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Effect of nutritional diet on Sports Women

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Abstract: Nutritional food plays a vital role in the daily life of Sports persons. The data were collected with the help of pre tested questioners regarding personal information, meal and diet pattern, nutritional intake and participation in sports events. The observation scheduled was used for recording anthropometric clinical and biochemical examination. It was found that the majority of sports women was up to 19 years of age and educated up to graduation. In respect of knowledge about nutrition in dietary requirements the sports women were found to moderate.

Keywords: Sports women, Nutritional status.

INTRODUCTION

In India the sciences of sports nutrition is relatively new and specialized efforts of establishing nutritional principles for a sport persons and have gained momentum over the last two decade. Concentrated efforts have been made to strengthen the Indian sport persons. This is monitor during the specific camp organized by the sport authority of India (SAI). In recent time sports have gained tremendous popularity all over the globe. A sport serves varies vital social and cultural functions. It helps in all round development, it provides ample and healthy means for recreation and relaxation of human body and it provide opportunities for social interaction their by fostering peace and understanding among different people, nation, races, religions to complete against each other there by reach height of excellence of human endeavor and attainment.

The balance diet providing all the essential nutrients for the player must be event specific and suited to their individual needs to maintained optimum body build and composition. Foods provide needed energy for daily activities and energy consumed by player depends on the major of activities. For this reasons the type and quantity of foods one eats must needs the specific needs of an events and training during player performance. When the body is undergoing extensive exercise there would be depletion of the nutrients from the body stored fuel. Hence, eating properly and balance diet provides fuel needs during training and competitions. Sports person needs wide range of nutrients to lead a healthy and active life and better performance. These are derived through the diet consumed daily. The components of diet must be chosen judiciously to provide all the nutrients needed by an individual in adequate amount and in proper proportion. The amount of each nutrient that is required by body depends upon age, sex and physical status. Generally, adult person needs nutrients for maintaining constant body weight and ensuring proper body function, but those who do exercise and play regularly require more energy. The energy consumed by players depends on the nature of activity, intensity with which it is played and how long it is played.

The proper nutrients health individual in following ways :

1. Regular balance diet during sports has benefits to health. It reduces that risk of obesity and coronary heart disease.
2. Proper nutrition helps to maintain health which assists in the selection of most suitable event for training and growing.
3. Proper nutrition helps maintain ideal body weight and composition (Fat and then body mass) and to ensure peak performance. Adequate nutritional supports hence needs to be maintained through dietary manipulation from time to time.

Very few studies were under taken on Indian sports women nutritional profile. So it was thought opportune to study the nutritional status of sports women. The performance in different sports and games depends on physical, mental and social health status. Hence, the study was planned to assess nutritional status of sports women.

THE SPORTING BODY & THE SCIENCE OF NUTRITION

It was not until the 1930s and 1940s that scientists started to make links between diet and athletic performance in relation to proteins and carbohydrates. In the 1930s Scandinavian scientists started to investigate the role of carbohydrates in endurance performance but it was not until the 1960s that further research carried out in Sweden established carbohydrates as necessary for improved performance. (Applegate & Grivetti 1997b). This research led to the development of a sports drink invented by researchers at Florida University seeking to improve the performance of the university football team the 'Gators'. Eventually sold under the brand name 'Gatorade', this glucose and sucrose based drink was the first in what is now a multi-million pound athletics drinks industry which connects the aspirations and desires of ordinary consumers and non-elite athletes with the performances of professional athletes through dietary association.

So long as there have been Olympic Games those involved have recognised the connection between diet and athletic performance. In the Classical world it was understood that physical, mental and spiritual health were interlinked, so diet played an important part in the training regimes of athletes. Sportsmen competing during the ancient games were advised by Hippocrates to "get drunk once or twice" if they were suffering from sore muscles; and dried figs, soft cheese, wheat, and meat were felt to enhance performance, while cold water, wine and desserts were understood to limit performance and so were prohibited (Applegate & Grivetti 1997a). However, although the connection between diet and sporting performance was recognized from an early time, it was not until the development of nutritional science in the late nineteenth and early twentieth centuries that there was an understanding of the roles different nutrients played in shaping the body and its performance (Drummond, 1957).

Given the centrality of diet for the contemporary athlete, the relative newness of nutritional science is surprising. Sports nutrition, a subset of nutritional science, is the study and application of nutrition and diet in relation to athletic performance. Sports nutrition attempts to enhance the performance of athletes, relative to the sport, physique and gender, by understanding the role and balance of different fluids and foods in the diet. At the time of the Olympian revival in 1886, nutritional science was still embryonic and understanding about the role of food in determining health and fitness was limited (Carpenter 2003 a & b). Little was understood about the role of vitamins and minerals in maintaining a healthy diet and malnutrition in the general population was tackled as a problem of quantity (too little food) rather than one of quantity and quality (food of poor nutritional value or an unbalanced diet) (Drummond, 1957). Ideas about diet and health tended to be culturally specific and determined, in large part, by the availability and abundance of particular foods and drinks. Even as late as the 1948 Olympics, swimmer Don Bland claimed there was "no dietary advice about vitamins or proteins… nor any mention of fluid intake. My special race mix was three or four glasses of water, each with six teaspoons of sugar" (Hampton, 2008).

The quest to improve physical performance through diet therefore raises issues of health, ethics and sportsmanship. Controversies relating to athletes' diets and health have been highlighted by the prevalence of performance enhancing aids, particularly anabolic steroids. Artificial stimulants have long been a feature of athletic performance (Rosen, 2008). Thomas Hicks won the 1904 Olympic marathon with the help of brandy, raw eggs and doses of strychnine, a dangerous stimulant. And while drugs were not widely used in the Games of the 1950s and 1960s, it was 'common knowledge' at the 1956 Games that US track and field athletes were experimenting with testosterone (Pound, 2004). The discovery of anabolic steroids in the early 1930s led to their widespread use for athletes, with disastrous consequences for their long-term mental and physical well being. The IOC began to raise concerns after 1960 and began testing for the sake of the athletes' health. After scandals in the 1980s and 1990s, the IOC drew up a more focused Anti-Doping Code.

Another area relating to athletic diet and health which has interested social science researchers relates to the prevalence of eating disorders among athletes. Such behaviours are not evenly distributed in terms of either nationality or discipline and research suggests that a range of factors including cultural values, the elite sports environment and individual predisposition combine to increase the risk of eating disorders (see Hulley et al, 2007). Researchers have raised questions about the gendered nature of eating disorders among athletes and the relationship between notions of masculinity and diet and nutrition in sports cultures (Atkinson, 2011; Sansone & Sawyer, 2005).

The connection between diet, performance and health at the Olympics concerns not only the bodies of the elite athletic few, but is bound up with challenges facing the body of the nation. The British Journal of Sports Medicine recently noted that only 26% of British adults take the recommended amount of exercise, and concerns about increasing population obesity are regular news items. The 2012 Olympics has been heralded as an opportunity to encourage participation in sport and so improve the health of the nation, but the sponsorship of the Games by branded fast food producers has raised concerns about the effectiveness of messages about healthy diet, exercise and the relation between the two.

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NUTRITION FOR THE ATHLETES

Carbohydrates

Athletes benefit the most from the amount of carbohydrates stored in the body. In the early stages of moderate exercise, carbohydrates provide 40 to 50 percent of the energy requirement. Carbohydrates yield more energy per unit of oxygen consumed than fats. Because oxygen often is the limiting factor in long duration events, it is beneficial for the athlete to use the energy source requiring the least amount of oxygen per kilocalorie produced. As work intensity increases, carbohydrate utilization increases.

Complex carbohydrates come from foods such as spaghetti, potatoes, lasagna, cereals and other grain products. Simple carbohydrates are found in fruits, milk, honey and sugar. During digestion, the body breaks down carbohydrates to glucose and stores it in the muscles as glycogen.

During exercise, the glycogen is converted back to glucose and is used for energy. The ability to sustain prolonged vigorous exercise is directly related to initial levels of muscle glycogen. The body stores a limited amount of carbohydrate in the muscles and liver. If the event lasts for less than 90 minutes, the glycogen stored in the muscle is enough to supply the needed energy. Extra carbohydrates will not help, any more than adding gas to a half-full tank will make the car go faster.

For events that require heavy work for more than 90 minutes, a high-carbohydrate diet eaten for two to three days before the event allows glycogen storage spaces to be filled. Long distance runners, cyclists, cross-country skiers, canoe racers, swimmers and soccer players report benefits from a precompetition diet where 70 percent of the calories comes from carbohydrates.

According to the Olympic Training Center in Colorado Springs, endurance athletes on a high-carbohydrate diet can exercise longer than athletes eating a low-carbohydrate, high-fat diet. Eating a high-carbohydrate diet constantly is not advised. This conditions the body to use only carbohydrates for fuel and not the fatty acids derived from fats.

For continuous activities of three to four hours, make sure that glycogen stores in the muscles and liver are at a maximum. Consider taking carbohydrates during the event in the form of carbohydrate solutions. The current recommendation is a 6 to 8 percent glucose solution.

You can make an excellent home-brewed 7.6 percent sports drink with reasonable sodium amounts. Add 6 tablespoons sugar and 1/3 teaspoon salt to each quart of water. Dissolve sugar and cool. The salt translates into a sodium concentration of 650 mg/liter. This small amount is good for marathon runners.

Electrolyte beverages can be used if the athlete tolerates them, but other electrolytes are not essential until after the event. Experiment during training to find the best beverage for you. Eating sugar or honey just before an event does not provide any extra energy for the event. It takes about 30 minutes for the sugar to enter the blood stream. This practice may also lead to dehydration. Water is needed to absorb the sugar into the cells. Furthermore, sugar eaten before an event may hinder performance because it triggers a surge of insulin. The insulin causes a sharp drop in blood sugar level in about 30 minutes. Competing when the blood sugar level is low leads to fatigue, nausea and dehydration.

A diet where 70 percent of calories comes from carbohydrates for three days prior to the event is sometimes helpful for endurance athletes. (See Table 1 for a sample menu.) Water retention often is associated with carbohydrate loading. This may cause stiffness in the muscles and sluggishness early in the event. A three-day regimen minimizes this effect. The previously suggested seven days of deprivation/repletion is not recommended due to increased risks of coronary heart disease. In addition, electrocardiograph abnormalities may occur and training during the deprivation phase may be difficult.

Water

Water is an important nutrient for the athlete. Athletes should start any event hydrated and replace as much lost fluid as possible by drinking chilled liquids at frequent intervals during the event. Chilled fluids are absorbed faster and help lower body temperature. (See Table 1.)

Table 1: Recommendations for hydration

Day before	Drink fluids frequently
Pre-event meal	2-3 cups water
2 hours before	2-2 1/2 cups water
1/2 hour before	2 cups water
Every 10-15 minutes during the event	1/2 cup cool (45-55 degrees) water
After event	2 cups fluid for each pound lost
Next day	Drink fluids frequently (it may take 36 hours to rehydrate completely).

Fats

Fat also provides body fuel. For moderate exercise, about half of the total energy expenditure is derived from free fatty acid metabolism. If the event lasts more than an hour, the body may use mostly fats for energy. Using fat as fuel depends on the event's duration and the athlete's condition. Trained athletes use fat for energy more quickly than untrained athletes. Consumption of fat should not fall below 15 percent of total energy intake because it may limit performance. Athletes who are under pressures to achieve or maintain a low body weight are susceptible to using fat restriction and should be told that this will hinder their performance.

Fat may contribute as much as 75 percent of the energy demand during prolonged aerobic work in the endurance-trained athlete. There is evidence that the rate of fat metabolism may be accelerated by ingesting caffeine prior to and during endurance performance. However, insomnia, restlessness and ringing of the ears can occur with caffeine consumption. Furthermore, caffeine acts as a diuretic and athletes want to avoid the need to urinate during competition.

Protein

After carbohydrates and fats, protein provides energy for the body. Exercise may increase an athlete's need for protein, depending on the type and frequency of exercise. Extra protein consumed is stored as fat. In the fully grown athlete, it is training that builds muscle, not protein per se. The ADA reports that a protein intake of 10 to 12 percent of total calories is sufficient. Most authorities recommend that endurance athletes eat between 1.2-1.4 grams protein per kg of body weight per day; resistance and strength-trained athletes may need as much as 1.6-1.7 grams protein per kg of body weight. (A kilogram equals 2.2 pounds.)

Japanese researchers demonstrated that "sports anemia" may appear in the early stages of training with intakes of less than 1 gram/kg of body weight per day of high quality protein. To calculate your protein needs, divide your ideal weight by 2.2 pounds to obtain your weight in kilograms. Then multiply kilograms by the grams of protein recommended.

A varied diet will provide more than enough protein as caloric intake increases. Furthermore, Americans tend to eat more than the recommended amounts of protein. Excess protein can deprive the athlete of more efficient fuel and can lead to dehydration. High-protein diets increase the water requirement necessary to eliminate the nitrogen through the urine. Also, an increase in metabolic rate can occur and, therefore, increased oxygen consumption. Protein supplements are unnecessary and not recommended.

Vitamins and Minerals

Increased caloric intake through a varied diet ensures a sufficient amount of vitamins and minerals for the athlete. There is no evidence that taking more vitamins than is obtained by eating a variety of foods will improve performance. Thiamin, riboflavin and niacin (B vitamins) are needed to produce energy from the fuel sources in the diet. However, plenty of these vitamins will be obtained from eating a variety of foods. Carbohydrate and protein foods are excellent sources of these vitamins. Furthermore, the B vitamins are water soluble and are not stored in the body, so toxicity if not an issue. Some female athletes may lack riboflavin, so ensuring adquate consumption of riboflavin-rich food is important, like milk. Milk products not only increase the riboflavin level but also provide protein and calcium. The body stores excess fat-soluble vitamins A, D, E and K. Excessive amounts of fat-soluble vitamins may have toxic effects.

Minerals play an important role in performance. Heavy exercise affects the body's supply of sodium, potassium, iron and calcium. Sweating during exercise increases the concentration of salt in the body. Consuming salt tablets after competition and workouts is not advised as this will remove water from your cells, causing weak muscles. Good sodium guidelines are to: 1) avoid excessive amounts of sodium in the diet and 2) beverages containing sodium after endurance events may be helpful.

Iron carries oxygen via blood to all cells in the body and is another important mineral for athletes. Female athletes and athletes between 13 and 19 years old may have inadequate supplies of iron due to menstruation and strenuous exercise. Female athletes who train heavily have a high incidence of amenorrhea, the absence of regular, monthly periods, and thus conserve iron stores. Iron supplements may be prescribed by a physician if laboratory tests indicate an iron deficiency. Excess iron can cause constipation. To avoid this problem, eat fruits, vegetables, whole grain breads and cereals..

Calcium is an important nutrient for everyone as it is important in bone health and muscle function. Female athletes should have an adequate supply of calcium to avoid calcium loss from bones. Calcium loss may lead to osteoporosis later in life. Choosing low-fat dairy products, provide the best source of calcium.

The Pre-Game Meal

A pre-game meal three to four hours before the event allows for optimal digestion and energy supply. Most authorities recommend small pre-game meals that provide 500 to 1,000 calories.

The meal should be high in starch, which breaks down more easily than protein and fats. The starch should be in the form of complex carbohydrates (breads, cold cereal, pasta, fruits and vegetables). They are digested at a rate that provides consistent energy to the body and are emptied from the stomach in two to three hours.

High-sugar foods lead to a rapid rise in blood sugar, followed by a decline in blood sugar and less energy. In addition, concentrated sweets can draw fluid into the gastrointestinal tract and contribute to dehydration, cramping, nausea and diarrhea. Don't consume any carbohydrates one and a half to two hours before an event. This may lead to premature exhaustion of glycogen stores in endurance events.

Avoid a meal high in fats. Fat takes longer to digest as does fiber- and lactose-containing meals.

Take in adequate fluids during this pre-game time. Avoid caffeine (cola, coffee, tea) as it may lead to dehydration by increasing urine production.

Don't ignore the psychological aspect of eating foods you enjoy and tolerate well before an event. However, choose wisely -- bake meat instead of frying it, for example.

Some athletes may prefer a liquid pre-game meal, especially if the event begins within two or three hours. A liquid meal will move out of the stomach by the time a meet or match begins. Remember to include water with this meal.

The Post-Game Meal

Regardless of age, gender or sport, the post-game.competition meal recommendations are the same. (See Table 3.) Following a training session or competition, a small meal eaten within thirty minutes is very beneficial. The meal should be mixed, meaning it contains carbohydrate, protein, and fat. Protein synthesis is greatest during the window of time immediately following a workout and carbohydrates will help replete diminished glycogen stores. However, consume food within the 30 minute window may be difficult for athletes—they often experience nausea or lack of hunger. Options to address this difficulty include:

Carbs you can drink that contain protein. There are several liquid smoothies and beverages on the market that provide high protein and carbohydrates for replenishment. One classic is chocolate milk.
If that is difficult, fruit, popsicles, oranges, bananas, bagels, melon, or apple slices all would be better than not consuming any food.
Many athletes turn to protein/amino-acid supplementation in the form of powders or pills post-workout. These are unnecessary and have been linked to dehydration, hypercalciuria, weight gain, and stress on the kidney and liver. Furthermore, any athletes consuming supplements in replacement of meals should consult with their doctor or a registered dietitian before continuing.

Maintain nutritional conditioning not only for athletic events, but all the time (See fact sheet 9.353, Dietary Guidelines for Americans). A pre-game meal or special diet for several days prior to competition cannot make up for an inadequate daily food intake in previous months or years.
Lifelong good nutrition habits must be emphasized. Combine good eating practices with a good t

CONCLUSION

The findings of present investigation conclusively brining out the nutritional diet effect on sports women. The sports women were found to be medium in knowledge about nutrition and dietary requirements, vegetarian in food habits and follow their meal pattern of breakfast, lunch and dinner. During participation in games the sports women were consumed generally Rice, Dal, Roti and vegetables alongwith energy giving food and fruit juices, but generally avoid the intake of spicy foods. The intake of total calories, carbohydrate, proteins and fats were normal in sports women but less than RDA. The majority of sports women preferred to play cricket and spent more than two hours daily on exercise. The knowledge about nutrition was found to be non-significantly associated with their nutritional intake. The body weight and BMI had significant association with nutritional intake of sports women. It was notated that a little over half of the sports women were possessing medium level of knowledge about nutrition and dietary requirements. It is therefore suggested that the aspect of diet counseling be introduce in the collegiate programme for sports women.

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