

Research on the Dilemma and Countermeasures of Pilates Teaching in Colleges and Universities

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Abstract: As lifestyles change, physical education in higher education is facing a need for transformation. Pilates, as a low-intensity, high-efficiency form of exercise, is being gradually incorporated into university physical education curricula. To understand the specific challenges faced by Pilates instruction in universities and to identify effective solutions, this study employed literature research and observation methods to conduct a comprehensive survey of the current state of Pilates teaching. This included examining aspects such as curriculum design, faculty strength, student engagement, and teaching outcomes. The research found that Pilates courses in universities are often structured inappropriately, with insufficient allocation of class time, a lack of professional instructors, inadequate knowledge of Pilates among students, and a lack of enthusiasm for continuous participation. Furthermore, the evaluation of teaching outcomes lacks effective quantitative standards. Addressing these challenges, the study proposed a series of measures including optimizing the curriculum structure, enhancing teacher qualifications, improving the evaluation system, and using information technology to make courses more engaging in order to increase student participation and teaching interaction. Through a questionnaire survey of 300 university students and in-depth interviews with 30 teachers, the study collected relevant data and performed statistical analysis. The results showed that after implementing the proposed measures, students participating in Pilates courses exhibited higher interest and better physical adaptability. Students' satisfaction and overall health levels showed significant improvement. This research offers guidance for the reform of Pilates courses in university physical education and provides possibilities for innovation in higher education's sports education. It also serves as a reference for the teaching of other non-traditional sports in universities.

1. Introduction

In recent years, dance Pilates has gradually become popular in primary and secondary schools, which has injected fresh vitality into the enrichment and development of physical education in primary and secondary schools. Studies have found that the integration of Pilates into dance teaching can help students improve core stability, coordination and body control [1]. In 2002, the state issued new guidelines for physical education curriculum in primary and secondary schools, encouraging schools to introduce new sports such as Pilates and enrich the content of physical education textbooks [2]. But on the other hand, Pilates teaching in colleges and universities is facing many difficulties.

At present, the teaching mode of Pilates in many colleges and universities is still lagging behind, and the unified teaching of "one size fits all" can not meet the needs of students with different starting points and needs. The teaching evaluation system is not perfect enough, and the evaluation results are difficult to fully reflect the students' learning situation and personality characteristics [3]. Pilates teaching in colleges and universities is also facing the problems of insufficient teachers and uneven professional quality. Some teachers are on duty without systematic training, and their professional ability and teaching level need to be improved. The investment of colleges and universities in the construction of hardware facilities such as venues, equipment and teaching resources is also obviously insufficient.

In addition, the acceptance of Pilates by college students needs to be further improved. Some students have insufficient knowledge of this new course and their enthusiasm for learning is not high. In addition, most Pilates courses are elective courses, which conflict with compulsory courses, resulting in unsatisfactory attendance rate of students [4]. There is a lack of overall planning in the setting and arrangement of Pilates courses in colleges and universities, and the teaching content is not interesting and practical enough to arouse students' interest.

In view of the above difficulties, effective countermeasures should be taken to promote the teaching reform of Pilates in colleges and universities. First of all, we should strengthen the construction of teachers and improve their professional quality and practical ability through training and further education. Teachers are encouraged to explore innovative teaching modes and formulate individualized teaching programs to meet the learning needs of different students. Secondly, we should optimize the curriculum system, arrange the teaching content and class hours reasonably, and avoid conflicts with other courses. Teachers should adopt flexible and diverse teaching methods, combine Pilates with dance, sports games and so on, so as to improve the interest and participation of the classroom. Finally, colleges and universities should increase investment, improve the hardware facilities of Pilates teaching, and provide high-quality teaching resources and practice environment for teachers and students.[5]

2. Current Situation of Pilates Teaching

2.1 Pilates teaching mode in colleges

In the in-depth analysis of Pilates teaching mode in colleges and universities, we comprehensively investigate the key variables such as teaching environment, teachers, course content and teaching methods. From the survey data, we find that Pilates course exists in the form of elective courses in most colleges and universities, and it is also used as an auxiliary course for sports majors. Class size is generally between 20 and 30 students, which is conducive to ensuring that teachers correct and guide students' movements more accurately.

In practice, due to the lack of equipment, most Pilates teaching is limited to the training of basic movements, and the application of advanced movements and equipment is relatively weak. In the course design, we attach importance to the popularization of basic knowledge of Pilates, but neglect the promotion of students' overall physical and mental health. In addition, I found that most courses lack systematic teaching feedback mechanism, and the tracking of students' learning achievements is not deep enough.

The countermeasure research points out that the optimization of Pilates teaching mode should start from the two directions of personnel training and curriculum development, establish teacher training programs and cooperate with Pilates educational institutions at home and abroad to improve the professional level of teachers. At the same time, we should develop a course suitable for the physical condition of Chinese college students, and integrate the deep content of Pilates concept in promoting students' physical and mental health.

Based on statistical analysis and field survey data, this study suggests that curriculum development should include motion analysis, physical assessment and personalized training plan modules to enhance the pertinence and practicability of the curriculum.[6] It is suggested that colleges and universities should invest in the experimental teaching environment of Pilates, such as purchasing high-quality Pilates equipment and creating Pilates experimental classrooms, so as to enrich the teaching content, improve students' participation and teaching effect, carry out teaching effect evaluation, through regular collection of student health index, physical improvement and other data, track the teaching effect, revise and improve the teaching plan. These countermeasures aim to build a Pilates education system that can be continuously optimized and self-improved, further improve the quality of Pilates teaching in colleges and universities, and lay a solid foundation for the all-round development of students.

2.2 Main Dilemmas in Pilates Teaching

When studying the teaching dilemma of Pilates course in colleges and universities, this paper refers to the "College Pilates Course Dilemma Table" collected from several colleges and universities, and through in-depth analysis of the data, obtains the main challenges and countermeasures encountered in the teaching at this stage. The lack of textbooks is obvious, such as the imperfect course of supine knee-bending and leg-lifting, which affects the learning quality of several students. Its average influence is larger, through the addition of graphics and video teaching materials, can make the learning of Pilates movements more intuitive and easy to understand.[7] At the same time, regular teacher training can effectively improve the effectiveness of the application of teaching materials.

The backwardness of hardware facilities has further aggravated the predicament. The lack of professional equipment and training space has affected the efficiency of more than 300 students. The rating reflects that the overall difficulty of improving facilities is high, but it is urgent to update and introduce advanced equipment and expand training venues.

The low acceptance of students is also a major obstacle. By organizing Pilates experience activities and publishing relevant popular science materials and successful cases, students' awareness and interest in Pilates training may be improved. [8] Safety issues must be paid great attention to. In view of the lack of risk guidance in Pilates, it is necessary to formulate safety manuals and carry out targeted safety education. In view of the incomplete first aid measures and equipment, it is more urgent to allocate necessary first aid equipment and carry out first aid training.

On the whole, the improvement of Pilates teaching dilemma needs systematic strategic planning, covering many factors such as teaching materials, facilities, teaching ability and curriculum content, and should always take ensuring students' safety and improving teaching quality as the core goal. Refer to Table 1.

Table 1 College Pilates Course Dilemma Table

Dilemma classification	Specific issues	Affect the number of students	Average degree of influence	Improve the difficulty rating	Suggest countermeasures
Insufficient teaching materials	Lack of Supine Knee Bend and Leg Lift Tutorial	256	7.2	Medium	Add graphic and video teaching materials
	The details of the supine straight knee leg lift are not clear.	325	6.8	More difficult	Teacher training courses are held on a regular basis
Hardware facilities are backward	Lack of professional Pilates training equipment	134	8.1	High	Renew and introduce advanced equipment
	Insufficient training space	210	7.5	Medium	Expansion or optimization of training venues
The level of teachers is uneven	Bend your knees and lie on the foam axis with one/two legs off the ground.	89	7.9	More difficult	Regular assessment of teachers and provision of opportunities for professional development
	Inaccurate analysis of the action of bending knees and lying on the foam axis	76	8.2	Medium	Compile a unified teaching manual
Student acceptance	Students lack interest in Pilates	298	5.4	Medium	Hold a Pilates experience
	Students' lack of awareness of the effect of Pilates training	414	6.1	Easier	Publish popular science materials and successful cases of Pilates
The curriculum is unreasonable.	Lack of Pilates Graded Tutorials for Different Levels of Students	175	6.9	More difficult	Implement graded teaching in small classes
	Course schedule is unreasonable and conflicts with students' work and rest time	350	7.3	Easier	Investigate student schedules and optimize curriculum
Potential safety hazard	Insufficient guidance on movement risk in Pilates	65	9.0	High	Formulate safety instruction manual and conduct safety education regularly
	Incomplete emergency medical measures and equipment	80	8.7	Medium	Provide necessary first-aid equipment and carry out first-aid training

3. Analysis of the Dilemma of Pilates Teaching

3.1 Teacher qualification and teaching resources

When analyzing the dilemma of teacher qualification and teaching resources in Pilates education in colleges and universities, we quote the flow chart of teacher professional competence improvement as the main model framework. First, a comprehensive review of the existing teacher qualifications is conducted to ensure the initial guarantee of the quality of education. Subsequently, with the established promotion goal as the core, a multi-channel professional competence promotion process was launched. Among them, professional training activities provide teachers with a systematic path of knowledge updating and practical skills upgrading, covering a full range of content from basic theoretical knowledge to practical classroom application. Teachers are encouraged to expand their reading of the latest Pilates research literature, as well as in-depth exchanges and learning with experienced teachers, which will help broaden their horizons and enhance their understanding of the trends and practices of Pilates education.

By integrating various knowledge and skills such as training, literature learning and practical experience, teachers' professional competence can be enhanced in an all-round way.

With the effective cooperation of organization and resources, the dilemma of teacher qualification and teaching resources can be alleviated, which lays a foundation for improving the quality and effect of Pilates teaching. To sum up, the optimization of teacher qualifications and teaching resources through targeted improvement process and scientific evaluation methods can not only solve the current difficulties, but also promote the long-term development of Pilates education in Colleges and universities.

3.2 Student Acceptance and Course Schedule

In the investigation and analysis of Pilates courses in colleges and universities, we collected the acceptance questionnaires of 250 students inside and outside different universities for Pilates courses, and recovered 236 valid questionnaires. The questionnaire involves many dimensions, such as students' knowledge of Pilates, their interest in Pilates and the rationality of course arrangement. Survey results show that only 32.2% of the students have a good understanding of Pilates, and 58% of them think that the course content is not highly related to the actual needs. The recorded data show that the course satisfaction is only 3.1 points (full score of 5 points), which clearly reflects that there is a big dilemma in the acceptance of Pilates teaching by students.

Based on the statistics and student interview data, the specific manifestations of unreasonable curriculum arrangement are further analyzed. First of all, the time orientation of Pilates courses is generally in the middle of the week, which overlaps with other studies of students, rather than after-school time, which leads to 56.7% of students being absent frequently, and the continuity and systematicness of the courses are difficult to guarantee. Secondly, the duration of the course is fixed once a week, 90 minutes each time. Students generally reflect that the number of times is less, and it is difficult to practice the depth and accuracy of the designated movements in the prologue of the course. Only 45.8% of the students think that the number of courses is reasonable. Thirdly, the content of the course is too single, and there is a lack of hierarchical division for students with different physiques. 67% of the students reflect that the course is difficult to stimulate interest, hoping to increase the interaction and interest of the course.

In view of the dilemma of low acceptance and unreasonable arrangement of the above-mentioned courses, the curriculum content is reformed, hierarchical training modules are designed, three levels of entry, improvement and advanced are provided for students with different physiques, and interactive games and team competitive activities are added in order to improve students' participation in the courses and their interest in Pilates. By analyzing the distribution of students' spare time and fitness needs, and refining the personalized program, it is expected to enhance the attractiveness and effectiveness of the course, aiming at solving the core difficulties of Pilates teaching.

In general, in view of the dilemma of Pilates teaching, we optimize the curriculum arrangement and teaching content on the basis of research, combined with the actual environment of colleges and universities and the needs of students, aiming at improving students' participation and satisfaction, so

as to promote the healthy development of Pilates teaching in colleges and universities.

4. Research on Countermeasures

4.1 Countermeasures to Improve Teachers' Professional Competence

In the study of improving the professional competence of Pilates teachers in colleges and universities, this report adopts comprehensive strategies, focusing on teaching methods, academic training, resource optimization, teamwork and educational psychology, and formulates a detailed "strategy table for improving teachers' professional competence". [9] Specific strategies, such as the implementation of interactive Pilates teaching, aim to enhance the interaction between teachers and students, and significantly improve student participation. Through special training for new teachers, they can master the skills of applying interactive tools, and iteratively update teaching methods through classroom trial teaching and student feedback, aiming at achieving the predetermined goal of improving student satisfaction by 20%.

On the other hand, for experienced teachers, the introduction of Pilates Advanced Coach Certification can effectively improve teachers' teaching skills and professional knowledge. The selection process focuses on the identification of teachers who demonstrate the potential for excellence in teaching and systematic academic development through participation in high-level external training. This process not only promotes the improvement of teachers' own abilities, but also is expected to reflect a 15% improvement in the assessment of teachers' professional skills.

In the optimization strategy of teaching resources, the development of multimedia teaching resources provides more abundant and efficient teaching tools for all teachers. This measure aims to increase the frequency of use of teaching resources by investigating teaching needs, developing interactive teaching software and integrating film and television courses, and is expected to achieve a 25% improvement rate.

Interdisciplinary teaching projects in teamwork can promote cooperation and communication among teaching teams, including the establishment of a solid teaching team, regular teaching seminars, and the realization of collaborative teaching among courses. This not only improves the efficiency of teamwork, but also creates synergy in teaching practice.

In the aspect of educational psychology training, aiming at the course of students' psychological understanding and communication provided by junior teachers, through the basic training of organizational psychology and class situation simulation, teachers' understanding of students' psychology has been greatly deepened, and the relationship between teachers and students has been significantly improved.

To sum up, this set of improvement system composed of multiple strategies can ensure the orderly implementation of various improvement measures and achieve the expected results according to the implementation steps and effectiveness evaluation indicators in the strategy table. Based on the existing teaching problems, combined with practical improvement methods, the overall research establishes a clear promotion path and evaluation mechanism, aiming at improving the quality of Pilates teaching and the professional development level of teachers in an all-round way. Refer to Table 2.

Table 2 Strategies for Improving Teachers' Professional Competence

Policy type	Method name	Target groups	Expected effect	Implementation steps	Indicators for effectiveness evaluation	Estimated lift rate
Innovation of teaching methods	Interactive Pilates teaching	New Teachers	Increase student participation	(1) Training teachers to use interactive tools (2) Implementing classroom trial teaching (3) Collecting students' feedback	Student satisfaction has been improved	20%
Academic studies	Pilates Advanced Instructor Certification	Experienced teachers	Improve teaching skills and professional knowledge	① Selecting excellent teachers to participate in certification ② Organizing study groups ③ Participating in external training courses	Teachers' professional skills assessment scores	15%
Optimization	Development of	All teachers	Enriching	(1) Investigation of teaching needs	Frequency of	25%

of teaching resources	Multimedia Teaching Resources		teaching content and improving teaching efficiency	(2) Development of interactive teaching software (3) Integration of video tutorials	use of teaching resources	
Teamwork	Interdisciplinary Teaching Project	Intermediate teacher	Promote teaching team cooperation and communication	(1) Establishing a teaching team (2) Holding regular teaching seminars (3) Implementing collaborative teaching of courses	Teamwork efficiency	30%
Student Feedback System	Live Online Feedback Tool	All teachers	Timely adjustment of teaching methods and contents	① Installation of feedback system ② Use of teacher training ③ Collection of student feedback after the course	Adjust the speed of teaching accordingly	50%
Teaching Observation and Reflection	Regular teaching case sharing meetings	Senior teacher	Share teaching experience and inspire teaching	① Organizing the submission of excellent teaching cases ② Holding regular sharing meetings ③ Encouraging the implementation of teaching cases	Implementation proportion of new teaching method	35%
Technology and equipment renewal	Introduction of modern teaching equipment	All teachers	Improve the level of teaching modernization and enhance the interaction of teaching	(1) Evaluating the demand for teaching equipment (2) Purchasing modern equipment (3) Organizing teachers' operation training	Satisfaction with teaching equipment	40%
Educational Psychology Training	Students' Psychological Understanding and Communication	Junior teacher	Deepen the understanding of students' psychology and improve the relationship between teachers and students	(1) Basic training of organizational psychology (2) Implementation of class situation simulation (3) Instructor's application in teaching	Improvement of teacher-student relationship	45%
International exchanges	Foreign University Teaching Exchange Program	All teachers	Broaden international horizons and learn advanced international teaching concepts	(1) to establish an international cooperation framework; (2) to select teachers for overseas exchanges; (3) to organize teachers to share overseas experience.	Participation in international exchanges	30%
In-service graduate education	Teacher Professional Development Course	All teachers	Continuous Education to Improve Teachers' Lifelong Learning Ability	(1) Developing in-service education courses; (2) Providing learning opportunities for teachers; (3) Evaluating the effectiveness of courses and continuously updating the content of courses.	Teacher Lifelong Learning Index	25%
Application of data analysis	Teaching effect data analysis platform	All teachers	Improve the scientificity and adaptability of teaching decision-making	(1) Realize the integration of teaching data (2) Train teachers' data analysis skills (3) Use data to support teaching adjustment and decision-making	Success rate of data-driven teaching reform	30%

4.2 Improvement of curriculum system and teaching methods

In the teaching of Pilates in colleges and universities, the improvement of curriculum system and the innovation of teaching methods are particularly urgent. Through a detailed analysis of the current curriculum and teaching methods, this paper reveals the shortcomings of the curriculum framework and practice process, and the research and practice evidence shows that even in the same university, there are some problems in Pilates curriculum, such as content duplication and single teaching method. In addition, the current teaching method lacks practical and effective strategies to cultivate students' interest and creative thinking. Therefore, the reform is urgent, aiming at putting forward a unified and innovative solution to these problems.

First of all, in the reform of the curriculum system, according to the flow chart of curriculum improvement and innovation, a new curriculum structure is designed in line with the characteristics

of Pilates. By collecting high-quality data and using advanced statistical analysis methods, it can ensure that the structure covers the knowledge points of the subject more comprehensively and is closely integrated with Pilates practice. For example, the basic theory of Pilates is integrated with human anatomy to provide more in-depth theoretical support. The length of the course ensures that students can absorb new knowledge in a sufficient amount of time without feeling overburdened.

Secondly, while exploring effective teaching methods, we should consider the matching degree between teaching content and students' cognitive ability, and pay attention to the maximization of learning efficiency. In practice teaching, interactive methods such as case simulation and role-playing are used to simulate Pilates sports scenes with the help of virtual reality technology, so as to enhance students' sense of experience and immersion. In addition, the design of teaching interaction emphasizes the high-frequency feedback mechanism, so that students can get the teacher's evaluation in real time, effectively promote self-correction and improve the accuracy of action.

After the establishment of the improvement plan, the curriculum reform was put into practice immediately, and the teaching effect was tracked through multi-dimensional monitoring means such as classroom observation and student survey. The stage results show that the new strategy has achieved remarkable results in improving students' Pilates skills and enhancing the attractiveness of the course. Accordingly, the research provides a dynamic evaluation model for better teaching effect, which can automatically adjust the teaching parameters according to the teaching feedback. If the effect is positive, this teaching mode will be extended to the whole college and even the whole education group; otherwise, it will continue to adjust and optimize for the shortcomings. This dynamic and iterative process ensures that the teaching reform can constantly adapt to the changes of the educational environment and the evolution of students' needs.

To sum up, this study not only constructs an innovative framework of Pilates curriculum system and teaching methods in theory, but also realizes the transformation from concept to application in practice, and creates a sustainable development of Pilates teaching mode in Colleges and universities.

5. Conclusion

Through this study, the following conclusions can be drawn: First of all, there are some problems in Pilates teaching in colleges and universities, such as insufficient professional competence of teachers, lack of teaching resources, low acceptance of students and unreasonable curriculum arrangement, which seriously restrict the promotion and development of Pilates in colleges and universities [10]. Secondly, in view of the above problems, colleges and universities should take various measures to improve them. On the one hand, schools should strengthen the training of Pilates teachers to improve their professional skills and teaching level; on the other hand, they should optimize the Pilates curriculum system, rationally arrange the proportion of theoretical courses and practical courses, and adopt flexible and diverse teaching methods to improve students' interest in learning [11]. Finally, Pilates exercise helps to enhance students' physical control and rhythm, promote students' all-round physical and mental development, and meet the requirements of cultivating compound talents in contemporary colleges and universities. Therefore, it is of great significance to vigorously promote Pilates in colleges and universities, but it requires the joint efforts of schools, teachers and students to solve the current dilemma of Pilates teaching and give full play to the educational function of Pilates [12].

To sum up, Pilates is still in its infancy in college physical education, and there are many problems in the teaching process that need to be solved urgently. Colleges and universities should attach great importance to Pilates teaching, improve teaching conditions, improve teaching quality, and promote Pilates movement to take root and bear fruit in Colleges and universities. Only by constantly exploring the law of Pilates teaching, optimizing the teaching mode and strengthening the teaching management, can we make due contributions to the cultivation of students' healthy physique, aesthetic taste and cultural accomplishment, and to the realization of the goal of personnel training in Colleges and universities. It is believed that through the cooperation of schools, teachers and students, Pilates teaching in Colleges and universities will be promoted to develop in depth, so that Pilates movement will truly become an important part of physical education in Colleges and universities, and promote

the comprehensive and healthy development of college students' body and mind.

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