Analysis of the Relation between Athletes'physical Ability and Technical and Tactical Play Based on Data Mining

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Abstract: for Competitive Sports, the Ultimate Goal of Sports Training is to Create Excellent Sports Results, and the Physical Fitness of Athletes is the Most Basic and Controllable Factor to Improve Competitive Ability. with the Accumulation of Test Data, It Has Become More and More Difficult to Manage and Analyze the Test Data of Athletes by Manual Processing. It is Particularly Important to Solve the Problem of Athletes'physical Training Scientifically and Correctly Handle the Relationship between Physical Training and Technical and Tactical Training. Only through the Correct and Reasonable Use of Sports Techniques and Tactics Can the Physical Training Level Be Brought into Full Play and the Physical Training Level Obtained Can Be Fully Displayed on the Field. Data Mining is the Process of Extracting Valuable Knowledge from a Large Amount of Data by Using Machine Learning Methods. in This Paper, the Classification and Association Rules in Data Mining Are Used to Analyze the Relationship between Athletes' Physical Fitness and Their Skills and Tactics.

1. Introduction

For Competitive Sports, the Ultimate Goal of Sports Training is to Create Excellent Sports Results, and Athletes' Physical Fitness is the Most Basic and Controllable Factor to Improve Competitive Ability [1]. the Development Trend of Modern Competitive Sports Demands Higher and Higher Physical Fitness of Athletes. It is the Common Goal of Both Domestic and Foreign Physical Training to Continuously Improve the Scientific Level of Physical Training and to Maximize the Potential of Athletes. How Well the Technical and Tactical Level is Played in the Competition is Influenced by Many Factors, of Which Physical Ability is One of the Most Important Factors [2]. with the Accumulation of Test Data, It Has Become More and More Difficult to Manage and Analyze Athletes' Test Data by Manual Processing. the Traditional Data Processing and Database Management Functions of Computers Can Be Used to Solve the Management Problem of Physical Fitness Test Data [3]. Data Mining Uses Algorithms to Extract Information and Patterns. It is a Step in the Knowledge Discovery Process. Data Mining Technology Extracts Valuable, Previously Unknown, Implicit, and Potentially Useful Knowledge from Large Amounts of Raw Data. Therefore, It is Very Suitable for the Analysis of Athletes' Physical Fitness Test Data [4].

Data Mining Extracts the Information and Knowledge Hidden in It from a Large Number of Incomplete, Noisy, Fuzzy, Random Data [5]. the Frequent Exchanges of Various Competitions Also Make Coaches and Athletes Confused about Their Problems in Technical and Tactical Level and Physical Training [6]. Scientifically Solving the Problem of Athletes' Physical Training, It is Especially Important to Correctly Handle the Relationship between Physical Training and Technical and Tactical Training. There is Still a Gap between China's Physical Strength Research and Actual Combat and Foreign Countries. the Status of Physical Fitness in Today's Competitive Sports is Changing [7]. This Paper Uses the Classification and Association Rules in Data Mining to Analyze the Relationship between Athletes' Physical Ability and Skills and Tactics.

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2. Analysis of Determinants of Sports Competitive Ability

2.1 Characteristics of Technical and Tactical Ability

Movement technology is the most fundamental means by which athletes can create excellent sports results. The effect of movement technology is directly related to sports results. Athletes must have very comprehensive physical qualities, including speed, strength, flexibility, agility, speed endurance and general endurance. Athletes must not only have comprehensive skills, but also have special skills. They must be skilled, accurate and practical in technology. Technical and tactical ability is an important factor that affects athletes' competitive ability, is a winning weapon, and plays an important role in improving athletes' competition results. Technology and physical fitness training are closely linked and mutually promoted, but also have contradictory aspects. In terms of tactical characteristics, athletes are required to be able to organically combine tactical methods with competition formation, have good competition awareness, and coordinate development in overall offensive and defensive tactics [8]. Without a highly developed level of physical fitness, it is impossible to play excellent sports skills in fierce competitions, thus achieving effective tactical coordination. Only when athletes use sports techniques and tactics correctly and reasonably can they give full play to their physical training level and make the obtained physical training level fully manifest on the field.

2.2 Physical Characteristics

In sports training, the development of athletes' various sports qualities, the improvement of physiological functions and the change of body shape should be taken as important contents of physical fitness training. This paper proposes a data mining-based modeling method for athletes' muscle biomechanical effects in sports training. Table 1 shows the power and fatigue index during repetitive anaerobic sprint. Table 2 shows relevant physiological indexes during repetitive anaerobic sprint.

Table 1 Power and Fatigue Index during Repeated Anaerobic Sprinting

Peak power (W)	Average power (W)	Minimum power (W)	Fatigue index
787.1	622.9	517.3	408.2

Table 2 Relevant Physiological Indicators during the Process of Repetitive Anaerobic Sprint

Blood lactate (mmol/L)	Heart rate (b/min)	RPE
11.1	172.1	14.7

The purpose of physical fitness training is to improve the physical fitness of athletes through training, so that athletes can reach the best physical fitness state and play the best competitive level during the competition. The morphological structure of human organs, tissues and cells is the material basis of their functions. Certain structures have certain functions, and functional states can also have corresponding effects on morphological structures. The two are interdependent and restrict each other. Sports quality is a variety of basic sports abilities that the body displays during activities, usually including strength, endurance, speed, flexibility and agility. A good respiratory system and blood circulation are the necessary physical foundation for athletes to maintain their ability of continuous exercise in long-term competitions. The key to solve the problem of athletes' physical fitness index optimization is to make clear the correlation between each index item. The improvement and innovation of action technology can only be carried out within the limits set by the competition rules, which makes it impossible for action technology to change indefinitely, and its changes can only be shown in details.

3. Analysis on Training Characteristics of Athletes

In personal technical training, one should make one's special skills more prominent and pay attention to the specialization of training contents. The formation of athletes' techniques and tactics needs physical fitness as the basis, and different techniques and tactics need different physical fitness. As the constituent factors of athletes' physical fitness structure, physical form, physical

function and athletic quality have an important influence on the completion and quality of competition techniques and tactics. A good level of physical training is the basis for mastering and improving sports techniques and tactics, and only by mastering sports techniques and tactics can the physical training level be brought into play more effectively, so that the obtained physical training level can be fully displayed in the competition [9]. In training, athletes should be consciously trained to think independently during the competition. Attention must be paid to developing athletes'intelligence and training their ability to solve problems in a complex situation and in a short period of time. The level of development of these physical factors will directly affect the rhythm of the game and the coordination of muscular strength of various parts of the body in the process of technical and tactical completion. The basis of tactical cooperation is not only exquisite technology and good consciousness, but also physical fitness.

Athletes'high coordination greatly affects the quality of movement and the improvement of technical level. After treadmill training and electromagnetic field intervention of joint injury, two routine indicators are tested to reflect the metabolic changes in the process of joint injury repair. As shown in Figure 1, there was no significant change in serum ALP and platelet levels.

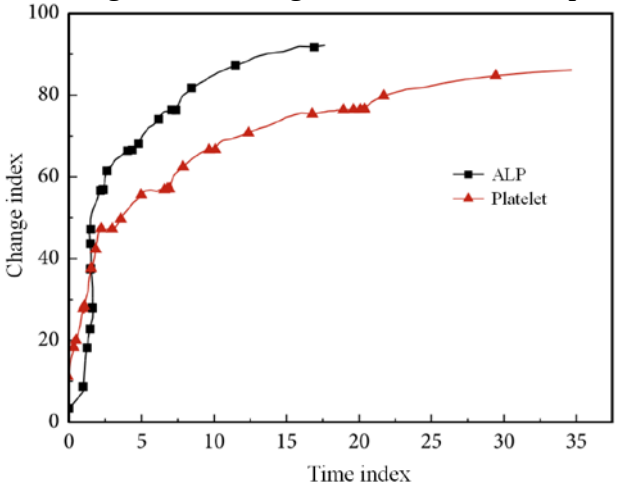

Fig.1 Alp and Platelet Data in Serum

With the rapid development of the technical and tactical levels of various group projects, the competition has become increasingly fierce. Different levels of athletes can focus on developing their physical fitness according to scoring methods during physical training. Most athletes exercise leg strength on fitness equipment. At this time, the upper limbs are completely relaxed. The longer the athletes exercise in the leg strength, the less the upper limbs exercise, so the leg strength is stronger, and the upper limbs A weaker phenomenon. Physical training requires the integration of skills and tactics, mental and psychological training. The coaches should emphasize the normative nature of the basic technical movements of the athletes' competitive sports and the rationality of the actions in the tactical implementation, and standardize the basic competitive sports techniques in the training. Through the design of the action mode, it builds a bridge between physical fitness and technology to improve the athletic ability of athletes. In normal training, athletes must not only strengthen the training of technology, tactics and physical fitness, but also organically combine the three. From the perspective of sports training, technical, tactical and physical training are the main contents of sports training.

4. Conclusion

In high-level competitive competitions, each athlete's position division is very clear, which in addition to the need for technical and tactical arrangements, another important reason is the physical constraints. Regardless of which event athletes in the process of sports training, they strive to use various effective training means and methods to transform their body shape, improve the level of body function, so as to improve health and develop sports quality. Technology and physical training are closely related, mutually reinforcing and contradictory. The proportion of training should be

arranged reasonably, and physical training and technical and tactical training should be effectively combined. For high-level athletes, physical training should be promoted to improve the level of skills and tactics. For the same sports program, the research on the individual physical characteristics of athletes should be strengthened, and the principle of differential treatment should be applied to arrange targeted physical training for different athletes' individual characteristics or different position characteristics. Only by using sports technology and tactics correctly and reasonably can the physical training level be more effectively exerted, so that the level of physical training that has been obtained can be fully demonstrated on the field.

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