THINK INDIA JOURNAL

ISSN:0971-1260
Vol-22-Issue-04-October-2019

Role Of Nutrition In Sports: A Review

RAJESH KUMAR
Assistant Professor
Department of Health and Physical Education
ARYA PG College, Panipat

ABSTRACT

Nutrition plays an essential role on sports performance. Following an adequate nutrition pattern determines winning the gold medal or failing in the attempt. That is why it is commonly referred to as "invisible training." However, regarding food and performance, it is not only referred to professional athletes. Nowadays, a large number of amateur athletes perform daily physical activity both recreationally and semiprofessionally. That population also seeks to achieve an improvement in their personal brands, which can be reached following proper nutritional guidelines. In athlete population, nutrient requirements are incremented compared with non-athlete population. Therefore, it is essential to carry out a nutritional approach adapted to the athlete and training sessions. In addition, other advantages of adequate food intake in sports are related to changes in body composition, reduction of injuries, and prolongation of professional career length. The objective of this paper is to determine the nutritional requirements of athlete population that allow achieving their sporting goals. Nutritional strategies will be addressed in terms of macronutrients consumption, hydration, and timing depending on type and intensity of exercise.

Key Words: nutrition, diet, sport, athlete, supplements, hydration

INTRODUCTION

Sports nutrition is the study and practice of nutrition and diet with regards to improving anyone's athletic performance. Nutrition is an important part of many sports training regimens, being popular in strength sports (such as weightlifting and bodybuilding) and endurance sports (e.g. cycling, running, swimming, rowing). Sports Nutrition focuses its studies on the type, as well as the quantity of fluids and food taken by an athlete. In addition, it deals with the consumption of nutrients such as vitamins, minerals, supplements and organic substances that include carbohydrates, proteins and fats.

ISSN:0971-1260
Vol-22-Issue-04-October-2019

Sports nutrition is a broad interdisciplinary field that involves dietitians, biochemists, exercise physiologists, cell and molecular biologists, and occasionally psychotherapists. It has both a basic science aspect that includes such concerns as understanding the body's use of nutrients during athletic competition and the need for nutritional supplements among athletes; and an application aspect, which is concerned with the use of proper nutrition and **dietary supplements** to enhance an athlete's performance. The psychological or psychiatric dimension of sports nutrition is concerned with eating and other mental disorders related to nutrition among athletes.

Some persons who specialize in the field of sports nutrition are registered dietitians (RDs) who have pursued a master's or other advanced degree in the field of exercise physiology; the American Dietetic Association (ADA) has a dietetic practice group or DPG for sports nutritionists called Sports, Cardiovascular, and Wellness Nutritionists (SCAN), which has its own website and telephone contact number. Most academic sports nutritionists, however, hold doctoral degrees in the field of exercise physiology and often specialize in working with athletes in one particular type of sport, such as baseball or swimming. Although sports nutrition can be applied to almost any form of athletic training or physical activity—including yoga, tai chi, martial arts, and professional dance—professional sports nutritionists do most of their work with team sports, endurance sports (cycling, long-distance running, triathlon training, etc.) or sports involving weight training (wrestling, weight-lifting, some forms of bodybuilding). Some nutritionists also work one-on-one with individual athletes.

PURPOSES OF NUTRITION

Sports nutrition has several purposes:

1. To prepare athletes before performance or training.
2. To maintain an acceptable level of performance during competition or training.
3. To help the athlete's body recover after training or athletic competition.
4. To provide sound information about healthy dietary practices and use of supplements.
5. To monitor athletes for signs of eating disorders, doping, supplement abuse, or other unhealthful nutritional practices.
6. To provide specialized nutritional advice to athletes following vegetarian, vegan, or other special diets.

ISSN:0971-1260
Vol-22-Issue-04-October-2019

7. To monitor the special nutritional needs of persons with disabilities who participate in athletic activities and programs.

FACTORS INFLUENCING NUTRITIONAL REQUIREMENTS

Differing conditions and objectives suggest the need for athletes to ensure that their sports nutritional approach is appropriate for their situation. Factors that may affect an athlete's nutritional needs include type of activity (aerobic vs. anaerobic), gender, weight, height, body mass index, workout or activity stage (pre-workout, intro-workout, recovery), and time of day (e.g. some nutrients are utilized by the body more effectively during sleep than while awake).Most culprits that get in the way of performance are fatigue, injury and soreness. A proper diet will reduce these disturbances in performance. The key to a proper diet is to get a variety of food, and to consume all the macro-nutrients, vitamins, and minerals needed. According to Eblere's article (2008), it is ideal to choose raw foods, for example unprocessed foods such as oranges instead of orange juice. Eating foods that are natural means the athlete is getting the most nutritional value out of the food. When foods are processed, the nutritional value is normally reduced.

1. Gender

There are obvious physical differences between male and female anatomy, while physiology is the same for the most part, how they metabolize nutrients will vary. Men have less total body fat but tend to carry most of their fat in the adipose tissue of their abdominal region. Adipose tissue is indirectly mediated by androgen receptors in muscle. On the other hand, women have more total body fat that is carried in the subcutaneous layer of their hip region. Women metabolize glucose by direct and indirect control of expression of enzymes.

2. Anaerobic Exercise

During anaerobic exercise, the process of glycolysis breaks down the sugars from carbohydrates for energy without the use of oxygen. This type of exercise occurs in physical activity such as power sprints, strength resistances and quick explosive movement where the muscles are being used for power and speed, with short-time energy use. After this type of exercise, there is a need to refill glycogen storage sites in the body (the long simple sugar chains in the body that store energy), although they are not likely fully depleted.

ISSN:0971-1260
Vol-22-Issue-04-October-2019

3. Aerobic Exercise

Aerobic exercise is also known as cardio because it is a form of cardiovascular conditioning. This includes exercises such as running, cycling, swimming and rowing. Athletes involved in aerobic exercise are typically looking to increase their endurance. These athletes are training their slow twitch muscle fibers to be better at taking in oxygen and getting it to their muscles. This is done by two mechanisms, glycolysis and aerobic respiration. Slow twitch muscles are smaller in diameter and are slow to contract. These fibers don't store much glycogen; instead they use lipids and amino acids to generate energy. With a high concentration of myoglobin that stores oxygen, the slow twitch muscle fibers have plenty of oxygen to function properly. These factors help make slow twitch muscle fibers fatigue resistant so athletes can have endurance in their sport. There are many options for supplements that athletes can take to assist with endurance like glycerol and guarana.

DIETARY SUPPLEMENTS

Dietary supplements contain one or more dietary ingredients (including vitamins; minerals; amino acids; herbs or other botanicals; and other substances) or their constituents is intended to be taken by mouth as a pill, capsule, tablet, or liquid. Athletes may choose to consider taking dietary supplements to assist in improving their athletic performance. There are many other supplements out there that include performance enhancing supplements (steroids, blood doping, creatine, human growth hormone), energy supplements (caffeine), and supplements that aid in recovery (protein, BCAAs).

1. Energy Supplements

Athletes sometimes turn to energy supplements to increase their ability to exercise more often. Common supplements to increase an athlete's energy include: Caffeine, Guarana, Vitamin B12, and Asian ginseng. Caffeine, a common energy supplement, can be found in many different forms such as pills, tablets or capsules, and can also be found in common foods, such as coffee and tea. Caffeine is used to improve energy and increases metabolism. Guarana is another supplement that athletes take to enhance their athletic ability; it is frequently used for weight loss and as an energy supplement

A 2009 study from the University of Texas reports that caffeinated energy drinks decrease sporting performance. They found that after drinking an energy drink, 83% of participants improved their physical activity parameters by an average of 4.7%. This was attributed to the

ISSN:0971-1260
Vol-22-Issue-04-October-2019

effects of caffeine, sucrose and Vitamin B in the drink - however scientific consensus does not support the efficacy of using Vitamin B as a performance enhancer. To explain the performance improvement the writers report an increase in blood levels of epinephrine, norepinephrine and beta-Endorphin.

2. Recovery Supplements

Common supplements to help athletes recover from exercising include protein and amino acid supplements. The main use for athletes to take dietary proteins is for hormones, oxygen transport, cellular repair, enzymes and conversion to fuel. The intake of protein is a part of the nutrient requirements for the normal athlete and is an important component of exercise training. In addition, it aids in performance and recovery. Dietary protein intake for well-trained athletes should occur before, during and after physical activity as it is advantageous in gaining muscle mass and strength. However, if too much protein and amino acid supplements is consumed it can be more harmful to the body than it is beneficial; health risks include: dehydration, gout, calcium loss, liver, renal damage, diarrhea, bloating, and water loss. A bountiful protein diet must be paired with a healthy, well-rounded meal plan and regular resistance exercise. Characteristics of this particular diet include the type of exercise, intensity, duration and carbohydrate values of diet. The most effective way to secure the natural nutrients required by the body for optimum health and physiological performance is by consuming vitamins, minerals, proteins, fats, sugars and carbohydrates, which can be procured from fresh fruits and vegetables.

Post-exercise nutrition is an important factor in a nutrition plan for athletes as it pertains to the recovery of the body. Traditionally, sports drinks such as Gatorade and PowerAde are consumed during and after exercise because they effectively rehydrate the body by refueling the body with minerals and electrolytes. Electrolytes regulate the body's nerve and muscle function, blood pH, blood pressure, and the rebuilding of damaged tissue. These types of drink are commonly made of glucose and sucrose in water and has been seen to improve the football players' performance.

3. Performance-Enhancing Supplements

In the extreme case of performance-enhancing supplements, athletes, particularly bodybuilders may choose to use illegal substances such as anabolic steroids. These compounds which are related to the hormone testosterone, can quickly build mass and strength, but have many adverse effects such as high blood pressure and negative gender specific effects. Blood doping, another illegal ergogenic, was discovered in the 1940s when it was used by World War II pilots Blood

ISSN:0971-1260
Vol-22-Issue-04-October-2019

doping also known as blood transfusions, increases oxygen delivery to exercising tissues and has been demonstrated to improve performance in endurance sports, such as long-distance cycling.

The supplement, Creatine, may be helpful for well-trained athletes to increase exercise performance and strength in relation with their dietary regimen. The substance glutamine, found in whey fiber supplements, is the most abundant free amino acid found in the human body. It is considered that glutamine may have a possible role in stimulated anabolic processes such as muscle glycogen and protein synthesis, for well-trained and well-nourished athletes. Other popular studies done on supplements include androstenedione, chromium, and ephedrine. The findings show that there are no substantial benefits from the extra intake of these supplements.

PROPOSALS FOR HEALTHY NUTRITION FOR ATHLETES

1. The significance of sustenance in games not the same as that or male jocks. Anyhow mind exhibition ought to be distinguished and must be taken in appreciation of calcium and iron sufficient offices furnished to guarantee that admission on account of the supplemental physiological jocks accept the right kind and measure of requests of female sportspeople. What's more, dish nourishment ought to be rich in B12, folate and zinc.

2. Choice of contenders ought to be finished on investigative assessment for better physic supplied diverse. Specifically, they need increasingly with inalienable physiological proficiency. Fitting protein (2 g for every kg of figure weight) to take experimental preparing projects ought to be conceived forethought of infrastructure of bulk, muscle with sufficient sustenance inputs to expand recovery and the extra necessities exhibition because of games exercises. Lesser players might as well.

3. Figure creation and figure weight ought to be fitting for the particular brandish for which the jock has been chosen and the aforementioned ought to be upgraded through preparing and sustenance.

4. In above all preparation scenarios, jocks of the same occasion gain the same sort of preparing agendas. This accelerates varieties in preparing load appropriated by the jocks because of weight contrasts. Thus single preparing dockets ought to be received.

5. There ought to be periodical medicinal check-up of contenders to survey updates in figure weight, figure piece, micronutrient equalization, lipid profile, and so forth according to the eating regimen and Excess weight can counteract crest exhibition preparing. For this reason every jock

ISSN:0971-1260
Vol-22-Issue-04-October-2019

might as well uphold his dietary history and preparing dockets and submit duplicates to the preparation foundation.

6. Diets have been endorsed for diverse classifications of games relying on the form weight and vigor needs. The recent will change from 3000 calories for expertise recreations to 7000 calories for force occasions of super substantial class the opposite, abundance vitamins or minerals.

7. Sustenance for female contenders is not altogether different from that or male jocks. Anyway mind must be taken in appreciation of calcium and iron allow as a result of the supplemental physiological requests of female contenders.

CONCLUSION

Diet is of great importance to athletes, the key to achieving an optimal sports diet in relationship to peak performance and good health is balance. Athletes must fuel their bodies with the appropriate nutritional foods to meet their energy requirements in competition, training and recovery. If these nutritional needs are not met, there is an increased risk of poor performance and health issues. The use of nutritional supplement within established guidelines is safe, effective and ethical. Hundreds of studies have shown the effectiveness of creatine monohydrate supplementation in improving anaerobic capacity strength and lean body mass in conjunction with training, but still there is sports specific variation in the food fads and practices indicating the strong influence on coaches and peers. It is vital to educate the sportsmen about the dietary pattern. Failure to consume right diet during competition due to false belief in markets and constant fear of eating prohibited foods may hamper performance.

Finally the future of nutritional supplement looks bright in regard to the areas of transport mechanism, improved muscle retention as well as treatment of numerous clinical maladies through supplementations.

REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision. Washington, DC: American Psychiatric Association, 2000.

2. American Society of Health-System Pharmacists (ASHP). AHFS Drug Handbook, 2nd ed. Philadelphia: Lippin-cott Williams & Wilkins, 2003.

3. Larson-Meyer, D. Enette. Vegetarian Sports Nutrition. Champaign, IL: Human Kinetics, 2007. MacLaren, Don, ed. Sport and Exercise Nutrition. New York: Elsevier, 2007.

ISSN:0971-1260
Vol-22-Issue-04-October-2019

4. McArdle, William D., Frank I. Katch, and Victor L. Katch. Exercise Physiology: Energy, Nutrition, and Human Performance, 6th ed. Philadelphia: Lippincott Williams & Wilkins, 2007.

5. Pelletier, Kenneth R., MD. The Best Alternative Medicine, Chapter 6, "Western Herbal Medicine." New York: Fireside Books, 2002.

6. American Academy of Pediatrics (AAP). 141 Northwest Point Blvd., Elk Grove Village, IL 60007. Telephone: (847) 434-4000. Website:http://www.aap.org.

7. American College of Sports Medicine (ACSM). P. O. Box 1440, Indianapolis, IN 46206-1440. Telephone: (317) 637-9200. Website:http://www.acsm.org.

8. American Council on Exercise (ACE). 4851 Paramount Drive, San Diego, CA 92123. Telephone: (858) 279-8227. Website: htpp://www.acefitness.org.

9. American Dietetic Association (ADA). 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. Telephone: (800): 877-1600. Website:http://www.eatright.org.

10. American Society of Health-System Pharmacists. 7272 Wisconsin Avenue, Bethesda, MD 20814. Telephone: (301) 657-3000. Website:http://www.ashp.org.

11. Dietitians of Canada/Les dietetistes du Canada (DC). 480 University Avenue, Suite 604, Toronto, Ontario, Canada M5G 1V2. Telephone: (416) 596-0857. Website:http://www.dietitians.ca.