Research on Teaching System of Aerobics Based on Electronic Action Library

Yonglan Hua1,*, Xiangdong Ye2
1,2Shaanxi Institute of International Trade and Commerce, Shaanxi, China

*E-mail: 5710700@163.com

Abstract. Aerobics can exercise our body and build a perfect body. Aerobics training is essential for people who love sports and need to lose weight. In today's aerobics teaching process, the virtual electronic network teaching system provides people with great convenience. According to a large number of studies by foreign researchers, the teaching method of Aerobics Teaching System Based on electronic action library plays a positive role in improving the training quality of aerobics. Moreover, it is found that the aerobics system based on information technology and movement design can improve the visualization level of gymnastics movement. Therefore, it is necessary to optimize and design the virtual teaching system of aerobics.

Keywords: Electronic, Action Library, Aerobics

1. Introduction

Since aerobics was introduced into China in the 1980s, it has been welcomed by the public with a distinct sense of rhythm and a strong sense of the times. It is one of the main subjects in the curriculum of various physical education departments in China. At the same time, it is also an important part of the mass fitness market. Because of its great potential of social demand, the society needs talents with high calisthenics teaching and training level[1].

At present, with the continuous innovation and progress of the information age, various technical means of gymnastics auxiliary teaching gradually appear. In the use of modern cutting-edge technology, people can apply the virtual role to the teaching of Aerobics through computer modeling technology. Virtual reality technology can collect and capture the detailed movements of bodybuilders. Therefore, this auxiliary teaching method can greatly improve the daily training level of Aerobics athletes[2].

2. Analysis of the social needs of aerobics teaching system

Nowadays, with the progress and renewal of the electronic age, the application of computer is more and
more extensive. It is widely loved by people. At the same time, the progress of the times has also increased people's workload. People often lack time to exercise. The function of the body is getting worse and worse. Aerobics can exercise people's bodies. However, people often lack time to go to the gym. On the basis of this environment, researchers have developed an electronic teaching system of aerobics[3].

The virtual teaching system of aerobics can actively use the database extraction technology. This can optimize the efficiency and speed of data update within the system. This technology is also conducive to the construction of virtual system electronic action library and improve the availability of the system. In the process of system design, technicians can use programming language and database software to optimize the motion capture system of aerobics. Optimizing the design of the program interface outside the system can make the user's operation of the system more convenient.

3. Teaching system of aerobics based on electronic action library

3.1. Overall structure of the system

The virtual aerobics system adopts the multi-layer structure of C / S structure. These structures include application layer, information processing layer, information transmission layer and digital processing layer. Aerobics system can real-time analysis and teaching related data. After analyzing the movement of aerobics, the computer can process the data by means of signal conversion and grating display. This situation can help people understand the details of the ideal aerobics. The action display of Aerobics Teaching is shown as Figure 1[4].

![Figure 1. The action display of Aerobics Teaching](image)

3.2. Interaction of system information

Athletes can communicate with virtual environment through sensors in physical interaction space. The
system receives relevant data from human body through sensors to analyze the behavior data of athletes[5]. The behavior data will be input into the virtual environment of the system by computer to realize the interactive operation between electronic devices and users. This kind of interaction can ensure the rationality of virtual environment. It will bring users a real teaching experience.

3.3. The design of the database of the system

It is very important to build the database module of Aerobics auxiliary teaching system. The establishment of the database can improve the ability of the system to process the detailed data. At the same time, in the process of database design, technicians should ensure that the memory capacity of the database is not too small. The database should be able to store a large number of gymnastics movement data, so as to satisfy the requirements of athletes.

4. Overview of overall design

4.1. Design objectives

With the help of the auxiliary teaching of gymnastics system and the storage and distribution of materials, the purpose of relieving people's working pressure can be realized. In addition, gymnastics training can also improve people's work and learning initiative and enthusiasm.

4.2. Specific selection of teaching content

The teaching content of the auxiliary system should include basic gymnastics movements, basic combined movements, high difficulty movements and typical wrong movements as well as correction methods (see Table 1).

| General category | Denomination of dive | Key word | Notes          |
|------------------|----------------------|----------|----------------|
| 1                | Basic steps          | Step     | Normal         |
| 2                | Basic combination    | Combination | Normal     |
| 3                | High difficulty      | Difficulty | Muscle strain |

4.3. Specific design of function module

According to the different needs of social people, the system should have five functional modules. These modules include auxiliary teaching, information inquiry, system setting and information input[6].

4.3.1. Auxiliary teaching. Auxiliary teaching includes two functions: teaching demonstration and auxiliary lesson preparation. According to the needs of teaching, aerobics teachers can choose the corresponding gymnastics actions in the module of teaching preparation for online preparation. In the process of teaching, teachers can play the content of the lesson plan through the multimedia player.

4.3.2. Informational service. Information query includes three functions: condition query, detailed
action statistics and action browsing. Generally speaking, the information query function is the most basic function module in the system. It can provide technical basis for other modules.

4.3.3. System setup. System settings include permission settings and interface settings. Generally speaking, the setting of auxiliary system should include teachers and students. Students have the right to query, browse, assist teaching and input information. Teachers should have all the authority.

5. The benefit of gymnastic system design based on electronic action library

In order to satisfy people's training and management of virtual aerobics teaching process, designers strive to optimize the virtual system. In today's gymnastics training process, the use of ordinary two-dimensional virtual scene teaching methods will make students lack the real experience of gymnastics teaching. This will greatly reduce the enthusiasm of students to learn gymnastics and the quality of gymnastics teaching.

Aerobics is a popular sport. The establishment of aerobics teaching system aims to make athletes completely indulge in the virtual teaching process. This can greatly improve the visual and auditory perception of athletes. Therefore, I think the optimization of aerobics teaching system is essential. We can apply this system to the physical education of all walks of life. This technology can realize the informatization of gymnastics teaching and actively play its important value.

6. Conclusion

With the advent of the information age and the emergence of modern education means, the traditional ideas and education models of physical education have been greatly impacted. In the electronic age, people should change the specific concept of aerobics teaching. We should study computer hard. Physical education teachers should make great efforts to learn the operation of the auxiliary teaching system and make outstanding contributions to the cause of aerobics teaching.

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