International Journal of Yoga, Physiotherapy and Physical Education
ISSN: 2456-5067; Impact Factor: RJIF 5.24
Received: 23-02-2020; Accepted: 24-02-2020; Published: 25-03-2020
www.sportsjournal.in
Volume 5; Issue 1; 2020; Page No. 36-38

A review: Nutritional guidelines to the young athletes

Divyasree P[1], Madhu GR[2]
[1] M.P. Ed Student, Alva's college of Physical education, Karnataka, Moodbidri, India
[2] Assistant Professor, Alva's college of Physical education, Karnataka, Moodbidri, India

Abstract
Nutrition is an integral component to any athletes training and performance program. In adults the balance between energy intake and energy demands is crucial in training, recovery, and performance. In young athletes the demands for training and performance remain but should be a secondary focus behind the demands associated with maintaining the proper growth and maturation. Research interventions imposing significant physiological loads and diet manipulation are limited in youth due to the ethical considerations related to potential negative impacts on the growth and maturation processes associated with younger individuals. This necessary limitation results in practitioners providing nutritional guidance to young athletes to rely on exercise nutrition recommendations intended for adults. While many of the recommendations can appropriately be repurposed for the younger athlete attention needs to be taken towards the differences in metabolic needs and physiological differences.

Keywords: nutrients, nutrient timings, macronutrients, athletes etc

Introduction
Optimal nutrition is a critical component of growth and development but also plays an integral role in sports performance. The young athlete who is not well-fueled or hydrated may experience deficits in strength, speed, and stamina, as well as decreased focus, increased fatigue, and increased risk of injury. However, the message about eating needs to be pertinent to young athletes; otherwise, it goes unheeded. A focus on nutrition is not as accepted as an emphasis on performance. (Petrie HJ, Stover EA, Horswill CA, 2004) [9]

Proper nutrition is a fundamental component of athletes training and performance plan. Proper nutrition ensures that an individual is amassing the fuels necessary for the energy production needs related to activity and recovery. (John Eric *et al*., 2015) [7] One of the areas needing to be addressed is the unique nutritional needs associated with intense exercise stress. However, our understanding of the effects of strenuous physiological training and nutritional variations in combination with exercise stress in youth athletes is greatly limited. This limited knowledge is most likely due to the ethical considerations of withholding nutrients and physiologically overstressing a vulnerable population such as children and adolescents still in the process of growth and development.

Nutrient Timing
It is extremely important for young athletes to be well-fueled before, during and after training. The emphasis before training is on fluids, carbohydrate, a little protein and fat (depending on the workout) and sodium **(**Sherman W. M, 1981) [11]. A small meal with water or a snack will sufficient. If the training session is a glycogen depleting workout (longer than 3 hours or very high intensity-threshold or VO2max sessions), it is important to consume fluid, carbohydrate and sodium during a workout. For, general recommendations include drinking 3-8 ounces of fluid every 15 minutes, eating 20-40 grams (80-160 calories) of carbohydrate per hour and consuming 300-500 milligrams of sodium per hour. This can easily be sustained by eating pretzels, bananas, water, fruit, or a peanut butter and honey sandwich. Once the child is comfortable with whole foods, it is okay to slowly introduce bars, gels and drinks as long as you educate them about the specific purposes these types of products have. After a difficult training session, encourage them to drink 20-24 ounces of fluid for every pound of body weight lost during the workout, about 1/2 gram of carbohydrate per pound of body weight, about 10-15 grams of protein and at least 300-500 milligrams of sodium. Young athletes are great to work with as they are typically sponges for information but keep in mind that they do require slightly different methods of nutrition education and implementation than adults. Take the time, set good examples and have fun in teaching young athletes the nutrition skills that they can take with them throughout their life and sport career.

Caloric (Energy) Needs
Caloric requirements for youth athletes depend on age, gender, and physical activity level. While there is limited evidence for the amount of energy expended in various sports, it is well established that youth expend approximately 10 to 25% more energy per pound of body mass compared to adults. (Beelen M, 2010) [3]

Adequate energy is required to meet the needs for growth, health, body mass maintenance, daily physical activity and training. Chronic inadequate energy intake may result in short stature, delayed puberty, menstrual irregularities, poor bone health and increased risk of injuries. Female adolescents in particular who participate in distance running, walking and jumping events may be at an increased risk of inadequate energy intake and disordered eating as a result of their pursuit of a lighter and leaner physique.

Carbohydrates

Despite recent trends in low-carbohydrate diets, the safety and efficacy of these dietary patterns in youth athletes have yet to be rigorously evaluated. As such, carbohydrates remain an important dietary component for the youth athlete. Consuming adequate amounts of carbohydrate supports usual training intensity and promotes rapid recovery. Carbohydrates are the most readily available source of food energy for the exercising muscle, the primary fuel source for high intensity exercise, and the exclusive source for the brain and nervous system. Carbohydrates are stored in the muscle and liver as glycogen. Stored muscle glycogen resulting from carbohydrate consumption pre-exercise may help delay fatigue during exercise. Carbohydrate consumption during exercise that lasts more than 60 minutes helps the body maintain blood glucose availability late in exercise. Post-exercise carbohydrate consumption helps to improve muscle glycogen storage.

Protein

Protein is needed for normal cellular functioning as well as synthesis of various bodily tissues. Athletes tend to have elevated demands for dietary protein intake compared to sedentary individuals. (Nancy R. Rodriguez, 2010) [8] As a general recommendation for maintaining health, current recommendations are between 0.8 and 1.2 grams of protein per kg of body mass daily. This recommendation is sufficient to meet the bodily demands of 97.5% of the population, which also accounts for variations in demographic BMI as well as gender.

Many athletes make dietary modifications in attempt performance and meet body weight requirements for competitive classes. Several studies have shown increased dietary protein intake accompanied by exercise intervention may aid in weight loss as well as preservation of lean body mass typically associated with reduced body weight. Some suggest the mechanism may be partially attributed to increased thermogenesis and satiety associated with elevated protein intake.

Fat

Fat may be the preferred fuel source for children because of the higher rate of fat oxidation during exercise. Fat should provide 25% to 30% of the daily calories. Parents may consume a very low-fat diet or offer their children nonfat food choices in an attempt to trim body fat. Many of the fat-free foods are nutrient poor, or they provide the same number of calories as the full-fat items but are devoid of an essential nutrient. Certainly, low-fat or fat-free dairy foods and lean meats are acceptable; however, full-fat peanut butter and regular or light salad dressings and mayonnaise can be used instead of the fat-free alternatives. (Buschmann JL, 2020) [4]

Dietary lipids are essential for the absorption of vitamins A, D, E, and K, as well as synthesis of cholesterol and other sex hormones. In terms of caloric requirements, most sources recommend lipid intake should be limited to 25–30% of total caloric intake, which is relatively the same for both sedentary and active individuals. It is important to consider caloric demands are increased in athletic populations; therefore, absolute lipid intakes are likely to be higher. The average adolescent consumes roughly one third of their dietary intake as lipids. It is important to restrict lipid intake to avoid excessive caloric intake; however, there is no health benefit in diets with less than 15% of calories from lipids. In terms of athletic requirements, an increase of dietary carbohydrate should account for a majority of the increased caloric demands, rather than an increase of dietary lipid.

Micronutrients

Micronutrients categorically refer to vitamins and minerals used by the body during normal physiological functions. Generally, it is accepted that a well-balanced diet of sufficient caloric intake will provide the adequate micronutrients to support normal growth and maturation. The American Medical Association (AMA) and the American Dietetic Association (ADA) recommend nutrients be obtained from food sources rather than supplements in healthy children. Likewise, the American Academy of Pediatrics (AAP) does not endorse regular supplementation of vitamins and minerals in healthy children (with the exception of fluoride in unfluoridated areas). However, AAP has noted that some children are at increased risk of nutrient deficiencies. Specifically, AAP suggests that children and adolescents with anorexia or poor appetites, chronic diseases, and food insecurity are at greater risk for nutrient deficiencies. Youth who do not consume adequate amounts of dairy or have sufficient sun exposure may also be at risk for deficiencies.

Conclusion

Children and adolescents have specific nutritional needs, and although the principles of sports nutrition are similar to adults, there are some important differences, particularly with respect to energy expenditure, fuel utilization and thermoregulation during exercise. During this life stage, particularly in girls, there is an increased risk for inadequate dietary intake secondary to dieting to optimize physique. This increases the risk for energy deficiency, disordered eating, menstrual irregularity and reduced bone density. Appropriate nutrition is critical during these growing years to maintain health, growth and the development of athletic potential.

References

1. Astrand PO. Experimental studies of physical working capacity in relation to sex and age. Munksgaard, Copenhagen, 1952.
2. Bar-Or O. Nutrition for child and adolescent athletes. Sports Science Exchange, 2000, 77.
3. Beelen M, Burke LM, Gibala MJ, van Loon LJC. Nutritional strategies to promote postexercise recovery. International Journal of Sport Nutrition and Exercise Metabolism. 2010; 20(6):515-532.
4. Buschmann JL, Buell J. Sports nutrition. In: Miller MD, Thompson SR. eds. DeLee and Drez's Orthopaedic Sports Medicine. 5th ed. Philadelphia, PA: Elsevier; chapter 25, 2020.
5. https://www.google.com/search?q=sports+nutrition+for+young+athletes+pdf&oq=&aqs=chrome.0.35i39l5.-1j0j7&client=ms-android-xiaomi&sourceid=chrome-mobile&ie=UTF-8
6. https://www.ncbi.nlm.nih.gov › pmc results Sport nutrition for young athletes - NCBI
7. John Eric *et al*, Nutritional consideration for performance in young athletes J Sports med (Hindawi publ corp) PMCID: PMC4590906, 2015.

8. Nancy R. Rodriguez; Nancy M. DiMarco; Susie Langley. Nutrition and Athletic Performance, Medscape, 2010. Retrieved 2019-02-15
9. Petrie HJ, Stover EA, Horswill CA. Nutritional concerns for the child and adolescent competitor. Nutrition. 2004; 20(7-8):620-631
10. Phillips SM, Van Loon LJC. Dietary protein for athletes: from requirements to optimum adaptation. Journal of Sports Sciences. 2011; 29(supplement 1):S29-S38.
11. Sherman WM, Costill DL, Fink WJ, Miller JM. Effect of exercise-diet manipulation on muscle glycogen and its subsequent utilization during performance. International Journal of Sports Medicine. 1981; 2(2):114-118.
12. Wilk B, Yuxiu H, Bar-Or O. Effect of body hypohydration on aerobic performance of boys who exercise in the heat [abstract]. Med Sci Sports Exerc. 2002; 34(5 suppl):S48