Research on the Application of Big Data and Internet of Things Technology in Extracurricular Sports Training and Sports for Young People

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Abstract. In recent years, with the continuous development of sports in China, the number of young people participating in sports and training has gradually increased. Adolescents are in the growth and development of the body, physical skills, physical fitness in the rapid development and growth, this stage is also the best stage for the majority of teenagers to learn and master the movement. This paper takes big data and Internet of things technology as the means to intervene in youth sports training and sports, in order to provide valuable reference for promoting the basic training of young people in our country.

Keywords: Big Data, Internet of Things, Teenagers, Physical Training

1. Introduction

At present, due to the great pressure of schoolwork, lack of fitness awareness and initiative, most of the sports of teenagers are basically carried out in the school, and the proportion of independent sports outside the school is on the low side[1]. How to ensure the regular development of students' extracurricular sports, especially the independent exercise outside school, is a difficult task. One of the main factors is that it is difficult to track and urge students to exercise, and it is not possible to verify the students' exercise effect[2]. Therefore, how to choose the appropriate methods and means to promote the correct development of extracurricular activities have become an urgent and both task. With the popularity of the Internet of things concept, cloud computing and intelligent sensing technology have penetrated into all fields around us[3]. Thanks to the support of wireless communication technology, we can perceive things in a more intelligent way; by combining with big data processing and analysis technology, we guide practice by transforming perceived information into knowledge[4]. In view of the current situation of youth physique in our country, we try to explore the
role of big data and Internet of things technology in the practice of extracurricular exercise, summarize the basic function model of practical application, and discuss the feasibility, practicability and superiority of intelligent perception technology in the process of assisting youth extracurricular physical exercise, so as to provide a suitable solution to solve the problem of extracurricular sports guarantee for teenagers.

2. Big data and internet of things overview

2.1. Big data
The data collection and preprocessing must first integrate the data into a valid and efficient data set. For data from different sources, they are also re-examined to eliminate information similar to what they want to repeat[5]. The storage and application of big data are fully linked to the related applications of big data after that, in the face of large-scale, multi-source data, the need for more differentiated access interface, and the traditional way of information storage cannot meet this demand. In the present big data environment, the more suitable data storage methods include distributed file system and distributed database[6]. More development departments are also constantly experimenting with new ways to optimize information storage.

2.2. Internet of things
In the concept of the Internet of things, it is emphasized that any object has a connection before each other, and the connection of the age of electronic technology mainly refers to information exchange and information communication. The main core of the Internet of things is the Internet, emphasizing the use of the Internet's network basis for better interconnection. The industrial chain of the Internet of things can also be fully expanded because of the high diffusivity of the Internet of things, including equipment manufacturers, system integrators, network operators and platform suppliers.

3. Application of big data and material integration

3.1. Internet of things to provide analytical raw materials for big data
Nowadays, because of the big data age, more data is collected not directly from human beings, but through sensors. First of all, big data has its unique data types and structures, because the data are collected through sensors, which include structured data that can be processed directly, unstructured data that are difficult to be processed directly, and data that cannot be processed in time, and the value of these data cannot be first analyzed and utilized to be abandoned as dormant data. Secondly, the Internet of things big data has more obvious timeliness and future predictability. As sensors provide data, they all flow through the flow of data.

3.2. Big data brings effective analysis to internet of things
As the more efficient big data for storage analysis, its value embodiment includes the following aspects. Big data can make timely analysis of consumer products to improve marketing methods and more refined marketing. The analysis of big data can also solve the root cause of the analysis failure and save more cost. The full use of big data is to better apply the analysis results to the collection end and optimize the data acquisition part of the Internet of things association. With big data for more
targeted data analysis planning, it is better to study value re-creation in the Internet of things.

4. Big data and advantages of Internet of things in youth sports training

4.1. Promoting rational distribution of youth strength and endurance development

Aerobic training and anaerobic training are two important contents in sports training for teenagers, which can improve their competitive level as soon as possible. If in aerobic training, the training time is short, then it will certainly affect the amount of training and training results. Therefore, it is necessary to make the training plan according to the specific training conformity, the training intensity, determine the training time length, and realize the reasonable arrangement of aerobic training. Marathon runners, for example, have different levels of the finisher's touchdown empty time as shown in Figure 1.

![Figure 1. Average touchdown time ratio for marathon runners at different levels](image)

4.2. Rational arrangement of training rehabilitation for young people

After special training for teenagers, the recovery link is often ignored by teachers. Therefore, coaches must pay necessary attention to the recovery of training and completely change the original concept, from the subjective consciousness of the youth training recovery more efforts. The training recovery plan should not be arranged according to the same content, but according to the training load, training intensity, training time and so on. Teachers must also make accurate judgment on the fatigue degree of teenagers, communicate and communicate with them in time, and judge the fatigue degree through their narration.

4.3. Training for the physical and psychological development of adolescents

With the continuous improvement of sports training in our country, it is very important for young people to carry out scientific early training as reserve force of sports. However, the major of teenagers are in the important stage of long body, and must follow their training load system when making the training plan. The recovery rhythm of young people of different ages after training is different, we must try our best to avoid keeping the body of young people in a high state of tension, and make reasonable and scientific arrangements for the load of their training, which is of great importance,
because it is directly related to the overall growth and physical health of the majority of young people.

4.4. Improving the training methods of sports
The speed and endurance training of teenagers is very important, and it is also a key link to improve their physical quality. However, the current training methods for youth speed and endurance are very simple and more traditional, so it is necessary to change them as soon as possible in order to adapt to the changing scientific movement and keep pace with the development of the times and achieve new development and creation. In endurance and speed training, teenagers are more suitable for high altitude training, which is an effective way to help teenagers’ respiratory and circulatory system bear more load under the same absolute load, and it is also a key link to promote the whole body of adolescents to produce adaptive changes. Taking youth marathon enthusiasts as an example, different levels of participants were pacing as shown in Figure 2.

![Figure 2. Proportion of main step frequency interval](image)

4.5. To realize the harmony of sports and cultural learning
The majority of young people are in the critical period of physical, intellectual and psychological development, for them, in the course of physical training, but also to ensure their learning of cultural courses. Therefore, we must realize the organic integration of physical education as soon as possible, and completely abandon the contradiction of training and learning in teenagers. It is not only the need of physical training but also the need of self-improvement for the young people to improve their culture and cultivate their good character.

4.6. Improving the psychological quality of young people
The psychological quality level of teenagers is different. Some teenagers have strong psychological quality in training center, while some teenagers have weak psychological quality. There are inherent
differences in psychological quality, but the cultivation and training of acquired psychological quality is also very important. This therefore requires that sports trainers take this into account in developing youth training plans. Through the training of youth will, psychological quality, so that they can face all kinds of difficulties, successful completion of the training program.

5. Conclusions
Through big data and internet of things technology to analyze and guide the extracurricular sports training and sports of teenagers, to promote the all-round development of teenagers, to cultivate a young generation with the ability to survive, not afraid of the ups and downs of life, happy body and mind, and can assume social responsibility, with a view to establishing a social environment of self-discipline and harmonious development of everyone. It is the embodiment of the vigorous vitality of modern science and technology in the nation, the symbol of the progress of social civilization and the important aspect of the comprehensive strength of the country.

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