

The application of Computer Information Technology in the analysis system of volleyball game technique and tactics

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Abstract: Volleyball is a very strong confrontation, with a series of basic techniques, complex tactical routines of the collective project. In order to improve the technical and tactical level of volleyball match, it is necessary to study the basic situation, law and development trend of the game. As the technical and tactical analysis of volleyball matches requires high professionalism and relatively complex data, it is necessary to actively explore the computer-aided application strategy. Through the establishment of volleyball game skills, tactics analysis system, provide more comprehensive and effective after the game for the learners of the skills and tactics evaluation model, in order to make up for and improve the level of volleyball game.

Key Words: Computer Information Technology; volleyball match; technique and tactics; analysis system; application strategy

The development of volleyball can not be separated from the support of sports scientific research, and the statistics, analysis and evaluation of game techniques and tactics are important contents of sports science and technology. Through the statistics of on-the-spot skills in volleyball matches, primary source can be obtained, and based on scientific mathematical analysis, objective reasons for winning and losing matches can be found, and problems existing in matches and ordinary training can be found, therefore, the methods and approaches to solve the problems are put forward. With the continuous development of volleyball and the further development of modern science and technology, scientific training has become a guarantee to improve the level of competition and obtain excellent results.

1.THE APPLICATION VALUE OF COMPUTER INFORMATION TECHNOLOGY IN THE ANALYSIS SYSTEM OF VOLLEYBALL GAME TECHNIQUE AND TACTICS

The computer information technology provides better conditions for volleyball training and reduces many limitations, which has far-reaching significance for volleyball events and the better development of athletes. The computer information technology can record the whole course of the volleyball training, and process the video through the analysis software, so as to master the volleyball training situation and point out the problems and omissions in the training, give effective suggestions to help athletes optimize their training and improve their strength. The computer is very intelligent. It can record the training and competition of the volleyball player without missing anything. It can provide effective video recording data and facilitate the analysis and viewing of the video. Not only can the computer record video, but also can effectively save and watch at any time. When athletes need to watch their own volleyball training video, analysis and grasp the lack of their own training, so as to carry out targeted training and improve their own level and ability. So computer information technology plays a very important role in volleyball player training and should be fully utilized.

Computer information technology is used in volleyball training, it not only reduces the workload of the staff, but also for the reasonable processing of video, providing convenience for coaches and athletes to use. In the volleyball

training, can use the computer information technology to record and process. First of all, computer information technology can be used for volleyball training video recording. Recording volleyball training is very important, it is the basis for video technology analysis, but also very useful video data. The computer may carry on the complete recording to the volleyball training according to the artificial setting and the request, thus provides the true reliable video data. Secondly, computer information technology can be used for volleyball training video storage. Volleyball training video storage also has its important significance, it can allow athletes and professional analysts to watch and analyze, thus improving volleyball training methods. As long as the storage space is large enough and the storage settings are correct, the computer can effectively store the volleyball training video for analysis and use. Finally, computer information technology can be used for volleyball training video processing. For video data processing is part of the analysis, is essential. The staff can classify, edit, cut and so on the volleyball training video according to the need, so as to choose to make the video materials more in line with their own work requirements. Therefore, the computer information technology can be used for volleyball training video recording and processing, for the analysis of volleyball training video to facilitate.

The computer information technology can be used not only in the recording and processing of volleyball training video, but also in the segmentation and synthesis of volleyball training video, to help the staff more effectively grasp the training status of athletes, so as to develop a more appropriate training plan. For the volleyball training video segmentation and synthesis can allow staff to extract their own needs of information, through more professional and targeted analysis to master the effects of volleyball training, thereby improving the volleyball training athletes, improve the strength of the players. First of all, computer information technology can be used for volleyball training video segmentation. With the development of computer technology and the update of software, there are a lot of software for video segmentation. Staff in order to improve the efficiency of the work, so that volleyball training video more in line with their own analysis needs, the video can be segmented to extract their own video clips, and then effective processing and analysis. Secondly, computer information technology can be used for volleyball training video synthesis. In the volleyball training, the recording of the volleyball training video is constantly updated. By analyzing the training videos of athletes in different periods, we can more accurately grasp the status of the athletes' training progress and the deficiencies in the training, thus more reasonable arrangement athlete's training intensity and the progress. For the effective synthesis of video can provide better viewing and analysis of the staff, therefore, the synthesis of volleyball training video is indispensable. Therefore, in volleyball training, computer information technology can be used for video data segmentation and synthesis.

2.THE APPLICATION CONTENT OF COMPUTER INFORMATION TECHNOLOGY IN THE ANALYSIS SYSTEM OF VOLLEYBALL GAME TECHNIQUE AND TACTICS

Volleyball skills and tactics is an important part of volleyball, in volleyball training to train students skills and tactics, can strengthen the athletes in training or competition in the use of volleyball skills. Volleyball techniques and tactics mainly refer to the comprehensive embodiment of the volleyball player's ability of observation, judgment, reaction, thinking and rational use of tactics in sports, it also reflects the players' understanding of the law of volleyball movement. Improving the skills and tactics of athletes can make the coordination between athletes more tacit understanding, thus effectively improve the fighting capacity of athletes. Technology, tactics can be the whole team together, so that athletes in training or competition to better play a personal advantage, successful completion of the task of the competition.

Strengthening the training of athletes' skills and tactics can effectively strengthen the skills in volleyball and improve the flexibility of athletes in volleyball matches. The technique, the tactics may let the student in the actual

competition understands the teammate each activity the tactical goal in time, thus completes the cooperation in the activity to cooperate with the work. The technique and tactics can make the players seize every opportunity to move flexibly and change the attack and defense correctly in the volleyball match, so as to bring the systematic tactics skills into play on the match field in time and grasp the best attack and defense time, not in the face of unexpected circumstances in the game and panic.

The training of technique and tactics can help the athletes to know the whole situation, observe and analyze the state of the match, make correct judgment and plan the next step. Train the skill of Operation Mobilization, tactics can let the athlete discover the activity intention of the opponent in time, not be subjected to the opponent everywhere. Technical, tactical training, can improve the sense of teamwork. Volleyball is a collective sport, need each member of the close cooperation and tacit cooperation to complete. This requires each athlete has the overall situation consciousness, takes the collective benefit as the most important, in the competition and the teammate's behavior maintains the identical, forms a group, faces the opponent's attack together. In the game to play the strengths and weaknesses, complementary advantages for the team to play a high level of technology and tactics to ensure that.

The analysis of match technique and tactics is an important basis for coaches to make scientific training plan and on-the-spot technique and tactics decision. However, traditional methods are inefficient in dealing with massive data and can not meet the requirements of real-time, so coaches can only rely on the surface information of small data sets and personal subjective experience to judge and guide, science and accuracy are not high. This study is to design a volleyball game technology and tactics analysis system based on data mining technology, and prove the availability of the system through testing.

3.THE APPLICATION OF COMPUTER INFORMATION TECHNOLOGY IN THE ANALYSIS SYSTEM OF VOLLEYBALL GAME TECHNIQUE AND TACTICS

On the basis of a detailed analysis of the technical and tactical characteristics of volleyball, this paper studies and develops the data collection system, intelligent analysis system, decision support system and multimedia analysis system based on data mining. According to the scientific theory, the diagnostician uses the scientific method to evaluate the volleyball players' technical application effect in the competition, so as to find the gap and deficiency, and then from the technical action and tactics to judge the reasons for the gap and shortcomings, so as to provide a reference for the prescription, improve technical action and tactics. The establishment of the concept of volleyball technical and tactical diagnosis points out the direction for the research and practice of volleyball technical and tactical diagnosis, and defines the scope, which is helpful to grasp and examine the technical and tactical diagnosis system from the macro-level.

The technical and tactical diagnosis system of volleyball belongs to the artificial system, which has the systematic characteristics of integrity, hierarchy and similarity, the structure includes: Technology application effect subsystem, collective tactics diagnosis subsystem, individual tactics diagnosis subsystem, technology action diagnosis subsystem and diagnosis result output subsystem. Except the output subsystem of diagnosis result, the other four subsystems include: index system, diagnosis method and Operation Steps. The five subsystems with different functions and performances operate according to certain rules and procedures, and form an organic whole, it avoids the disadvantage of "Seeing trees but not forest" caused by the independent running of each diagnosis part, and makes the diagnosis result more accurate and reliable.

In the aspect of data collection, Data Volleyball, a popular statistical analysis software of volleyball matches in the

world, has contributed to the collection of technical and tactical data of volleyball matches, it creates a process-based scripting language. However, the data collection mode of the software is single (supports keyboard collection), and the design of the script description language is not efficient enough. In this paper, a scheme of improving the speed of data acquisition is proposed. In the aspect of collection mode, it combines the mouse collection with the keyboard collection, and improves the speed of recording by looking for frequent scripts, using mnemonics to encode a series of action patterns in volleyball matches, and then through script parser to infer the script, so as to improve the recording efficiency. The experimental results show that the method can effectively improve the recording speed. In the aspect of data analysis, this paper analyzes the difficulties in the application of data mining algorithm in the technical and tactical analysis of sports games, puts forward three schemes for mining the key factors of winning a volleyball match, and applies the relevant data mining algorithms respectively, by calculating the reliability difference of the system, the problem of searching for the transformation process of the key movements in the volleyball match is solved, and the problem of searching for the association combination in the volleyball match is solved through the classification of the scripts and searching for the frequent item sets, by simulating linear regression and using least squares, the problem of predicting the success rate of coordination in volleyball matches is solved. And the design experiment shows the correctness and feasibility of the above scheme.

In the sub-system of technology application effect, the comprehensive evaluation method is used to evaluate the technology application status, and the evaluation result is more scientific and reasonable. In the collective tactical diagnosis system, using the volleyball position coordinate marking system developed by this research, the players' position, Spike Point and other coordinates are recorded, the space-time relationship and the effect of each link in the formation are analyzed synthetically, and the diagnosis is more detailed and effective. The individual tactical diagnosis adopts the combination of quantitative diagnosis and qualitative diagnosis, and evaluates the individual tactical from three aspects of rationality, effectiveness and accuracy. In the technical action diagnosis subsystem, the expert system method and the small sample technique diagnosis method are combined to make the diagnosis more simple, rapid and reliable. By using the diagnosis system of volleyball technique and tactics, a series of problems in volleyball technique and tactics can be found, the diagnosis method is simple and effective, which realizes the requirement of fast feedback, the diagnosis result is detailed, reliable and effective, it can give the reference to the improvement of volleyball technique and tactics, solve the problems brought by the artificial analysis which is mainly used at present, and enable the coach to analyze the match technique and tactics data more accurately, so as to provide a scientific basis for coaches to conduct reasonable guidance and decision-making.

4 CONCLUSION

Sports computing is a process of applying data mining technology to sports field, especially in competitive sports. In recent years, sports computing has become a hot research area in the field of computer science. With the growing influence of volleyball, the use of computer technology and other high-tech means to improve the training and competition level of athletes has become a common understanding. Some countries or regions with high level of sports have invested a lot of funds to carry out research in this field. However, the main problems in the research of sports computing in the field of volleyball match are: the data collection can not meet the real-time requirement well, meanwhile, for the analysis of massive data, it is also a difficult point to choose the suitable data mining algorithm and establish the suitable analysis model.

REFERENCES

- [1] Dang Tingting. The current situation and countermeasures of the application of modern information technology in college volleyball teaching [J]. *Contemporary Sports Science and Technology*, 2015 (9): 118, 120.

- [2] Zeng Shengyu. Research on the application of modern information technology in volleyball teaching in higher vocational colleges [J]. Value Engineering, 2014 (11): 258-259.
- [3] Li Yi. Exploration on the new changes of volleyball teaching in ordinary colleges and universities under the environment of information technology [J]. Industry and Technology Forum, 2014 (22): 158-159.
- [4] Ma Yunfeng. Modern information technology assists high school volleyball teaching [J]. Reading and Writing (Education and Teaching Journal), 2015 (8): 100.
- [5] Chen Qing. On the Application of Modern Information Technology in Vocational Volleyball Teaching [J]. Contemporary Sports Science and Technology, 2014 (35): 109, 111.