

# Research on Special Physical Training of Track and Field

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**ABSTRACT.** *Track and field is a popular sport. In track and field competitions, athletes must have strong speed, strength, endurance, flexibility and other qualities so that they can give full play to their competitive level. This paper first briefly introduces track and field sports and its specific physical training knowledge, and then expounds the specific physical training principles and specific methods of track and field sports. The purpose of this study is to make track and field athletes pay attention to the special physical training, and to provide some guidance to track and field coaches in the development of physical training projects.*

**KEYWORDS:** *Track and field sports, Track and field training, Physical training, Physical quality*

## 1. Track and field sports and special physical training

With the development of mankind, track and field sports have a long history and cultural connotation. Track and field sports which mainly include walking, running, jumping and throwing is an important event in large-scale sports events. In the Olympic Games, track and field, swimming and archery are known as the “three Olympic gold medal”[1]. The Olympic spirit of “higher, faster, stronger” can be powerfully reflected in track and field. Track and field competition is fierce and competitive, it includes field, track, heel-and-toe walking, road running and cross-country running. Track and field sports have high requirements on athletes' physical qualities such as speed, strength, endurance and flexibility. With the continuous improvement of track and field athletes' technical level, it has become an inevitable requirement to enhance athletes' sports level and competitive level to strengthen athletes' special physical training.

Track and field special physical training is a kind of special physical exercise that is closely related to track and field special sports, it should improve the performance of track and field special sports directly and adapt the needs of track and field special sports. Only athletes possess the above special sports ability, it is possible to apply track and field special technology and tactics steadily and neatly in the competition, and then get excellent results.

## 2. Key Points of Special Physical Training in Track and Field

The coach must pay attention to the following questions before instructing track and field athletes to carry out special physical training.

### 2.1 Attach Importance to General Physical Training and Lay a Foundation for Special Physical Training

General physical training is the basis of special physical training. In the teaching of track and field sports, general physical training is the training for athletes to use kinds of non-special body exercises, like that they can promote their own physical health, improve their body shape, enhance their system function level and improve their basic sports ability [2]. Track and field sports require athletes to have good development of multiple parts of the body, but special physical training can only improve the development level of individual parts of athletes, while general physical training can effectively solve the task of comprehensive development of multiple parts of the body of athletes. Therefore, when the coach guide the athletes, he should let them do the general physical training first instead of doing specific physical training directly.

### 2.2 The Special Physical Training Should Be Integrated into the Athletes' Technical and Tactical Training

The coach should not separate the special physical training from the technical and tactical training, but closely combine them, so that the athletes can adapt to the requirements of track and field sports in terms of physical quality, body shape and system function faster and better. At the same time, the combination can further

promote the reform of the content of special physical training and technical and tactical training, so as to further stimulate the enthusiasm and initiative of athletes in training and improve their special performance.

### ***2.3 Arrange the Content and Method of Special Physical Training and Improve the Pertinence of Training According to the Actual Situation***

When the coach arranges the content and method of the athlete's special physical training, it should be different according to the person, the item and the time. "the person" refers to the coach should arrange physical training content and method according to the athlete's physical quality, track and field sports foundation and learning ability; "the item" refers to the coach should arrange physical training content and method according to athlete's learning items (is it a sprint or a long run, long jump or high jump); "the time" refers to the coach should arrange physical training content and method according to the training time (different period and stage).

### ***2.4 Reasonably Arrange the Exercise Load of Special Physical Training***

Track and field special physical training has a certain exercise load. The coach should arrange appropriate exercise load for the athletes according to their physical quality, track and field sports foundation, and their adaptation rules, so as to obtain ideal training effect [3]. In the process of athletes' special physical training, the coach should evaluate their special physical development level regularly to avoid the training effect of their response to one of exercise load. In general, according to the track and field special physical training task and the actual situation of the athletes, the coach can give them exercise load based on the rule of "increase - adapt - increase again - adapt again".

## **3. Content and Method of Special Physical Training in Track and Field**

Track and field special physical training includes speed training, endurance training, strength training, flexibility training, etc, each item has their own emphasis on athletes' quality training. For example, sprint special physical training focuses on the speed and strength training; heel-and-toe walking, middle and long distance running emphasis on speed and endurance training; throwing discus and javelin focuses on strength and endurance training; high jump and long jump focuses on speed and flexibility training.

The following is an example of sprint special speed training and javelin special strength training to illustrate the methods of track and field special physical training.

The sprint special quality includes the starting reaction speed, acceleration ability and maximum speed ability, the speed of athletes' reaction from the start is very important in sprinting. The starting reaction speed of an athlete is closely related to the state of his central nervous system, so the coach can improve the flexibility of the athlete's central nervous system by effective methods according to the physiological theory, so as to improve the starting reaction speed of the athlete<sup>[4]</sup>. For example, a coach can train an athlete's starting speed by changing direction, start running, and changing speed after listening to the password. Acceleration is the ability of an athlete to achieve maximum speed in the shortest time after starting, maximum speed ability is the ability of an athlete to maintain that speed after reaching his maximum speed. The acceleration and maximum speed ability can be trained by the practice on marching running, downwind running and timing running, etc.

Javelin requires the athletes to have strong muscle strength on abdominal, arm and lumbar abdominal, etc. When the coach instructs the strength and quality training of javelin athletes, the first thing is to ensure that the special strength training confirms to the basic requirements of javelin competition. During the training, the coach should guide the athletes from the aspects of the range of movement and the work way of the muscles. Common training methods: use sit-ups to strengthen abdominal muscle; throw the ball behind bow to develop the muscle strength while throwing; lie on back and pull head back to develop the arm muscle strength in the final effort of throwing; pull the bell to the chest to strengthen the explosive power of the athlete's shoulders, arms, torso and legs.

## **4. Conclusion**

Special physical training has an important influence on the full play of athletic level and competitive level of track and field athletes. Therefore, the coach should strengthen the special physical training of track and field athletes. In the process of training, the coach should let the athletes carry on the general physical training first to lay a good foundation on special physical training, then integrate the special physical training into the technical

and tactical training in order to promote the common development of the athletes' special physical ability and technical and tactical level. In addition, the coach should arrange the content and method of special physical training to improve the pertinence of training according to the actual situation.

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