

# Research on the Reform of Sports Training and Competition Organization Model Based on Data Mining Technology

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**Keywords:** Data Mining, Sports Training, Competition Organization Mode.

**Abstract:** Competition is a demonstration of athletes' long-term training results. The organization and management modes of various sports competitions are beneficial to the cultivation and improvement of athletes' abilities and organizational abilities. Some partial system reforms and innovations in the organization mode of athletes' sports training and competitions in China are not enough to completely change the original deep-seated and fundamental problems. Based on the sports training and competition organization model of data mining technology, this paper discusses the problems existing in the current sports training and competition organization model of Chinese athletes, and explores the main ideas and measures for implementing the reform and innovation of sports training and competition organization model.

## 1. Introduction

After nearly ten years of exploration, Chinese competitive sports system has made considerable progress in the reform of management system and operation mechanism. However, we must clearly see that the problems and accumulated contradictions in the sports training and competition system of our athletes under the condition of long-term planned economy are far from being fundamentally solved [1]. Therefore, according to the current competition system, it is of great significance to scientifically and systematically organize the competition activities of related events so as to give full play to the enthusiasm of coaches and athletes, improve the level of sports skills and achieve the expected competition purpose [2]. It is still difficult to set up a virtuous circle and sustainable development system for athletes' sports training and competition. The purpose of building high-level sports teams in ordinary colleges and universities is to train high-level sports talents with all-round development for the country. The goal is to complete the participation tasks of the world athletes' games and major international and domestic sports competitions, and to contribute to the national Olympic glory winning plan and the sustainable development of competitive sports [3].

With the rapid development of computer technology and its in-depth application in various fields, it is possible to organically integrate different aspects of athletes and apply scientific training theories and advanced training methods to the management of athletes' sports training. Data mining technology is theoretically feasible to apply in the decision support system for athletes' sports training [4]. In order to better carry forward the sports culture, give full play to the role of physical fitness and exercise the athletes' sports spirit, it is necessary for schools to carry out sports training and competition among athletes. Under this background, this paper studies the reform of athletes' sports training and competition organization mode.

## 2. The Footholds and Main Ideas of Reform and Innovation of Sports Training and Competition Organization Mode for Chinese Athletes

### 2.1. The Foothold of the Reform and Innovation of Our Athletes' Sports Training and Competition Organization Mode

Sports competitions are the core work of the organization and management of sports competitions and are jointly attended by competition managers, athletes, referees, spectators, volunteers, news media and other participants in sports competitions. The essence of sports

competition organization and management activities is to manage sports competition activities, effectively improve the quality of sports competition products, and achieve the goals and objectives of sports competitions. It must be admitted that the sports training and competition system, like other social systems, has historical inheritance [5]. Therefore, the reform of our athletes' sports training and competition organization mode must be based on the judgment of basic facts.

Chinese athletes' sports training and competition organization model was established under the historical condition of planned economy. It is not perfect and has many unreasonable factors left over from history. These unreasonable factors increasingly restrict the development of Chinese athletes' sports training and competition organization under the market economy system. The organizations of all levels of sports competitions can promote the rational allocation of sports competition management resources by determining their respective job responsibilities, authorities and coordination of mutual relations, so as to achieve the best system functional benefits and effects of the sports competition environment and complete the competition process. In terms of athletes' sports competition system, the low-level operation of athletes' sports competition system does not meet the needs of athletes' sports development, nor does it conform to the development rules of competitive sports and the training rules of competitive sports talents, which seriously hinders the further improvement of athletes' sports level in China [6]. The organization of competitive sports in the school mainly depends on the non-governmental organizations such as the athletes' association and the clubs. Almost all the athletes participate in these non-governmental organizations, such as football, volleyball, baseball and other clubs. All kinds of clubs make detailed activities and training plans every semester and put them into practice. Therefore, the organization and management of the sports competition is essentially an organization process to realize the best sports competition environment and complete the final goal of the competition through the reasonable allocation and organization of auxiliary resources such as human, financial, material, time, information and so on.

## 2.2. The Reform and Innovation of Sports Training and Competition Organization Mode for Chinese Athletes

The research of data mining integrates the technologies and achievements of many different disciplines, making the current data mining methods show various forms [7]. Knowledge discovery data mining technology is a completely different mining technology from statistical analysis data mining technology, including artificial neural network, support vector machine, decision tree, genetic algorithm, rough set, rule discovery and association order. The system uses knowledge discovery data mining technology, which selects the corresponding model to analyze the data according to the user's input, and further enriches the knowledge base and model base according to the new knowledge and model generated by the data mining algorithm. The system adopts an intelligent decision model and adds data mining and problem solving modules. The system functional architecture diagram is shown in Figure 1 below.

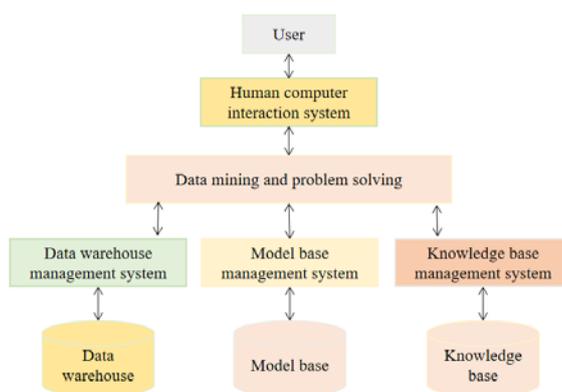


Figure 1 System function architecture diagram

With the gradual deepening of the reform of the market economy system, the national government departments have changed their functions, and it is impossible to invest a large amount

of resources to directly hold amateur sports training and competitions for athletes. The competition committee system was a successful form of competition organization before the Olympic Games was held in China. China successfully held many Asian Games, East Asian Games, World Athlete Games and National Games in this form, with obvious Chinese characteristics. Britain is the originator of developing sports clubs. Sports clubs are organized by fans themselves and are called voluntary associations or voluntary organizations. The original sports clubs were some local entertainment organizations, but now they have been transformed into strict competitive sports organizations, providing sports facilities, training, competitions and social services for their members. Macroscopically plan and guide the construction of high-level sports teams in ordinary colleges and universities, and gradually form a sports training and competition system in ordinary colleges and universities with prominent focus, distinctive features and optimized resource allocation.

### **2.2.1. Taking the Reform of the Organization Mode of the Amateur Sports School of Athletes Into the Ordinary School System as a Transitional Measure**

It is beneficial to solve the contradictions accumulated in the long-term operation of amateur sports schools that cannot be solved by themselves. Establish and complete the preparation teams of competition venue management teams and non-competition teams, prepare venue operation plans and test competition plans, establish the preparation team of territorial government venue peripheral support work and prepare venue peripheral support plans, and make overall preparations for the test competition. It forms a huge foundation; On the second floor are various sports teams. The top level consists of excellent athletes. Clubs are the basic places for people to participate in sports training and competitions, and national sports associations are responsible for formulating rules and managing competition activities. It is helpful to draw a clear line between the functions of government administrative departments and to handle the relationship between "running sports" and "managing sports". With the change of government functions from "directly running sports" to "managing sports", the government generally does not directly control sports training and competition organizations and their activities, and does not set up relevant government departments. The training of school athletes is unique. There is no special school sports team in the school. The school has set up a club. The best athletes in the club represent the school in various competitions and at all levels. The athletes train hard for the honor of the school and to obtain excellent sports results.

### **2.2.2. Athletes Amateur Sports School Into the Reform Direction of The General School System Organization Mode**

Objectively speaking, there were some unreasonable factors at the beginning of the formation of Chinese athletes' sports training and competition organization model, coupled with the inertia of the government management mechanism and the lag of reform, which brought obstacles and difficulties to the reform of athletes' sports training and competition organization model. In this case, we should grasp the key points of the transitional period. Under normal circumstances, no amateur sports school for athletes invested and operated by the state will be set up. The amateur sports schools that are too small to invest in will be withdrawn in time. Actively increase the intensity of the combination of sports and education, more athletes amateur sports schools to carry out the combination of sports and education pilot, to prepare for its inclusion in ordinary schools. Complete the formation of venue teams and peripheral support teams, complete all levels of staff and organize induction training; We will complete the operation of venues during the Games, the organization of competitions and the support of peripheral services. We will activate cultural life through competitions, improve the health level of athletes, discover and train outstanding sports talents, test and improve the level of after-school training in schools, and promote the development of school sports.

### **2.2.3. The Combination of Physical Education and Physical Education is the Key to the Systematic Organization Mode**

Developed countries in Europe and the United States, which are at the forefront of industrialization, have not yet set up special government administrative departments to carry out athletes' sports training and competitions. Instead, they are carried out by educational departments or non-governmental organizations and organizations. This reflects a holistic view of education and thus avoids the dilemma we are currently facing. Although China has continuously strengthened its efforts in reforming athletes' sports training and competition organization mode, it has successively issued some measures, put forward some methods, and carried out some partial system innovation experiments, such as mobilizing social forces to run sports teams. Besides the traditional understanding and understanding of the purpose and significance of athletes' sports, it also pays more attention to the cultivation of sports competitions for human modernization. Assist the State Education Commission and individual associations in organizing various national athlete competitions and other sports activities; To promote exchanges with school sports organizations around the world; Participate in various sports competitions and sports exchanges for international athletes. The practice of the development of modern competitive sports shows that in order to achieve a higher level of athletic performance, there must be sufficient training time. To master certain cultural and scientific knowledge, one must also have certain cultural learning time. This brings sharp contradictions of "reading and training" to athletes.

#### **2.2.4. Establish a Perfect Association**

According to internationally accepted methods, an association of grass-roots training units shall be established to act as a coordinator between the state and the grass-roots organizations. Viewed from the point of view, the athletes' sports training and competition organization system should be an important component of the national athletes' education organization system, and whether the athletes' sports training and competition organization mode is reasonable. The athletes' sports competition organization is different from the ordinary competitive sports competition, and the method of fixing the season time and competition items should be adopted. Although some new achievements have been made in the reform of our athletes' sports training and competition organization model in recent years, whether it is to mobilize social forces to participate in sports training and competition or to set up sports teams in ordinary schools, it is only a partial change and does not fundamentally solve the deep-seated problems. Athlete's Sports Training and Competition Association is a non-governmental management organization in which all sports teams voluntarily participate. It does not form a relationship between leaders and being led, but a relationship of equal consultation and coordination. It is a coordination organization serving the common interests of all grass-roots sports teams.

### **3. Countermeasures for Training Athletes' Sports Training and Competition Association**

#### **3.1. The Government Should Give Full Play to the Main Role of Cultivating and Developing Athletes' Sports Training and Competition Organization Associations**

We will implement the pilot project of the athletes' sports training and competition organization association in a wider scope. Associations can be established in grass-roots schools and clubs. With the gradual deepening of the reform of the market economy system, the national government departments have changed their functions, and it is impossible to directly organize athletes' sports training and competitions with a large amount of resources. At the same time, the state's control over personal and family life, education and work choices is weakened. Combination of sports and education is not only conducive to solving the contradictions accumulated in the development and operation of amateur sports schools, but also helps to draw a clear line between the responsibilities of relevant departments.

Data such as athlete's sports achievement table and physical health questionnaire are collected and entered. Then a series of cleaning and conversion are carried out on the collected source data to clear invalid and erroneous data. Then a multi-dimensional dataset based on the data source is established in SQLServer to facilitate data mining. The basic physical condition of athletes is taken

as the fact table, and four related dimensions are selected. Each dimension table has its own attributes, and the dimension table and the fact table are related through dimension keywords. The star model is shown in Figure 2.

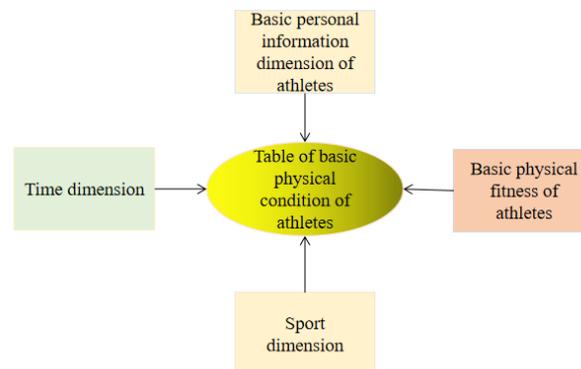


Figure 2 Star model diagram

The data warehouse management system is designed for decision support rather than transaction processing, so every time a user wants to conduct data mining, only the data useful for decision support is extracted from the operating environment and input into the data warehouse. After the input is completed, the data in the data warehouse becomes read-only and can be modified only under special conditions. It is necessary to change the old government-led sports training and competition organization model of athletes with "vertical connection" as the structural relationship, and replace it with the sports training and competition organization model of athletes with "horizontal connection" as the structural relationship, which cultivates social interests and interests.

### 3.2. To Define the Position of the Association of Athletes' Sports Training and Competition Organizations Through Legislation

It is necessary to establish the macro, meso and micro structures of the government, the athletes' sports training and competition organization association, and grass-roots schools or clubs, to clarify the positioning of the three, and to clarify the respective functions of the government sports management department and the athletes' sports training and competition organization association. When reforming the athletes' sports training and competition organization mode, there should be a systematic view, a holistic view and a comprehensive view. The factors affecting the reform of athletes' sports training and competition organization mode are complex, including political, economic, social, historical, cultural and people's psychological and behavioral factors [8]. Athlete competition is multi-dimensional, multi-level and has many benefits. Different value systems can be concluded from different angles and perspectives, with the characteristics of synchronicity and diversity. In addition, amateur sports school athletes spend most of their time in sports training and less time in cultural knowledge learning. When they leave the stadium, they will inevitably lack market competitiveness due to their single personal skills. The organization and activities of the association should be regulated by law, its rights and interests should be protected, its status, nature and functions should be confirmed, and it should be supervised and managed by legal means. This requires supporting legislation on the basis of the Sports Law.

### 3.3. Strengthen the Self-Construction of Athletes' Sports Training and Competition Organization Association

In order to meet the needs of the reform of the education system and the sports system, make competitive sports better coordinate with the economic and social development, promote the quality education of athletes, and improve the comprehensive quality of sports culture, body and morality, it is urgent to speed up the reform of the sports training and competition organization model of athletes and the representativeness of the sports training and competition organization association. The association should develop its members across regions and systems so that its members can

cover all grass-roots training units within a certain geographical range. Improve the connection between high schools and universities, confirm the training objectives of athletes, introduce market-oriented operation to promote the establishment and improvement of incentive mechanism and management system of athletes, introduce the reform of social resources system, form a multi-level and diversified competition system, and speed up the legislation of athletes. The extensiveness of information. Athlete's Sports Training and Competition Organization Association should grasp and release the latest information of athletes' sports training and competition in a timely and accurate manner through contacts and exchanges with grassroots members and peers at home and abroad. In terms of the scope of power and responsibility, the government administrative departments such as the Culture and Sports Bureau should transfer the management authority of amateur sports schools to the education department and change the management mode of the government directly running sports. Through the comparative study on the cultivation of university competition market between China and western developed countries, five countermeasures are put forward, such as establishing organizational structure, unifying admission standards, strengthening student status management, cultivating university competition market and weakening the management function of sports system.

#### **4. Conclusion**

To construct the organization model of amateur training and competition for athletes, focusing on its "new" and "wide" and new adaptation to the socialist market economy; Widely face and attract more athletes to participate in sports training and competitions. It is future-oriented, but it must be based on a profound understanding of reality, the spirit of the times and social development. We should further learn from the successful experiences of developed countries in Europe and the United States, establish a training mode of combining sports and education with sports clubs, take the law as the criterion, standardize the management of sports associations, and promote the smooth development of various sports competitions. The advantage of the service provided by the association of athletes' sports training and competition organizations is that it brings together a group of experts who love, are familiar with and understand athletes' sports training and competition business, and their knowledge and skills can enable all grass-roots units to receive good service.

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