

Diet is of great important to Athletes “critically disuses”

Diet plays a major role in the lives and performance of athletes; The concept that dietary interventions will optimize performance is a widely accepted theory. Sports nutrition is in constant change and evolution, the recommendations and advice given today is very different than decades ago. Sports Nutrition has been documented as early as 580 B.C. (Grandjean, 1997). Maughan (2001) states that in this day and age, Sport Nutrition can be easiest described as those aspects of nutrition science that relate to the interaction of nutrition and physical activity. Furthermore, the term “diet” can be described as a particular selection of food, especially as prescribed to improve the physical condition, regulate weight, or cure a disease (Macquarie Dictionary Word Genius 2007). Cotugna, Connie, Vickery, Sheldon, McBee (2005) mention The key is balance; Dietary intervention should contain a balance and combination for carbohydrates, protein, fats, micronutrients (vitamins and minerals) and hydration. Undertaking this formula will lead to optimal performance in competition, training and recovery for the athlete. However, there are some health issues that arise when an athlete’s diet becomes unbalanced and there is insufficient nourishment to sustain good health. Dietary deficiencies and/or excess of one food type which can lead to physical disease, eating disorders and/or body image issues possibly leading to psychological disease.

History has taught us many lessons. Meanwhile research, clinical evidence, trial and error have provided us with a respectable body of knowledge in sports nutrition.

Recommendations given today are very different to those given a decade ago (Grandjean 1997). What follows are some key steps that have led us to where we are today. According to legend, ancient Olympians were reported to have a high meat intake, especially pork, with particular hydration strategies e.g. wine before competition. Burk & Maughan states (2000, p. 3) that, Whorton (1813) recorded the following, In 1809, the famous pedestrian Captain Barclay walked 1000 miles in 1000 hours. His dietary strategies were

An animal diet is alone prescribed, and beef or mutton. Biscuits and stale bread are the only form of vegetable matter permitted. Vegetables are too watery and are hard to digest. Liquors must be taken cold and home brewed beer, old but not bottled, is best. Water is never given alone.

In 1950, oral rehydration, water with a small amount of sugar and salt, was given to children with diarrhea. This research was not immediately applied to sport, but this was the base for commercial sport drinks today. (Burk & Maughan, 2000, p. 6). In the past 20-30 years, sports nutrition has evolved greatly with advancement in the understanding of the impact of diet on performance. Research still continues and the evolution process provides us with ongoing knowledge, leading to greater achievements in the sporting arena. For now, we have sufficient information to formulate a basis for the ideal sports diet.

The key formula in meeting and maintaining energy needs of an athlete in competition, training and recovery, is the combination and balance of carbohydrates, protein, fats and micronutrients. The four mentioned components to a athlete's diet can be further explained as,

Firstly: Carbohydrates are necessary for: meeting the demands of energy needed during exercise, maintain blood glucose and replenish muscle glycogen stores

(Lemon, 1998, p. 428). Carbohydrates should be the largest percentage of an athlete calorie intake, at least 50% to 60% (Litte 2004, p. 8).

Secondly: Protein is required for the hormone and enzyme production, nutrient transfer in the blood, connective tissue support, and the repair of tissue in response to periods of exercise. Athletes should have a slightly higher intake of protein than the general population (Jenkins & Reburn, 2000, p. 126). They should consume 10%-15% of total calories from protein (Lemon, 1998, p. 129).

Thirdly: Fat intake is important for the energy production, protecting organs, providing insulation to the body, and facilitating fat-soluble vitamin uptake and essential fatty acid intake (Cotugna, Vickery, & McBee, 2005, p. 323). According to the American Dietetic Association and the American College of Sports Medicine (2007), fat intake should be 20%-25% of the total calorie intake.

Fourthly: Micronutrients are essential players in energy production, hemoglobin synthesis, bone health, immune function and antioxidant activity. Micronutrient needs can be met through athletes consuming a high energy and balanced diet (Maughan, King & Lea, 2004). However, if the athlete does not intake sufficient nutrition, there is a high likelihood there will be increased risk of health issues and poor performance.

The diet of an athlete should be balanced so that total caloric intake equals expenditure. As mention by Venkatraman (2002) the tendency to consume fewer calories and to avoid fats may lead to not achieving a balance in micronutrients and

therefore compromising the immune system and reducing optimal performance. Such imbalance can be iron depletion, and/ or dehydration. Depletion of iron levels is one of the most common nutritional health issues athletes' face (Burk and Read 1987, p. 256.). Elite as well as recreational athletes undertaking hard training have a higher use of iron and will deplete their stores faster than a sedentary person. The body cannot produce its own iron and depends on the diet for its supply. Deakin states (2000, p. 247), "Iron depletion will have an effect on performance capacity and recovery". Iron is essential for many of the metabolic systems that produce energy from food for our cells. It is also essential for the transport of proteins and for hemoglobin to carry oxygen in the blood. Iron transports carbon dioxide away from the body and ensures a healthy immune system. If iron depletion occurs, it may lead to feeling abnormally tired and low on energy. Since the brain has a large demand for oxygen, it may lead to a lack of concentrate and feeling irritable the athlete may be susceptible to frequent infections'. (Sports Dietitians Australia, 2001),

Hydration is a very important aspect of sports nutrition that must be monitored closely. Dehydration can occur with as little as the loss of 2% of body weight in sweat ... During exercise, an athlete sweats to help control rise in core body temperature. If the body loses the ability to control its core temperature it stimulates the skin blood flow; resulting in an elevated heart rate. (Maughan, 2000, p. 337)

Fluid loss causes loss of sodium, iron, and calcium through sweat. Dehydration will lead to an imbalance of the electrolyte, causing a dysfunction of the body's ability to transports energy to the muscles, reducing muscular strength so fatigue will have a faster onset (Swaka & Coyle, 1999)... Swaka and Coyle (1999, p. 169) states that "Extreme dehydration can lead to death!" Recent research has demonstrated that consuming fluid in direct proportion of sweat loses will preserve physiological

function. (Maugham 2000, p.337 p). The above are a sample of physical conditions that athletes face, but there are also psychological aspect of sports nutrition in the form of eating disorders.

Athletes, pressured into obtaining a certain weight or body shape with the thought that it will improve sports performance, may be at risk of developing a form of eating disorder (Houtkooper, 2000, p. 232). There are two main types of eating disorders: firstly anorexia nervosa, where the athlete refuses to maintain body mass for age, sex and height, allowing the body mass to become less the 15% of what is recommended. Secondly, Bulimia nervosa where the athlete will eat in secrete, a feeling of out of control where large amounts of food are consumed with no ability to stop, leading to self induced vomiting. Both diseases can lead to misuse of laxatives, diuretics, enemas, other medication and fasting. The athlete is afraid of gaining weight or becoming fat. Disturbances occur in the way the athlete perceives his body shape and can lead to the denial of the seriousness of his condition and excessive exercise (American Psychiatric Association, 1994). Behavior characteristics include not being under personal control and/or significant changes in psychological, social or physical functioning. (Anderson 1990, p. 225). Houtkooper (2000, p. 226). Summarises , Consequences of eating disorders cover a wide range of health issues including powerful psychological effects of depression and morbidity. Physical effects may increase risk of injury and infection due to nutrition deficiencies, adverse changes in the cardiovascular, digestive and skeletal system. Some of these can be fatal if left untreated. Prevention, early detection and education on how to achieve realistic weight goals will improve the outcome, enabling the athlete to succeed in his sport in a healthy manner and leading to achieving optimal performance (Thompson & Sherman, 1993, p. 97).

In summary, diet is of great importance to athletes. There are various research papers that confirm this argument. 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 individual 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. If you think of the body as a race car, if the best fuel is not used, and/or the tank is not sufficiently filled to reach the finish line, chances of winning will be decreased. Sport nutrition is just one of the aspects to achieving peak performance.

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