Optimized Allocation of Tennis Teaching Resources Based on Big Data

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Abstract: In recent years, tennis has become a popular sport in China, whether in competitive sports or in the daily fitness of ordinary people is widely welcomed. However, due to the late development of tennis in China, the corresponding tennis teaching resources are relatively scarce, and there are problems such as unbalanced allocation. In view of this situation, this paper puts forward the research on the optimal allocation of tennis teaching resources based on big data. This paper makes an in-depth investigation on the current situation of Tennis Teaching under the background of big data, and analyzes various reasons for the backward allocation of tennis teaching resources. In view of these shortcomings, in order to improve the quality of tennis teaching in China, this paper combines the core concept of tennis teaching and big data technology, puts forward measures to strengthen the optimal allocation of tennis teaching resources, and creatively constructs a new basic principle of tennis teaching based on the background of big data. This paper investigates the current situation of tennis teaching development in 30 colleges and universities in China. Through the analysis results, this paper believes that using big data technology to optimize the allocation of tennis teaching resources can effectively improve the imbalance of existing resources and low learning efficiency.

Keywords: Big Data Technology, Tennis Sports, Tennis Teaching, Optimal Allocation of Resources

1. Introduction
At the end of the 20th century, tennis flourished in China. Due to its elegant, passionate and unrestrained characteristics, it has rapidly become a fashion sport. In China, tennis has become one of College Students' favorite sports, and tennis class has become a popular course on campus [1-3]. How to make use of limited field resources, improve the quality of teaching, make students learn and master tennis faster and better, and through extracurricular activities practice, enhance students' self-confidence, improve the health level of college students, tennis as a lifelong sport, is the key to
current Tennis Teaching [4-5].

Tennis has become an important national fitness and competitive sports in China. Therefore, how to enrich the training system of tennis is an important issue in the development of tennis. The application of scientific and technological means and theories to daily training has become the development trend of training science. Big data is the large-scale collection and management of relevant data, including the collection, classification, processing, analysis and display of a large number of relevant data related to tennis competition, training and Teaching [6-7]. And through the big data technology, it can effectively integrate teaching resources and provide a shared communication platform for the exchange of venues, equipment, personnel and knowledge. Big data technology has played an increasingly important role in tennis teaching and resource allocation optimization, and has become an important part of tennis training teaching [8-10].

This paper makes an in-depth investigation and Research on the current situation of tennis teaching. Through the analysis of the survey results, the vast majority of colleges and universities in China have not formed the concept of big data management for tennis teaching, among which there are insufficient policies and related technologies, which lead to the backward situation of tennis teaching resources management in Colleges and universities in China. Therefore, this paper establishes the research on the optimal allocation of tennis teaching resources based on big data. In the research, according to the characteristics of tennis teaching, combined with big data technology, the paper puts forward a feasible scheme for the optimization of existing tennis teaching resources, and lists specific reform measures in the scheme, which effectively improves the ability of tennis teaching resources allocation in China. Through the investigation of teachers and students, the analysis results show that the use of big data technology to optimize the allocation of tennis teaching resources can effectively improve the quality of teaching, as well as the teaching level of teachers.

2. Big Data and Tennis Teaching

2.1 Tennis and Tennis Teaching

Tennis originated in England, but it didn't develop very well in England. In France, it was more popular to some extent. It was not until the United States played a very important role in the world during the First World War that the development of tennis in the United States was initially reflected. Because of the unique status of the United States, this sport has affected the whole world and is known as the world's second largest ball game. With the gradual penetration of western culture in China, many college students have a deeper understanding of tennis, which has set off a wave of tennis on campus. Combined with the definition of tennis teaching, we can define tennis teaching as teachers' purposeful, organized and planned teaching students to learn the basic knowledge and skills of tennis. Students actively and consciously learn and accelerate the mastery of such knowledge and skills, so as to promote the improvement of students' tennis knowledge and skills.

2.2 Big Data and the Allocation of Tennis Teaching Resources

Big data, that is, massive data, refers to the data sets that cannot be captured, managed and processed by mainstream software tools in a certain period of time. Its data scale and transmission speed are very high, a single data set is generally about 10TB, and its structure is not suitable for the original database system. The application of big data in tennis mainly comes from IBM. IBM applies advanced technologies such as analysis, cloud computing, social commerce and mobile to the four Grand Slams open, so that fans can get comprehensive and detailed game data as soon as possible after enjoying high-level competitions. And in recent years, it has been gradually introduced into the field of professional tennis training and teaching, which has become a mainstream way to reform and optimize the traditional tennis teaching resources.

3. Questionnaire Survey on the Current Situation of College Tennis Teachers and Students
Training Under the Background of Big Data

In this paper, through the way of questionnaire survey, we have a certain understanding of the current situation of big data tennis teaching. By connecting with the relevant content of the core concept of tennis teaching discipline, we can guide the design of tennis teaching, which can not only improve the teaching quality of teachers, but also promote the overall development of students, improve the comprehensive quality of students, which is conducive to the cultivation of students' comprehensive ability of tennis training.

In the investigation and research, the investigation and analysis of teachers mainly focus on the shortcomings of teaching in order to objectively understand. According to the investigation of students, the difficulties encountered in the process of tennis training and the effect of traditional teaching methods is evaluated. This time, a total of 30 colleges and universities were surveyed, and the tennis teachers and students were surveyed respectively. A total of 120 questionnaires were distributed to teachers and 360 to students. A total of 480 questionnaires were collected, 475 of which were recovered. The effective rate of recovery was 98.9%. The survey results are shown in Table 1. Based on the analysis of the survey results of the two groups, it can be seen that at present, most colleges and universities in China have insufficient big data management and poor teaching effect. However, due to the lack of effective information feedback mechanism between teachers and students, so that teachers do not grasp the real learning situation of students. Therefore, this paper believes that the development of tennis teaching big data resources optimization can effectively improve the above problems.

Table 1. investigation and Analysis on the training status of tennis teachers and students under the background of big data.

| Teacher                        | Lack of space | Insufficient equipment | Insufficient professional training | Lack of learning and communication |
|-------------------------------|---------------|------------------------|-----------------------------------|-----------------------------------|
| percentage                   | 34.2%         | 41.3%                  | 57.4%                             | 51.9%                             |

| Student                        | Lack of learning resources | Too little training time | Lack of learning and communication | The training effect is poor |
|-------------------------------|----------------------------|-------------------------|------------------------------------|--------------------------|
| percentage                   | 67.8%                      | 37.8%                   | 53.9%                              | 57.1%                    |

4. Discussion

4.1 Analysis on the Causes of the Allocation of Tennis Teaching Resources in Colleges and Universities under the Background of Big Data

The concept lag is still the primary problem in optimizing the allocation of tennis teaching resources in Colleges and universities. Many colleges and universities have no strong awareness of tennis teaching informatization and data application, and cannot deeply understand the huge power of big data on tennis teaching. Secondly, the risk of data security has become a hidden danger in the optimal allocation of college tennis teaching resources. Many colleges and universities information technology application level and network hardware conditions are not optimistic, which makes data analysis difficult and data security risk is large. Finally, the innovation speed of tennis teaching resources is seriously lagging behind, which also affects the process of resource optimal allocation. Therefore, renewing the concept is the premise of optimizing the allocation of tennis teaching resources. The specific problems are as follows:

(1) In college tennis teaching, the optimal allocation of big data resources has not been paid enough attention. In the rules and regulations of provincial and municipal education departments, there are no guiding documents and relevant rules and regulations on the allocation of university tennis teaching
data resources.

(2) The lack of information literacy and the ability to reduce information risk of resource allocation subject is mainly manifested in the poor information literacy of most tennis teachers. College Tennis teachers lack of time and energy in developing tennis courses.

(3) Tennis teaching big data resources development sustainability can be insufficient. The problems such as the imbalance of tennis resources allocation, the speed of teaching resources and the lack of teaching resources have become the obstacles to the development of tennis resources.

According to the analysis of the statistical results in Figure 1, only 20% of the 30 universities surveyed have a clear allocation of big data resources for their tennis courses. 46.7% of the universities are unable to optimize the allocation of big data tennis teaching resources due to backward development technology. In addition, the lack of training venues and teachers also account for 10% and 13.3% respectively the reason is 10%. Through the analysis of the data, this paper believes that the existing unreasonable allocation of tennis teaching resources is caused by various reasons. To improve the current situation, it is not enough to rely on the development of big data. It is necessary to formulate a complete optimization strategy from the policy level.

![Figure 1](image)

**Figure 1.** statistical analysis of reasons for insufficient allocation of tennis teaching resources under the background of big data

According to the statistical results in Figure 2, under the background of big data, the effect of tennis teaching optimization resources from high to low is: 75% of learning resources sharing, 67% of venue allocation, and 52% of teaching staff transfer, 41% of professional training and 32% of joint teaching. Through the analysis, we can see that the use of big data to optimize the allocation of education resources in tennis teaching can improve the quality of existing tennis teaching in many ways. Especially in the exchange and cooperation and free learning method has a unique advantage, which has a positive role in promoting the development of tennis in China.
4.2 Measures to Strengthen the Optimal Allocation of Tennis Teaching Resources

Through the optimization of teaching resources, we can create a good practice environment for students, improve the quality of tennis training, and constantly improve the practical ability of students, so as to lay a good foundation for their future career. Therefore, we need to do the following two things well:

(1) Strengthen the optimal utilization of hardware facilities

The basic condition of network training is its hardware resources. Therefore, in order to realize the optimal allocation of network training resources, we must strengthen the optimal utilization of its hardware facilities. Hardware facilities are the fundamental guarantee and important support for the construction of university training base, and all teaching practice activities are inseparable from hardware facilities.

(2) Strengthen the resource integration among schools

With the rapid development of colleges and universities in China, many universities have established teaching and training parks. Therefore, it is necessary to strengthen the integration of resources among schools on the basis of optimizing the internal resources of schools. In the process of inter school resources integration, it is necessary to establish a coordinated communication mechanism to realize information sharing and communication. When the training resources of colleges and universities are insufficient, they can make use of the resources construction of other schools; at the same time, colleges and universities can also make a joint construction plan of tennis training resources, make use of their respective advantages, maximize the use of resources, and improve the utilization rate of tennis training resources in Colleges and universities.

4.3 Basic Principles of Tennis Teaching

(1) Principles of systematic practice
The systematic practice principle refers to the practice principle which organizes the practice process continuously and step by step. It has two meanings: on the one hand, it means that students can only achieve certain goals through long and continuous practice. On the other hand, it is emphasized that the increase of exercise load should be gradual and orderly, not sudden increase, in order to achieve the desired effect.

(2) The principle of intuition
In tennis teaching, students should get vivid images through various senses, so as to master the basic knowledge, skills and skills of tennis. The general methods are: technical demonstration action, technical action demonstration diagram, technical demonstration video, free hand waving and vivid pithy formula, etc.

(3) Principle of suitable load
In the process of training, the effect of exercise can be achieved by exerting appropriate exercise load on athletes. Sports load is composed of load intensity and load content. Load intensity includes load amount and load intensity. In the training plan arrangement of different periods, the content and measurement of training load should show different characteristics according to different training stages.

5. Conclusions
In the process of studying the optimal allocation of tennis teaching resources based on big data, this paper takes the introduction of big data technology into the current traditional tennis education resource allocation scheme as the main research line. After research, this paper believes that in the future development of tennis teaching, big data technology will play an increasingly important role in teaching reform and resource optimization, and become an indispensable part. Through the investigation of different groups of teachers and students in the school, this paper analyzes their understanding of the optimization management of big data resources in tennis teaching. Combined with the actual needs of teachers and students, this paper puts forward the reform measures of tennis teaching resources optimization based on big data technology. This measure covers the core characteristics of tennis teaching and big data technology, fully integrates the existing teaching resources, and carries out effective distribution management. The survey results show that the vast majority of students and teachers think it is necessary to develop big data management in tennis teaching, and it can really help their learning and teaching work. Combined with a number of survey results, this paper believes that in the traditional management of tennis teaching resources, the use of big data technology for management and distribution can maximize the scientific distribution and reasonable planning, which is an important measure in line with the scientific outlook on development. This research has achieved ideal results and made a contribution to the development of tennis teaching optimization resource allocation field in China.

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