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# Research on Application of Physical Training in Middle School Amateur Track and Field Training

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***Abstract:*** *Track and field training in middle school can improve students' physical quality effectively and give full play to their sports potential. However, most schools only focus on students' technical development while neglecting basic physical training, which makes it difficult for students to achieve self-breakthrough in some training programs. In addition, the traditional track and field training mode is single in forms with low training efficiency, and it is difficult to meet the requirements of modern sports. Therefore, this paper tries to integrate physical training and ensure students' basic physical quality by improving the proportion of physical training.*

***Keywords:*** *Physical training; Track and field practice; Basic method*

## 1. Introduction

Each track and field event can effectively improve the comprehensive ability of students, but on most occasions, the instructors pay little attention to basic physical training, which leads to students' understanding of key technologies at a superficial stage. Secondly, physical education in middle school is characterized with speciality, which requires teachers to maximize the development of students' potential on the basis of ensuring their physical safety. The training mode can not only improve the physical quality of the entire population in our country, but also cultivate corresponding talents for the relevant fields in our country.

## 2. Status quo of physical training

### *2.1. Superficial recognition*

In the training of traditional track and field events, most instructors tend to give technical training, so that students can reach a certain standard through corresponding technical guidance. However, in actual training, instructors' understanding of track and field techniques is generally at a relatively low level, which makes it difficult for students to convert methodological teaching into practical experience and realize self-improvement through methodological understanding[1]. Secondly, due to the poor basic physical ability of students, the high burden of skill training aggravates the probability of injury of students, and to a certain extent, it also give blow to the enthusiasm of students to participate in track and field.

### *2.2. Single teaching method*

In the development of teaching methods, the physical training of junior high school is mainly implemented in form of large class training, and it is difficult for the instructors to make personalized adjustment according to the actual situation of students.At the same time, due to the overall number of participants, the instructors have to improve the students' mastery of a certain skill through inefficient action repetition[2]. In addition, in modern sports and track and field training, most of the training in middle school is a mere formality, with less core skills and low training continuity. In terms of flexibility and differential performance, most regions are under-performed, which severely reducing the output of elite track and field athletes.

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### *2.3. Lack of pertinence in physical training*

Although relevant physical training for field activities was conducted in most regions, most of the physical training methods proved to be single, which was conducted mainly through running, jumping and other ways to train students' explosive power. However, standardized physical training needs to be highly targeted, such as improving students' explosive power of legs and running and jumping performance through targeted training. It is known that most schools failed to have complete sports training facilities, which not only reduces the pertinency of training, but also greatly prolongs the training cycle. And to some extent, this kind of condition intensifies the contradiction between sports training and learning[3].

### *2.4. Negligence of students' subjectivity in relevant training*

In the relevant investigation, it was discovered that most of the conditioning training failed to be implemented around the core system. For example, in some areas, the guidance by instructors in middle school track and field events is very scattered, it is difficult to ensure the basic training volume. The development of each training item in the training mainly depends on the field conditions,which failed to be conducted according to the actual needs of students. In the development of training, students have strong passive training and lack initiative in most cases[4].

## 3. The necessity of physical training in track and field training

### *3.1. Improvement of students' mastery of key track and field skills*

Part of the training of track and field skills has high requirements for students' physical quality. The simple skill practice is not effective, and it is easy to cause students' injury. For example, in the previous training observation, it can be found that basic physical training can effectively shorten the mastering time of some skills. For another example, in running training, basic physical training can effectively improve students' control ability in explosive power. Under the same conditions, students with higher basic physical fitness have obvious advantages in both the breakout time and breakout cycle[5].

### *3.2. Improvement of the richness of training*

The mastery of some track and field techniques is relatively abstract, and in most cases, the instructors only rely on the application effect for judgement, which will inevitably lead to errors in judgment. When students' basic physical ability increases, instructors can also make detailed judgments on students' mastery of track and field skills through various ways. At the same time, due to the increase of students' physical coordination ability, teachers can shorten the training time through various targeted training methods. For example, in the training of balance force, teachers can get rid of the traditional ground training mode rather they can use balance training equipment for auxiliary training[6]. In addition, the emergence of a variety of training methods will not only improve training results, but also effectively enhance students' interest in training. And it will also extend the validity of training.

## 4. Contents of physical training and common methods

### *4.1. Main contents*

#### *4.1.1. Strength training*

Big strength training can effectively improve the muscle density of students and ensure that students can quickly improve muscle mass. In track and field events, muscle mass can effectively improve students' explosive power, which has a significant effect on the performance improvement of both major and related minor events. In terms of selection of actual training contents,strength training mainly includes two forms, namely, short explosive strength based training and continuous strength training, and the proportion of training content is adjusted according to the development direction of students. Flexibility and relaxation exercises should be interspersed in strength training to reduce the probability of injury[7].

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#### *4.1.2. Acceleration training*

Acceleration training is generally scheduled after strength training, which is made mainly to help students rationalize the strength training results, so that the muscles can be quickly applied to speed improvement. In most cases, acceleration training mainly consists of two parts, namely, technical guidance and practical operation. In the technical instruction stage, the instructor needs to adjust the teaching method, so that students can understand the muscle control relationship more clearly, and then achieve short distance speed improvement through scientific force control. The concept of skill occupies a large proportion in acceleration training, and auxiliary equipment will also be used for targeted training in actual training[8].

#### *4.1.3. Stamina training*

Stamina training plays an important role in track and field sports, such as effectively improving the distance and frequency of sprint acceleration. In specific performance, students can enhance muscle control by maintaining stamina over long periods of time.In repeated training tasks, students can freely adjust the muscle retention time with reasonable distribution of physical strength.Especially in speed maintenance, stamina training will enable students to have more advantages than pure skill training personnel.

#### *4.1.4. Explosive training*

Explosive training is commonly seen in the high jump, long jump and sprint events and can significantly improve performance in these events. At the same time, under the training of the strength program, the students can control the rapid eruption of a certain part of the muscle, and finally achieve a specific technical effect. At the same time, weight-bearing exercises for explosive training can also effectively improve the explosive effect. In training, most instructors believe that 30% weight training can achieve the best training effect[9].

### *4.2. Common training methods*

#### *4.2.1. Accelerated swing training*

Role swing training can effectively improve the dynamic balance ability of students, so as to ensure that students can effectively control the body posture in the state of movement, and thus improving the training efficiency. In the specific operation, the swing training is mainly divided into two parts, respectively load-bearing swing and non-load-bearing swing. In both swing states,the instructor instructs the student to practice as much as possible in a running position to simulate the change of center of gravity in actual motion. The weight bearing state can be maintained with attention to the students' behavior feedback, and the weight should not exceed 20% of the body.In the later stages of training, in addition to the simulated running position, you can also use the lunge position for center of gravity exercises. If students perform well, they can also use jumping, hurdles and other ways to supplement training.

#### *4.2.2. Barbell assisted exercises*

Barbell assisted exercises are commonly used in a lot of training and can quickly improve the student's muscle strength. With proper guidance, students can convert strength directly into forward speed, which can greatly improve sprint performance.In practice, trainers can group students by weight, with one group for every five kilograms. In terms of training content, barbell squat can be adopted in early training to improve the lower limb muscle based explosive power. On the one hand, the number of squats in each group is 5~8. The weight will directly affects the barbell weight, because the number of squats has no relationship with it. On the other hand, in the middle of the training, we can do step training with each group of 5, the rest time is equal to the time spent in squats. After the rest is complete, the number of squats will increase by one and continue to squat.When students reach the limit, the number of squats can be reduced until it returns to the normal level. However, it is important to note that barbell assisted training can be conducted with attention to the training frequency.At the later stage of training, the load of biceps femoris and quadriceps bone increased significantly, and the problem of muscle imbalance was serious. In the training process, the proportion of barbell auxiliary training can be adjusted according to students' feedback, and do not rely too much on this type of training.

#### *4.2.3. Muscle group based targeted training*

Most track and field events are achieved based on the arms as the power points, so targeted technical training can improve performance in some events. On the one hand, in the muscle group training, the

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instructor can use the elastic band to fix the relevant muscle group, so as to improve the control of the students' muscles. On the other hand, in wrist muscle exercises, you can adjust the force point by bearing flexion and extension, clenching your fist and so on. In the exercise of the upper arm muscle group, in addition to the use of barbells for auxiliary training, large auxiliary equipment can be adopted for targeted exercises. However, the school equipment is relatively limited, and the guidance staff can replace the equipment for assistance. In the waist muscle group training, students generally weak muscle management. Students can also use the Swiss ball and supine weight for explosive exercise.

### *4.3. Key points of physical training*

#### *4.3.1. Strengthening the concept distinction between steady state and unsteady state*

In the actual survey, some students reported that although the difficulty of concept understanding was at a low level, the practical operation was not good and it was difficult to enter the state of theoretical practice. After analyzing the training process, the author finds that although most physical exercises distinguish the concepts of steady state and unsteady state, they do not adjust them in practice, which leads to students' inability to accurately grasp the difference between the two states.For example, in the explosive force exercise, the explosion speed is fast in the steady state environment, while the explosion speed is slow and the stamina lasts relatively short in the unsteady state environment.If the core strength of students is not enough, it is also vulnerable to get hurt. If conditions permit, students should be instructed to pay attention to the switching quality between steady state and unsteady state as much as possible.

#### *4.3.2. Improvement of the entertainment of training*

Amateur training in middle school should be conducted to ensure the entertainment of training and balance the relationship between study and training. For example, in the actual training, we can use competition instead of practice to adjust students' participation enthusiasm.At the same time, in the choice of training methods, we can appropriately choose the modern popular elements as the main carrier of training.In addition, trainers can also try to gamify training programs. For example, under the framework of game rules, they can improve students' active participation by appropriately delegating power, so that students can have a correct cognition of their physical changes.

## 5. Conclusion

In high-end track and field events, athletes' basic physical skills can give the play of the upper limit of athletic skills to the extreme, thus minimizing the physical fatigue and loss by training. In addition, the traditional track and field training mode is single in forms with low training efficiency, and it is hard to meet the requirements of modern sports. Therefore, when conditions permit, instructors should adjust training strategies on a scientific and efficient basis to ensure training benefits.

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