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Application Analysis of Sports Biomechanics in Physical Education and Training

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Abstract: Sports biomechanics is of great significance and value to physical education and training. In order to improve the overall effect of sports biomechanics, colleges and universities need to fully recognize the necessity and significance of its application in physical education and training, and achieve the expected goals. I believe that this experimental study has certain enlightenment for the teaching reform of physical education professional courses. Under the rapid development of modern science and technology, physical education teachers and coaches should fully grasp various scientific knowledge, and apply scientific and correct training methods to allow students to master technical movements more quickly and comprehensively, and to better improve the athletic ability and performance of sports athletes. techinque level.

Keywords: *Application Analysis, Sports Biomechanics, Physical Education and Training*

I. INTRODUCTION

Sports biomechanics is a new discipline with a relatively short development time. It is a discipline that integrates biological and physical theories, and uses modern advanced scientific measurement techniques to analyze and study the actual changes in physical function of individuals during sports. a special discipline. The application of sports biomechanics in physical education and training has important significance and value, and can promote the development and progress of sports. Therefore, it is of great significance to analyze the application of sports mechanics in physical education and training in this paper. In recent decades, the international sports biomechanics has developed rapidly, and the application of new materials and computers has made the biomechanical testing methods develop rapidly in the direction of automation, accuracy and speed.

The infiltration and collaboration between disciplines have been strengthened to make the knowledge system of biomechanics more perfect, revealing the essence of sports technology, and verifying the scientific, advanced and rationality of movement technology. In order to explore and innovate movements, provide theoretical basis for the optimal training program and the most effective training methods, including talent selection and prediction of sports performance. Sports biomechanics is a professional compulsory course for physical education majors, and the core of its research is the human body. Sports movements, the ultimate goal of physical education students' learning is to achieve the organic combination of sports movements essentials and mechanical analysis, so as to facilitate the improvement of the effect of teaching and training in the future. Applicability is very important and necessary in sports biomechanics teaching.

At present, the physical education equipment and education level of many colleges and universities are uneven, and most schools ignore the education of physical education courses to a certain extent, resulting in the general low level of physical education of current students in our country. In order to effectively improve the overall effect of my country's physical education level, schools and teachers should increase the research on physical education professional knowledge and training skills, and apply scientific and reasonable methods to analyze and improve the level of physical education. There are still some physical education teachers who do not know much about sports biomechanics and have a vague understanding. Therefore, in physical education and training, the application of sports biology still needs to be further strengthened.

Sports biomechanics mainly strengthens the interaction and influence of sports body tissues, and analyzes sports in all aspects through data values and the direction of force action. The traditional physical education and training mode can be said to be purely physical activities, and teachers and students only express sports through a lot of "body language". As a result, only know to do sports action without knowing why the action is done. Because of the lack of scientific understanding of sports, people do not exercise scientifically, and athletes train "blindly". In the past long-term sports training work, coaches used visual means and traditional training methods based on experience. This training method is very valuable and indispensable for teaching sports skills and improving sports performance. However, in the current situation where the technical level of various sports tends to be the limit, but not the limit, in order to achieve this effect, it is a good choice to use the "reverse push method" teaching form, that is, first of all, through the students' understanding of sports movements Observation and learning, to establish the image of sports action (sports image refers to the action image or motion scene reproduced in the brain on the basis of motion perception.

II. THE PROPOSED METHODOLOGY

For example, Lewis, a well-known sprinter, encountered a bottleneck in the process of sprint training that was difficult to improve his performance. In the past, a single outdated training model could no longer improve Lewis' performance. However, Lewis's coaches used the professional knowledge and theory of sports biomechanics to effectively improve Lewis' performance. sprint and broke the world record at the time. Help students improve the accuracy and physical quality of training, let them master the correct posture and appropriate exercise intensity in daily training and physical learning, so as to promote their physical and mental development, and improve the safety of physical education and training.

It also has an intuitive understanding in practice, and the organic combination of basic theoretical knowledge and specific practice will help students to effectively and flexibly use biomechanical means to solve practical problems in sports training in future work, and will also enhance students' learning. The interest of this subject. Statics analysis is to study the conditions of the human body in a static state, the conditions of

the body's balance, the conditions of muscle work, the external forces the body is subjected to and the relationship between the force systems, etc. When the human body is in a static state, two conditions must be met mechanically, that is, the total external force is equal to zero and the external torque is equal to zero. Because people have the ability to learn through observation, they can quickly grasp a large number of integrated behavior patterns, without having to rely on boring The trial-and-error approach to getting complex behavior bit by bit.

Observational learning can not only shorten the acquisition process, but also avoid the major loss or harm caused by the failure of direct attempts, and then comprehensively grasp the movement status of each stage of the students. Then physical education teachers can use this part of the data to analyze the projection distance of the students' feet and the center of gravity on the ground and the length of the landing time, so as to effectively solve the problem of horizontal resistance caused by the reaction of support and shorten the time for the feet to fall, so As a result, you can increase both the stride frequency and the momentum of the body's forward motion, thereby increasing the stride length. For example, every 10 meters or 20 meters is divided into a section, and the time and step length of the students are recorded at different stages. Finally, the overall situation of the students is summarized and analyzed. Through the relevant principles of sports biomechanics, the actual situation of the students participating in sprint track and field sports is clarified. Effect. It can be seen that the application of sports biomechanics in sports track and field teaching improves the enthusiasm of sports and the atmosphere of "exploration" in the classroom. After class, students will consult books extensively with questions and great interest in their own running situation, trying to analyze their own movement situation.

Through this method of teaching, students' theoretical level, understanding of technical movements, and the ability to master and improve technical movements. The throwing project is to throw the throwing equipment farther, and the body mainly moves in a straight line when pushing the shot put and bidding gun. , When throwing discus and hammer, the body mainly performs compound movements of rotation and horizontal linear movement. Throwing equipment all do oblique throwing movement. Due to the different shapes of the instruments, the flight trajectories are also different. The radius of curvature of the flight trajectories of the shot put and hammer ball is larger, and the radius of curvature of the flight trajectories of the discus and javelin is smaller and tends to be straight. On the basis of the syllabus of "Sports Biomechanics", according to actual needs, it is divided into several "stations" according to the structure of the content, and the "station" type of teaching is adopted as a unit.

Classes (1) and (4) of the 05 body were used as the conventional teaching group (control group); classes (2) and (3) of the 05 body were used as the experimental group. From the point of view of mechanics, the resultant force and the resultant external force when a person is in a static state are both zero. However, from the perspective of statics, the action produced when a person prepares to start a run is a preparatory action for the individual to change from the original static state to the moving state, which can quickly turn the human body into a moving state. Among them, those with a significantly larger take-off angle will have longer distances in the long jump. Therefore, when performing long jump physical training, most teachers will require students to increase swing movements to make up for the lack of leg strength, and conduct targeted contraction training on the legs to further improve long jump performance. Exercises to develop back kick strength, swing strength, and kick swing speed, as well as exercises to improve the coordination ability of all aspects of the body, can be used.

This finds the meaning and purpose of some training methods, and can also help us improve and create some new methods and methods. Through the application of this analysis method, students can understand physical activities on the basis of their own theoretical knowledge, and improve the knowledge and scientific nature of sports. According to the theory of mechanics, any object that produces movement or changes in movement speed is a achieved under the action of force. Such as the shot put, discus and other throwing equipment flying in the air, it is because the athletes' strength acts on the throwing equipment. From the analysis of Table 1 and Table 2, it can be seen that the excellent rate of test results is low. Because there are 20 points of analysis and discussion questions in the test, it is a comprehensive test of students' creative thinking. Therefore, students who enter the excellent ranks can be sure that they also have a certain ability of independent analysis under the premise of mastering the basic knowledge.

The low rate of excellence explains the traditional teaching mode on the one hand. This reflects the problem of insufficient leg strength and poor elasticity in the second student's long jump. Based on this, physical education teachers should pay more attention to the second student's leg strength and bouncing ability, enhance the exercise of leg contraction ability and body bouncing ability, and then improve the students' long jump performance. The application of sports biomechanics to sports training can be analyzed from the perspective of kinematics, mainly through various advanced instruments and measurement techniques, to comprehensively and accurately record the actual use status and physical fitness of athletes. The method makes it easier and faster for students to master the essentials of technical movements, thereby greatly improving their overall motor skills. This technology can be used not only for daily training, but also for pre-competition preparations for student games.

In the dynamic analysis of track and field technology, it is not enough to only measure the magnitude of the force, but also to measure or calculate the direction of the force and the change with time. Only by measuring the magnitude, direction, time and change of the force can we analyze the advantages and disadvantages of sports technology. Through experimental research, it can be affirmed that the introduction of "observation learning" method in sports biomechanics teaching of physical education major is conducive to the improvement of students' academic performance , and can broaden the students' thinking, stimulate the students' learning motivation, and boost the students' action. After the teaching, we can fully feel the students' recognition of this teaching method through the discussion with the students. Dynamics refers to the analysis of the specific reasons for the changes in the sports athletes' movement states, and the measurement of the magnitude, direction and changes of various forces. situation, and further explore the formation law of force.

Through the understanding of mechanics theory, all objects are completed under the action of force when they produce motion or change in motion speed. And through various data in-depth analysis of the speed and acceleration of athletes in the sports state, combined with kinematic parameters to adjust the training methods of athletes. For example, during boxing training, high-speed cameras and measuring instruments for boxing strength can be used to measure the relevant movements and strength of athletes, such as the angular velocity and angle of uppercuts and side kicks. It was found that the triceps of the

stomach is the agonist muscle of extending the elbow, and the biceps glue is the agonist muscle of the supination of the forearm, so it is suggested that in the training of tuina exercises, the training of these muscles should be strengthened in a targeted manner in order to enhance the The endurance of massage manipulation and the coordination of movements provide a solid foundation of sports biology for the formation of standard movements.

CONCLUSION

Facing the transformation of society, the development of ideological and political education should be targeted, interesting and autonomous, to promote the continuous self-improvement of college students in the learning process, and to strive to practice the core socialist values. Colleges and universities should pay attention to the moral education of contemporary college students. Improve the work efficiency of young students and enhance the patriotic enthusiasm of young students to face the society and the future. We can try to establish a league branch on the Internet, accompanied by a strict registration system, through the innovative form of team building network, to strengthen the organizational awareness and team concept of the members, the introduction of important documents, the publicity and learning of policies, and the promotion of large-scale activities. All can be done through online groups.

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