Research on the Application Value of Sports Video Analysis Technology in Ice and Snow Sports Teaching

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Abstract: The movement video analysis technology is the data tracking technology that is developed through the comprehensive data analysis. During the process of motion tracking research and development, we should pay attention to the analysis of computer data collection and do a good job of data conversion and technical application. In winter snow and ice sports, the application of video sports technology can effectively improve the analysis of athletes' data movements, accurately judge the actual image standards, strengthen the analysis of precise guiding ideas and improve the application of snow and ice sports teaching technology. This paper will study the standards of sports video data analysis and analyze the value model of implementing effective technology teaching application in snow and ice sports.

With the application of modern network technology, more and more sports teaching activities begin to use sports video data analysis. Through data analysis, the actual movement status of athletes can be judged and the movements and habits of athletes can be timely mastered. By means of physical training, students and teachers can analyze technical movements after class, strengthen deliberation and research, improve accuracy, and thus improve the training effect. At present, the data storage, time delay and playback of action video shooting is mainly adopted to analyze data. In addition, we can use the method of the simulation of data and image based on the demands of actions to facilitate the study of students and teacher through the display of high-speed video data.

1. Sports Video Data Collection and Application in Snow and Ice Sports Teaching

1.1 Video data collection, storage and sorting

According to the actual sports of ice and snow athletes, we can collect data through the computer to implement effective interconnection combined with the content of data technology movements. Through automatic data recording, storage and recording, the basic storage of video data is completed. Video is recorded by high-speed equipment. According to the action characteristics of relevant projects, data collection is carried out in combination with the installed video data equipment to enhance the accuracy of data collection.

For example, in ice skating, three high-speed motion cameras are set up at different angles. According to the process of video recording and data collection, the computer sends instructions and stores instructions to complete the storage and analysis of the data. The user retrieves the data information through the data terminal to obtain the valuable basic data of the action data.

The process of data collection includes two parts, namely, the shooting, storage and sorting of basic athletes' movements; Through the computer data instruction, we can obtain the collected data information. According to the data Settings in the computer, it can automatically filter the valid data

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and then output the computer through the high-speed port to facilitate the storage and retrieval of the hard disk.

At present, the main systems are DF09 system made in Germany, sm3d7.2 system in Switzerland and DVC system in the United States. We can install the software on the computer and obtain video data through data shooting. Through the application of the software, it can assist in more convenient analysis of data information, obtain effective action video data and facilitate subsequent collation and induction.

1.2 Video motion analysis

In the analysis of sports video, effective training is carried out according to the collected data of video and the comparison of the data. Teachers need to analyze the process and key ideas of competition teaching according to the actual training course content and strengthen the research on the convenience and rapidity of sports video software training. In daily life, it is necessary to strengthen communication between ice and snow athletes and teachers, analyze the possible particularity of video action data in ice and snow sports, obtain video data through practical operation, carry out drawing analysis on athletes' action data and implement panoramic synthesis, movement superposition and comparative analysis. Through the acquisition and analysis of human motion parameters, the effective motion track is determined while the analysis is beneficial to the better motion mode of athletes.

In the process of sports training, accurate data training can be repeated through the feedback of technical image data. The stored data can be compared and analyzed to determine the trajectory standards of different athletes and movements. We can make a reasonable judgment through the sports movements. Moreover, we will also be able to superimpose and compare the movements of the students, analyze the differences between the movements, strengthen the judgment of the key points of the movements to improve the precision and effectiveness of the movements of the ice and snow athletes in winter sports.

Data images can be drawn by using motion video technology. We can analyze the data table through speed, angle, acceleration, length, interval, motion integrity, strength display, etc., and compare the changes before and after with the data. Through the application of video data information tracker, we can compare data for many time and then a large number of analyses can be made. In this way, the same movements of one athlete can be analyzed in different periods, conditions and weather changes. In addition, the teacher can analyze the athlete's joint position, angular velocity, starting speed, etc., and study the guiding ideas and suggestion in line with the students' training in order to help the students complete more effective training. We can also draw all the data into a library. According to motion simulation design, we cam adjust the structure of data analysis, determine the standard of motion tracking mode, analyze the track of athletes and the track standard of elite athletes, and then apply it to the technical training of athletes.

Table1. Collection and analysis of motion video

Data recording	data storage	Data integration	data transmission	Data aggregation
Data analysis	Data compilation	Generate image	Draw renderings	3D simulation

2. Analyze problems of ice and snow athletes through sports video data

The computer equipment can be connected to the Internet and then we can set up cameras in the

different machine positions through the single or many unit module operation and adjust the network data system platform to realize the synthesis data summary and the conformity. However, when ice and snow athletes play outdoors, the equipment also needs to be set up in an outdoor environment. The equipment is composed of electronic components. When at the low temperature of about -25 ℃, it is easy to cause battery failure and video sensitive function decline. In the sports video data analysis of ice and snow athletes, it is necessary to protect the sports camera equipment against cold and timely adjust the integrated standard of the data terminal. Through the analysis of unit mode, data communication and data matching application are obtained while accurate data collection and network sharing are realized.

The application of sports video technology is not sufficient. Not all ice and snow athletes can use equipment in the teaching and training process. Faced with the requirements of equipment cost and technical mode improvement, it is necessary to conduct accurate analysis of data, pay attention to the accuracy and professionalism of action video data analysis, strengthen the training and application of computer video data and constantly improve the comprehensive level of computer data.

3. Development Trend of Sports Video of Snow Sports in the Future

Ice and snow sports are with more fun that can only exist in the winter. According to the characteristics of snow and ice athletes' teaching needs, teachers should make detailed analysis of the athletes' movements, study the movements and strengthen the analysis on the accuracy and consistency of the movements. In sports video technology, the communication between teachers and students can deepen the understanding of movements, which is conducive to the actual operation of outdoor movements. Through the analysis of video motion, the defects and deficiencies of movements can be quickly grasped, corrected or improved in time, leading to the great improvement of the accuracy of movements.

Table 2 Development trend of sports video of snow sports in the future

Equipment upgrading	Technology upgrading	Shooting skills improvement	Computer hardware upgrade	Computer software upgrade
Network configuration improvement	Function upgrading	Analysis standard improvement	Increased sensitivity	Data integration resource promotion

4. Conclusion

To sum up, the video is an extremely important and effective technical training mode in sports training of the ice and snow sports. Through the communication between teachers and students, we can strengthen motion video technology pattern drills. The video action, movement mode, teaching method and so on will be comprehensively integrated to change the exercise standard of the traditional teaching mode. Moreover, we should pay more attention to the promotion of professional technology and training and enhance the efficiency of teaching and implementation.

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