Research Article

Research on Taekwondo Teaching Reform in Colleges and Universities Based on Nonlinear Data Prediction Analysis

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With the all-round development of quality education in China, the development of new courses has been continuously added. The problems of Taekwondo education in colleges and universities in China have gradually emerged, which has hindered the development of Taekwondo. Taekwondo is an ancient martial art. Taekwondo is an important part of physical education in colleges and universities. It plays an important role in the teaching reform in colleges and universities. The fact of Taekwondo Teaching can meet the demands of diversified sports. However, at present, there are some problems in the course of Taekwondo in colleges and universities, such as insufficient attention, lack of professional teachers, lack of professional venues, one-sided teaching ideas, unreasonable evaluation system, and so on. It is necessary to further implement the concept of education, optimize the teaching environment, strengthen the construction of teachers, innovate teaching methods, improve the evaluation mechanism, and give better play to the educational function of Taekwondo.

1. Introduction

With the continuous progress of the social economy and the continuous improvement of China’s overall living standards, people have gradually shifted from the basic focus of daily life to spiritual life. Taekwondo is now an official event of the modern Olympic Games. Now, many colleges and universities have carried out courses on Taekwondo. Tong [1] mentioned that Taekwondo originated from South Korea and is an ancient martial art. Taekwondo usually involves kicking and falling; Fist means to strike with a fist; Tao is an art. Kai proposed that the teaching of Taekwondo in colleges and universities generally has four characteristics as follows: the learning process is mainly based on legs and combined with fists; pay attention to the exercise of internal and external forces; breaking bricks, formwork, etc., by hands and
scientific programming believes that under the background of quality education in forms, and create a good teaching atmosphere [12]. Junqian teachers’ professional level to broaden teaching channels and strengthened teaching training and exchange, and improved means, stimulated students’ learning enthusiasm, wondo teaching environment, reformed teaching forms and teaching investment and construction, optimized Taekwondo education[11]. Shuxian pointed out the problems existing in the sustainable development of Taekwondo courses, and promote the physical and mental health development of college students [14]. In essence, education is a humanistic process in which people are the center and the root. Taekwondo courses in colleges and universities not only have the value of general physical education courses to strengthen the body but also contain cultural attributes different from Western sports. Taekwondo Teaching Reform in colleges and universities from the perspective of humanistic spirit will effectively give play to the value of Taekwondo.

2. Analysis on the Present Situation of Taekwondo Teaching in Colleges and Universities

At present, Taekwondo Teaching in domestic colleges and universities is generally divided into two teaching methods, theory and practice. In terms of theory, teachers choose textbooks as the basis and write on the blackboard to understand, mainly teaching some basic theoretical knowledge about Taekwondo. In terms of practice, teaching is carried out in relevant venues. Students can better receive and practice through the teacher’s demonstration actions and the combination of technology and understanding. The above two methods are the basic teaching methods for colleges and universities. This method is the mainstream teaching method in colleges and universities. This teaching method is too simple, and students will feel bored when they know more. This will lead to students’ inability to raise their interest in Taekwondo in the process of learning, and they have no desire to understand and learn. This is not conducive to the sustainable development of Taekwondo courses, and efficiency is also greatly reduced. Taekwondo is a very competitive, confrontational, and practical sports activity. At present, most colleges and universities choose practical teaching for Taekwondo Teaching. This teaching mode ignores the cultural inheritance of Taekwondo and the importance of theoretical knowledge of Taekwondo. In such a teaching mode, students tend to understand Taekwondo in an aggressive way, which is too one-sided and only exists in the form of expression. Therefore, the usage rate of Taekwondo is low. Based on the analysis of the current teaching situation, Figure 1 is obtained.

Figure 1 shows the proportion of relevant data for each decomposition action in Taekwondo at present. From the data, it can be seen that in the study of Taekwondo in colleges
and universities, the applicability and scores of horizontal kicks are the highest, followed by the data on pushing and kicking. The proportion of data on other decomposition actions has significantly decreased. Therefore, in the case of uneven scores for each action in Taekwondo in colleges and universities, it is more necessary to strengthen the training of Taekwondo students’ comprehensive actions. To optimize Taekwondo teaching methods and promote students’ active participation and interaction, it is necessary to innovate the traditional Taekwondo teaching, so as to improve the teaching quality of colleges and universities and the comprehensive quality of students.

3. Nonlinear Data Prediction and Analysis Technology

Linear data have one or more commonalities. Generally, one piece of common data is made according to the data, which is called linear data. Nonlinear data include physical phase data and many nonlinear data in nature. Nonlinear data have the characteristics of proportional law, irregularity, commonality law, etc. Nonlinear data can be analyzed through the law of physical thermodynamics statistics, and the law of phase transition in physical substances. Nonlinear data can be analyzed by a series of analyses, quantitative analysis and the rule generated between nonlinearity, and recording the value of the rule generated between nonlinear data.

4. Students’ General Information and Class Classification

This study adopts the method of average grouping to randomly group 88 college students in two classes of the same grade in 2021 who study Taekwondo at a university. There are 43 students in the reference group of conventional Taekwondo teaching methods, 17 girls and 26 boys, with an average age of 18.9 years. There are 45 students in the observation group, 25 boys and 20 girls, whose average age is 20.8 years old.

5. Statistical Methods

This research needs to use a variety of basis function formulas to comprehensively analyze and calculate the research object in the Taekwondo teaching reform. Among them, it needs to use the arithmetic mean and standard deviation rate to calculate and analyze, as follows:

$$\sigma = \frac{1}{n-1} \sqrt{\sum_{i=1}^{n} (x_i - \mu)^2}, \mu = \frac{1}{n} \sum_{i=1}^{n} x_i,$$

(1)

Here, $\sigma$ is the standard deviation rate calculation result of the basis function and $\mu$ is the arithmetic mean of the input sequence $x$ of the basis function.

6. Application of Nonlinear Data Prediction Analysis in Taekwondo Teaching in Colleges and Universities

Is a linear process, which has a large number of problems, students’ self-regulation ability to learn Taekwondo is not enough. Although the domestic curriculum model also has single loop feedback or double loop feedback, and because the operation of the learning system of Taekwondo courses is more complex, multiloop feedback should be adopted. This multiloop feedback can solve problems at multiple levels, timely adjust courses and increase learning flexibility. Compared with a linear process, nonlinear data can provide new ways and ideas for Taekwondo teaching, and let us reexamine the teaching mode of Taekwondo course. Nonlinear courses can make teaching more flexible. Nonlinear teaching no longer only abides by a certain educational goal. Educational goals change with the teaching cycle of Taekwondo. Students can make timely adjustments and feedback at each learning stage according to the course. Instead of setting fixed results, teaching courses are also constantly updated with teaching time.

Change continues to develop and gradually fits in with students’ life. The networking of nonlinear courses has many factors affecting Taekwondo teaching, including the relationship between teachers and students and students’ personality development. The networking of nonlinear courses needs to take more factors into account to have an all-round impact on the teaching courses. This impact will be fed back into the teaching structure and content of the courses. Taekwondo course itself is an open, nonbalanced, multi subsystem teaching system. In the teaching process, when the threshold of a certain aspect reaches the top, the system of the course will change. Secondly, the course is also related to the surrounding environment during the teaching process, resulting in changes. This change is unexpected, and it can make the teaching courses of Taekwondo reach another
level online, such as Taekwondo in freshman and Taekwondo in sophomore. Based on the above research, for nonlinear Taekwondo teaching, it is proposed that the Taekwondo course will be changing all the time. When the teaching reaches a certain node, the feedback will be adjusted locally or as a whole. These adjustments are the new starting point of the course, and the end point of the course will also change with the change. The starting point and end point of the course chosen by students are obviously inconsistent. At present, teachers and students are passive receivers in Taekwondo learning. Students’ information about Taekwondo is not limited to the classroom. They can learn more about it and drive people around them to participate in the exercise. Taekwondo courses are not only limited to the closed classroom but should be more than the exchange of external information. The continuity of the course itself will also be affected by discontinuity. This discontinuity can generate new learning in the course and greatly enhance students’ interests.

6.1. Analysis on the Specificity and Sensitivity of Different Teaching Courses in Taekwondo Teaching in Colleges and Universities. There are no clear standards for different teaching courses to correspond to the teaching objectives of each lesson. Therefore, in classroom teaching, we need to integrate the curriculum objectives with the core literacy, so that the classroom teaching has a core literacy generation direction and students have a clear literacy precipitation consciousness. Teaching system evaluation can not only integrate relevant theoretical knowledge but also introduce nonlinear data to establish the theoretical basis of the intelligent teaching evaluation system. While improving teaching evaluation methods, teaching ideas can be adjusted, which can better find a practical path for students in learning and education. It can adjust the teaching concept while improving the teaching evaluation methods, so as to find a practical path for students in learning and education. In this case, if we want to better play the role of the teaching system and improve teaching ability, we need to choose a reasonable teaching evaluation system. The evaluation system should not only assess the basic theoretical knowledge of teaching but also evaluate the comprehensive quality indicators of students in all aspects. In order to better analyze the different teaching courses of Taekwondo teaching in colleges and universities, this paper compares and analyzes the sensitivity and specificity of the two teaching methods of conventional course teaching and intelligent interactive Taekwondo teaching, as shown in Table 1.

Table 1 shows the comparison of sensitivity and specificity of College Taekwondo Teaching based on nonlinear data prediction analysis to different teaching methods. Before using nonlinear data for teaching, the sensitivity and specificity of nonlinear teaching are lower than those of conventional teaching. However, after using nonlinear teaching methods, the relevant data integrated into teaching methods are significantly higher than those of conventional teaching methods. There was a significant difference between the two groups after teaching, $T < 10.000, P < 0.05$. The comparison results had significant statistical significance.

In order to analyze and evaluate the nonlinear teaching effect more intuitively, the sensitivity of the conventional course teaching and intelligent interactive Taekwondo teaching method system is visualized, and Figure 2 is obtained.

Figure 2 shows the visual comparison of the sensitivity of the two groups of different teaching method systems, intuitively showing that the sensitivity effect is better after using the observation group teaching system, which also shows that the application of the observation group evaluation system is conducive to Taekwondo teaching in colleges and universities, can promote the sensitivity of intelligent interactive Taekwondo, and then improve the quality of Taekwondo teaching in colleges and universities.

6.2. Early Warning Analysis of Different Taekwondo Teaching Methods. The data coupling results of different Taekwondo teaching methods through different algorithms can predict and analyze the teaching method on the basis of high sensitivity big data collection of nonlinear data. With reference to different influencing factors, the analysis of this teaching method is shown in Table 2.

In order to better reflect the prediction sensitivity of nonlinear data in the application, the data comparison results in Table 2 are visualized, and Figure 3 is obtained.

Table 2 and Figure 3 show the prediction results of the teaching methods of the two groups of analysis objects. The results show that the teaching method using nonlinear prediction is better than the traditional teaching method. The nonlinear prediction method has higher early warning data and better early warning ability, which is conducive to improving the teaching application of Taekwondo in colleges and universities.

6.3. Comprehensive Effect Analysis of Taekwondo Teaching Courses in Colleges and Universities. In the practical application of the relevant teaching evaluation system, it can combine various practical teaching in the classroom, optimize the teaching methods, increase the interaction in the classroom and the learning initiative of students, enable students to quickly invest in Taekwondo courses, help to cultivate students’ physical quality, and improve students’ will quality in the process of Taekwondo learning. By analyzing and comparing the sensitivity and specificity of different teaching methods in Taekwondo in colleges and universities, the comprehensive scores of students with different teaching methods are compared to better analyze the impact of nonlinear data prediction on Taekwondo teaching, as shown in Table 3.

Table 3 shows that under the nonlinear data prediction teaching, the scores, teaching modes, classroom effects, and teaching achievements of students in traditional teaching have been significantly improved. There is a significant gap between the comprehensive scores of students in the two teaching methods. The comprehensive scores of nonlinear
In order to more intuitively analyze the teaching of Taekwondo in colleges and universities on the prediction of nonlinear data and visualize the students’ comprehensive scores, Figure 4 is obtained.

Figure 4 shows the comparison of Taekwondo scores under different teaching methods. It can be seen more data prediction teaching are significantly higher than those of conventional courses.

Table 1: Analysis of specificity and sensitivity of different courses in Taekwondo teaching.

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference group</td>
<td>16</td>
<td>68.32</td>
<td>83.12</td>
<td>76.41</td>
<td>92.32</td>
</tr>
<tr>
<td>t value</td>
<td></td>
<td>3.328</td>
<td>3.684</td>
<td>5.259</td>
<td>5.685</td>
</tr>
<tr>
<td>P value</td>
<td></td>
<td>0.005</td>
<td>0.006</td>
<td>0.007</td>
<td>0.008</td>
</tr>
</tbody>
</table>

Table 2: Comparison of prediction sensitivity of different Taekwondo teaching methods.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Predictability Before use</th>
<th>Predictability After use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference group</td>
<td>16</td>
<td>96.2 ± 5.9</td>
<td>98.9 ± 4.6</td>
</tr>
<tr>
<td>Observation group</td>
<td>16</td>
<td>97.1 ± 5.5</td>
<td>99.2 ± 2.3</td>
</tr>
<tr>
<td>t value</td>
<td></td>
<td>6.982</td>
<td>7.823</td>
</tr>
<tr>
<td>P value</td>
<td></td>
<td>0.008</td>
<td>0.009</td>
</tr>
</tbody>
</table>

Figure 2: Visual diagram of sensitivity and specificity of different teaching courses.

Figure 3: Visual comparison of prediction sensitivity of different Taekwondo teaching methods.
intuitively that the comprehensive effect of teaching methods based on nonlinear data prediction is better. Students’ scores in all aspects are significantly higher than those of students using conventional courses, so as to improve the effectiveness of the teaching evaluation system and promote the all-round development of students’ morality, intelligence, and physical beauty.

7. Summary

With the development of the social economy, Taekwondo is a popular sport integrating fitness, competition, entertainment, and art. Taekwondo is popularized in society. Taekwondo elective courses are offered in colleges and universities across the country to activate the old teaching mechanism, which plays a positive role in improving students’ physical quality. The promotion of Taekwondo teaching in colleges and universities plays an important role in cultivating students’ fighting spirit and exercising good physical quality. At present, due to various reasons, there are many problems with the teaching methods and promotion of Taekwondo in colleges and universities, which restrict the popularization of Taekwondo projects.

Therefore, this study uses nonlinear data to predict and analyze the teaching reform of Taekwondo in colleges and universities, stimulate more students’ love for Taekwondo, and bring the new learning experience to students through this teaching method. The overall optimized curriculum system ensures the key to the standardized and scientific implementation of classroom teaching and strengthens the construction of the Taekwondo curriculum and team, which is conducive to enriching their after-school life and improving their self-cultivation. Sports have no national boundaries people of all ages have the right to pursue sports. With the progress of science and technology, it is believed that people will find more learning models for sports and fitness in the future.

Data Availability

The data underlying the results presented in the study are available within the manuscript.

Conflicts of Interest

The authors declare that there are no potential conflicts of interest.

Authors’ Contributions

All authors have seen and approved the manuscript for submission.

References


