

The Role of Nutritious Diet in Boosting Athletic Performance

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Abstract:

Athletes and sportspeople should be aware of the importance of nutrition. The performance of a sportsperson during competition can be impacted by numerous elements, each of which may be related to a different domain. Sportspeople who do not take enough dietary energy as a whole frequently experience nutritional-related issues. It is no secret that in the contemporary era of top sports, nutrition has become a critical aspect that can impact an athlete's performance. It's not by chance that we hear a lot about athletes' tight diet regimens; the optimum diet programme will vary depending on the sport, the athlete's goals, and their unique tastes. Each of them has a particular purpose in supplying the body with nutrition. Recognizing what each does to his body under the physical, mental, and emotional pressures of competition is crucial for the sportsman. The primary source of energy utilized to meet the work demands of a given sport will depend on the length and intensity of the exercise performed in that sport. The right diet and nutritional strategies can improve athletic performance, and nutrition is crucial to an athlete's success. The diet of the athlete should contain plenty of carbs, moderate amounts of proteins, and little or no fat. Teenagers who participate in sports have higher nutrient requirements due to the additional demands of increased physical activity in addition to needs for growth, development, and wellness. Due to a lack of appropriate nutritional counselling, the health and nutritional status of this population may be impaired. Additionally, false information about wholesome foods spread by the media to school-age children can be highly dangerous. This review paper's objectives are to illustrate the dietary requirements of young people and athletes taking part in various sports, as well as to educate young people and athletes on the value of proper nutrition when engaging in physical activity.

Keywords: Physical activity; Nutrition counseling; Food and health, Sports nutrition

Introduction:

High levels of carbs, moderate levels of proteins, and little to no fat should make up the athlete's diet. Teenagers who participate in sports have higher nutritional needs than non-participants because to the increased physical activity requirements beyond growth, development, and wellbeing. Due to inadequate nutritional counselling, the population's health and nutritional status may be impaired. Additionally, false information about wholesome foods spread by the media to young readers who are attending school might be quite dangerous. This review paper's objectives are to illustrate the dietary requirements of teenagers and athletes taking part in various activities, as well as to inform and educate teenagers and athletes about the value of nutrition during involvement in games and sports. Sports nutrition can be summed up as the application of nutrition science to a realistic daily eating programme designed to maximize athletic performance in competitive events, facilitate the repair and rebuilding process after strenuous physical work, and provide the fuel for physical activity. It also aims to support general health and wellness. Sports nutrition is sometimes perceived as being exclusive to "athletes," which implies that only those people who are competing at the highest level are included. Any person who engages in regular physical activity, from fitness enthusiasts to competitive amateurs or professionals, is referred to as an athlete in this literature. Along this defined spectrum of athletes, there may be variations in specific nutrient requirements, posing the fun issue of individualized sports nutrition programmes. Professionals advising athletes on proper eating methods first need to have a command of general nutrition as well as exercise science. This will enable them to completely comprehend and then apply sports nutrition concepts. The second stage is to learn how nutrition and exercise science are connected, realizing that healthy eating and exercise depend on one another to generate the best results. The third step—the practical application of sports nutrition knowledge to individual athletes participating in a sport or physical activity—can be regarded as one of the most crucial. Professionals in sports nutrition must be able to instruct athletes by applying "book" information to real food choices and meal planning, while taking into account the difficulties posed by hectic training, competition, work, school, and other commitment schedules. After completing an undergraduate or graduate programme in sports nutrition, dietetics, exercise science, or athletic training, many professionals are missing this third step.

Objectives of the Research:

1. To define Concepts of nutrients
2. To study good eating habits of athletes
3. To study the impact of all-round nutrition for athletes
4. To study the nutritional information required to enhance sports performance of the athlete

Research Methodology:

Secondary sources provide the basis of this research paper. For the purpose of gathering information, the researchers have used a variety of research tools, including reference books, books, research papers, periodicals, newspapers, and YouTube etc.

Concepts of nutrients: Six nutrients found in food and beverages are essential to human health because they help the body produce energy, support tissue growth and development, control bodily functions, and fend off deficiency and degenerative diseases. They are categorized as important nutrients—the six nutrients. They consist of water, vitamins, minerals, proteins, lipids, and carbohydrates. The body needs certain nutrients to function effectively, but it is unable to produce them on its own in the levels required on a daily basis.

Carbohydrate: Carbohydrates serve as the primary energy source for any physical activity, making them arguably the most significant macronutrient in an athlete's diet. Typically, an athlete's energy source should consist of between 55% and 70% of carbohydrates. This is because the primary source of glucose is carbs. The body transforms glucose into glycogen, which is then stored in the muscles and liver. The energy from the stored glycogen is subsequently utilized by athletes to power their movements.

Protein: Protein is a necessary component of a training diet since it helps muscles recover and repair after exercise. The recommended daily protein intake for strength and endurance athletes is 1.5 to 2 gram per kilograms of body weight, which is rather easy to meet. This is because protein needs are typically met by a diet rich in variety and carbs, many of which also contain a significant quantity of protein.

Fat: Protein and carbs may be the two macronutrients that an athlete requires the most in their diet. However, what use do fats serve? Contrary to common misconceptions and out-of-date assumptions, fats are an essential component of a healthy diet. Cell membranes, joint structure, and hormone production all depend on fats. In addition, because many vitamins are fat-soluble, they must be consumed with fat in order for the body to fully absorb them. Usually, 10% to 15% of your daily caloric intake should be made up of fat. The key issue should be the type of fat that is ingested. Monounsaturated and polyunsaturated fats are regarded as healthy fats. Saturated fats also provide health benefits but should be ingested in moderation. While fats, especially artificial ones, should be avoided since they have been shown to increase dangerous cholesterol, diminish the quantity of beneficial cholesterol, and increase the risk of heart disease.

Common Eating Strategies: Pre-Training / Competition:

Athletes usually eat a lot of carbs before a competition to optimize their glycogen reserves, especially in sports that call for endurance. According to the Journal of Sports Medicine, carbohydrate loading before a competition has benefits including a 20% delay in the onset of fatigue and a 3% boost in performance. Furthermore, several research suggest that the carbs taken before a sporting event should have a low GI. This makes it possible for an energy release to remain longer during exercise, which can improve endurance and reduce fatigue.

During Training / Competition: It is not a coincidence that we commonly see athletes eating a tiny snack, an energy gel, or a mouthwash with carbohydrates while playing. This aids them in refueling their energy and replenishing their glycogen levels in addition to lowering their risk of hypoglycemia.

Post Training / Competition: As was already noted, it is essential for athletes to eat in order to restore their glycogen levels and support recovery following a taxing workout or competition. The first one to two hours following exercise are ideal for taking carbs. In general, a moderate to high Glycaemic Index protein and carbohydrate mix is indicated.

Carbohydrates are essential for fuel and recovery: Different carbohydrate recommendations are being provided based on the amount, frequency, and intensity of exercise. Wholegrain breads and cereals, which are high in unprocessed carbs, should form the basis of an athlete's diet. meals that contain more refined carbs Athletes are encouraged to adjust their carbohydrate intake to match their amount of exercise for both fuel and recuperation.

For example:

1. Light exercise (30 minutes per day): 3 to 5 g/kg per day
2. 5 to 7 g/kg/day of moderate intensity exercise (60 minutes/day).
3. 6 to 10 g/kg/day of endurance exercise (1-3 hrs/day)
4. 8 to 12 g/kg/day for extreme endurance activity (greater than 4 hours/day).

Training with low carbohydrate availability: An athlete's training programme may occasionally require a period of carbohydrate restriction. As a more contemporary technique, some athletes now train with low body carbohydrate levels and intakes. There is mounting evidence that strategically timed training sessions with limited glucose availability may increase certain of the muscle's responses to the training regimen. However, the benefits of this tactic for raising athletic performance are not yet obvious.

Sporting performance and glycemic index:

Foods and beverages are ranked on the glycemic index based on how "carbohydrate-rich" they are and how rapidly they raise or drop blood sugar levels. Athletes are getting more and more interested in the GI when it comes to sports nutrition. Assuming an athlete consumes

enough total energy and carbohydrates, the research generally does not show a major impact of GI modulation in the diet on exercise performance.

Although it has been proposed that eating low GI foods can help with a more prolonged energy release before exercise, the evidence is insufficient to demonstrate any performance effect. It's possible that foods and beverages with a moderate to high GI are the best to eat or drink while exercising and in the early phases of recuperation. It's imperative to remember that the type and timing of food ingested should be tailored to individual tastes and to maximize performance in the particular sport that person is participating in.

Pre-event meal:

A vital part of the athlete's pre-workout routine is the pre-event meal. Eating a meal rich in carbs three to four hours prior to exercising is believed to enhance performance. Have a little snack an hour or two before your workout to improve performance. Drinking enough of water before an event is essential. Drinking 500 ml of liquid two to four hours prior to an event may be a good idea in general. Some people may experience unfavorable effects from eating soon after exercise. You will probably feel worse after eating a meal that is high in fat, protein, or fiber. Because they do not irritate the stomach, it is advisable to eat a lot of carbs shortly before doing out. A few examples of appropriate pre-workout meals and snacks include cereal and low-fat milk, toast, muffins and pancakes, fruit salad and yoghurt, pasta with tomato sauce, a low-fat breakfast bar or muesli bar and low-fat creamed rice. Liquid meal supplements may also be beneficial, particularly for athletes who experience pre-event jitters. For athletes competing in competitions lasting less than 60 minutes, a mouth rinse with a carbohydrate beverage may be adequate to improve their performance. The benefits of this strategy appear to be connected to how the brain and central nervous system are impacted.

Eating during exercise:

To keep blood glucose levels stable and avoid becoming fatigued after exercise lasting more than 60 minutes, carbohydrates must be consumed. Current guidelines state that 30 to 60 g of carbohydrate per day found in sports drinks, low-fat cereal, sports bars, or sandwiches made with white bread are adequate. It is essential to start taking in before working out and to keep up a consistent intake rate during the workout. In order to avoid dehydration during vigorous exercise, regular fluid intake is also essential. You can drink water, fruit juice that has been diluted, sports drinks, and other things.

Eating after Exercise:

After exercise, it's important to promptly replace glycogen. You should consume foods high in carbohydrates and drink fluids after working out, especially in the first one to two hours. After exercising, it's important to eat enough total carbohydrates, but the type of carbohydrates you eat also counts. This is particularly true if a subsequent training session or event is less than eight hours away. Athletes should choose high GI carbohydrate foods in this situation within the first half hour or so after exercise. Up to the reinstatement of the regular mealtime routine, this should be continued. A good place to start is with sports drinks, juices, cereal, low-fat milk, low-fat flavored milk, sandwiches, spaghetti, muffins/crumpets, fruit, and yoghurt. Since the majority of athletes incur a fluid deficit during activity, rehydrating after exercise is equally essential for attaining the optimal recovery. Athletes are advised to consume 1.25 to 1.5 L of fluid for every kilograms of body weight lost when exercising.

Protein and sporting performance:

Protein is necessary for post-workout recovery and repair and is an integral part of a training diet. Most athletes can typically meet their protein needs if they consume enough energy from their diet. Intake recommendations for protein for the general population are scarcely higher than those for athletes.

For example:

1. The general public and participants Protein intake of 0.8 to 1.0 g/kg of body weight per day is advised.
2. Athletes who compete in non-endurance sports The recommended daily intake for persons who exercise for 45 to 60 minutes each day is 1.0 to 1.2 g/kg of body weight.
3. Competitors in strength and endurance contests in sports Aim for 1.2 to 2.0 g of protein per kg of body weight per day if you exercise for extended periods of time (more than an hour) or engage in strength training like weightlifting.
4. Increasing protein intake up to 2.0 g/kg of body weight per day for athletes seeking to lose weight on a low-energy diet may help to prevent the loss of muscle mass. For athletes wanting to improve lean mass or muscle protein synthesis, consuming a high-quality protein source, such as whey protein or milk containing 20 to 25 g of protein, right before exercise may be beneficial. It is generally recommended to spread out protein consumption fairly equally throughout the day in order to obtain appropriate protein intakes; for instance, ingesting roughly 25 to 30 g of protein every 3 to 5 hours, including as part of regular meals. Because of this, it is unlikely that more protein supplements will improve players' athletic performance.
5. Potentially detrimental effects on renal and bone health.

6. An increase in body weight if protein options contain a lot of fat.

Water and sporting performance:

Athletic performance can be hampered by dehydration, which in extreme circumstances can even result in collapse and even death. It's important to hydrate properly before, during, and after exercise. Avoid delaying till you are thirsty. When participating in long, intensive, or warm-weather events that run more than 60 minutes, it's crucial to drink plenty of fluids. Sodium in sports drinks helps with absorption. For sports nutrition, a sodium concentration of 30 mmol/L (millimoles per litre) seems suitable. Although many athletes battle with insufficient hydration, overhydrating can also be detrimental. Rarely, athletes may consume excessive amounts of fluids, diluting the blood and lowering the blood's salt concentration. Hyponatraemia is a disorder that, if untreated, can lead to seizures, collapse, coma, or even death. Drinking 400 to 800 ml of fluid per hour of exercise may be a good place to start in preventing dehydration and hyponatremia, but the best fluid intake should be customized to each athlete, taking into account factors like environment, sweat rates, and tolerance.

Main purposes a nutrition plan has to fulfil in relation to sports performance:

Although a good diet offers many benefits for overall health, a nutrition plan for athletes must focus on three key goals:

1. Provide energy for training & competition:

Although it may seem simple, it is important for athletes to achieve their daily caloric needs while also being mindful of how those calories are ingested. When creating an ideal diet plan, macronutrients, micronutrients, ratios, meal timing and frequency, water, and supplements are all important considerations.

2. Facilitate recovery after training & competition:

After a demanding game or training session, the muscles' glycogen (or energy reserve) is depleted, and some of their proteins are broken down and destroyed. These glycogen stores are replaced by eating quickly after (or even during) exercise or competition, preventing muscle (protein) breakdown and hastening recovery.

3. Achieve & maintain optimal body weight & composition:

To maximise their performance, athletes should reach ideal body weight and body fat percentages. More importantly, a food plan needs to be created so that the athlete can follow it easily over time.

Conclusion:

Athletes need to arrange their diets in order to maximise their health and performance. They must ensure they have a diversified diet that has all the vitamins and minerals they need while also considering their calorie and macronutrient needs. Hydration and timing of meals are also crucial for all-day performance. Dietary supplements may be chosen by some athletes. An ideal diet plan, macronutrients, micronutrients, ratios, meal timing and frequency, water, and supplements are all important considerations. Glycogen stores are replaced by eating quickly after (or even during) exercise or competition, preventing muscle (protein) breakdown and hastening recovery and athletes should reach ideal body weight and body fat percentages. They should check to see whether their sporting association is okay with them and be mindful of safety and effectiveness issues. Both amateur and professional athletes can get advice from a sports nutritionist on the best diet to follow to meet their individual needs and goals.

Reference:

1. Thomas DT, Erdman KA, Burke LM. American College of Sports Medicine Joint Position Statement. Nutrition and athletic performance. *Medicine and Science in Sports and Exercise*. 2016; (3):543-568.
2. Eberle, S. G. "High-intensity games nourishment". *Wellness Magazine*. 24 (6): 25.
3. Jurek, Scott (2012). *Eat and Run*. London: Bloomsbury.
4. Lemon P. (1995). "Do competitors require more dietary protein and amino acids?". *Global Journal of Sport Nutrition*. 5: 39–61. doi:10.1123/ijns.5.s1.s39. PMID 7550257.
5. Spada R. "High-intensity games sustenance". *Diary of Sports Medicine and Physical Fitness*. 40 (4): 381–382