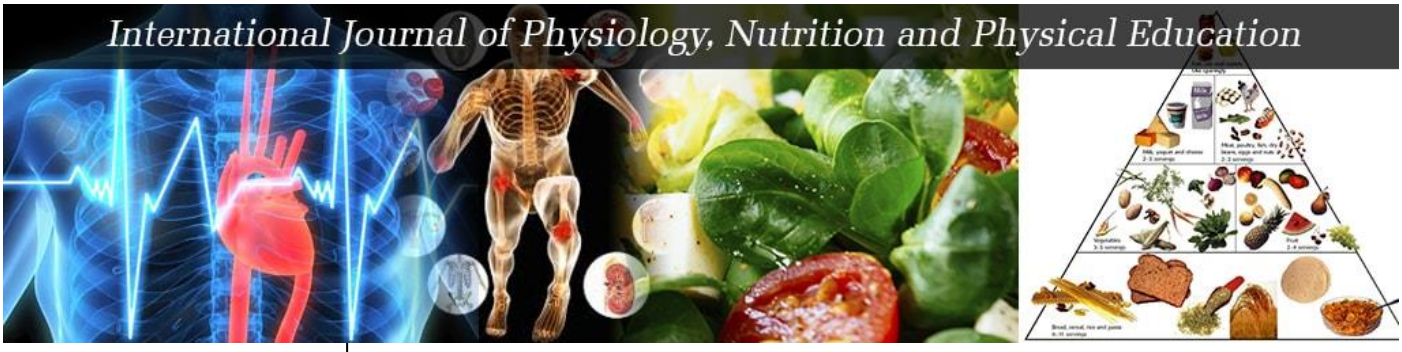

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A review study on importance of nutritional assistance during exercise or physical activity

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Abstract
Environmental and social changes are important contributors to obesity over the past few decades and there has been substantial progress towards identifying environmental factors related to eating & physical activity that can point towards solutions. The aim of this study is to assess how nutritional assistance important during exercise or physical activity.

Keywords: Nutrition, carbohydrate, protein, fat, vitamin and minerals, water

Introduction
Physical work and physical fitness are related, although not entirely, determined by physical activity patterns over recent weeks or months. Genetic contributions to physical fitness are accounted for less of the variation observed in fitness than is due to environmental factors.
Physical activity is an important public health issue that has received increasing attention in recent years (Blair S, *et al*.,1995) [41] The goal of increasing physical activity in the United States is one of 10 "leading indicator" are as described in Healthy People 2010.
The foods we eat, the location of eating, the number of eating events, and even the composition of the persons at each eating event have changed nowadays. Behind these changes lie vast shifts in food production, processing and distribution systems as well as food shopping and eating options.
Nutrients are consumed through the food that we eat in our daily life and these nutrients are absorbed at a cellular level in the body (Gibney *et al*. 2009).
Optimum nutrition contributes to health, wellbeing, normal development and good life (Gibney *et al.* 2009)
The role of nutrition related to health in sports is very important. Greany and Jeukendrup (2015) [25] stated that from fueling to recovery, muscle building weight and making optimal nutrition definite the best platform for success in any sports.
Nutrition is vital, not only in the growth and development of humans and animals but also in the prevention of disease. Nutrition is also fundamental to the maintenance of health and functionality. Basic and applied research on the interrelations between nutrition and non communicable diseases, composition, and nutrition monitoring represents the underpinning for healthy populations and strong economies. Thus, innovative nutrition research and education provide the basis for solutions to larger health-related issues, allowing individuals to live healthier, more productive lives. (Sarah D. Ohlhorst *et al*.,2013)
Citizens of industrialised countries tend to regard the intake of food in a rather passive manner and this seems to be the result of a general lack of understanding of what constitutes optimal nutrition, and how the latter regulates our bodily activity. Some of the food we eat in our dily life is used to build, maintain or repair the body cells, while the majority is processed (i.e. metabolised) for energy (ATP) production (Bohnsack B L, Hirschi K K,2004; Payerl D, *et al*.,2004) [6, 52]. Most of this energy appears as heat and is used to keep the body warm; some is used for work of cells and some for affecting the muscles. Body building requirements determine the quality of diet, whereas the energy needs of the individual determine the quantity of diet (Helge J W, 2002) [28]. Therefore, optimal nutrition is a dietary balance of different nutrients to keep the bodily activity at the required levels and in the watery medium

of the cell, delicate blending of carbohydrates, proteins and fats, along with vitamins and minerals make it possible. In this chapter, aspects related to these nutrients will be briefly discussed. (Liu S, Manson J E.,2001) [38].

The thinking and research on eating, physical activity, sedentary life, and obesity have been guided until recently by biological and psychological theories focusing on individuals, families and small social groups such as friends and coworkers. The rapidity of the rise of the obesity epidemic and the discovery that most interventions to help people change their eating and physical activity behaviors have weak and short-lived effects (Kumanyika *et al*., 2000; Marcus *et al.*, 2000) reveal the limitations of the influence over individually focused models of behavior.

Basic nutrition

Food we eat and beverages we drink are composed of six nutrients that are very important to the human body for producing energy, contributing to the growth and development of tissues, regulating body activity and preventing deficiency and degenerative diseases. The six nutrients are classified essential nutrients and they are carbohydrates, proteins, fats, vitamins, minerals and water. Body requires these essential nutrients to function properly however the body is unable to endogenously manufacture them in the quantities needed on a daily basis. (Weber S, 2004) [55].

Carbohydrate

Carbohydrates are stored in the body in a form of glycogen, which can be used during or exercise or physical activity. It is necessary to meet the demands of energy needed during exercise, to maintain blood glucose level and replenish muscle glycogen store. Carbohydrates in the body are the major source of fuel during sub-maximal exercise

Carbohydrate is the body's preferred energy source and the most important fuel for the working muscles. During the exercise of high intensity and brief duration, this nutrient provides most of the energy needs (Ivy J L. *et al*., 2004). As a practical both men and women should eat 7- 10 g of carbohydrate per kg weight per day each gramme of carbohydrate will produce 4 calories of energy and within the process will use 0.7 liters of oxygen.

Scientists agree that increased stores of muscle glycogen can enhance physical performance in terms of its intensity and duration (Costill D L, 1991) [18]. Muscle glycogen is utilized rapidly during intense exercise and fatigue occurs when it is depleted to low levels (Febbraio M A, Dancey J., 1999) [23]. Muscle glycogen is restored at a rate about 5% per hour and thus given that an appropriate diet is employed.

Carbohydrates will be found in two food- groups. One group would come with complex (or 'slow') carbohydrates, like unrefined grains, potatoes, and fruits. However, the overall desire to choose sweet and palatable foods has led to the formation of the second food- group containing simple (or 'fast') carbohydrates, like refined flour and sugar. In these carbohydrates, vitamins, mineral salts, and trace elements are often reduced. Excess consumption of refined carbohydrates can impose a pathogenic strain on the pancreas - among other organs - and thus may be the essential reason for 'diabetes mellitus' (or an inability to control blood glucose). (Schulze M B, Hu F B., 2005) [47].

The main role of carbohydrates in physical activity is to produce energy. For athletes, if their diet doesn't contain enough carbohydrate, it's likely that their performance and recovery are going to be impaired, as carbohydrate is that the key fuel for the brain and for muscles during exercise.

The body can store carbohydrates within the muscles and liver as glycogen, and use these stores as a source of fuel for physical activity. These glycogen stores are limited, so for those training at a high level, it is important to be fully fuelled at the beginning of any exercise. Glycogen is that the main source of energy at the start of exercise and through short bursts of exercise. If you are doing high intensity training for long periods and your glycogen stores don't seem to be sufficient you may feel tired, lack energy and not be able to perform at your best. So, regular intake of carbohydrate-rich foods will be important during this case to stay stores topped up. The right food choices can help make sure the body has enough energy for activity, as well as help aid recovery. Starchy foods are an important source of carbohydrates in diet. Wholegrain varieties also provide fibre, and a spread of vitamins and minerals including B vitamins, iron, calcium and folate. Sugars are also carbohydrates and therefore the amount of 'free sugars' (those added to foods and drinks or in fruit juices, honeys and syrups) consume should be limited.

Sharma *et al*. found that carbohydrates, is that the preferred fuel for working muscles particularly during high intensity activity. Some carbohydrate are consumed regardless of the kind of exercise performed. The study was conducted to judge the knowledge of adolescent female football players regarding carbohydrate and its significances. It had been found that 70% adolescent females were aware of the term carbohydrate. The knowledge of the females regarding the term carbohydrate (simple and complex) and its affiliation with the function of carbohydrate is extremely significant ($P<$ 0.001). The attention of the females on carbohydrate sources, kind of carbohydrate to be ingested before, after and through competition was insignificant. A need for developing nutrition education programs becomes pertinent to enable the players to decide on appropriate diet to enhance their performance.

Protein

Protein is required for nutrient transfer within the blood, connective tissue support and also the repair of tissue in response to periods of exercise. (Clark Nancy, 2008) [15].

There is no uncertainity that protein ingestion helps athletes recover pass through exercise, but questions remain regarding the optimal amount, type and timing of protein needed so as to optimize training-induced adaptations in skeletal muscle.

The American College of Sports Medicine (ACSM), American Dietetic Association (ADA) and Dieticians of Canada (DC) 2000, recommend that Protein recommendations for endurance athletes are 1.2 to 1.4 g per kilogram of weight per day, whereas those for resistance and strength-trained athletes is also as high as 1.6 to 1.7 g per kilogram of weight per day. Many sports nutritionist have concluded that protein requirements are higher for athletes. The additional protein may be needed so as to market muscle adaptation during recovery from exercise in several ways aiding within the repair of exercise-induced damage to muscle fibers. Supporting training-induced adaptations in muscle fibers (e.g., synthesis of new proteins that are involved in energy production and/or force generation).Facilitating the replenishment of depleted energy stores

Fats

Fat is mainly used as a fuel during low to moderate intensity exercise. Fat is additionally engaged in providing structure to

cell membranes, helping within the production of hormones, lining of nerves for correct activity and make it easier for process of absorption of fat soluble vitamins

Fat could be a vital component of a diet designed to exercise. One gram of dietary fat equals nine calories and one pound of stored fat provides approximately 3,600 calories of energy. This calorie density (the highest of all nutrients) along with our seemingly not limited storage capacity for fat makes it our largest reserve of energy. While these energy are less accessible to athletes performing in a short time, intense efforts like sprinting or weight lifting, fat is essential for longer, slower, lower intensity and endurance exercise, such as easy cycling and walking. Everything we eat is made up of macro and micronutrients that are converted to energy inside the body, helping to fuel all of our bodily functions. Dietary fat has been blamed for many health problems, but it is actually an essential nutrient for optimal health. Adipose tissue (stored fat) provides cushion and insulation to internal organs, protects nerves, moves vitamins (A, D, E, and K) throughout the body, and is the largest reserve of stored energy available for activity. Stored body fat is different from dietary fat. Body fat is only stored in the body when we consume more calories than we use, from any and all foods we eat, not just from dietary fats. There is an optimal level of human body fat for health and for athletic activity. (Elizabeth Quinn, 2020) [21].

Low-carbohydrate and high-fat diets, such as the Ketogenic diet and Paleo diet, all work on that lower carbohydrate intake, coupled with high fat and moderate to high protein intake leads to burning body fat as the main fuel source while exercising. There is, in fact, some scientific evidence that shows long-term low-carbohydrate/high-fat diets to be safe and possibly helpful in improving metabolic risk factors for chronic disease. In studies, these diets have shown to be beneficial for performance in ultra-endurance sports while at least several months of adaptation to a low-carbohydrate/high-fat diet are required for metabolic changes to occur. (Lin P-J *et al.*,2017) [14].

Vitamin and Minerals

Vitamins are required in wide variety of human bodily functions and operations which helps to sustain the body healthy and disease free. The function of minerals is for structural development of tissues as well as the regulation of bodily process. (Srilakshmi B, 2003) [51].

Micronutrients play an important role in energy production, haemoglobin synthesis, maintenance of bone health, adequate immune function, and the protection of body tissues from oxidative damage. They are also required to help build and repair muscle tissue for exercise. Theoretically, exercise may increase the need for vitamins and minerals in a number of ways. Exercise stresses many of the metabolic pathways in which these micronutrients are required, thus exercise training may result in muscle biochemical adaptations that increase micronutrient needs. Exercise may also increase the changes of these micronutrients, thus increasing loss of micronutrients from the body. Finally, higher intakes of micronutrients may be required to cover increased needs for the repair and maintenance of the lean tissue mass in athletes. It is assumed that the current RDAs and Dietary Reference Intakes (DRIs) are appropriate for sports athletes unless otherwise stated.

The antioxidant nutrients—such as vitamins A, E, and C, beta carotene, and selenium—play an important role in guard the cell membranes from oxidative damage. Because exercise can increase oxygen consumption by 10- to 15-fold, it has been hypothesized that chronic exercise produces a constant "oxidative stress" on the muscles and other cells (Clarkson, 1995) [16]. In addition, muscle-tissue damage caused by intense workout can lead to lipid peroxidation of membranes. Although there is some evidence that acute exercise may increase levels of lipid peroxide by-products (Kanter, M.M., 1994) [34], habitual exercise has been shown to result in an augmented antioxidant system and a reduction of lipid peroxidation.

Water

The human body can survive for a long duration without any of the micro and macro nutrient but not without water. The body is made of 55-60% water, representing a nearly ubiquitous presence in bodily tissues and fluids. In sports athletics, water is important for temperature regulation, lubrication of joints and the transport of the nutrients to active tissues. It regulates the body temperature, cushion and protects vital organs, aids the digestive system, acts within each cell to transport nutrients and dispel waste. (Clark Nancy, 2008) [15].

The science of nutrition in relation to sports performance has progressed from empirical studies investigating the effect of dietary manipulations such as restriction and supplementation to the direct investigation of physiological basis of the specific nutritional demands for hard physical exercise. (Greany J, 2015) [25].

Dietary intake for performance will change as the training regime changes. Poor nutrition can lead to injury, fatigue and poor recovery, all three of which can hinder as to how efficiently an athlete performs (Costill DL and Miller JM,1980) [19].

American Dietetic Association, Dietician of Canada and American College of Sports and Medicine stated that physical activity, athletic performance and recovery from exercise are enhanced by optimal nutrition. Proper selection of foods and fluids, timing of intake and supplement choices are required for optimal health and exercise performance. (Burke LM *et al*., 2011) [9].

Slater and Phillips in 2011 found that athletes related to strength hand power are mainly interested in enhancing power, related to body weight and thus almost all about some form of resistance training. While sports athletes may attempt to boost skeletal muscle hypertrophy, fundamental nutritional issues are broader than those apposite to hypertrophy and include an admiration of the sports supplement industry, the long term timing of nutrient intake to maximize fuelling and recovery objectives, plus accomplishment of pre-competition body mass requirements. Also that total calorie and macronutrient intakes of strength-power athletes are mostly high but intakes tend to be routine when expressed relative to body mass.

Huberty *et al*., defined that a paramount consideration is that an individual approach is needed to meet each athlete's nutritional needs. Present training for power sports involves diverse routines, which place a wide array of physiological demands on the athlete. Nutritional aim is to support general training needs - tailored to specific training phases - as well as the various demands of competition. Elite athletes have high training intensities and volumes for most of the training season, so calorie intake must be sufficient to assist recovery and adaptation. Low muscle glycogen decreases high-intensity performance, so day to day carbohydrate intake must be highlight throughout training and competition phases. It was found that the timing of exercise, type and amount of

protein intake influence post-exercise recovery and adaptation. Most games and sports feature demanding competition schedules, which require aggressive nutritional regaining strategies to optimize muscle glycogen resynthesis.

Fuel for exercise

When carbohydrate is provided at desirable rates during or after endurance exercise, protein supplements appear to have no direct performance increasing effect. Carbohydrate and fat are the two major fuel sources oxidized by skeletal muscle tissue through prolonged (endurance-type) exercises. (Cermak NM and Van Loon L, 2013) [13].

Endurance performance and bearing capacity are largely ordered by endogenous carbohydrate availability. As such, meliorate carbohydrate availability during prolonged exercise through carbohydrate ingestion has dominated the area of sports nutrition research. As a result, it has been well established that carbohydrate intake during prolonged more than two hours moderate-to-high intensity exercise, increase endurance performance. (Phillips SM and Van Loon LJ, 2011) [43].

An athlete's carbohydrate ingestion can be evaluated by his total daily intake and the timing of uptake in relation to exercise maintains enough carbohydrate substrate for the muscle and central nervous system. Carbohydrate availability is enhanced by ingesting carbohydrate in the hours or days prior to the session or activities, intake during exercises and provides additional fuel during recovery between sessions. This is an important for the high-intensity training where optimal performance is require. Carbohydrate intake during exercise must be increased according to the requirement of the event or games. (Holway FE and Spriet LL, 2011) [30].

The function of protein in promoting sports performance is split along the lines of how much aerobic-based versus resistance-based activity the athlete attempts. Athletes attempt to gain muscle mass and strength are likely to have higher quantity of dietary protein than their endurance-trained trainers. (Phillips SM and Van Loon LJ, 2011) [43].

Protein needs have been compared across several population groups, including sports athletes and other exercising individuals. Many studies have examined that the effects of consuming animal and vegetable protein sources and their effects on sports performance. Recently mixture of dairy protein and soy protein has materialized in commercial sports nutrition products such as nutrition bars and ready-to drink and powdered beverages and this study states that the potential nutritional advantages of merging whey protein, casein and isolated soy protein. Presently all supplement industries spotted a growing market. (Campbell B *et al*., 2010) [24] Nutrition (ISSN) Position Stated that Protein and Exercise assessed general literature on renal and bone health. There is lack of scientific evidence about protein intake, that ingestion of protein within the limit (1.4-2.0 gm/kg body weight per day) is unhealthy for an athlete. (Lowery LM, Devia L,2009)

People who do not include adequate protein in daily diet may show slower recovery and training adjustments (Burke DG *et al*.,2006) [12]. Protein supplements or ergogenic aids offer a appropriate way to ensure that athletes take quality protein in the diet and complete their protein needs. However, ingesting additional protein beyond the daily requirement does not help in extra gain in strength and muscle mass. Research focus over recent years has been to influence whether different types of protein (e.g. whey, casein, soy, milk proteins, colostrums, etc) and various biologically active protein subtypes and peptides (e.g. α-lactalbumin, β-lacto globulin, glycol macro peptides, immunoglobulin's, lacto per oxidizes and lacto ferrin, etc.) have varying effects on the physiological, hormonal and immunological responses to training. (Flinn S *et al*., 1985) [22].

In addition, a significant amount of experimentation has examined whether timing of protein intake and provision of specific amino acids may play a role in protein synthesis or training adaptations, conducted mostly in untrained populations (Tallon MJ *et al*., 2007) [33]. Although more research is necessary in this area, evidence shows that protein requirement of individuals busy in intense training are elevated, various types of protein have different effects on anabolism and catabolism. It was observed that different types of protein subtypes and peptides have unique physiological effects and timing of protein intake may play a significant role in optimizing protein synthesis following exercise. Therefore, it is simplistic and misleading to suggest that there are no data supporting contentions that athletes need more protein in their diet and there is no possible ergogenic value of integrating various types of protein into the daily diet. (Schenkel A *et al*.,2008) [29].

It is the position stand of ISSN that exercising persons require approximately 1.4 to 2.0 grams of protein per kilogram of body weight per day. This is often greater than the RDA (Recommended Dietary Allowance) for sedentary person (Andersen KK *et al*.,2003) [36]. According to the current literature we know that the addition of protein and BCAA (Branch Chain Amino Acid) before or after resistance training can expand protein synthesis and increase in lean mass beyond normal adjustment. However, it should be noted that gains have primarily been pereived in untrained populations unless the supplement contained other nutrients like creatinine monohydrate. (Wilborn C *et al*.,2008) [35].

Muscle glycogen is the predominant fuel for energy during exercise, and also the ability to rapidly replenish glycogen stores during recovery is important for sports athletes. This is often particularly true for athletes undergoing long exercise bouts or multiple daily workouts. The simplest strategy to promote muscle glycogen resynthesis during the initial few hours after exercise is to ingest a high amount of carbohydrate at frequent intervals. Provided that carbohydrates are consumed at a rate of about 1.2 gram per kilogram of body weight per hour (0.5 g/lb/h), in 15 to 30 minute intervals, most evidence suggests that protein added to a recovery drink won't further enhance the speed of muscle glycogen resynthesis. (Burke LM *et al*.,2004) [11]. Protein consumed after exercise does assist within the repair and synthesis of muscle proteins, and as such, is important to the recovery process.

For example, protein added to a carbohydrate/fat supplement increased leg muscle protein accretion during recovery from cycling exercise, as opposed to net losses in muscle protein when just carbohydrate and fat were ingested. (Levenhagen DK *et al*., 2002) [37].

Athletes have demonstrated increased performance time to fatigue, or increased power output during the later stages of prolonged exercise. It is generally believed that these performance benefits are derived because carbohydrate beverages augment blood glucose levels during the later stages of prolonged exercise, when muscle glycogen levels are significantly reduced.

Impact of other factors

Shriver *et al*. discovered that failing to meet overall

nutritional needs or to provide specific nutritional support to a session of exercise is likely to affect acute performance and decrease the effectiveness of training or recovery. (Wollenberg G *et al*.,2013) [49].

Muslim athletes who fast during Ramadan should use overnight opportunities to consume foods and drinks that can supply the nutrients require enhancing performance, adaptation and recovery in their sports or activity. Because of the advantage ofhaving the ability to consume a minimum number of these consistent with the nutritional needs of athletes, their exercise and nutrition plan should be revised. (Burke LM, King C,2012) [10].

The use of weight loss diet, selection of foods and frequent weight fluctuation among sports athletes preparing for competition in weight classes and leanness sports have shown various problem for years, but the extent of the matter and also the health and performance results have yet to be fully examined. (Sundgot-Borgen J, Garthe I, 2011)

A review article by Wescott concluded that standard resistance exercise is effective in reversing muscle loss, recharging resting metabolic rate and reducing fat, alleviate physical activity, improving blood glucose levels, better cardiovascular health, increasing bone mineral density, enhancing mental health and reversing specific aging factors (Westcott RT, 2013) [56]. In inactive adults, muscle mass reduces by 3% to eight per decade after age 30 years and by 5% to 10% per decade after age 50 years, averaging about 1 lb of muscle loss annually after the fifth decade of life. Reduced lean weight is liable for decreased resting rate, which is often in the middle of increased fat accumulation. Wescott made two groups for his study, the Exercise/Protein Diet group focused on identical Exercise/Protein protocol together with a restricted daily caloric intake (1200-1500 Kcal/day for women; 1500-1800 Kcal/day for men). Wescott found that after 10 weeks of coaching, the Exercise/Protein group reached greater increases ($P< 0.05$) in muscle mass weight and greater decreases ($P< 0.05$) in diastolic pressure level rate than the Exercise-Only group. The Exercise/Protein/Diet group experienced reduction ($P< 0.05$) in body composition analysis including weight, body mass index (BMI), percent fat, fat weight, waist circumference (WC), systolic force per unit area (SBP) rate and DBP (Diastolic blood pressure) rate than the Exercise-Only group, still as greater reductions ($P< 0.05$) in weight, BMI, percent fat, fat weight and WC (waist circumference) than the Exercise/Protein group. It had been concluded that a high protein diet may enhance the consequences of exercise for increasing subject lean weight and decreasing DBP rate. It absolutely was further indicated that a higher protein and lower calorie diet plan enhance the result of exercise for reducing person weight, BMI, percent fat, fat weight, WC, SBP rate and DBP rate, while accomplishing similar gains in lean body mass.

Assessment and promotion of exercise and physical activity which is useful in achieving desired benefits across several populations. Most work suggests that exercise and physical activity are associated with good quality of life and health outcomes. Therefore, assessment and encouragement of exercise and physical activity may promote well-being in attaining desired benefits across several populations. (Byars A *et al*., 2003) [26].

Ergogenic Aid

An ergogenic aid is any training techniques, mechanical devices, nutritional practice, pharmacological method or psychological techniques which will improve exercise performance capacity or enhance training adaptations. It helps in individual to tolerate heavy training to a greater degree by helping them recover, faster or help them stay injury free during intense training. Some studies show that using supplement significantly enhances exercise performance e.g. helps athletes run faster, lift more weight or do more work during a given exercise task. On other hand it prepares an athlete to enhance recovery from exercise. It is the potential to boost training adjustment and thus must be considered ergogenic. (Byars A *et al*., 2003) [26].

Creatine products are readily available as a dietary supplement and are regulated by the US Food and Drug Administration. Specifically, in 1994 US President Bill Clinton signed in to law the dietary supplement Health and Education Act (DSHEA). Which permit manufactures/companies/brands to form structure function claim, the law strictly prohibits disease claims for dietary supplements. (Denham BE, 2011) [20].

Bhasin *et al*. shows that testosterone and growth hormone are two primary hormones in the body that serve to develop gains in muscle mass (i.e., anabolism) and strength while reducing muscle breakdown (catabolism) and body fat mass. (Bhasin D *et al*., 2001) [3].

Testosterone also elevates male sex characteristics (e.g., hair, deep voice, etc). Low level anabolic steroids are often prescribed by doctors to prevent loss of lean weight for people with various diseases and illnesses. (Wang Y *et al*., 2009) [46].

The research has generally shown that use of anabolic steroids and growth hormone during training can promote increase in strength and lean weight. However, variety of probably life threatening contrary effects of steroid abuse are reported including liver and hormonal dysfunction, hyper lipidemia (high cholesterol), increased risk to cardiovascular disease and behavioral changes (i.e., steroid rage) and mood swings. (King DS *et al*.,2002) [10].

For this cause, anabolic steroids have been banned by most sport organizations and should be avoided unless prescribed by a physician to treat an illness. (Bhasin D *et al*., 2001) [3].

Conclusion

During exercise, the first goals for nutrient consumption are to switch fluid losses and supply carbohydrate for the upkeeper of blood glucose levels. These nutrition guidelines are very important for endurance events lasting longer than an hour. If these nutritional needs are not met, there is an increased risk of poor performance and health issues. The ustilization of a nutritional supplement within established guidelines is safe, effective and ethical. Many 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's sports specific variation within the food fads and practices indicating the strong influence on coaches and peers.

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