The Conception of Application of Computer Virtual Reality Technology in Sports Training

Yue Ren¹,*, Jianchen Li²
Capital University of Physical Education and Sports, Beijing, 100091, China
*renyue@cupes.edu.cn

Abstract: In recent years, with the rapid development of the economy and the rapid progress of science and technology, computer technology has also made great progress, and the computing power of the computer has been improved unprecedentedly. The progress of computer technology has also brought technological innovation and new human-computer interaction experience, and a large number of frontier technology has emerged in the field of computer. Virtual reality technology is one of the outstanding representatives. At present, virtual reality technology has been applied in many industries and has played an important role. Athletic sports will also be promoted by the spirit of "science and technology to serve the Olympic Games" of the State Sports Administration. Among them, all kinds of advanced sports science and technology, including virtual reality technology, will also penetrate the daily training and scientific research of competitive sports, and provide scientific and technological support for coaches and athletes in various sports to create better results. Therefore, this paper will focus on the advantages of virtual reality technology, and study the possibility of combining virtual reality technology with the training of many competitive sports events. So as to promote the development of the physical education industry, bring fundamental changes, and promote the progress of sports in China.

1. Introduction
Virtual reality technology can simulate all kinds of things in real life, such as image, action, and posture. Through the simulation of virtual reality, technology to achieve the interactive experience between athletes and machines. Through virtual reality technology, athletes can use electronic devices to feel like real-world scenes. This feeling is very real, real-life can make the sound, action and even the taste of existence can be perfectly presented to the device users through virtual reality technology. The application of virtual reality technology is mainly to achieve three parts of the operation. The first is to simulate by computer. things that exist in the real world. The second is to make things in the virtual world interact with athletes. and finally virtual construction through sensors. Through this kind of interactive experience, athletes can get the experience of being on the spot. Virtual reality technology makes the computer interaction mode of the past has been innovated, the communication with the virtual world no longer through the computer interface, but in the computer equipment simulation of the virtual environment to complete the interactive operation and experience. This is a major breakthrough in the original technology. Virtual reality technology can change the surrounding environment, thus making the experience of athletes more real.
2. Characteristics of Computer Virtual Reality Technology

With the continuous development of science and technology, computer equipment has made great progress. Today, the computing power of computer equipment has been improved unprecedentedly, which has laid a solid foundation for the application of computer virtual reality technology. According to academic research, we usually summarize the characteristics of VR technology into the following four aspects:

2.1. Interactive characteristics

The realization of virtual reality technology should be based on the computer as a device carrier to simulate the real world in the virtual world. Therefore, the virtual scene can be transformed through the user's related operations, to achieve the purpose of connecting the real world and the virtual world[1]. Such connections and influences are two-way and interconnected. The virtual world can present information to the users in the real world through audio and video equipment, and the users in the real world can also influence the virtual world through certain operations. Virtual reality technology is an interactive technology with strong interactivity. Therefore, the virtual reality technology breaks through the limitation of the real environment and simulates the scene which does not belong to the real world. This is of great help in many areas.

2.2. Perceptual characteristics.

In order to realize the complex scene application of virtual reality technology, a variety of devices are needed to complete it. These include sensors, computer hardware, and software. Through these complex devices, virtual reality technology can collect the image of the user's action and the surrounding environment and analyze it, so as to make the corresponding judgment and feedback. Besides, the virtual reality technology will collect the difficult to observe information such as force field, magnetic field, touch, and so on in the process of practical application, and process the collected environmental information, so as to present to the user a more real experience. Through these complex sensing devices, virtual reality technology is endowed with multi-perception properties.

2.3. Conceptual characteristics.

Concept is related to interactivity. Both conceptual and interactive need to rely on computer technology to simulate the virtual scene. But in the actual use process, the two are different, reflecting different thinking logic and development direction. Interactivity is mainly to provide a fixed scene to the user so that the user can complete a certain operation in the scene. On this basis, the concept further expands the thinking space, diverges people's thinking, and creates new scenes that do not exist through people's imagination[2].

2.4. Immersion characteristics.

Immersion is the true uniqueness of virtual reality technology. The virtual scene can be simulated by virtual reality technology. The virtual scene can be omnipotent, all-encompassing, can imitate everything that can be imagined and can bring users a very real experience. thus satisfying the user's desire for all interaction, so that the user can immerse in it.

3. Application of Virtual Reality Technology in the Course of Multi-sports Training

Computer virtual reality technology has been successfully applied in many fields. In the field of physical training, if it can be applied well, it will become a major change in the physical education curriculum. The process of physical training is no longer simply imparting knowledge, but comprehensive educational practice training. This kind of change breaks the process of teaching sports training from coach to athletes and makes sports training become a scientific and efficient training mode. The contents in Table 1 are several common ways of applying virtual reality technology in the field of sports. And the training of competitive sports is no longer as boring as before, but become more complex and vivid. Virtual reality technology has been successfully applied in many fields,
according to these successful cases we can imagine the application of virtual reality technology in sports training activities.

Table 1. Several common ways of applying virtual reality technology in the field of sports.

| Apellation       | Explicate                                                                 |
|------------------|---------------------------------------------------------------------------|
| Form 1           | Virtual environment                                                        |
|                  | Improve the adaptability of athletes by simulating the environment.         |
| Form 2           | Virtual audience                                                           |
|                  | Adjusting athletes' competitive state by establishing virtual audience.    |
| Form 3           | Virtual adversary                                                          |
|                  | Improve athletes' competitive ability by simulating different opponents.   |

3.1. Application in Aerobics Training

Aerobics is a complex sport. In this sport, we can see gymnastics, dance, music, and other elements, enjoy the health and beauty of the human body. It is both a sport and an art. Therefore, in the training of aerobics, it puts forward high requirements for athletes' body coordination and flexibility of movement and also puts forward higher standards for the divergence and innovation of athletes' thinking ability. But such unique requirements also pose many problems. For example, in the past training work, a lot of emotional content, the coach is difficult to pass through the language and body to the athletes. It is also difficult for athletes to understand the intention of the coach so as to master the content to be learned. And the presentation of virtual reality technology is more rich and diverse, can be carried out through video demonstration of related actions, but also with the action synchronization display related notes. According to the actual needs, the athletes can also be rerun the parts that are not clear[3]. By the coach to provide the corresponding auxiliary explanation, the athletes can have a more sober understanding of what they have learned, in mind to leave a clear impression of the standard movements, so as to quickly, comprehensively, and accurately grasp the technical essentials. At the same time, through virtual reality, technology-related equipment to practice can better attract the interest of athletes, so that the process of learning athletes more active, more hard, learning efficiency. Virtual reality technology can also monitor the movements of athletes in real-time. If the athletes' movements are found to be wrong, they can be warned in time, remind the athletes, and analyze the reasons for the mistakes of the athletes, so as to correct the wrong movements of the athletes pertinently. In the process of practice to avoid because the learning process is not solid resulting in action errors.

3.2. Application in volleyball training.

In the past volleyball training work, mainly through the coach demonstration to make the athletes master. The technical essentials of volleyball. But this process is very inaccurate, athletes through the naked eye are difficult to observe the coach's clear movement of the whole process. This situation seriously affects the effectiveness and speed of volleyball training, which makes the actual process of volleyball training will emerge a variety of problems and difficulties. The emergence of virtual reality technology has changed this status quo so that volleyball training has appeared a new change. For example, virtual reality technology can be used to simulate body movements when explaining the main points of action to athletes. And through the simulated body movements, so that athletes understand the key to the movement. At the same time can use a variety of vivid demonstration, so that athletes know where the strength of the body, how much strength to use, how much range can also let athletes through the virtual reality technology simulation of human movements to perceive the correct essentials.[4]. Athletes can also synchronize with VR technology to complete the action, thus using VR technology to correct the action.
3.3. Application in basketball training
In the past basketball training work, the coach's narration and demonstration operation occupy the main part of the course. With the progress of technology, virtual reality technology can also play an important role in basketball training. Virtual reality technology can not only help coaches to make courseware, but also guide athletes in the course of action exercises[5]. In order to achieve both to teach athletes knowledge, but also lead athletes to practice the main points of action. In the actual operation process, the need is to build a virtual model through the relevant equipment. The players are then asked to complete the basketball exercises in the field built by the VR equipment. while computing opportunities monitor the entire training process. This process is easier and faster than coach-led training, reducing the stress of the coach and making the athletes freer. Athletes with different talents can practice according to their own schedule, and calculate the opportunity to monitor the learning progress of each athlete and provide corresponding supporting assistance, so as to tailor the learning content for each athlete, so as to teach students according to their aptitude[6].

3.4. Application in the training of trampoline project
Virtual reality technology also has a unique application in the trampoline. Virtual reality technology can build a simulation platform in the computer. Then the athlete's body data and movement data input into the system. This allows real-time computer analysis of the movements of athletes. Then the digital model of the whole process of the trampoline is established. These actions can also be broken down after modeling. It can even decompose the movements of different parts of the athletes. Then the data is re-integrated to get a virtual model of athletes training[7].This model can make the training effect of athletes more intuitive. The coach can better take the athlete as the research object, correct the wrong action, examine the effectiveness of the training. Coaches can also develop more scientific training programs based on this. Through the athlete's muscle, joint, and other body parts of the exercise situation, but also can develop a scientific diet plan and muscle relaxation plan.

4. Conclusion
To sum up, the application of virtual reality technology in multimedia equipment. Turned the action into a part of the video, plus the supporting explanation content, and combined with the actual needs of training, the action is disassembled and repeatedly demonstrated, so as to better complete the training activities. This combination allows athletes to learn the process of knowledge, but also under the guidance of the practice of relevant movements and skills. Therefore, the role of virtual reality technology in sports training is multi-angle, all-round. Virtual reality technology can play a role in every link to sports training work. It can be predicted that in the near future, virtual reality technology will certainly provide great help for sports training work. so as to provide scientific and comprehensive guidance in all aspects of trampoline athletes' daily training.

Acknowledgements
I would like to express my gratitude to all those who helped me during the writing of this thesis. I gratefully acknowledge the help of my supervisor, Mr. Li Jianchen, who has offered me valuable suggestions in the academic studies. In the preparation of the thesis, he has spent much time reading through each draft and provided me with inspiring advice. Without his patient instruction, insightful criticism and expert guidance, the completion of this thesis would not have been possible. I also owe a special debt of gratitude to all the professors in Foreign Languages Institute, from whose devoted teaching and enlightening lectures I have benefited a lot and academically prepared for the thesis. I should finally like to express my gratitude to my beloved parents who have always been helping me out of difficulties and supporting without a word of complaint. supporting without a word of complaint.

References
[1] Hong H 2018 Application of digital multimedia technology in dance teaching Journal of Jiamusi
Vocational College 349-350.

[2] Jing Y 2019 Application of modern educational technology in dance teaching in colleges and universities Management and technology of small and medium enterprises 80-81.

[3] Pei L 2019 Discussion on the organic combination of multimedia and dance teaching in higher vocational colleges Drama House 163-164.

[4] Jiandong Y Development and application of Mongolian dance digital dance simulation action resource base .

Journal of Inner Mongolia Normal University (Educational Science Edition) 116-120

[5] Xian G 2020 Application of multimedia technology in dance teaching Career 89-90.

[6] Jia X 2019 Application of microcourse in college P.E. dance teaching VW Standardization 209-211.

[7] Xiaojie W 2019 Application of flipping classroom model in college dance teaching Drama House 142-143.