Application of 3D Reconstruction Technology in Taekwondo Video Scene

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Abstract: video scene plays a more and more important role in the skill learning of Taekwondo, and the research of 3D reconstruction will play a positive role in its research. Through the analysis and processing of the figures of the figures in taekwondo practice and competition, and the knowledge of the computer vision, the three-dimensional information of the characters in the actual combat is derived, and the corresponding training and technical diagnosis are carried out. Based on the analysis of Taekwondo's action skills and combined with the actual needs of the national team's training, the 3D reconstruction technology can be more intuitive to meet the needs. This function is not only helpful to the acquisition of the Taekwondo scene, the delay replay and the establishment of the tactical policy, but also the key point is that it can accurately analyze the competitive level of Taekwondo sports and promote the development.

Key words: three dimensional reconstruction technology; Taekwondo; video research teaching.

The guiding process of Taekwondo project requires the athletes and sports team to provide information about training and competition, and to carry out analysis guidance and feedback, so as to improve the level of athletes, as a video scene feedback, the use of 3D reconstruction technology can play a more important role. The 3D reconstruction technology refers to the restoration and reconstruction of a model for 3D scenes or characters, and the acquisition of three-dimensional depth information. It combines modeling software (modeling software such as AutoCAD, 3DMAX) and 3D scanners to sample the scene. Further research is carried out to promote the development of related Taekwondo industry. This paper introduces the importance of 3D reconstruction technology in the application of Taekwondo video scenes, and puts forward a new idea for Taekwondo Teaching in China.
One, the application of 3D reconstruction technology in Taekwondo Teaching

1, the defect of traditional teaching in Taekwondo

Taekwondo is a game of bout against the process of competition, each in the three rounds of each 2 minutes of confrontation, and the confrontation process is made up of the relative motion state of the two sides, in order to combat quality and hand over the number of movements, and then determine the competition intensity and victory or defeat. How many rounds are there? This is very important for future training. And the traditional teaching of video recording feedback analysis, for Taekwondo this kind of random, sudden, fast and fleeting features, in the slow video is still very difficult to carry out some detailed analysis, and these are precisely the key to training and competition. Compared with the teaching of feedback that can completely record the competition information, the cost of time and energy is easy to cause unnecessary waste. With the rapid development of 3D reconstruction technology, if it can carry out certain practice in Chinese Taekwondo education, it can effectively eliminate the shortcomings of traditional teaching of Taekwondo.

2, the application of Taekwondo three-dimensional reconstruction technology

Three dimensional reconstruction technology is a unique form of teaching content. It has certain application value in different fields. With the initial development and application of three-dimensional reconstruction technology in the field of education, we will achieve beneficial innovation and development for traditional teaching methods of Taekwondo. With the rational use of single image, stereo vision, silhouette and deep image reconstruction, several steps of this research teaching are carried out: image acquisition, camera calibration, feature extraction to meet the conditions of three-dimensional reconstruction. The technical details of Taekwondo videos are analyzed. Under the technology of three-dimensional reconstruction, the teacher establishes the model of personage suitable for his own teaching, and the operation of the ideal Taekwondo action model, and performs the action playing, segmented playback or the full angle of the scene according to the needs of the teaching, so as to realize the perfect combination of the 3D reconstruction technology and the Taekwondo Teaching Class, and then improve the effective improvement. The quality of teaching.

3, the establishment of information system for 3D reconstruction system of Taekwondo.

The establishment of the information base of the Taekwondo three-dimensional reconstruction system helps to collect and explore the details of the competition and specific training, and records, statistics, surveys and analyses the performance of Taekwondo. And in the future matches, we can quickly invoke, explain and suggest. In the ordinary training, the athletes can get the high technical skills, according to the normal training set up the three-dimensional reconstruction reserve, in the future competition or training can get the corresponding extraction, the teaching quality and training effect can also be greatly improved, so it needs a certain time accumulation and development.
Two, the application advantages of 3D reconstruction technology in Taekwondo.

1. Improve the interest of teaching and training

The basic three dimensional reconstruction is based on the construction of two dimensions, and the teaching of Taekwondo can play the role of the environment, improve the teaching interest effectively, and help to observe the model of Taekwondo accurately. It can not only carry out practical Taekwondo training, but also can be intuitively felt in the reconstructed 3D scene. By the action mechanism of the character model, we can achieve a certain degree of understanding in our mind. The combination of three-dimensional reconstruction technology and Taekwondo Teaching is superior to traditional stereotyped teaching, and it is more effective in maintaining interest in learning.

2. Have a certain control advantage

In the traditional teaching conditions and environment of Taekwondo, the real time control of the demonstration action can not be realized and the students can be observed, especially the details of action, which makes it difficult for the students to understand the deep understanding of the movement, and the teaching of Taekwondo which is built in the three-dimensional reconstruction technology can be effectively handled. This problem, the three-dimensional reconstruction model established by the teacher can be directly added to the classroom. The teaching difficulties mentioned above can be effectively solved. The three-dimensional software can be used to operate the slow motion and quick action in the action to achieve the role of the demonstration of the technical action. This is not achieved in the traditional video teaching program of Taekwondo.

3. Three-dimensional reconstruction of the advantages of Taekwondo action teaching.

The video teaching and teacher demonstration in the traditional teaching plan of Taekwondo can effectively achieve the function of the action explanation, but it is obviously difficult for the detail performance of the action. The Taekwondo action teaching is built on the 3D reconstruction, it is convenient to carry on the full angle action teaching, and let the students form the action technique quickly. With the establishment of skillful and technical skills, the teaching angle can even be adjusted and improved from the angle of action and vision. It can realize the teaching of the angle of overlooking and looking up and so on, which is convenient for the students to understand and grasp the action.

Three, summary and suggestion

1. Summary

From the above, the application of 3D reconstruction technology in Taekwondo video scene is novel and worthy of practice, and for the rapid development of the 3D modeling technology, its many advantages are obvious, the effective combination of Taekwondo video scene, and can assist in the improvement of Taekwondo classroom teaching effect. There are many similarities between the research and development of Taekwondo industry field, and the teaching of traditional Taekwondo can be innovated. From the basic aspects of observation and demonstration in teaching, some basic aspects are made and improved, and then a more reliable basic teaching mode of Taekwondo action is made.
2. Suggestions
(1) rational use of three-dimensional reconstruction technology to improve the teaching effect of Taekwondo.
The characteristics of Taekwondo movement expressed by the 3D reconstruction technology help students to understand the demonstration action or the practical action, but should pay attention to the reasonable teaching methods, because the theoretical demonstration is much, and it should be balanced with the actual combat practice, the time of demonstration is reasonable and the complexity of the teaching from easy to difficult.
(2) the combination of three dimensional reconstruction technology and traditional teaching
Taekwondo is a combination of physical exercise and thinking movement. Therefore, learning Taekwondo itself is also a process. Learning to make use of the advantages of three dimensional reconstruction technology, to improve the shortcomings of the traditional Taekwondo Teaching, to help students understand Taekwondo movement and form, and then to form a more complete teaching consciousness. Combined with traditional teaching, a lot of exercises are carried out and combined with matches to get relevant experience.
(3) establishment of resource sharing platform for 3D reconstruction technology of Taekwondo.
The three-dimensional reconstruction technology is a fast developing field. In the process of making the teaching content, it is inevitable that the professional staff should help. The coaches and experts in the industry should cooperate with the technical personnel to create high quality.