Analysis of the Innovative Application of Virtual Reality Technology in Physical Training of Colleges

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Abstract. In order to realize the effectiveness and scientificity of college physical training, we can integrate modern technology into college physical training, and promote the intellectualization and standardization of college physical training. In view of many problems that need to be solved in college physical education training, this paper designs a physical education training virtual simulation system by combining the application advantages of computer virtual reality technology, introduces the system functions and overall framework in detail, designs the corresponding functional modules, and expounds the advantages of computer virtual reality technology in college physical education training in detail. The research results show that it is necessary to apply computer virtual reality technology in college physical training, which can effectively promote the development of college physical training teaching, and promote college students to strengthen physical training.

1. Introduction

As a practical and comprehensive teaching activity, physical training in colleges, once well-trained in physical education, will inevitably bring positive effects to students’ curriculum learning. Especially in the era of knowledge economy, how to use modern technology to realize the intelligent training of physical education in colleges and universities has become a focus of high attention of teachers and students. In order to realize the standardization, scientificness and intellectualization of physical training in colleges and universities, the advantages of computer virtual reality technology through its wide application in all walks of life have attracted the attention of colleges and universities, and the application of computer virtual reality technology in physical training in colleges. Although, since the virtual reality technology has brought a certain expected effect to college physical education teaching, it has improved the effect of college physical education training, how to give full play to the advantages of computer virtual reality technology and highlight the professional, scientific and normative nature of college physical education training is still a problem worthy of continuous
practice and exploration. Therefore, it is of great practical significance to study the innovative application of computer virtual reality technology in college physical training [1-3].

At present, many new concepts such as "Internet +" and virtual reality technology are booming. The virtual simulation teaching resources generated by the combination of virtual reality and education have characteristics such as simulation, security, intelligence, interaction, and efficiency. Physical training provides an important complement. Therefore, combining the realistic and informatized training goals of physical training to take advantage of virtual reality technology to form a "three-stage" virtual simulation teaching and training mode that integrates basic training, judgment training, and simulation training, and realizes virtual simulation training mode. It will help to improve the effect of physical training of college students and improve their physical fitness and health.

2. The necessity of applying virtual reality technology in college physical training

2.1. Virtual reality technology has certain application advantages

Computer virtual reality technology has the characteristics of interactivity, multi-perception, imagination and immersion. In virtual reality, the computer simulates various scenarios of the reality and transforms some of the simulated scenarios under human control. Under the effect of virtual reality technology, technicians can selectively simulate non-existent scenes in real life. Under the virtual reality technology, with the help of computer software and hardware, various sensors, and the collection of analysis actions and images, some non-specific information can be judged and processed, so that computer virtual reality has the characteristics of multi-perception. In addition, the computer simulation reality technology also has the characteristics of imagination and immersion. Under this technology, non-existent scenes are simulated in order to expand people's imagination space and let people immerse them.

2.2. Problems in college physical training

In the current college sports training, not only there are more training subjects, but also less training time, so that the training effect is not ideal. The traditional method of college physical training is mainly based on the requirements of the new curriculum standards, focusing on the improvement of the overall level of students' physical education, but it is difficult to attach importance to the comprehensive quality of students. It also has a relatively monotonous and boring training method, so that the results of physical training in colleges are not obvious. In China's college sports training, students' learning enthusiasm is not high, and the evaluation criteria are not clear, so that the results of college sports training are not outstanding. However, in college physical education, by making full use of the advantages of virtual reality technology, it has greatly broken through the traditional training methods and simulated physical education courses with virtual reality scenes. This has stimulated the enthusiasm of students in physical training and also avoided Some improper operations have largely prevented unsafe accidents in sports training. The application of virtual reality technology in physical education in colleges and universities breaks the traditional training mode of sports, and enables students to change from passive training to active training, which not only achieves the purpose of physical training, but also meets the internal needs of students from physical perspective To a large extent, it stimulates students' creative consciousness and challenge ability.

Therefore, the application of virtual reality technology in college sports training, if we takes full advantage of the advantages of computer virtual reality technology, will definitely bring unprecedented help to college sports training.

3. Innovative application of virtual reality technology in college sports training

College physical training should fully recognize the characteristics of virtual reality technology, and make full use of its advantages and technologies, and apply it appropriately in each process of college physical training. Through the characteristics of the above-mentioned computer virtual reality technology and many problems in college sports training, this article believes that the innovative
The application of virtual reality technology in college sports training can be designed from sports training simulation systems, standard sports technical actions, and virtual sports. The training environment, creating a good atmosphere for physical training, breaking through time and space constraints, and implementing interactive training in physical education in colleges and universities are as follows:

3.1. Design a sports training simulation system and build standard sports technical moves

Generally speaking, the key to college sports training is to require a lot of training time and technical moves, and to make sports moves as standard as possible in sports training. At present, more and more colleges and universities have attached importance to the important advantages of virtual reality technology, and have continuously constructed a simulation system for physical training in colleges and universities in order to more comprehensively analyze the entire content of athletes’ sports training and analyze the problems of athletes’ skills existing in the movement are analyzed, and a more standardized and scientific sports training plan is formulated for the athletes in the policy system, so that the athletes can strengthen the training and then improve the overall effect of sports training. In this regard, the sports training simulation system relies on virtual reality technology, and college physical education teachers need to understand and master the relevant knowledge and use methods of virtual reality technology, and combine students’ physical education status to teach students according to their aptitude. More importantly, college physical education teachers can also add some standardized physical movements to the physical training simulation system, and decompose the movements under the action of the computer. At this time, students can not only have a deeper understanding of their own training actions, but also communicate with classmates and teachers in a timely manner in the sports training policy system, so that the effect of sports training is gradually enhanced. To analyze sports in more detail

The training movements can be constructed in the simulation system with the help of virtual reality technology. By comparing the movements with the actual sports training, we can find out the difference between the students’ sports training and the standard sports movements. differences, and constantly correct the movements of sports training according to standard movements, and correct sports training movements to the standard level in the shortest time.

3.2. Build a virtual sports training environment and create a good sports training atmosphere

The innovative application of virtual reality technology in college sports training should actively construct a virtual sports training environment and create a good sports training atmosphere. Because virtual reality technology is mainly combined with computer systems to construct a virtual environment, that is, a space imagined by students, so that students can perform physical training in such a virtual environment. Full of enthusiasm and strength focus more on sports training. At this time, college physical education teachers must build a surreal sports training environment with the help of virtual reality technology according to the different environments in which students are interested. Of course, teachers can also add some pre-sports training in the virtual trial training environment, and require the class to actively participate in sports events in the sports training simulation system, and reward the top three students each week. Under various rewards, the enthusiasm of students for sports training will gradually increase, and the true meaning of sports training will be felt in the sports training in a competitive atmosphere, and it will also increase in the long-term competition environment for sports training. Your own level of sports.

3.3. Break through time and space constraints to achieve remote interactive training of college sports

The application of virtual reality technology in college sports training breaks through time and space constraints, and realizes interactive training of college sports in different places. Because of the interactive nature of virtual reality technology, at this time, you can perform off-site interactive exercises for physical training. Because some colleges and universities have not only lacked typical sports training programs, but also lacked some advanced sports training programs, once some students were very interested in these sports programs, they could not conduct corresponding sports training.
For this reason, using the sports training simulation system, students can choose any sports for training, and learn the sports courses of other colleges and universities under this system, which greatly enriches the students' sports training programs and also helps improve students' sports level and cultivate students' sports spirit.

Design of virtual simulation system for physical training in Colleges and Universities

4. The design of virtual simulation system for college physical education training should be analyzed

According to the needs of college students, it is mainly to provide a carrying platform for each functional module, so that students participating in the training can use each module to enter different virtual situations on this platform, and students participating in the training can interact with virtual situations through virtual reality equipment, and the platform will store Students' training process and results, and analysis and evaluation, so as to improve the level of students' sports. Starting from the top-level design, this paper designs the functional framework, architecture and module grouping of the virtual simulation system of college physical training [4-5].

4.1. System functions

Based on the improvement of physical education level and physical quality of college students, combined with virtual reality technology, the virtual simulation training system must be virtualized, scene oriented and practical, which requires it to have the functions of virtual situation construction, training equipment simulation, instant scenario generation, training record analysis and evaluation.

4.1.1. Virtual situation construction function

Virtual situation is the main space for students to learn and train, so the simulation effect of virtual situation directly determines the effect of training. First of all, it is necessary to generate realistic virtual training environment through computer technology and virtual reality technology; secondly, it is necessary to set different virtual training situations for different training subjects and different training stages, so that students can choose according to their own needs and carry out different operation behaviors selectively, so as to achieve efficient training purposes; finally, through the virtual reality equipment, the students can enter into the virtual situation, a high sense of immersion, interaction and a real simulation training scene, which can help the students to grasp various sports movements quickly.

4.1.2. Simulation function of training equipment

The platform needs to model and simulate these equipment, so that the characteristics and parameters of the simulation equipment are the same as the real sports equipment.

4.1.3. Real time scenario generation function

In order to be close to the real situation in sports training, the platform must have the ability of scientific and reasonable scenario and the ability of real-time and efficient editing and generation, so that the virtual training site has variability.

4.1.4. Training record analysis and evaluation function

First of all, students can watch their own training videos at any time to find problems and then correct them. Secondly, the specific data quantification standards are made for the quantifiable indicators. According to the quantification standards, the recorded student training data (training duration, training results, etc.) are intelligently evaluated to generate the training data report of students. Finally, through the data analysis technology to analyze the training data report of the trainees, according to the analysis results to optimize the intelligent evaluation standard of the platform.
4.2. System framework
The system architecture, hardware support and software support are included in the overall framework of sports training virtual simulation training system.

4.2.1. System architecture
According to the functional characteristics of virtual simulation training system for sports training, the system is divided into four parts: management control subsystem, functional module and virtual simulation training platform. Connect with each other through the internal server, so that trainees can access the system for training, as shown in Figure 1. The management control subsystem is the main center of the virtual simulation training system of sports training, which mainly has the functions of virtual situation construction, real-time guidance, interactive interface, module optimization, scenario resource base update, etc. The function of virtual situation construction refers to that the system generates the corresponding scene according to the training module selected by the students or teachers, and can sense the actions of the students through the input device of the system terminal, so as to realize the interaction between the students and the virtual situation, so that the situation can change realistically according to the activities of the students. The real-time adjustment function includes two contents. On the one hand, according to the training effect reflected by big data analysis module, adjust the training curriculum for students; on the other hand, adjust the virtual practical training for students to make the training close to the real situation. The interactive interface function refers to the access interface provided by the system for the students using the terminal, which enables people and the server to exchange information. Students can access the login system through the interface, and can browse and search the learning content, understand their own learning progress, training results and other training conditions.

Figure 1. Overall framework of virtual reality simulation training system
Module optimization function means that the system will automatically optimize the function of the module. For example, to make the assessment scoring mechanism of the assessment and evaluation module more scientific and reasonable, detect whether there is conflict between the training sub modules and eliminate the conflict.

The renewal function of situation resource pool refers to the repetitive training of students. On the one hand, it is easy to produce a sense of boredom and fatigue. On the other hand, the old situation has been familiar to the students, which makes them know the "plot development" during the training, and it is difficult to further improve the training level. Therefore, it is necessary to regularly create new scenarios to enrich the resource pool, so as to arouse the interest and enthusiasm of students and improve the training effect.

Virtual simulation training platform is a real training environment and virtual reality equipment that enables students to enter the virtual situation to carry out training and realize interaction with the virtual situation. Virtual reality devices are generally divided into input devices and virtual reality output devices. Input devices generally include gesture recognition devices, motion capture devices, voice perception devices, while output devices generally include virtual reality head mounted displays, data gloves and other devices.

5. Conclusion
In summary, due to the characteristics of interactivity, multi-perception, imagination, and immersion, the application of virtual reality technology in physical education in colleges and universities has broken the traditional training mode of physical education, making students change from passive training to active training. Therefore, colleges and universities should make full use of the advantages of computer "virtual reality" technology, connect with the current state of physical training in colleges, design sports training simulation systems for students, construct standardized sports training actions in the system, and construct virtual sports training scenarios to create sports training atmosphere, enrich sports training items, and achieve as far as possible interactive training of college sports. Only in this way can we fundamentally improve the effect of physical training in colleges and universities, cultivate students' sports spirit and improve their sports level, and then promote the sustainable development of college physical education and teaching.

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