The Analysis of the Application of Computer Virtualization Technology to Modern Sports Training

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Abstract: With the rapid advancement of technology, computer-based virtualization has been widely applied in many fields, including sports training. By utilizing computer software and hardware, various real-world scenarios can be simulated, and corresponding feedback can be provided based on user manipulation and voice commands, thus establishing a realistic and reliable user experience. With the development of science and technology, computer virtualization technology has been widely applied in various sports activities, especially in diving, trampoline, volleyball, basketball, etc., and has achieved significant results. However, there are still many challenges that need to be addressed. Therefore, this article will delve into and elaborate on the application of computer virtualization technology in sports.

1. Introduction

Using computer virtualization technology, it is possible to simulate multiple forms of images, postures, and movements, thereby enabling people to communicate more intuitively. Especially in the field of sports, computer virtualization can help athletes better grasp the rules of the game and provide effective training advice based on their own situation. With the advancement of computer virtualization technology, it can bring a more diverse sports environment for athletes, better meeting their various sports requirements. Therefore, how to use this unprecedented technology to effectively improve the quality of sports training has become an important research topic in today's sports industry. Researching and developing computer virtualization technology is crucial to the impact on modern sports.

2. Overview of computer virtual reality technology

Virtual reality technology has become a revolutionary science that utilizes advanced electronic computing, sensors, and strategic planning to achieve realistic simulations of various scenarios, allowing people to experience everything in the virtual world and achieve real-time interaction, enabling users to gain a deeper understanding of the virtual world. By using this virtual technology, users can enter a new and amazing virtual world, experiencing unforgettable sounds, movements, etc[1]. Additionally, effective communication and interaction can also occur between users. Through online interaction, people can communicate effectively with others, experiencing the unique charm

of the virtual world. The definition of virtual reality technology includes three aspects: firstly, it uses advanced computer science to make the real world more realistic, providing people with a more intuitive experience, such as obtaining information about the surrounding environment through visual, auditory, tactile, and olfactory senses. Secondly, virtual reality technology enables people to achieve real-time interaction with the virtual world through various parts of their body, such as eyes, ears, and fingers. Thirdly, virtual reality technology also involves the modeling of three-dimensional space, object morphology, optical features, etc. Through virtual reality technology, people can obtain a new, realistic, bionic, and simulated experience, greatly improving user experience in the real world. The functions of virtual reality technology mainly include three aspects: allowing people to have a more intuitive perception of the charm of the real world, enabling people to explore and understand the world in a more in-depth way, and changing people's perception of the three-dimensional world from a passive recipient to an active controller. Through the use of interactive devices, users can better control objects in the virtual environment and change the surrounding environment. Thirdly, to gain a deeper understanding of the virtual environment, it is necessary to approach it from a rational and sensitive perspective, making the real experience more realistic. By using computer software and hardware, a real and interactive environment can be constructed. Through virtual reality technology, users can create a realistic and multifunctional simulation environment, whether dynamic or static, that can make people feel its charm. Currently, virtual reality technology has been widely applied in various fields, not only changing people's lives but also greatly promoting the realistic development of industries such as entertainment, sports, art, design, planning, education, training, and sports. The popularization and development of virtual reality technology has brought tremendous changes to China's sports industry, making the game more exciting and gaining global acclaim.

3. The importance of applying computer virtual technology in modern sports training

With the development of computer virtual technology, people are able to mimic real-world sounds, objects, and smells through it. This technology enables people to have interesting interactions with others in virtual environments. Additionally, by using this technology, people can gain more immersive experiences, surpassing traditional computer interfaces and enhancing their physical training effects. Through the utilization of computer virtual technology, athletes can be better assisted in their sports training and the occurrence of accidental injuries can be effectively prevented or reduced[2]. By using virtual environments, accidental injuries can be avoided while still providing athletes with an enjoyable training atmosphere. Furthermore, even if athletes demonstrate incorrect training techniques or movements, professional guidance can be provided in the virtual environment to help them complete their sports training with standard movements. The importance of modern sports training is self-evident, which involves not only the guidance of standardized movements but also the scientific evaluation of athletes' movement data, greatly improving the quality of sports training. In addition, the development of computer virtual technology has brought new possibilities to modern sports training. It can help control training progress more accurately, achieve goals more effectively, and enable people to enjoy sports activities more pleasantly.

4. The difficulty of applying computer virtual technology in modern sports training

In recent years, sports training and exercise have become hot topics in Chinese society and have become core activities of various sports organizations. However, due to the rapid development of modern computer technology, many sports institutions and individuals have started to focus on its application, but the results of this approach are still limited. The cost of modern computer virtual technology is considerable, and therefore, multiple sensors must be used to monitor and identify

technological changes. In addition, professional analysis software must be applied to achieve accurate data processing. Although such software is relatively common in the market, the professional skills required are extremely demanding[3]. However, many athletes rely too much on their own experiences in training and neglect the use of scientific computer software for analysis, resulting in a lower utilization rate of virtual sports technology. Third, due to a lack of sufficient understanding of virtual sports, many people believe that it cannot provide real physical exercise, thereby ignoring its importance.

5. The application of computer virtual technology in modern sports training

5.1 Application of computer virtual technology in aerobics training

With the development of the times, bodybuilding has become a popular way to maintain health. It can enhance physical fitness, cultivate mental state, and make your thinking clear. In recent years, an increasing number of aerobic exercise competitions have been held nationwide, which has led more and more people to engage in aerobic exercise. This exercise combines classical dance, modern gymnastics, and music perfectly, requiring superb skills to showcase the charm of dance. Compared to traditional bodybuilding, this method usually helps people master these skills through verbal guidance and practical movements. With the emergence of computer virtual technology, the essence of bodybuilding training has become clearer, greatly reducing people's negative attitudes and boredom towards exercise. This new bodybuilding training method greatly improves people's experience and provides them with a new way of sports training. By using computer technology, athletes can personally experience the basic and complex high-difficulty movements of bodybuilding through simulated videos. With the guidance of the videos, athletes can practice continuously until they master the essence of it[4]. In addition to using indoor virtual technology to create dynamic video images, a carefully selected music can also create a fun and rhythmic fitness atmosphere, thereby enhancing the athlete's fitness training ability.

5.2 Application of computer virtual technology in volleyball training

The traditional volleyball training relies on the coach's demonstration and guidance, which makes it difficult for students to truly master the skills. Because they can only observe the actions visually, it is difficult for them to truly understand each subtle movement. This method not only affects students' visual abilities but also leads to poor performance in strength, footwork, and body coordination. Although "big ball" sports have more exercise volume than bodybuilding, it still has certain advantages because it can help coaches save a lot of physical energy and enable athletes to better master sports skills. In addition, by using computer virtual technology, the details and movements of "big ball" sports can be simulated in a realistic environment, especially when kicking a ball, the coordination of hands, feet, and body can be more clearly demonstrated. By using computer simulation technology to edit tactical exercises, it can not only help athletes better understand response strategies in different environments but also more accurately grasp their teammates' body language, thereby effectively enhancing teamwork and improving sports training performance.

5.3 The Application of Computer Virtual Technology in Basketball Training

Using computer virtual technology to train basketball can provide a better understanding of the athletes' skills and movements, thus improving their reaction speed and endurance. This allows for more accurate identification and correction of mistakes made during the game, ultimately leading to

an increase in their competitive level. With the development of computer virtual technology, coaches can simulate a realistic basketball environment to guide and train athletes' skills, enabling them to comprehensively and accurately grasp basketball tactics and teamwork, thereby effectively improving the training level of basketball.

5.4 Application of computer virtual technology in diving training

Virtual technology can simulate diving training more realistically by capturing fine details such as joint coordinates and angles, thereby improving diving efficiency. Additionally, virtual technology can help divers better master their skills and complete diving tasks. Three-dimensional motion information is crucial for divers to improve their skills, as it can help them understand their own conditions, master the latest techniques, and effectively guide and train them. Currently, the most common way to obtain 3D information is through active tracking, which involves placing reflective markers within the diver's field of view to obtain more accurate data[5]. This technology is widely used in various entertainment activities, sports competitions, dance training, and other forms of training. In recent years, with the continuous improvement of 3D motion capture technology, from mechanical capture to electromagnetic capture, people have been able to more accurately track and monitor athletes' behaviors in real-time, and better reflect their skill level. Although these technologies play a crucial role in sports competitions, they cannot completely replace human observation capabilities. However, tagging athletes may seriously damage their performance, especially in competitive sports such as diving and gymnastics where there are no restrictions on the use of any form of identification. Therefore, how to capture athletes' true state more accurately has become a topic of great concern for divers. This problem has been successfully solved through the use of virtual technology, which uses various training facilities, including cameras and video processing systems, to capture athletes' dynamics from different angles[6]. These systems are carefully edited, segmented, encoded, overlaid, and noise-reduced to provide more accurate images. By analyzing 3D models, real motion situations can be simulated in virtual environments[7].

5.5 Application of computer virtual technology in trampoline sports training

Using computer virtual technology, dynamic data of trampoline athletes can be effectively constructed, and their dynamic features can be comprehensively analyzed using computer processing systems. This method allows athletes to observe their movements from different perspectives and construct a perfect 3D dynamic model using computer virtual technology, thus improving the effectiveness of trampoline training. By observing the dynamic changes of athletes, their physical condition can be better understood[8]. For example, the degree of stretching of their skeletal muscles can be used to infer whether their joints are in a flexed state. This information can then be applied in trampoline training to improve its efficiency. By introducing computer virtual technology, sports standardization and effectiveness can be better promoted. Therefore, this technology should be taken seriously and efforts should be made to master its relevant knowledge to maximize its value in daily sports activities. By integrating sports training with computer virtual technology, the quality and efficiency of sports training can be greatly improved[9].

6. Conclusions

By employing virtual computer technology, sports training can be conducted more effectively, thus improving the physical and mental health of athletes. This will lay a solid foundation for their future and help them succeed in future competitions. Through continuous learning and practice, outstanding athletes are believed to become leaders in the future sports industry.

References

[1] Yang Jihong, Zhu Delong. Application of computer virtual reality technology in college physical training [J]. Journal of Baicheng Normal University, 2022, 36 (02): 57-62.

[2] Li Junjie. On the application of computer virtual technology in modern sports training [J]. Electronic world, 2020, (08): 45-46.

[3] Fan Fan. Application of computer "virtual reality" technology in college physical training [J]. Electronic World, 2020, (02): 175-176.

[4] Wu Na. Application of computer-based "virtual reality" technology in college physical training [J]. Forest District teaching, 2018, (05): 95-96.

[5] Hong Qihuan, He Weixiang. Application of computer virtual reality technology in physical training [J]. Journal of Beijing Institute of Printing Technology, 2018, 26 (01): 157-159.

[6] Du Jianping. Analysis of the application of computer virtual technology in modern physical training [J]. Electronic test, 2014, (13): 122-123.

[7] Sun Meng. The application of computer "virtual reality" technology in college physical training [J]. Electronic test, 2013, (22): 61-62.

[8] Bai Haijun, Gao Yunli. Research on the application of computer virtual reality technology in College Physical Training [J]. Journal of Heilongjiang Bayi Agricultural Reclamation University, 2013, 25 (03): 105-107 + 112.

[9] Zhang Tao. On the application of computer virtual technology in modern sports training [J]. Electronic test, 2013, (11): 264-265.