

The Role of Nutrients in Exploring the Application of Nutrients in Athlete Training

Fanqian Yan

International College, Krirk University, Bangkok, Bangkok, 10220, Thailand

slconaway@email.phoenix.edu

Abstract. In order to improve China's high level of competition, promote the development of China's athlete industry, improve the level of China's sports development. This paper adopts the literature method, logic analysis method of the present situation of the diet structure of domestic athletes, through the analysis of the sports nutrition food status at home and abroad, summarizes the excellent sports nutrition food strategy to promote the future development of sports nutrition food in China: perfect the sports nutrition food system construction, strengthen our sports nutrition food standard, establish a mature sports nutrition food market, so as to provide strong underlying construction for the development of sports undertakings in our country. This paper is mainly a detailed study of the athletes' diet collocation, before and after training special attention, this profound discussion and construction, get the athletes after training recovery reinforcement content, harvest a lot. Although the article deeply discusses the preparation work and competitive improvement of athletes before and after training, there is still a lot of research space for the stimulation measures of athletes before the competition and the protection means during the competition. Future studies should focus on the profound study of the function of athletes before the competition and the physical regulation during the competition.

Keywords: Athletes diet structure, bone mineral density, recovery system prevention.

1. Introduction

Exercise and nutrition are crucial for human growth and growth level of the key factors, for the internal link between effective analysis and exploration, grasp the main connotation of sports and nutrition, and effectively implement in the process of practice, to escort for human health. Combined with this situation, this paper targeted analysis and discusses the main characteristics of the related sports nutrition demand and the influence on the body metabolism, and find out the demand between sports and nutrients, and nutrients through the nutritional function in exercise, scientific and reasonable control of diet, and the exercise ability, so as to for scientific physical exercise and reasonable nutrition supplement to provide corresponding guidance. The brief analysis of this paper can make a certain contribution to improving people's sports ability and improving their health. Nutrients are important factors that affect human growth and development and health level. Through the characteristics of basketball and the impact of the body metabolism analysis, find out the relationship between sports and nutrient demand, and then on the nutritional function of various nutrients in exercise and the reasonable eating habits and dietary system in the exercise ability and health status, scientific guidance for physical exercise and reasonable nutrition supplement, improve exercise ability, improve the field performance in large macronutrients [1].

2. Macronutrients such as Carbohydrates, Protein, and Fat Fuel Physical Exercise

2.1. Carbohydrate

Carbohydrates are the most important fuel source for athletes because they provide glucose to use for energy needs. One gram of carbohydrates contains about four major calories of energy. Glucose is stored in glycogen in muscle and liver. Muscle glycogen is the most accessible energy source in exercise muscles and is released faster than other energy sources. Carbohydrates should account for

45 to 65 percent of total calorie intake. Good sources of carbohydrates include whole grains, vegetables, fruits, milk, and yogurt.

2.2. Protein

Protein can build and repair muscles, hair, nails, and skin. For light and short exercise, proteins are not the main energy source. However, with increasing exercise time, protein helps to maintain blood glucose through liver gluconeogenesis. One gram of protein provides four calories. Protein should account for between 10% to 30% of the total energy intake [2]. Good sources of protein include lean meat and poultry, fish, eggs, dairy products, beans, and nuts, including peanuts.

2.3. Fat Class

Fat is necessary to absorb fat-soluble vitamins (A, D, E, K), which provide essential fatty acids, protect vital organs, and provide insulation. Fat also provides satiety. It is calorie-dense energy (it can provide 9 calories per gram), but it is difficult to use. Fat should account for between 25% to 35% of the total energy intake [3]. Fat saturation should not exceed 10% of total energy intake. Good sources of fat include lean meat and poultry, fish, nuts, seeds, dairy products and olive oil and low erucic vegetable oil, which should be minimized in potato chips, sweets, fried foods and baked goods.

2.4. Liquid

Liquid, especially water, are an important nutrient for athletes. Sports performance can be affected by the time, number and time of fluid input. Fluids help regulate body temperature and replace sweat loss during exercise. Ambient temperature and humidity can affect how much athletes sweat and how much fluid they need to consume. High temperatures and higher humidity make people sweat more and need more fluid to keep moisture. Dehydration reduces athletic performance and puts athletes at risk of heat stroke. Proper hydration requires hydration before, during and after exercise. The amount of fluid required depends on many factors, including age and body size. Athletes should drink 400 – 600ml of cold water 2 – 3 hours before exercise. In physical activity, athletes should consume 150 to 300ml of liquid every 15 minutes to 20 minutes. For events lasting more than 60 minutes or occurring in hot and humid weather, sports drinks containing 6% carbohydrates and 20mEq/L to 30mEq/L sodium chloride are recommended to replace energy storage and fluid / electrolyte loss [4]. After exercise, athletes should drink enough fluid to replenish the fluid lost during sweating. This usually requires a weight loss of about 1.5L per kg of liquid. Eating sodium-containing liquids and snacks after exercise can stimulate thirst and maintain water, which can help with rehydration. For non-athletes, regular intake of carbohydrate-containing sports drinks leads to excessive calories, thus increasing the risk of overweight and obesity and dental caries should be avoided.

3. Restore food

Recovery food should be consumed within 30 min after exercise and again within 1 h to 2 h after exercise to help re-load glycogen in the muscle and for proper recovery. These foods should include protein and carbohydrates [5]. For example, graham crackers with peanut butter and juice, yogurt with fruit or a sports drink with fruit and cheese.

3.1. Research Progress: Meal Plan

One of the most difficult things to manage is meal meals around sporting events. Dining times are very important and need to be personalized. It is important that athletes find their favorite foods also help maximize performance. They should not try new food or new habits on race day.

General guidelines include eating at least 3 hours before the event to properly digest properly and minimize the incidence of gastrointestinal discomfort during exercise. Diets should include carbohydrates, protein, and fat. Cellulose should be appropriately restricted. High-fat foods should be avoided before exercise, because high-fat foods can delay gastric emptying and make athletes feel

dull, thus having adverse effects on exercise. For early morning practice or activity, a snack or liquid meal 1 h to 2 h before exercise followed by a breakfast after the activity will help ensure sufficient energy to maximize performance [6].

Pre-race snacks or water meals should be consumed from 1 hour to 2 hours before the race for digestion before starting exercise [2, 6]. Snacks can include fresh fruit, dried fruit, a bowl of cereal milk, fruit juice, or fruit smoothies. Sports drinks, fruit or granola can be consumed to replenish energy and maintain high energy.

3.2. Results Discussion

A balanced diet is essential for growing athletes to maintain proper growth and optimize athletic performance. The ideal diet includes 45% to 65% carbohydrates, 10% to 30% protein and 25% to 35% fat [7]. Liids are important for maintaining water and should be eaten before, during and after sports events to prevent dehydration. Time for food consumption is critical to optimize performance. Food should be eaten at least 3 hours before exercise, and snacks should be eaten 1 hour to 2 hours before exercise. Recovery foods should be consumed within 30 min of exercise and again within 1 h to 2 h of exercise to allow muscle reconstruction and ensure proper recovery [8].

4. Prerequisites Affecting the Status of the Athletes

4.1. Association between Fracture Conditions and Bone Density

Fracture in basketball, fracture is also a rare injury, the cause of injury has two aspects: one is the fatigue fracture caused by long-term exercise and not proper rest. Yao Ming retired early because of fracture. There is also a violent fracture, generally occurs in the process of fighting, athletes jump too high and lose the center of gravity, elbow and other parts of the serious fall on the ground and other reasons caused by the injury. During this period, bone mineral density is also deeply related to it. Bone mineral density is one of the measures of bone health, and the occurrence of fractures is closely related. Studies have shown that the risk of fracture increases by 1.5 to 3.0 times for each 1 SD drop in BMD [9]. Bone mineral density is influenced by individual age, gender, eating habits, and exercise status. Sports health benefits to significantly higher than its health risk, but athletes high intensity exercise, the body all aspects metabolic speed are higher than normal people, and the need to strictly control the weight to improve sports performance, easy to reduce bone density, increase fragility fracture, stress fracture, sudden fracture, lag fracture, and so on and so forth risk, shorten the sports life and even cause a series of injuries. Therefore, it is particularly important to pay active attention to the bone mineral density in athletes [10]. Due to many uncontrollable factors in exercise training, nutrition intervention is particularly important and easier to improve bone density. Calcium combined with vitamin D is a recognized nutritional supplement method to increase the overall bone mineral density of the body, and previous studies have focused on this. Protein, especially high-quality protein, are also important nutrients with functions to promote bone development, body recovery, and maintain bone mechanical properties, which are beneficial to bone health. However, studies on the impact of high-protein food on bone density in athletes are rare. The main reason is that it is difficult for many institutions or scholars to contact and discuss with them.

Therefore, through materials for high protein food in recent years to improve the bone mineral density related research, and the basketball players high protein food use and collocation of specific suggestion arrangement, in order to science, effectively improve their bone mineral density provide a reference, so as to improve the competitive state, improve sports performance. It can be seen that the rational dietary collocation of nutrients is closely related to the sports performance of athletes on the field. Therefore, the systematic training of athletes' series should not only make scientific training program and recovery mechanism, but also combine the high quality and high-level dietary proportion structure as the foundation.

4.2. Preventive Measures

1) Improve physical fitness

Physical fitness includes speed, strength, endurance, coordination and sensitivity. This quality is essential in the normal training or competition of a basketball player. The enhancement of physical quality is an important basis for improving the technical level of athletes.

2) Pay attention to preparation activities

Do adequate preparation activities can make the body heat up, so that their own body into the exercise state in advance, the muscles are no longer stiff, and their own nervous system in a state of relaxation. All athletes must use a protective gear that they feel comfortable with during training or competition.

3) Use the right movements

Getting the proper action is an important part of injury prevention. Many injuries are related to technical errors, therefore, in basketball, teachers teach basketball knowledge, at the same time, to correct students' wrong movements in time, athletes should also develop the habit of doing correct movements.

4) Strengthen the vulnerable areas

Strengthening the training of vulnerable or relatively weak parts and improving their function is a positive measure to prevent injury in vigorous exercise.

5. Discussion

About the diet of athletes: competitive sports for physical consumption, should be a large number of high calories, high protein food. Athletes spend more energy than ordinary people, need comprehensive nutrition and reasonable collocation. Note the heat balance. Reasonable diet system, minerals and vitamins timely supplement diet diversification. Eating more vegetables is also important for athletes". Although the diet of Chinese athletes is richer than ordinary people and has some scientific nature, there are still large loopholes and deficiencies, and there is still a lot of room for improvement and progress and development prospects.

Special note: basketball has different requirements on the athletes' body and mind. The famous foreign saying: "You are the result of what you eat" can be explained here as: different nutrition determines the different characteristics of athletes' body and mind. For example, vitamin A and lutein can greatly improve the visual efficiency of athletes, and the mineral zinc will greatly enhance the reflection speed and agility of athletes. The foundation of characteristics such as body and mind is nutrition. Extrinsic training methods are secondary, and nutrition is the most important.

However, a core point to be noted is that the supplement of trace elements or protein supplementation should also seriously control the dose and frequency. Vitamins or minerals may have many benefits for athletes, but they can also cause increased injuries or other health problems.

Major innovation: personalized science nutrition technology, can check the athletes' mind, direction, balance, handshaking and other problems are caused by the lack of food. The General Administration of Sport of China has issued a notice on further strengthening the prevention and control of injuries and medical security for national team athletes. Personalized diet plan can not only prevent nearly 100 common physical and mental diseases of athletes through scientific nutrition, but also promote their physical and mental health, and improve the various characteristics of athletes.

The physical competition mode of athletes should be innovative and needs the support of scientific and nutritional technology.

Improve the competitive level of athletes in various competitions at home and abroad. In the same case of sports methods and exercise intensity, athletes are mainly more than physical and mental strengths, so, personalized scientific nutrition is very important for athletes, of great significance.

6. Conclusion

In conclusion, diet collocation and athletes on the field performance is inseparable, and even play a decisive role, so for athletes, to ensure the training effect of effective and has a good competitive level, must be to the types of nutrition proportion as the basis, so personalized targeted scheme is particularly important! Therefore, the highly professional diet plan and the rational planning and use of nutrients play a decisive role in the performance of athletes, especially basketball, and the level of competitive state also has a profound connection with it.

To sum up, competitive basketball is a very interesting and exciting sport, and it is precisely because of the many unpredictable factors that add a lot of charm to the sport. Many people who love basketball, all know that it is easy to produce fierce confrontation in the process of sports. Therefore, in sports, sports injuries can often occur. Therefore, the prevention of basketball injury contributes to the development and popularization of basketball, improve the popularization of basketball in the world, and play an important role in the future quality development of basketball.

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