

# Research on the Application of Mathematics in Physical Education

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**ABSTRACT:** Physical education is an important part of quality education, and physical quality is the cornerstone of the quality training of higher vocational talents. The application of mathematics in sports vocational education is conducive to expanding students' sports knowledge and physical ability, and is conducive to tempering students' will. To improve the personality of students, but also to provide more flexible means and teaching methods for sports educators, and to guide students in sports vocational education to enter the enterprise, to the society, to develop their own lives.

**KEYWORDS:** Application of Mathematics, Sports Occupation, Sports Teaching.

## I. INTRODUCTION

Mathematics is a subject with a wide range of applications, which contains a lot of knowledge that is closely related to physical education. For example, statistical analysis of mathematics can be used to calculate the correlation between the sports index and age of the crowd; linear programming can be used to improve sports performance. ; Operations research can be used to adjust the combination of team sports; extreme values can be used to calculate students' physical functions and motor functions. This article analyzes and discusses how to use mathematical knowledge in sports vocational education.

## II. THE NECESSITY OF APPLYING MATHEMATICS TO SPORTS VOCATIONAL EDUCATION

First of all, with the development of the times and the advancement of science and technology, professional physical education in our country is completely different from traditional physical education. Combining theoretical knowledge of mathematics with physical education can not only provide teaching convenience for educators, but also facilitate the cultivation of

students' physical quality by scientific means and strengthen students' physical functions.

Secondly, the continuous development and innovation of education also determines that vocational education in physical education should not be limited to traditional physical exercises, but should take into account the individual factors of students as much as possible, and use mathematical analysis to highlight the advantages of each student. Ensure the effectiveness of physical education.

Finally, traditional physical education neglects the cultivation of students' physical fitness and physical ability, and neglects the "different from individual" view of physical education. With the continuous progress of society, "the body is the capital of the revolution" has become a concept generally recognized by modern people, and because of this, the importance of the growth and development of physical education students has become increasingly prominent.

## III. WAYS TO APPLY MATHEMATICS IN SPORTS VOCATIONAL EDUCATION

### 1. Compile teaching materials to integrate mathematical knowledge with physical education

Mathematics is everywhere, and the shadow of mathematics can be seen everywhere in physical education. For students, the most effective way of learning is to incorporate the knowledge they want to learn into textbooks. Mathematical theoretical knowledge is abstract, while physical education is flexible. Only by combining abstraction and flexibility can a greater degree of arousal spark. Teachers use basic mathematical analysis principles to explain to students the precautions, limits, and scope of sports, so that students can form a systematic understanding of sports on a theoretical basis. At the same time, in order to more quickly integrate with international

standards, Sports vocational education should observe sports from the perspective of mathematics, and solve problems in physical education with mathematical methods. For example, using the knowledge of mathematics application arrangement, probability and statistics to formulate detailed elimination rules for ball games, predict the scores for athletes, etc., these basic applications can be incorporated into teaching materials to provide teachers and students with a basic application template.

### **2. Train qualified teachers and learn to apply mathematical theory**

Teaching requires a certain amount of teachers. Therefore, to organically combine mathematics and sports vocational education, teachers are the necessary backbone. In the process of physical education, teachers should be good at using mathematical analysis knowledge to carry out physical education, such as using fuzzy mathematics, using biological, social, and psychological evaluations to construct an evaluation system, mobilize students' learning enthusiasm, and stimulate students' interest in learning and physical education. Enthusiasm to improve teaching effect; for example, teachers should know how to use mathematical analysis knowledge to analyze the limits of various physical skills for students, and be able to observe students' physical strengths and defects in a timely manner when students are learning physical education, and select the best for students based on data analysis. Sports items that are conducive to physical and mental development to cultivate students' sports skills, tap their physical talents, and enhance their physical fitness.

### **3. Combine practice, apply mathematical knowledge in practice**

As we all know, many mathematical problems are actually inseparable from sports. It can even be said that a lot of mathematical knowledge is actually generated based on sports, such as the parabola in functions and the tracking problems in algebra. In physical education, mathematical knowledge also plays a vital role. Therefore, in the process of sports professional education, teachers can combine physical education practice with mathematical knowledge and carry out effective theoretical analysis to ensure the teaching effect. For example, when shooting shot puts, teachers can use mathematical analysis to conclude that the theoretical best angle of shot should be less than 45 degrees. According to this theory, students can train specifically to observe their own throwing ability. For another example, in the rapid long jump, the teacher can analyze the

direction of the starting force based on mathematical knowledge and demonstrate to the students personally. The students use the principle of force under normal circumstances to exert force effectively, which is more effective than jumping without purpose. There are also items such as weightlifting, long-distance running, etc., which can be accurately analyzed based on mathematical knowledge to observe the physical function of students, and on this basis, provide students with a learning method that is more suitable for them. In this way, the quality of physical education can be Obviously improved, and the physical quality of students can also be significantly improved.

## **IV. CONCLUSION**

To sum up, the application of mathematics in sports vocational education can effectively improve the quality of sports vocational education, effectively promote the development of students' physical fitness and sports literacy, effectively cultivate students' various physical abilities, effectively enhance students' physical functions, and effectively Solve the problems existing in traditional physical education and provide more accurate and convenient teaching methods.

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