

The Role of Nutrition Supplement and Nutrition Food in Training for Athletes

Qiang Gao, Shangling Song and Zhen You

Jining Medical University, Shandong, China

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Abstract: With the development of competitive sports, during the period of high strength training, the demands on the nutritional needs for the athletes should be increased, which needs the researching staff to take some measures by dietary and supplement agent to ensure the body needs, so as to complete the training program successfully. In this paper, based on the investigation and analysis of the status of dietary nutrition, the strategy of having scientific and reasonable dietary nutrition supplement and nutrition supplement is proposed, so as to promote the training level of the athletes.

Introduction

As for athletes, sports nutrition is a kind of special nutrition, which takes the public nutrition as the basis. Meanwhile, the means of having nutrition supplement plays a very important role in raising the sports abilities, since reasonable nutrition can provide adequate energy for the exercise and ensure the normal operation of the body function, which also can help the recovery after having strenuous exercises, reduce the fatigue degree caused by exercises or delay its occurrence.

The Supplement of Liquid and Sugar

Stomach can absorb a boost of dehydration in an hour, so it is a good way for people to drink water often to supplement the body fluids. Drink two cups of water in two hours before having training session. Weigh the weight before the event or the match during the period of the training or the contest. Before fifteen minutes of the contest, athletes should drink one or two cups of water. During the period of training and competitions, in order to maintain the body moisture, athletes should drink half cup of water in every fifteen minutes, in half an hour, they should drink a cup of water. After the training or the day after the match, the loss of one pound weight should drink two cups of water. Cold water (about the temperature of refrigerator), which is an ideal humoral supplement. It is cheap, available and easy to be absorbed. Specially for the well trained swimmers, they usually supplement with electrolytes from food or drinks. If the body lost over six pounds during the period of one training course, athletes should drink some other drinks (equally to the concentration of body fluids), so as to supplement water and sodium. Putting 1/3 teaspoon salt in each of the dehydration, which can be made into the infiltration solution. Do not take sodium chloride tablets alone. Because the solubility is too high when it is soluble in the gastrointestinal. Thus gastrointestinal must absorb large amounts of water dilution, so as to reach the isotonic level. At the same time, a lot of water from the organization can come into the stomach, which will cause tissue dehydration and fluid imbalance.

Table 1 Symptom of Dehydration

Dehydration degree	Dehydration	Symptom	Physical decline
Mild dehydration	2% of the weight	The osmotic pressure of the body is increased, the blood volume is decreased, hemoconcentration, the burden of the heart is increased, thirsty and the amount of urine is decreased	10%-15%
Moderate dehydration	4% of the weight	Severe thirsty, heart rate is increased, body temperature rises, the feeling of fatigue is increased, and the blood pressure may be decreased The blood volume is reduced, the heart rate is increased, the acceleration of respiration,	10%-30%
Severe dehydration	6%-10% of the weight	nausea, loss of appetite, anorexia, irritability, muscular convulsion and mental activity is reduced	Seriously threatened the health

Fruits, Vegetables, Milk and Juice Contain Liquids and Electrolytes. Soda and juice drinks mainly contain sugar and water. These drinks belong to hypertonic drinks (higher than the concentration of body fluid). If you drink hypertonic drinks, the body must first dilute it firstly then absorb it. Juice, soda, some sports drinks and ordinary beer are hypertonic drinks. To maximize the absorption and maintain the body's moisture, when drinking such drinks, it must drink three or two times as much as the white water. Even if the renal function is normal, drinking water should not be excessive. The kidney needs to eliminate the excessive liquid from the diet or the drink effectively through the form of urination. Therefore, in order to maintain the maximum movement capacity, drinking water needs to be cautious.

Through good training, muscles can store more glycogen, at the same time, the storage of muscle glycogen as well as the storing capacity can depend on the diet including high carbohydrates, such as starch, sugar. Adequate storage of muscle glycogen can help to maintain long time intensity exercises, which can not increase the speed of the movement. How to maintain the adequate glycogen content? Diet with high content of carbohydrate can be including foods such as bread, cereal, gruel, rice, fruits, vegetables, which can help to maintain the storage of glycogen and provide energy. While the muscle cells and hepatocytes can not turn fat into this kind of material. However, in the condition of enough storage of glycogen, the excessive acid carbohydrates can be converted into fat or be oxidized immediately.

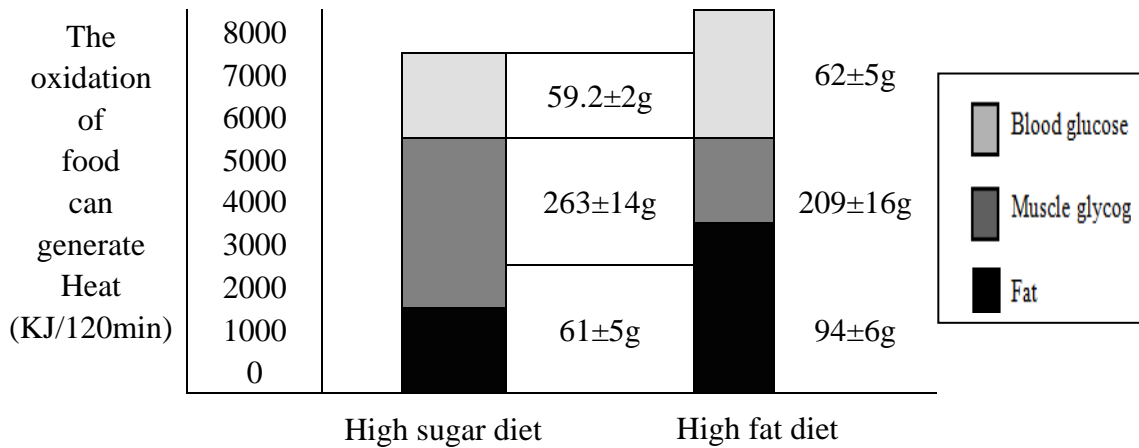


Fig. 1 Comparison of Energy Consumption between High Sugar Diet and High Fat Diet in the Process of Training

Glutamine

The exercise training can cause the plasma glutamine level to fall, which also can cause the function of immune system insufficient, leading to the athlete's poor resistance, who is easily to be sick. For example: among 75% of the maximum oxygen uptake power during the period of long-distance running exercise testing, plasma level of glutamine changes can be shown in the Table as follows.

Table 2 Changes of the Concentration of Glutamine in Plasma (mol/L)

Index of measurement	Group	Exercise before starting	Immediate time after exercise	After exercise
Glutamine	Add	603.1±96.4	603.1±96.4	598.3±95.5
Glutamine	Do not add	613.3±101.1	606.4±102.2	570.1±98.4

From the above table, it can be seen clearly that the supplement of glutamine can eliminate the decrease of glutamine concentration in plasma caused by exercise during the period of the continuous exercise or after exercise in 75% of VO₂max. Glutamine supplementation can improve immunity of the body, which also can prevent the athletes from the occurrence of colds and other diseases during the period of having high intense training or before having competition. At the same time, glutamine can also help to repair the destroyed muscle cells timely during the period of having training, so as to promote the fatigue recovery and develop the athletes' muscles strength.

Supplement of Accelerator

Caffeine is a kind of accelerator, which can only increase endurance and improve the athletes'

training amount, but it has not been proved that it can increase the speed. The effect of caffeine on endurance is due to the increased amount of blood of the release blood in the fat tissues of the athletes. Because of the high lipid level in the blood can promote the oxidation of higher fat in muscle tissue, which can not increase the amount of the oxidation of glucose. So it can postpone the occurrence of the short storage of glycogen. The effect of caffeine can also improve the working efficiency of nerves and muscles, so it seems easier for having exercises. The effect of caffeine on exercise is not dangerous, but the effect of being diuretic and stimulating effect can increase the risk of water loss and arrhythmia in the body. Caffeine also can cause sleep difficulties or insomnia. Excessive caffeine can cause some athletes' extreme excitement, which can result in the decline of sports performance.

Supplementation of Amino Acids

Honey contains many amino acids, vitamins, minerals and all kinds of chemicals. Study on the young swimmers who have daily training showed the comparison between the group of athletes who are taking honey and the group of athletes who are taking the placebo, it does not increase the amount of the maximal oxygen uptake; however, it also shows that due to the infection of the upper respiratory tract, the group of athletes who had reduced the training for one day, the maximal oxygen uptake is lower than the group that had taken the honey. It is important to note that honey has no direct effect on the movement of swimmers. Moreover, some people have allergic reactions to honey. Therefore, before training, if athletes want to use the nutrition accelerator it's better to follow the doctor's advice or adopt the nutrition advice from doctors.

Conclusion

Athletes take on the heavy training, sports tasks, with great physical exertion. Therefore, it is very important for the athletes to have the initiative health care by using nutrition knowledge scientifically. Studies have shown that the athletes' unbalanced dietary is existed as the common phenomenon, which is in contradiction with the important role of diet that plays in the sports, this kind of situation can not only affect the training effect and the recovery, but also can affect the athletic performance ultimately.

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