Economic Research on Computer Virtual Reality Technology in Sports Training Simulation

Xiaolan Xie [1, *] and Pan Sun[2]

[1] College of sports Shaoyang Univerity, Hunan, 422000, China

[2] Hunan Xinshao No. 1 Middle School, Hunan, 422800, China

* Corresponding Author Email: xiaolanxie@hnsyu.edu.cn

Abstract. With the rapid improvement of virtual reality technology, sports training has introduced an electronic simulation training scene simulation system. The system can perform virtual modeling for traditional sports training scenes, develop and implement a virtual training system with a strong sense of immersion and realism, and can allocate an account for each student. By wearing professional equipment, sports training virtual The simulation system can systematically study and train without being restricted by time and space, and can feedback physiological indicators at any time and provide them to the trainer for adjustment, and can effectively stimulate the initiative and interest of athletes in training, and has a good economy sex.

Keywords: Virtual reality; sports training; simulation; economy.

1. Introduction

Traditional sports training requires the construction of sports venues and the purchase of sports equipment. The construction of these infrastructures requires a high price, is not economical, and is easily damaged and difficult to maintain. It requires continuous investment of more manpower, material and financial resources to maintain. In order to maintain the normality of physical training. With the development and advancement of computer technology, people use advanced virtual reality, animation models, software engineering, and media communication technologies to develop a simulation virtual training scene system. The system can provide training opportunities for sports professionals through online training modes and break through time and space. Restrictions, repetitiveness, maintenance-free and other unparalleled economy.

2. The definition of virtual reality

Some people think that virtual reality is a modern high-tech with computer technology as the core to generate a realistic visual, audio, and tactile integrated virtual environment in a specific range. Users use necessary equipment to interact with objects in the virtual environment in a natural way. Mutual influence produces feelings and experiences equivalent to being in the real environment [1].

3. Economic analysis of virtual reality technology to sports training

3.1. Save the cost of venues and other costs

The system development cost is less, and it can be used for a long time, saving more expenses. After the virtual sports electronic training scene system is developed and deployed, only some application servers need to be added to complete the configuration function. Every user can log in to the system in a small environment, and even log in with devices such as smartphones and tablets. The system saves athletes' training expenses and helps athletes to devote themselves to training without worrying about the cost of training [2].

3.2. Reduce the repetition of traditional sports training

The virtual reality training system can realize one-to-one sports training learning and enhance the training effect. The system can design a virtual coach management system to build a standardized and scientific virtual coach. After the athlete logs in to the system, he can select the relevant sports coach, and then complete one-to-one coaching and training functions according to your own training plan, and provide athletes with one-to-one real-time guidance to strengthen the effect of sports training.

3.3. Reduce software reinstallation and loss

It is easier to control viruses and to ensure the security of service information. The virtualized sports electronic training scene system can adopt a centralized antivirus strategy and use strict control strategies to configure the server to prevent unauthorized users from accessing, and at the same time prevent network viruses from intruding, so as to effectively ensure the security of cloud service platform information. The security of cloud service platform access prevents information leakage and destruction. The computer virtual reality system is shown in Figure 1.

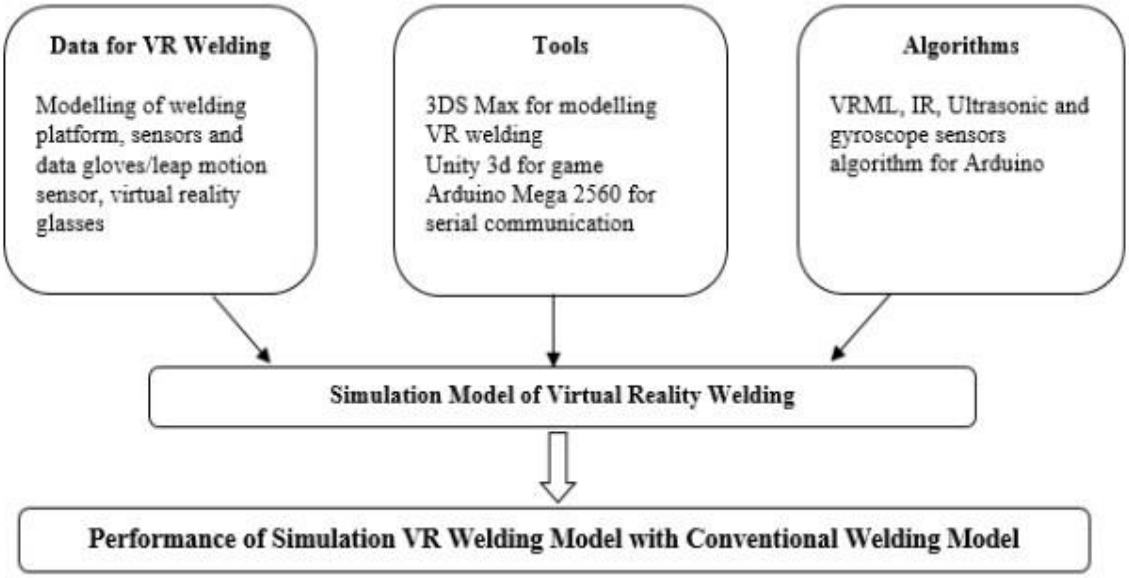


Figure 1. Computer motion simulation virtual system.

3.4. Save time and space cost

It can effectively break through the limitations of time and space and meet the individual learning needs of users. Athletes can use their own terminals anytime, anywhere, including smart phones, laptops, PCs, IPADs, etc., [3] without the need to go to professional computer rooms to concentrate on classes, beyond time And space constraints, customized learning content.

3.5. Unified application environment to improve maintenance efficiency

Deploy the application environment uniformly to improve the efficiency of system upgrade and maintenance. The virtual sports electronic training scene system is based on the cloud service platform and the B/S architecture [4]. The users only need to upgrade and maintain the cloud server, can deploy the server uniformly and quickly, and can update the login client of the terminal by issuing related plug-ins the terminal program is convenient and fast, no need to debug one by one terminal.

3.6. Reduce the blindness of traditional training

The intelligence of the training effect automatically adapts to the athlete's training environment and stimulates the athlete's initiative and enthusiasm for learning. The virtual sports electronic

training scene system can customize learning needs according to the individual needs of users, and at the same time creatively display the interpersonal learning environment [5], which can meet the learning needs of athletes. Different learning environment styles can effectively meet people's needs, stimulate the enthusiasm of athletes to learn, better improve the learning efficiency of athletes, and directly improve the learning effect of athletes.

4. Virtual reality technology construction

4.1. Build a virtual training scene that matches the actual training atmosphere

Technicians can establish a virtual training environment according to the requirements of fixed-point training scenarios. First, the use of multiple sensing devices in virtual reality technology to collect various data on the training site, such as real images of the actual training site, light background, basketball trajectory, etc., to provide a sufficient data basis for the next virtual scene construction; Collect the data and bring it into a professional mathematical model to calculate: a dimensional view map to build a real and vivid simulation training environment. In addition, the virtual human body and equipment can be modeled to make people aware of the changes in the running direction during training, so that the trainer can adjust the training plan in time.

4.2. Real-time data collection

Virtual reality can collect real exercise data of trainers with the help of multimedia sensors in time, and observe their physical and mental changes. First, the sensor tracking equipment in virtual reality technology can directly record the exercise data of the trainer and generate the corresponding dynamic form, so that people can clearly see the effect of fixed-point training, and then according to the known data, they cannot calculate what is in line with their own development. Training action. Secondly, the trainer can observe the physical and psychological changes of the trainer at any time through various sensors and intelligent monitoring equipment, and use this as the data basis for formulating the training plan, and arrange training actions that are consistent with the trainer's physical functioning characteristics, and increase training opportunities. Efficient.

4.3. Provide the best improvement path

Intelligent virtual reality technology can simulate training. It can provide feedback based on real-time training indicators, and provide an optimal path by comparing the historical data of the trainer, international standard data and the athlete's own conditions, and reproduce the analysis of the training effect through the action. Trainers improve their own deficiencies. The sports training simulation system constructed with virtual reality technology as the main technology can realistically and accurately reproduce the trainer's movements in a three-dimensional manner. Therefore, coaches can use virtual reality technology to analyze whether the trainer's shooting posture is correct, find out the problems in the movement in time, and make improvements to standardize the trainer's throwing momentum; it can also analyze and analyze the actions of other outstanding athletes. Get creative inspiration from it, innovate actions and techniques, and realize the improvement of technical level.

4.4. Innovative training mode

Virtual reality technology can center on international training standards and use virtual reality technology to construct a new training model. The traditional training mode is to implement theoretical teaching in the classroom and exercise outdoors. It is difficult for athletes to apply the theory to practical training in time, to quickly understand the key techniques, experience the fun of sports, and thus fail to raise the interest of learning. Coaches should formulate training programs around the characteristics of sports, use virtual reality technology to optimize the teaching of related training items, and establish modern training models to let trainers know the rules of fixed-point

sports in a virtual training environment and feel the charm of sports. The computer motion simulation system is shown in Figure 2.

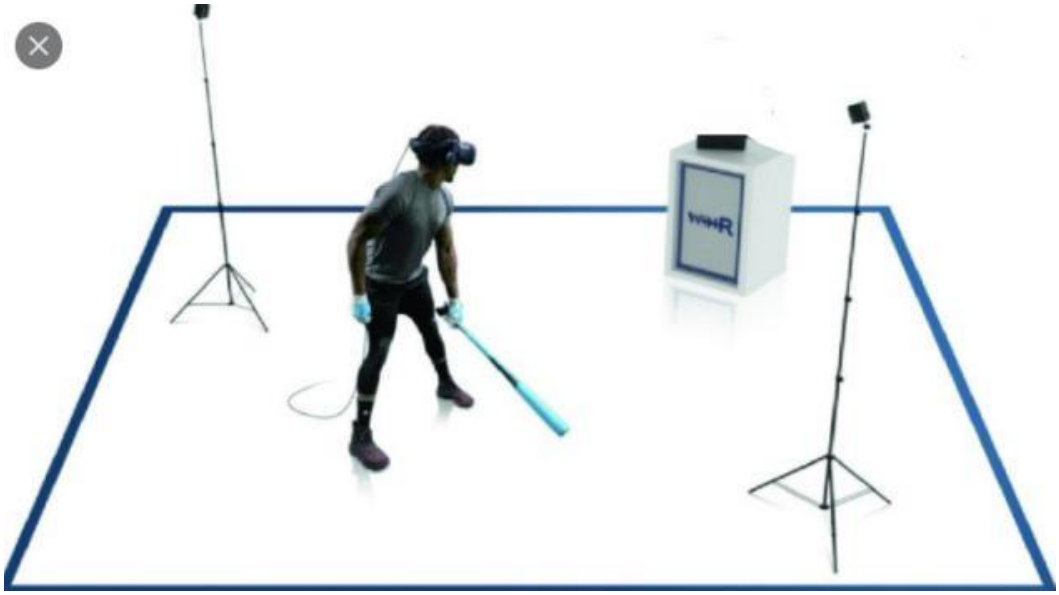


Figure 2. Motion simulation system under computer technology.

5. Application value of virtual reality technology in national sports training

The application of virtual reality technology in sports training has largely alleviated the deficiencies in the sports training process. By simulating the training environment, it has made up for the relatively single learning method of the athletes, which cannot bring rich sensory stimulation to the athletes, leading to classroom training. Unfavorable status quo such as poor results. Applying virtual reality technology to the sports classroom can create a virtual but authentic learning situation for athletes, help improve and enhance the diversity of training methods and the effectiveness of expression methods, and improve the effectiveness of training and the learning efficiency of athletes.

5.1. Arouse athletes' interest in training

The high intensity of traditional national sports training makes many people daunting. Because virtual reality technology has visual, auditory and tactile perception effects, it allows athletes to have a real situational experience and immersive experience in the process of virtual training. It helps to stimulate the learning motivation of athletes, and provides learners with one-to-one targeted training, which helps to promote athletes to construct a new type of cognitive process, which is conducive to understanding and memory.

5.2. Make up for the relative shortage of venues and equipment

The country has a large population and low per capita sports resources. In the training of athletes, the basic level is often limited to equipment difficulties. At the same time, in the process of sports training, due to weather, venues, regions and other reasons, some courses cannot be carried out, such as: Skating, swimming, baseball and other sports cannot be met in college physical education courses due to space limitations. The application of virtual reality technology can make up for this deficiency. In addition, athletes can also get a relatively real experience in a virtual environment. The 3D motion image capture simulation system is shown in Figure 3.

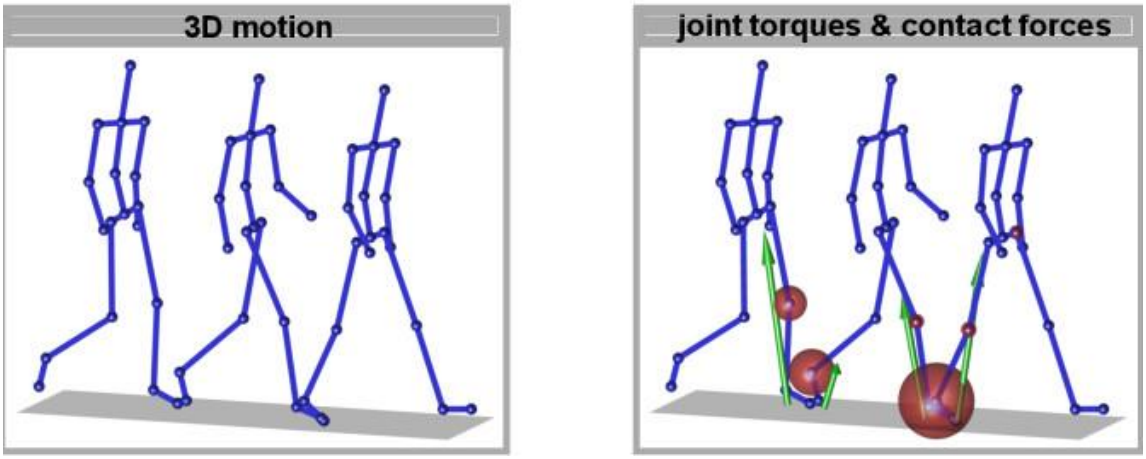


Figure 3. 3D motion image capture simulation system.

5.3. Avoid injury accidents

Part of the country's athletes are limited in their physical fitness levels, insufficient personal coaching capabilities, and improper protection and assistance, which may increase the probability of danger. Take the vaulting horse in gymnastics training as an example. The placement of the two-hand support, the height of the jump, and the stretching of the body in the air are all dangerous. In the virtual training process, athletes can safely perform various actions, which can effectively avoid the occurrence of injuries in classroom teaching.

6. Problems faced by domestic virtual reality technology in sports training

6.1. The cost and price limit of the system itself

They have a large one-time investment and expensive prices that discourage ordinary users. On the other hand, domestic virtual reality technology companies have low product costs, large functional limitations, and unsatisfactory virtual effects, and they have not fully reached the technical level of the simulation environment. Therefore, the various problems of domestic virtual reality technology products have greatly reduced the public's acceptance of virtual reality technology products and hindered the development of domestic virtual reality technology.

6.2. Immature hardware and software technology development

The country currently lags far behind foreign countries in the research and development of virtual reality technology software. The virtual environment can only simulate simple and rough macro scenes and other simple external environments, resulting in a lack of user immersion and presence. In addition, in some virtual reality technology sports game products, users often have compulsory self-motion sensations. It is still necessary to carry out further development and research on VR hardware and software.

6.3. Virtual reality technology weakens human-to-human communication

Virtual reality technology in sports training weakens the ability of participants to communicate, cooperate and react. In addition to the above problems, some experts and scholars believe that long-term use of virtual reality technology products will cause participants to reduce their ability to socialize, cooperate, and respond. Problem. In team sports such as basketball and football, the teammates simulated by the virtual reality system often cooperate with the athletes for training, which will cause the athletes to be self-centered in training. As a result, in real competitions, athletes who are accustomed to independent sports can hardly meet the basic requirements of team projects that require a high degree of cooperation. In addition, it should be pointed out that the arrangement of virtual reality technology in sports training is fixed. For example, in the training of volleyball, table

tennis, tennis and other antagonistic sports, it simulates the opponent's tactical play and offensive methods. As well as technical characteristics, they are all programmed and fixed in advance through computer software. Under this routine training mode, it is difficult for athletes to make flexible choices, which leads to the lack of adaptability for athletes when facing unexpected situations in real competitions. Ability.

7. Conclusion

From the perspective of reality, the national virtual reality technology has a strong economic advantage in sports training applications, especially under the national conditions where the country's per capita sports resources are small, it has far-reaching significance for achieving the balance of national sports training resources, but there are also excessive prices. There are many practical problems such as high technology, immature software and hardware technology development, weakening of participants' communication and collaboration and adaptability. With the continuous improvement of its technology, virtual reality technology will achieve the purpose of serving popularization, and its influence in the application fields of sports media, sports training and sports entertainment will continue to expand, and promote sports innovation and progress. It is true that the successful combination of virtual reality technology in sports training will break the shackles of traditional sports. But among them, it is still necessary to solve the current situation of virtual reality technology in sports training in order to promote a better interaction between virtual technology and sports. This means that the country should absorb more advanced virtual reality technology from abroad to make up for the shortcomings in the development of national virtual reality technology. It requires unremitting efforts by domestic scientific researchers to promote the rapid development of national virtual reality technology, and better interactively combine virtual reality technology with sports.

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