a growth narrative quality. A gamification point system can create tiered badges, e.g., “master of bottom line ball control” and “finisher in front of the net”, to identify and document technical milestones. The diverse evaluative system needs to be connected to teaching resources, e.g., tactical drills’ scoring of advanced level students’ needs to be the preferred qualification for the varsity team selection, fostering a self-perpetuating cycle of training-evaluation-incentivizing.

5. Conclusion

The application of layered teaching method in the tennis program of public sports courses in

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colleges and universities reflects the modern education concept of "student-centered". Through precise stratification, goal grading and content adaptation, it effectively bridges the gap between students' individual differences and teaching goals, and significantly improves technical learning efficiency and classroom vitality. The introduction of multiple evaluation system has weakened the singularity and competitiveness of traditional assessment, strengthened the process of motivation and dynamic feedback, and promoted the formation of sustainable learning motivation of students. Practice shows that the tiered teaching method not only optimizes the path of teaching tennis skills, but also deepens the nurturing function of physical education courses, providing replicable experience for the teaching reform of public sports courses in colleges and universities. In the future, it is necessary to further explore the integration mechanism between layered teaching and other teaching modes, and improve the dynamic adjustment strategy to adapt to a wider range of teaching scenarios and student needs.

References

[1] Song X. Physical education teaching mode assisted by artificial intelligence assistant under the guidance of high-order complex network[J]. Scientific Reports, 2024, 14(1): 4104.

[2] Zhang Y. The optimization of college tennis training and teaching under deep learning[J]. Heliyon, 2024, 10(4):12.

[3] Liu Y, Song G. Exploring Repetition Phenomena and Solution Strategies in Task-Based Teaching Method Research in School Physical Education[J]. International Journal of Education and Humanities, 2025, 5(3): 455-462.

[4] Bardy T, Fehlmann R. Mathematical modeling of the tennis serve: Adaptive tasks from middle and high school to college[J]. Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education, 2023, 26(3): 167-202.

[5] De Stefani E, Rodà F, Volta E, et al. Learning new sport actions: Pilot study to investigate the imitative and the verbal instructive teaching methods in motor education[J]. Plos one, 2020, 15(8): e0237697.