Research on the Fatigue and Recovery in College Track and Field Training

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Abstract: The problem of fatigue and recovery of sports training has always been a research topic that college track and field coaches generally attach importance to. With the continuous improvement of modern athletic sports technology, the amount of training load is getting larger and larger. It is difficult to adapt to and meet the needs of current training by natural recovery methods such as eating, sleeping and rest, so it should be included in the modern training system. Scientific medical supervision and diversified and comprehensive recovery measures can effectively guarantee the scientific nature of training.

1. Introduction

In college track and field training, the consumption and recovery of body abilities are synchronized. Recovery training is to eliminate the fatigue caused by athletes in training in time, and to produce excessive recovery through the process of biological adaptation to improve the body's ability. Restorative training is a powerful guarantee for rationally enhancing the body's ability by adjusting the body's ability to bear the load, and it is also an effective way to pursue excess recovery.

Fatigue and recovery in track and field training in colleges and universities is a problem faced by all coaches and athletes, and also an important link that coaches and athletes tend to overlook. The coach's training plan should include not only the amount of load, strength, etc. but also the means and specific content of fatigue recovery. At present, many college coaches only arrange some simple relaxation activities after training, which is not enough. This article describes the diagnosis methods of athlete training fatigue and some effective recovery methods, which are for reference only.

2. The Concept of Fatigue

Fatigue caused by students in sports training refers to the phenomenon that students' body cannot maintain a specific level or the body cannot maintain a certain level of exercise intensity during sports training. The fatigue of students in sports training is a protective response of the body and a normal physiological phenomenon. Therefore, fatigue caused by sports is inevitable in sports training and is a process of sports training, so the coach should arrange the training plan of the students, through the active recovery, eliminate the fatigue of the students and improve the effect of sports training

The main reasons for students' fatigue in sports training are the reduction and loss of body energy, the production and accumulation of metabolites in the body and the balance of water and minerals in the body. The fatigue of students in sports training can be divided into muscle fatigue, nerve fatigue and fatigue of cardiovascular system. Muscle fatigue caused by sports training is the most obvious during the training process, which is mainly manifested by muscle soreness, cramps, limb weakness and spasm during training.

The fatigue of the nervous system during sports training is mainly due to the decline of the cerebral cortex function of the students. The main manifestations are insufficient student excitement, slow response, insufficient coordination of movements, stiff movements, etc. The fatigue of the cardiovascular system generated during exercise training is mainly due to insufficient gas exchange and changes in many indexes in the blood.

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3. The Performance of Athlete Training Fatigue and the Method of Judging Fatigue

When the intensity and number of training loads reach a certain level, the human body will produce fatigue. In the training process, the recovery process starts at the same time as the consumption process, and it is always accompanied by sports training. When consumption and recovery are more balanced, the human body will not feel tired after training. When the relative balance between the two is broken, that is, when recovery cannot keep up with the need for consumption, recovery will “owe” the debt of consumption “This” debt “can only be compensated when the consumption level is reduced, but if too much debt is owed, it will be difficult to repay it at the moment of recovery. fatigue. For example, the energy supply characteristic of track and field sprinters is anaerobic energy supply, which includes the decomposition and energy supply of two high-energy phosphate compounds, ATP and CP. Due to the high intensity of exercise during training, frequent conversion of neural processes, the center is in a state of high excitement, it is easy to produce fatigue, and it cannot maintain the maximum working ability for a long time. The speed endurance is reduced, the pulse recovery time after fast running is extended, the athlete feels heavier, and the running movement is stiff. Changes in the central nervous system are important factors for fatigue, and a series of changes in internal organs, muscles, and blood also promote fatigue.

During the training process, the coaches should have rich experience in grasping the limits of the degree of fatigue, and it is especially important that they must understand some physiological and biochemical knowledge.

During the training process, in general, the coach judges the degree of fatigue by observing and asking the athlete's reaction and external performance.

Content	Mild Fatigue	Moderate Fatigue	Very Tired
Self-Feeling	Without any discomfort	Fatigue, leg pain, palpitations	Headache, chest pain, nausea and even vomiting, and it lasts for a long time
Complexion	Reddish	Quite red	Very red or pale, sometimes purple-blue
Perspiration	Not much	Many, especially the shoulder straps	Very much especially the whole torso
Breathe	Moderately accelerated	Significantly speed up	Significantly speed up Significantly speed up and become shallower, sometimes with irregular breathing rhythm
Action	Light and steady gait	Unsteady pace	Significant rocking phenomenon, uncoordinated movements
Attention	Better, can execute instructions correctly	The execution password is inaccurate and an error occurs when changing direction	Slow password execution, only loud passwords can be accepted

During the training process, the coach can use biochemical indicators to diagnose the degree of fatigue, mainly using blood lactic acid, hemoglobin, blood urea, blood ketone to cortisol ratio, etc., through the test to make the coach understand the athlete's fatigue, Adjust the training plan in time to realize the important reference basis for scientific training.

4. Recovery of Sports Training

Rehabilitation training means that after training, students use reasonable and scientific methods and means to quickly eliminate the physical and mental exhaustion and fatigue of the students, so that the students' physical fitness and abilities can be restored for the next cycle of training and competition.

In the middle school track and field training process, the speed of the student's fatigue recovery process depends on the individual's physiological function, and it takes a certain time to recover to the state before exercise. The main reason is that the recovery during the recovery process is greater than the consumption. This recovery of the function can not only return to the state before the exercise, but also exceed the original level, which is excessive recovery. The degree and time of over-recovery depends on the degree of consumption. In the physiological range, the greater the

amount of muscle activity, the more intense the consumption process, the more obvious the over-recovery. But if the load is too large, it will prolong the recovery process. There are two stages of recovery, one is recovery during exercise and the other is recovery after exercise.

It is possible to achieve good results by training without fully recovering from fatigue, but it is necessary to supervise the recovery process after sports and competitions, and also consider training and recovery as a whole. Because the unity of exercise and recovery is an important condition for training adaptation. In the process of track and field training in colleges and universities, in order to obtain good training results, it is necessary to recover the fatigue caused by the students' sports accordingly. After the training, the recovery time should not be too long or too short. During the training, the coaches should reasonably arrange the recovery time of the students according to the principle of over-recovery, so as to prevent the students from obtaining the effect of over-recovery. Therefore, in the process of sports training, load and recovery are a unified whole, and the load and recovery process are reasonably arranged according to the rules of the recovery process in order to obtain good training results and further improve athletic performance. In this regard, coaches must raise awareness in the process of sports training.

5. Means and Methods of Recovery

The speed of physical recovery of students is directly related to the recovery methods adopted, so the recovery methods and methods adopted by students after sports training are very important. In sports training, we can divide recovery methods into training methods, medical biological methods and psychological methods according to the disciplines they belong to.

Training methods and means refer to the methods to promote the recovery process by reasonably arranging training content, training methods, exercise load, recovery time and recovery methods in the process of sports training. There are various methods of recovery training. The coaches can arrange some sorting activities according to the training content of this class to accelerate athlete fatigue, especially the elimination of local fatigue. Such as: jumping exercises, strength exercises can be used after massage, flexibility exercises; speed endurance, speed training can be used for jogging, various flexible foot swings and coordination exercises. The content arrangement at the end of the training class is very beneficial for athletes to recover from fatigue caused by certain loads during training in a timely manner. The coach must not only formulate the corresponding relaxation and finishing content in the training plan, but also make the athletes develop the habit of finishing and relaxing after training, so as to ensure the training from the preparation of sports one by one training one by one after training. Completeness.

The medical biological recovery methods used in the exercise training process mainly include the nutrition supply corresponding to the exercise load, as well as physical therapy, medical agents, acupuncture and other measures. In addition to supplementing nutrition, athletes should have a reasonable life system, including daily morning and evening rest and rest time, at least 8-10 h of adequate sleep every day. Sleep environment, these are the basis to ensure full and active recovery. Massage also plays an important role in the recovery of sports training. The main methods of massage are pressing, rubbing, kneading, kneading, rubbing, patting, pushing, rubbing, etc., movement recovery techniques and scraping, rolling, splitting, pinching, etc., and then mixing As an auxiliary technique, moving and breaking strikes are medium-strength, light to heavy, shallow to deep, and appropriate stimulation intensity. The massaged person should stretch the body and relax the muscles of the limbs. The massage time should be controlled after exercise, and the time is generally controlled at about 1-20 minutes.

The main methods used in sports practice are: relaxation of muscles, skeletal joints, slowing of breathing, concentration of attention, and self-suggestion. Track and field events, especially long-distance running for long periods of time, can easily cause fatigue of the central nervous system. By using psychological effects, you can reduce neuropsychological tension, reduce psychological depression, and recover the consumed nerve energy more quickly. Thereby accelerating the recovery of other body systems and organs.

In training practice, whether it is short-term training or weekly training arrangements, the

increase and decrease in the amount of exercise load and intensity are undulating. After sufficient stimulation is given to athletes, sufficient recovery time should be arranged. (Recovery) During the process of repeated stimulation (re-recovery), the training level and athletic performance of athletes have been continuously improved. On the contrary, when the stimulation is too large, it is difficult for athletes to adapt and recover. Over time, over-training of athletes will occur. If the stimulation is over and the recovery time is too long, it is difficult for athletes to improve their training level. The training arrangement should be adjusted according to the athlete's training reflection and the medical supervision after training, so that the athlete is always in a benign training cycle.

Finishing activities at the end of the training session. This is the most easily overlooked issue, and this part of organizing activities has a great role in promoting the recovery of athletes. The coach arranges some targeted sorting activities according to the training content of this class to accelerate athlete fatigue, especially the elimination of local fatigue. For example, massage and flexibility exercises can be used after jumping and strength exercises; speed endurance, jogging, various flexible leg swings and coordinated exercises can be used after speed training, which is very important for athletes to recover from fatigue caused by the training class load in time benefit. Let athletes develop the habit of relaxing after training, so as to ensure the integrity of the sports training process and restore the body.

The nutrients required by the human body are six categories of proteins, lipids, sugars, inorganic salts, water and vitamins. The composition of the human body is not fixed. They are affected by sports training and the quality and quantity of food. Some of the nutrients ingested are used to renew tissues, growth and development, muscle strengthening and other functions, and some are used as energy substances. If the monthly intake of nutrients does not meet the needs, it will cause metabolic imbalance, insufficient energy supply, cell aging, decreased function, and muscle regression. If the intake of nutrition is excessive, it will be converted into fat accumulation in the body, resulting in an increase in the proportion of body fat and affecting exercise capacity. For track and field athletes, the monthly nutritional intake, in addition to the need to gain weight or maintain growth and development, should be a problem of balanced nutrition. The daily nutritional intake of athletes should be combined with the metabolic characteristics of this project. During exercise, there is a high degree of hypoxia. The energy source mainly depends on the energy supply system of prophosphate and glycolysis. In a short period of time, it consumes a lot of energy and produces acidic products such as lactic acid. Its nutritional characteristics should be consistent with the energy substances in the body can quickly mobilize to accelerate the synthesis of ATp and reduce the degree of acidosis in the body. Therefore, the diet should provide rich and digestible sugar and lipid vitamins and vitamin c, as well as calcium, magnesium, manganese, zinc, iron and other nutrients, in order to make the body's alkali reserves sufficient to enhance the ability to buffer acid, should eat more Vegetables, fruits and other alkaline foods help to eliminate fatigue and restore physical strength.

6. Conclusion

Without fatigue, there is no training, and there is no improvement without recovery. Sports training causes a certain degree of fatigue in the body of athletes. It is the biological basis for improving the level of sports competition. It is the fundamental measure for digging and improving functional capabilities and physical fitness. In short, mastering the laws of sports training fatigue and recovery is undoubtedly an effective guarantee for improving functional ability and athletic performance.

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