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# SPORTS NUTRITION: CAVERNOUS VIEWPOINTS, KEY PERSPECTIVES AND FACTORS

**Dr. Anjana Lohan***

*Associate Professor,
Head, Deptt. of Physical Education, S.D. Mahila Mahavidyalaya,
Narwana, Jind, Haryana, INDIA

## ABSTRACT

*Athlete performance may be improved via the use of sports nutrition, which examines and applies nutrition and diet to athletes. Weightlifting and bodybuilding (for example) and endurance sports (for example) both include nutrition into their training routines (e.g. cycling, running, swimming, rowing). The field of sports nutrition examines the types and quantities of fluids and food consumed by athletes in order to better understand how they affect performance. The intake of vitamins, minerals, supplements, and organic substances such as carbs, protein, and fat is also addressed. Nutritional needs are influenced by several factors. Athletes should tailor their sports nutrition strategy to their specific needs in light of their current circumstances and goals. Type of exercise (aerobic vs. anaerobic), gender, weight, height, BMI, workout or activity stage (pre-workout, intro-workout, recuperation), and time of day may all influence an athlete's dietary requirements (e.g. some nutrients are utilised by the body more effectively during sleep than while awake). Fatigue, injury, and discomfort are the most common roadblocks to peak performance. These performance hiccups may be minimised with a healthy diet. For a healthy diet, make sure you eat enough of a wide range of foods and that you're getting all the macro- and micronutrients you need. According to an article by Eblere (2008), choosing unprocessed foods such as oranges over orange juice is preferable when eating raw. Natural foods imply the athlete will receive the maximum nutrients out of the food they consume. The nutritional content of processed meals is usually diminished.*

**KEYWORDS:** *Sports Nutrition, Nutrition in Sportsmen, Key Role of Nutrition in Sports*

## INTRODUCTION

Despite the fact that much of their physiology is the same, the way men and women process nutrition differs dramatically. In overall, men have a lower body fat percentage, but their adipose tissue in the abdominal area is where they store the majority of their fat. In muscle, androgen receptors are responsible for mediating adipose tissue. Women, on the other hand, have a higher total body fat percentage, which is stored in the hip region's subcutaneous

layer. Glycolysis in women is controlled by the expression of enzymes, both directly and indirectly.

Glycolysis, the process by which carbohydrates are broken down for energy without the use of oxygen, occurs during anaerobic activity. The muscles are utilised for power and speed with short-term energy consumption in physical activity such as sprints, strength resistances and rapid explosive movements. Glycogen storage sites (the long simple sugar chains in the body that store energy) need to be refilled after this kind of activity, although they are not likely to be completely exhausted.

When this happens, athletes may eat a lot of carbs after their workout to make up for lost glycogen. Carbohydrates with a high glycemic index are often chosen because they increase blood glucose levels quickly. Protein or individual amino acids are consumed for protein synthesis. Amino acids with branched chains are critical for protein synthesis since they are the primary building blocks of protein. Female endurance runners, according to Lemon et al. (1995), had the most difficulty obtaining adequate protein in their diet. In general, endurance athletes need more protein in their diets than non-athletes.. In order to heal damaged tissue, endurance athletes need consume between 1.2 and 1.4 grammes of protein per kilogramme of body weight, according to research. Lean tissue will be broken down for energy and repair if the athlete eats too few calories for their requirements. Deficiency in protein may lead to a wide range of health issues, including early and severe tiredness, especially lengthy recovery times, and poor wound healing capabilities. The necessary amino acids needed to synthesise new tissues are found in complete proteins like beef, eggs, and soy. Even vegan athletes often mix legume and whole grain foods to obtain a full day's worth of protein from their diet. Rice and beans are a well-liked side dish combo.

These findings are based on Spada's (2000) study on endurance sports nutrition and the origins of carbs. Carbohydrates should be unprocessed or made from whole grains, according to him, for the best results while exercising. Carbohydrates such as these provide the greatest energy, are the most nutritious, and are the most filling. When it comes to the carbohydrate basis of an athlete's diet, fruits and vegetables play a critical role. They restore the vitamins and minerals that are lost during physical activity and must be replaced afterwards. They do this by providing vitamins and minerals. Vegetables and fruits both promote healing and recuperation while also lowering cancer, hypertension, and constipation risks. Because veggies have a little higher nutritional value per caloric intake than fruits, athletes should aim to consume more vegetables. Vegetables that are dark in colour have more nutritional values than those that are light in colour. The more nutrient rich a food is, the darker the hue it is. Variety is critical, just as it is with all other foods. Eating fruits and vegetables in their natural, unprocessed state, with no additional nutrients or sugar, provides the most nutritional benefit.


Figure 1 : Sports Nutrition

When anaerobic exercise is continued, the metabolic by-product known as lactic acid fermentation accumulates as a result of the continued use of the metabolic process. As Lactate builds up faster than it is eliminated, NAD+ regenerates in the area where it is required. When you work out hard and don't consume any oxygen, a lot of ATP is generated and your pH drops, resulting in acidosis. This is more precisely known as lactic acidosis. When lactic acid builds up during and after an exercise, it may be addressed by keeping hydrated, having a good cool down routine, and doing some excellent stretching after the workout.

Extreme physical exertion has the potential to permanently harm body tissues. Vitamin E and other antioxidants are required to prevent muscle damage and aid in its recovery. Endurance running causes muscular tissue breakdown and oxidative damage, therefore athletes must consume meals rich in protein to heal the damaged tissues. In order to heal, fuel, and limit tiredness and injury, female endurance runners must eat the right nutrition. The following 10 nutrients must be included in the diets of female runners in order to maintain their bodies functioning optimally.

**Heart and Lungs**

Due to its role in training the heart and blood vessels, aerobic exercise is often referred to as cardio. There are many different types of exercises included in this. Increasing endurance is a common goal for athletes who engage in aerobic training. Slow twitch muscle fibres are being trained by these athletes in order to improve their ability to take in oxygen and deliver it to their muscles. Glycolysis and aerobic respiration are both involved in this process. The "short term energy system" (also known as anaerobic glycolysis) is utilised mostly for high-intensity exercise, such as sprinting and other sports requiring rapid bursts of speed. Muscles with slow twitch fibres have a smaller diameter and contract more slowly. Rather of storing glycogen, these fibres produce energy from lipids and amino acids. Slow twitch muscle fibres have lots of oxygen because of the high quantity of myoglobin, which stores oxygen. Slow-twitch muscle fibres are made more fatigue-resistant by these variables, allowing athletes to compete for longer periods of time. Glycerol and guarana are just a few of the numerous supplements available to athletes looking to improve their endurance.

**Supplements**

A dietary supplement is a pill, capsule, tablet, or liquid that contains one or more nutritional components (such as vitamins, minerals, amino acids, herbs or other botanicals, and other substances) or their constituents. Athletes who want to improve their sports performance may want to think about using nutritional supplements. In addition to these, there are many additional supplements available, such as those designed to enhance performance (such as steroids and blood doping, as well as creatine and human growth hormone); to provide energy (such as coffee); and to assist in recuperation (protein, BCAAs).

**Dietary Additives That Provide Additional Energy**

Energy pills are occasionally used by athletes in order to enhance the frequency with which they exercise. Caffeine, guarana, vitamin B12, and Asian ginseng are common energy boosters for athletes. In addition to guarana as an energy supplement, many athletes use it to help them perform better on the field or court.

There are numerous various types of caffeine, including pills, tablets, and capsules, as well as in popular meals like coffee and tea. Caffeinated energy drinks have been linked to decreased athletic performance, according to a University of Texas research from 2009. According to the study, 83% of individuals increased their physical activity levels after consuming an energy drink, on average by 4.7%. However, scientific agreement does not support the effectiveness of supplementing athletes' diets with Vitamin B to improve their performance. The authors attribute the improved performance to higher levels of adrenaline,

norepinephrine, and beta-Endorphin in the blood. Caffeine's adenosine receptor antagonism explains the first two effects, while physical exercise's neurobiological effects explain the last.

When caffeine's ability to disguise tiredness was well known in the 1970s, it was first widely utilised in the early 1900s. Caffeine in energy drinks and coffee, on the other hand, has been shown in quickness and response anaerobic power tests to improve reaction performance and sensations of energy, concentration, and alertness. Consuming an energy drink or any other beverage that contains caffeine enhances short-term/rapid workout performance, in other words (like short full-speed sprints and heavy power weight lifting). There are molecular similarities between caffeine and the sugar adenosine, which aids in the control of many bodily functions, including neurotransmitter firing. As a result of caffeine replacing adenosine in your brain, it attaches to the same neuronal receptors that adenosine affects, increasing the rate at which your neurons fire.

Carbohydrates, which include all sugars, are a popular source of energy supplements. Simple sugars like sucrose and dextrose are used in sports drinks like Gatorade and Powerade. Because they keep blood glucose levels stable and help replenish muscle glycogen, carbohydrates are essential.


Figure 2 : Nutrition Supplements

**Supplements For Rest And Recovery**

Protein and amino acid supplements are common recovery aids for athletes. Dietary proteins are primarily used by athletes for hormone production, oxygen delivery, cellular repair, enzyme production, and fuel conversion. An athlete's nutritional needs include protein, which is an essential element of exercise training. Protein consumption is one of those needs. In addition, it helps with both performance and recuperation whether taken orally or topically. Well-trained athletes should consume dietary protein before, during, and after exercise to help build muscle growth and strength. Too much protein and amino acid supplementation, on the other hand, may be detrimental to the body, causing dehydration, gout, calcium loss, liver and kidney damage, as well as diarrhoea, bloating, and water loss. Health concerns include all of the above. For optimum health, a high-protein diet should be combined with a well-rounded diet and frequent resistance training. The kind of activity, intensity, duration, and carbohydrate content of the food are all factors in this diet. The best method to obtain the vitamins, minerals, proteins, fats, sugars, and carbs the body needs for optimal health and physiological function is to eat fresh fruits and vegetables, which are rich in these nutrients.

Post-exercise nutrition is crucial to an athlete's overall nutrition strategy since it aids in the body's recuperation after activity. In the past, people have relied on sports drinks like Gatorade or Powerade to help them rehydrate after working out. These beverages replenish the body's mineral and electrolyte stores. Blood pH, blood pressure, and the ability of the body to repair injured tissue are all controlled by electrolytes. Football players' performance has been shown to improve when they consume sports drinks that include glucose and sucrose.

Instead of sports drinks, try drinking milk after a workout. It includes a variety of electrolytes, minerals, and other components that make it an excellent post-workout beverage. Athletes' fluid and electrolyte losses after working out are replenished with milk. A post-workout recovery drink replenishes the sugar lost during exercise and aids in muscle repair so that the next time you work out, you can go all out. According to the Dairy and Nutrition Council, chocolate milk replaces and maintains normal body fluid levels better than plain water or sports drinks when it comes to sweat loss replacement. Chocolate milk drinkers had fluid levels approximately 2% higher (on starting body mass) than those who used other post-exercise recovery drinks after becoming dehydrated after exercise. These findings paved the way for improved endurance, particularly while doing the same activity or training over and over again.

Athletes, especially bodybuilders, may opt to utilise illicit drugs such as anabolic steroids in the case of extreme performance-enhancing supplements. There are a number of undesirable side effects, including elevated blood pressure and negative gender specific effects, that may be associated with these testosterone-related substances. Another illicit ergogenic, blood doping, was found by World War II pilots in the 1940s. There is evidence that blood doping, commonly known as blood transfusion, improves endurance performance in sports like long-distance cycling.

## CONCLUSION

Well-trained athletes may benefit from using creatine supplements to improve their workout and strength in conjunction with their nutrition. Glutamine, an amino acid present in whey fibre supplements, is the body's most plentiful free amino acid. For well-trained and well-nourished athletes, glutamine may have a role in stimulating anabolic processes like muscle glycogen and protein synthesis. Androstenedione, chromium, and ephedra have all been the subject of popular supplement research. According to the results, taking these supplements on top of your regular diet has no discernible health advantages and may even increase your health-care expenditures and risks.

## REFERENCES


1. Jurek, Scott (2012). Eat and Run. London: Bloomsbury.
2. Lemon P. (1995). "Do athletes need more dietary protein and amino acids?". International Journal of Sport Nutrition. 5: 39–61. doi:10.1123/ijsn.5.s1.s39. PMID 7550257.
3. Spada R. "Endurance sports nutrition". Journal of Sports Medicine and Physical Fitness. 40 (4): 381–382.
4. Delamere, Nicholas, and Claudia Stanescu. "Muscle Energetics." Physiology 201. University of Arizona, Tucson. 25, 27, 29 Mar. 2009.
5. Rokitzki L. (1994). "Alpha-tocopherol supplementation in racing cyclist during extreme endurance training". International Journal of Sport Nutrition. 4 (3): 253–64. doi:10.1123/ijsn.4.3.253. PMID 7987360.

**6.** Saladin, Kenneth (2018). Anatomy and Physiology: The Unity of Form and Function. New York, NY: McGraw-Hill Education. pp. 307–395. ISBN 978-1-259-27772-6.

**7.** "Background Information: Dietary Supplements — Health Professional Fact Sheet." U.S National Library of Medicine. U.S. National Library of Medicine, 24 June 2011. Web. 04 Nov. 2016.

**8.** Maughan, Ronald J., ed. "Sports Nutrition: What Is It?" Journal of Nutrition & Physical Activity 17 (2001). 2001. Elsevier Science Inc. 25 Mar. 2009.

**9.** "Energy Boosters: Can Supplements and Vitamins Help?". WebMD. 2017-05-18.

**10.** "GUARANA: Uses, Side Effects, Interactions and Warnings - WebMD". www.webmd.com. 2017-05-18.

**11.** "Improved Cycling Time-Trial Performance After Ingestion of a Caffeine Energy Drink." International Journal of Sport Nutrition and Exercise Metabolism 19 (February 2009): 61-78.

**12.** Applegate, Elizabeth A., and Louis E. Grivetti. "Search for the Competitive Edge: A History of Dietary Fads and Supplements." The Journal of Nutrition (1997): 869S-73S. The Journal of Nutrition. American Society for Nutritional Sciences. 1 Apr. 2009 <jn.nutrition.org>.

**13.** Hoffman, Jay R., Jie Kang, Nicholas A. Ratamess, Mattan W. Hoffman, Christopher P. Tranchina, and Avery D. Faigenbaum. "Examination of a pre-exercise, high energy supplement on exercise performance." Journal of the International Society of Sports Nutrition 6 (2009). Journal of the International Society of Sports Nutrition. 6 Jan. 2009. BioMed Central Ltd. 25 Mar. 2009