The Application of Computer Technology in Sports Training

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Abstract. Computer technology is more and more important in sports training. This article through sports training data processing and analysis, meanwhile present the build of virtual training scenarios through examples of the construction, and the construction of sports training aids systems, elaborate the research and application of computer technology in sports training.

Introduction

In the 21st century, computer technology and network technology in all walks of life have been widely used, but it is also increasingly play an important supporting role in sports training. Especially in scientific sports training, systematic, standardized effect is more obvious [1], not only to improve training efficiency and athletic performance, but also to avoid some sports injuries. Making sports training had very subjective exercise, can objectively training, have to say is a leap of sports history.

Data processing and analysis of sports training

Sports training process is a fast, complex systems process, so in this process, collecting relevant data, classification, retrieval, storage, analysis, processing is an important step in scientific training. Especially computer technology, network technology, wireless communication technology together data collection, database systems and data mining technology is being taken seriously and studied many sports circles[2].

Data Acquisition. In sports training, data collection is very important. It is directly related to real scientific subsequent data processing, so when the data collection, should ensure the authenticity and validity of the data. In different sports training, we can use different methods to collect. For example, in sailing, you can use the remote real-time visual guidance system for real-time data collection through a variety of sensors, video image acquisition. In weightlifting training, through the Java computer programming tools to collect back strength, muscle strength and other data. In the shot put training, you can throw the whole process of information comprehensive and timely acquisition, through a computer algorithm to throw in the direction, intensity and wind detailed acquisition.

Data Storage. After the collection of accurate data, it relates to the stored data. There are various types of collected data, digital images, as well as video and complex professional data. Therefore must be unified data format, it is important to provide the basis for subsequent data processing. You can use DAO data access objects and DATA space combining data access technology, which not only can store text, images and video data can also be stored in special data format. The most important thing is, not only can be stored on a PC, Pocket PC can also be stored on the PDA, it is very convenient reference.

Data processing. Data mining technology to sports training is a big help, through data mining from a large, incomplete, noisy, fuzzy data collection, the extraction is overlooked but is potentially useful information and knowledge extraction and processing , to avoid the irrational aspects of sports training and methods, whichever useful data as a basis for training. For example, in sports training, you can use the BP neural network technology, the relationship between the various physiological indicators of athletes and sports load between data mining, you can compare and evaluate them.

Achieve the function.

1) Help coaches quickly query and filter the information needed.
2) Automated preparation helps coach, coaches simply enter the title of the first few training sessions' code, and the computer can quickly display the desired content.
3) The information needed can be printed out.
4) Usually, you can always increase the accumulation of data; enter the new information, adding new content.
5) Facilitate the exchange between different coaches; promote the improvement of the quality of training.

Virtual build situational training

In sports training, it can take advantage of computer vision; modern bio-mechanics build a virtual context. For example the use of VFW SDK and digital image technology in shooting training, which built in a virtual environment, as long as the athlete training to make a shot when you press the action, as usual, the computer can take advantage of multi-threading technology, using projection method and interlaced scanning technologies accurately determine the location of each of the aiming point action image, more commendable is that technical analysis can be made.

In Chinese trampoline team put into a three-dimensional human motion system is through the computer's virtual scenarios for precision motion capture and analysis [3]. And at the State Sports General Administration of Sports Simulation Laboratory in the virtual environment achieve balance training. In this environment, athletes and athletes simultaneously operate virtual training, and virtual athletes do is a standard exercise, the two video display on the same screen, and can automatically analyze the movement parameters of the virtual athletes and athletes, so that we can intuitive, detailed, scientific and accurate comparison of the standard action and the athletes perform virtual athlete records the difference between the action in order to improve the athletes to improve training effectiveness. Especially in the meter hurdles and swimming, due to the application of virtual scenarios, so made a historic breakthrough.

Application of Computer Management System in Training Program

Significance of management training programs. Training plans are for the future training activities in advance to make the theoretical design. Formulate scientific training program is an important part of scientific training, is the trainer to achieve the most basic goal of the training is the most important work. Develop training programs introduced in the work of the computer, not only can improve the efficiency of coaches, reducing the statistical work takes a lot of time, and can take advantage of the computer's functions, quickly grasp, analyze, compare athletes training status, physical condition, sum up experience, complete system to retain valuable training program. Reasonable writing short and long term goals, arrange appropriate exercise load, so that athletes consume after reasonable physical, get the best excess recovery, to obtain the best results by training; through physical parameters such as endurance, speed, strength, flexibility sex, full load and intensity determination, physical ability and quantitative evaluation of athletes training effect, which made recommendations to improve the training work; technical aspects of the sport, the athlete technical movement parameters such as angle, height, center of gravity position, speed, etc. enter the computer , and with the best data comparison and analysis with the knowledge of biomechanics, sports technology found shortcomings and weaknesses, provide the basis for the coaches to develop training programs.

The Design Principles of application of computer management system in training program. Various sports have different terminology, therefore, to be implemented on a computer training program, the important task of system analysis is to standardize different data formats, and standardized terminology should follow precise, universal, simple principles. In order to make different levels of coaching can easily use the computer to develop training programs, the most important thing is to give them an easy to understand, easy and reliable as possible to reduce the

input of Chinese characters in the user interface. Therefore training programs on a computer implementation, each step of the operation have adopted Chinese menu prompts, when the contents of the input selection menu prompt. About to have a good professional terminology specifications, data and other first term bank deposit, when used in addition to the content of the individual is not fixed content, most use to enter the highlight to select the desired content can be. Thus, as long as the user is using simple computer training, you can easily separate training planning work.

The consisting of computer management system in training program. Athletes are basic information files: including personal circumstances, training and resume sports, important competition results and so on. Information files, leadership, coaches, athletes and other interested persons can keep abreast of important domestic and foreign athletes' basic conditions and competition results and other general information data.

Skills Information Archive: athletes, including body shape parameters, physiological and biochemical indexes, sports injuries and other information and data, the use of information and data tracking athletes everyday skills training, help coach a reasonable development of training programs can also provide a scientific basis for Athletes.

Specific technical information file: it is a regular statistical data athletes training situations, from the special technical information, and technical training results can be observed movements systematic development of athletes, or adjust the training program could be developed based on the results of the athletes training [4].

Training Program Information File: the role of collaborative writing coaches day period, monthly, quarterly and annual training plan, training plan and make inquiries and report output.

Systemic function: 1) Achieve a functional integration with the database system dominated: In order to use, easy to operate, can make all the functional modules concentrated under a menu, each module both independent and interrelated; Its main features include: input and modify each types of data, various data processing, according to the required output various contents. This research method is widely used in various parts of the body during exercise, stress or stress situations organ analysis, injury prevention and diagnosis, evaluation and collision experiments among sports.

2) Training methods can be called at any time: training methods in the development of training programs, the use of hotkeys be called up from the library and view training methods, and can be placed on a new training program. In developing training programs can also use hotkeys to keep the coaches think worth retaining credited training methods training methods library.

3) Handle different types of data with screen: training program for quantitative statistical data at any time automatically, the user can exercise according to the statistics, re-edit, correct quantitative data. At the same time, does not affect other non-quantitative data already entered.

4) Menu prompts for the content of the training program: in the development of training programs, in addition to training purposes, training evaluation, the names and other necessary characters, other content prompted by the menu, highlight bar to select the input. Greatly reducing the amount of user input, improve the speed of the development plan.

5) Develop training programs: In developing training programs, according to the analysis of the specific circumstances of the training program object, you can call the appropriate method of training methods from the library, the method, the content can be displayed menu prompt method for coaches choice, but the computer can also be automatically selects content based on the results of the computer analysis plan. The entire system can help coaches develop daily, weekly, annual training program, but also for the training program queries and reports, curve output.

Building training aid system

Training refers to the construction of the auxiliary system combines human biology, ergonomics, human physics, as well as optical and electrical integration of intelligent testing technology, video processing, computer graphics technology, network technology, database, data mining and other information technologies, sports training research and development support system gradually each item. The biggest feature of this system is a decision-making function, it can provide valuable information and a virtual learning environment for coaches and athletes, sports training process can

provide a powerful means of control and protection.

Shandong Province rowers in training used such systems. Both provide scientific guidance for coaches reference, but also reduce the blindness training decisions. Current national windsurfing team adopted a personnel database and windsurfing Sail Training Expert System. The system is object-oriented programming language by Delphi, training indicators SQL database systems, Photoyshops image processing techniques when national windsurfing team and developed training abroad Yachting adopted, athlete's physical fitness, basic techniques, etc. comparative indicators provide scientific reference for coaches and athletes.

In order to study the movement of the human body, the human body can be simplified as multi-body system, the body's muscles, tendons and other soft tissue treatment for each rigid body forces and moments between. H a nav an 15 proposed a rigid body model. The model of the human body is divided into head, upper torso, lower torso, thigh, leg, foot, arm, forearm, hand, a total of 15 rigid body, you can simulate a large number of general human action. For the needs of different problems, many experts and scholars studied according to their major problems and objectives, from different perspectives on the human body for a reasonable simplification varying degrees, have proposed different multi-body model of the human body.

Conclusion

In summary, IT has been trained in all areas of sports played a role, but now many studies have mainly stayed at the research stage, and not a lot of practical application in the field, which is there are many factors, such as many sports people do not have a certain IT literacy, so some obstacles exist at the time of application, of course, also part of the product is not particularly mature on the application, so the effect is not satisfactory. In the future, on the one hand, to further strengthen the training integration and accuracy of the data acquisition system, accelerate the research and development of sports training aid system[5], on the other hand, it need sports persons to improve the ability to handle information technology.

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