

Current Situation and Countermeasures of Aerobics Teaching in College under the Background of Big Data

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Abstract: Since entering colleges and universities, aerobics has always been an important part of college physical education, and it bears the important task of comprehensive education. However, with the continuous emergence of teaching reforms in colleges and universities, the research on aerobics teaching has been lagging behind. In this regard, exploring the way that aerobics teaching is suitable for the development of students' personality and physical and mental coordination is of great significance to the research of aerobics teaching in ordinary universities in my country. This article aims to study the current situation and countermeasures of college aerobics teaching under the background of big data. This article investigates and analyzes the current situation of aerobics courses offered in colleges and universities, and aims to fully understand the current situation of aerobics courses in universities in the western region of Heilongjiang Province, further clarify the teaching objectives of college aerobics courses, standardize teaching content, improve examination methods, and highlight fitness the role of aerobics teaching in quality education provides a valuable basis for the reform of aerobics class in Chinese colleges and universities. This article studies the current situation of aerobics teaching in ordinary colleges and universities in this city through the research and application of literature data, questionnaire survey, mathematical statistics, observation, interviews and other research methods. Research shows that more than 92% of students like aerobics. It further shows that aerobics has a solid mass foundation in some colleges and universities, which is bound to be beneficial to the better development of aerobics in some colleges and universities.

1. Introduction

With the development of the times, the progress of society, and the improvement of material and cultural life, new challenges have also been raised to the requirements of fitness programs [1-2]. People are no longer satisfied with a single and boring fitness method. Among the contradictions of

insufficient items, a new type of aerobics sports has been introduced into our country, gradually popularized, and has become the most popular fitness activity in contemporary times [3-4]. Aerobics is a sport that is accompanied by music, uses physical exercises as the basic means, and is based on aerobic exercises to achieve the purpose of improving health, shaping the body and entertainment [5-6].

In the research of aerobics teaching in colleges and universities, many scholars have conducted research on it and achieved good results [7-8]. For example, JiangY pointed out that the creation of a classroom environment that meets the interest and personality development of students at different levels will stimulate students' initiative in learning and enthusiasm, to achieve the purpose of improving the effect of exercises, to develop the habit of lifelong physical exercise. It embodies the entertaining, interesting, artistic, collective performance and other characteristics of aerobics, which creates a good and pleasant atmosphere for the teaching of aerobics and helps to improve the quality of teaching [9]. PIL pointed out that the adaptive teaching method means that the teaching methods used in the teaching process should be adapted to the students' abilities, so as to achieve the purpose of strengthening teacher-student communication, obtaining timely feedback information, and cultivating students' abilities. The adaptive teaching method is a new type of teaching method superior to the traditional teaching method. It can improve the quality of teaching more comprehensively and effectively, protect students' learning enthusiasm, cultivate students' comprehensive ability, and also put forward higher requirements for teachers and students [10].

This article needs to interview the aerobics teachers or heads of the physical education department of 4 colleges and universities in this city to understand the basic conditions of the aerobics curriculum development and teachers, the content of aerobics curriculum, teaching methods and teaching venues. Experts are also invited to put forward some opinions on the setting and development trend of aerobics teaching in colleges and universities in this city. Through these interviews and surveys, first-hand materials that are conducive to subject research will be obtained.

2. Status Quo of College Calisthenics Teaching and Its Teaching Strategies

2.1. Current Status of Aerobics Teaching

(1) The goal of aerobics class

In August 2002, the "National General College Physical Education Curriculum Teaching Guidelines" was released. It is the basic requirement of the state for college students in physical education curriculum. It is the new era of general colleges and universities formulating physical education curriculum syllabus and conducting physical education curriculum construction and evaluation. Among them, five field goals are proposed in terms of curriculum goals: sports participation goals, sports skills goals, physical health goals, mental health goals, and social adaptation goals. The setting of aerobics curriculum goals in most colleges and universities in most regions fully reflects the requirements of the goals in the above five fields.

To accomplish the above goals in the teaching of aerobics, teachers need to use the limited teaching time, use scientific teaching methods, and reasonably arrange the teaching content; use effective exercise methods and highlight the educational characteristics of the aerobics class. Otherwise, it is very difficult to achieve the teaching goal of aerobics class.

(2) Syllabus, teaching materials and teaching plans

Aerobics is very intuitive. Students can learn and exercise through teachers' explanations and demonstrations in class, and they can also watch aerobics videos together under the teacher's organization; but outside of class, students without teacher guidance can only practice the aerobics

movements you learn from your memory. It is often a practice that you can't remember the movements and don't know the meaning and effect of exercise. Both pictures and texts, concise and easy-to-understand textbooks, on the one hand, "can help students further understand the content of classroom learning, learn more systematic theoretical knowledge, some common sense of fitness, exercise methods, can enable students to obtain a combination of learning and use of the textbook. It truly integrates with movement practice and becomes a textbook that guides students' learning and extracurricular exercises," which will benefit them for life.

2.2. Teaching Strategies of Aerobics Courses in Colleges and Universities

(1) Teaching content of practical courses

In the practical teaching of aerobics, the content of the lessons must be constantly changing, and the students will feel tired of studying with a single teaching content. Make full use of the characteristics of the project and broaden the teaching resources. The combination of Latin dance, street dance, and yoga can be integrated into aerobics teaching, so that students can be exposed to more practice forms, stimulate students' interest in learning, and strengthen the teaching effect of practical courses. In addition, teachers can appropriately add some auxiliary teaching content according to the actual venue and equipment conditions, such as basic body training, light equipment training, etc., to make up for the lack of freehand aerobics for the balanced development of the body, so as to improve aerobics.

(2) Reform the single teaching method and develop towards diversification

Aerobics teaching is a complex process, and the teaching content is very rich. The tasks to be completed and the goals to be achieved are many. Therefore, in teaching methods and methods, we should break the traditional and single teaching mode and focus on multiple the combination of methods strives to achieve the most optimized aerobics teaching effect.

In the teaching of aerobics, the traditional and basic teaching methods are relatively single, and the single and unchanging teaching method is not suitable for the teaching of aerobics, which will make students feel boring and boring. The diversification of teaching methods can create new ideas in the classroom and allow practitioners to actively participate in sports. Good teaching methods can create magic in the classroom and attract students' enthusiasm for learning. Therefore, teachers should pay attention to the diversified use of teaching methods.

(3) Reform aerobics teaching assessment method

The evaluation of physical education is a value judgment on the teaching ability and teaching effect of physical education teachers, and on the students' learning ability and learning gain. Establishing a scientific evaluation method that meets actual teaching needs is an effective means to promote teaching. Reform evaluation methods should be followed, shift from a single evaluation perspective to multi-angle and multi-method comprehensive quality evaluation, and strengthen the comprehensive functions of inspection, feedback, and motivation. It is necessary to evaluate both the teacher's teaching and the student's learning, as well as the evaluation of sports knowledge, the learning results of skills should also focus on the physical development of students and the training of physical ability, and play the correct guiding role of assessment.

2.3. Sampling Algorithm of Questionnaire Survey

Over-sampling CSBNN-OS uses over-sampling to randomly copy high-cost category samples, thereby changing the distribution of training data, so that different categories are proportional to their costs, assuming that the number of samples with higher costs after copying X_{\min} becomes

X'_{\min} , Its calculation formula is as formula (1), using new samples to train the BP neural network, and using the obtained model to classify the test samples.

$$X'_{\min} = \frac{\text{Cost}_{\min}}{\text{Cost}_{\max}} X_{\max} \quad (1)$$

Under-sampling CSBNN-US uses under-sampling to reduce the sample size of lower cost categories to change the data distribution. Assuming that the low-cost sample X_{\max} becomes X'_{\max} after under-sampling, its calculation formula is as shown in formula (2), and a fixed algorithm is used to remove $(X_{\max} - X'_{\max})$ majority samples, so that the number of samples of the two types is equal to the cost proportion, use the new sample to train the BP neural network model, and use the obtained model to classify the test sample.

$$X'_{\max} = \frac{\text{Cost}_{\max}}{\text{Cost}_{\min}} X_{\min} \quad (2)$$

The threshold operation CSBNN-TM biases the decision boundary of the neural network to the boundary of the lower cost category, reducing the risk of the higher cost category of samples being misclassified, using BPNN to train the original samples, and introducing cost information in the prediction stage to achieve the cost sensitivity of classification. Assuming that the true value of the predicted output of BPNN is $O_i \in \{\max, \min\}$, then:

$$\sum_{i \in \{\max, \min\}} O_i = 1, (0 \leq O_i \leq 1) \quad (3)$$

3. Investigation and Research on Teaching Experiment of Aerobics in Colleges and Universities

3.1. Research Objects

This article takes 4 universities in this city as the main research objects. Distributed 470 student questionnaires to colleges and universities. A total of 452 student questionnaires were returned, with 447 valid questionnaires, an effective rate of 98.9%

3.2. Interview Method

Interviews with experienced experts and aerobics teachers in 4 colleges and universities in this city who have been engaged in aerobics teaching for many years, through face-to-face interviews and telephone contact, to understand the development of public sports aerobics courses, the status of teachers and the teaching of aerobics courses the idea of reform, through interviews, obtained first-hand materials that are conducive to subject research.

3.3 Reliability Test of Questionnaire

In order to ensure the reliability of the questionnaire, a small part of the survey subjects were surveyed again within the scope of the survey sample. The average interval between the two surveys was 15 days, and the correlation coefficient of the measured value was $R=0.89$, $P<0.01$, indicating the questionnaire survey. There is no significant difference, it has high credibility and meets the requirements of the investigation.

4. Investigation and Analysis of Teaching Experiment of Aerobics in Colleges and Universities

4.1. Students' Interest in Learning Aerobics

Interest refers to people's psychological inclination to understand and explore something. It marks a person's enthusiasm to participate in a certain activity and is a manifestation of individual subjective initiative. Only when students have a strong interest in the sports they participate in can they do their best to learn and exercise. This research divides students' interest levels into five levels: like very much, like, generally like, dislike, and dislike very much. The survey results are shown in Table 1.

Table 1. Statistics of students' interest in aerobics classes

Attitude	Boys(%)	Girls(%)
Like very much	24	27
like	37	34
Generally like	27	24
Don't like	7	6
Dislike	5	9

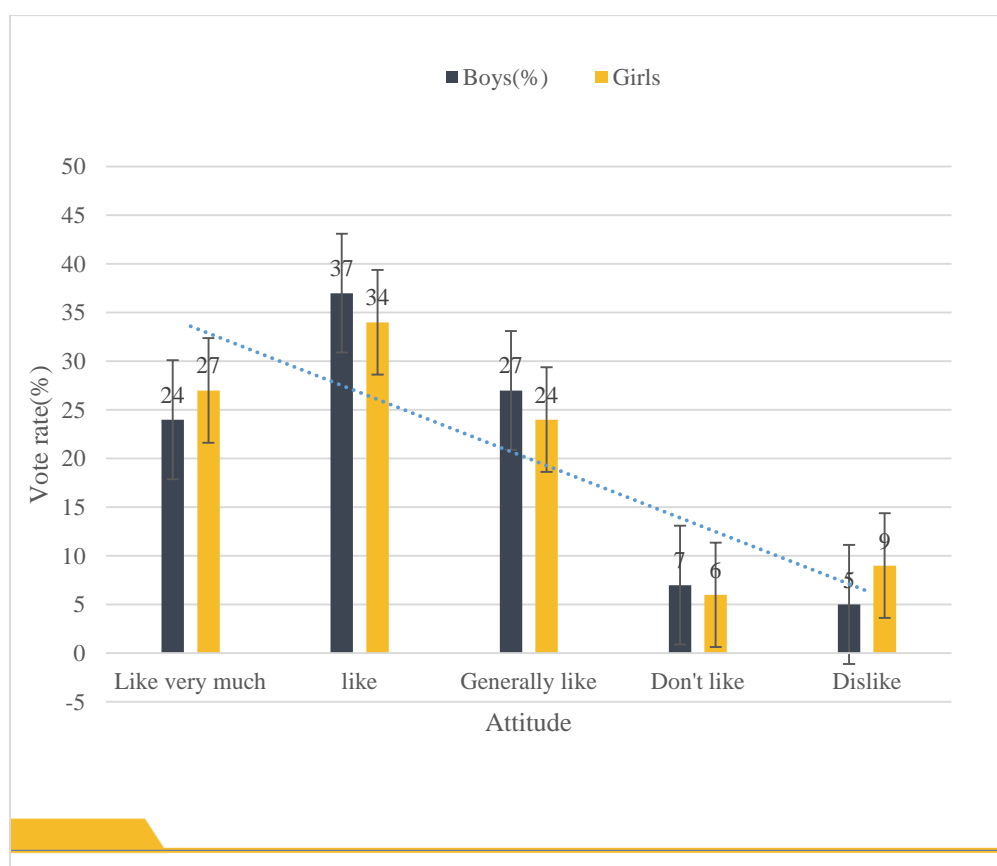


Figure 1. Statistics of students' interest in aerobics classes

It can be seen from Figure 1 that among the 470 students in the surveyed colleges and

universities, 25.5% of the students said they liked aerobics very much, 35.5% of the students said they liked it, and 25.5% of the students said they liked it in general, and the students who said they did not like or dislike it. They accounted for 6.5% and 6.5% respectively. It shows that students are more interested in aerobics. The main reason is that some college girls have a large proportion, and aerobics is a special sport that most girls like. Secondly, it may be the backwardness of economy and education, leading to very limited projects that can be carried out in college physical education courses, and students have relatively little choice. Therefore, the students who like aerobics account for more than 92%. It further shows that aerobics has a solid mass foundation in some colleges and universities, which is bound to be beneficial to the better development of aerobics in some colleges and universities.

4.2. Students' Demand for Aerobics Theory Teaching Content

Through interviews, it is learned that although the four universities in this city have theoretical textbooks on aerobics, the establishment of theoretical courses is not optimistic. The survey results are shown in Table 2.

Table 2. Reasons for not offering aerobics theory courses

The reason	Boys(%)	Girls(%)
Class limit	45	51
Lack of theoretical knowledge	14	12
No need to open	17	21
Students are not interested	15	13
Other	9	3

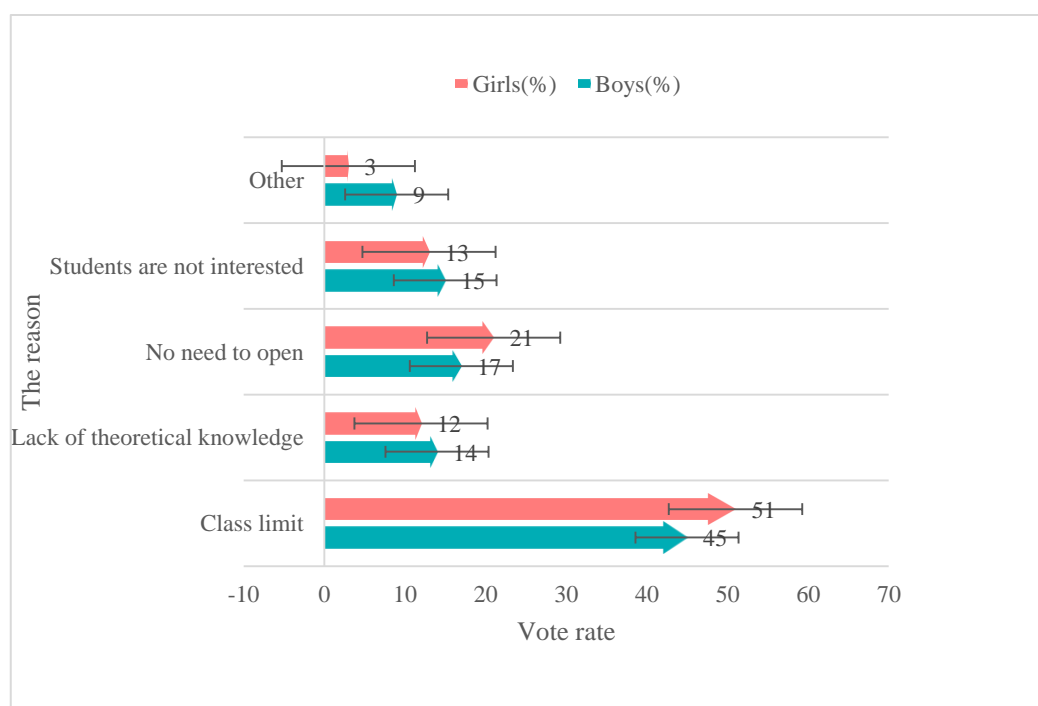


Figure 2. Reasons for not offering aerobics theory courses

As shown in Figure 2, according to the survey, the main reason for this situation is that the limit of school hours accounts for 48% of the total, followed by many aerobics teachers who believe that it is not necessary to set up 19% of the total, and the lack of theoretical knowledge of teachers accounted for the overall 14% of the total, and the students are not interested in the theoretical knowledge of aerobics accounting for 13% of the total, other factors account for 6% of the total. Therefore, this article believes that it is necessary to understand the real situation of Inner Mongolia college students' demand for theoretical teaching content, which has certain practical significance for the development of aerobics theory courses in the future.

5. Conclusion

The level of physical education research is an important indicator to measure the theoretical level, academic level and professional ability of physical education teachers. By engaging in scientific research, we will realize the virtuous circle of "research, teaching and research, and teaching" and effectively improve the quality of teaching. To improve the teaching level, we must first improve the academic level of teachers. Highly educated teachers can easily accept and use advanced educational concepts because they have received high-level education, thereby improving their teaching ability. According to the actual situation of the school, the school should introduce aerobics professional talents in a planned way to optimize the professional structure of the aerobics teacher team; moreover, the existing aerobics teachers should be organized for further training and short-term training, etc., and adopt corresponding mechanisms, encourage teachers to conduct business self-study.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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