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Medically reviewed by Alissa Palladino, MS, RDN, LD, CPT, Nutrition, Personal Training — By Louisa Richards on April 20, 2021Athletes will have different nutritional needs compared with the general public. They may require more calories and macronutrients to maintain strength and energy to compete at their optimum level.In addition to consuming sufficient amounts of calories and macronutrients, athletes may also require more vitamins, minerals, and other nutrients for peak recovery and performance.Moreover, they may need to consider meal timing and ensure adequate hydration.In this article, we discuss macronutrient and micronutrient needs of athletes and look at calories, meal timing, and how to tailor requirements to specific sports. We also give meal examples for breakfast, lunch, and dinner.Share on PinterestAlexander Spataro/Getty ImagesNutrition is essential for supporting an athlete’s general health and their training needs.Having a suitable diet provides a person with enough energy and nutrients to meet the demands of training and exercise. In addition to helping a person perform optimally, it facilitates recovery.Athletes may need to consider:their caloric needsmacronutrient amounts and ratiosmeal and snack timingsvitamins and minerals for recovery and performancehydrationTailoring these considerations to an athlete’s body weight and composition, the amount of time spent training, and the type of sport they do can improve their performance.The Dietary Guidelines for Americans, 2020–2025 suggest that the optimal macronutrient ratios for adults are as follows:The International Sports Sciences Association (ISSA) notes that people can adjust these ratios based on the goal of physical activity.For example, an endurance athlete would increase the amount of carbohydrates they eat, while a strength athlete would increase their protein intake.According to a 2018 review by the International Society of Sports Nutrition (ISSN), typical macronutrient ratios for athletes are as follows:CarbohydratesCarbohydrates receive a great deal of attention in sports nutrition due to the vital role they play in athletic performance.Carbohydrates are typically the preferable fuel source for many athletes, particularly for high intensity and long duration exercise. This is because they supply ample glycogen storage and blood glucose to fuel the demands of exercise.To maintain liver and muscle glycogen stores, athletes will need different amounts of carbohydrates depending on their exercise volume.For moderate amounts of intense training, defined as 2–3 hours per day of intense exercise performed 5–6 times per week, the ISSN suggests consuming 5–8 grams per kilogram (g/kg) of body weight, or 250–1,200 g, of carbohydrates per day for athletes who weigh 50–150 kg.For high volume intense training, defined as 3–6 hours per day of intense training in 1–2 daily workouts 5–6 days per week, the ISSN recommends 8–10 g/kg of body weight, or 400–1,500 g, of carbohydrates per day for athletes weighing 50–150 kg.For example, an athlete weighing 150 kg who performs high volume intense training would look to consume roughly 1,200–1,500 g of carbohydrates.Healthy carbohydrates for an athlete’s diet may include whole grains, such as brown rice, quinoa, oats, and pasta, and starchy vegetables, such as potatoes.ProteinProtein also plays an essential role in sports nutrition, as it provides the body with the necessary amount of amino acids to help build and repair muscles and tissues.Athletes doing intense training may benefit from ingesting more than two times the recommended daily amount (RDA) of protein in their diet.For example, the dietary reference intake for adult females is 46 g, and for adult males — 56 g. That is why it may be beneficial for athletes to consume nearer to 92 g and 112 g of protein, respectively.The ISSA suggests that many athletes can safely consume 2 g of protein per 1 kg of body weight daily, compared with the RDA of 0.8 g/kg.The ISSN also notes that optimal protein intake may vary from 1.2 to 2.0 g/kg of body weight per day.Higher amounts of protein can help athletes avoid protein catabolism and slow recovery, which the ISSN notes can contribute to injuries and muscle wasting over time.For moderate amounts of intense training, an athlete should consume 1.2–2 g of protein per 1 kg of body weight, which translates into 60–300 g of protein per day for an athlete weighing 50–150 kg.For high volume intense training, the ISSN suggests 1.7–2.2 g of protein per 1 kg of body weight per day, or 85–330 g of protein for an athlete weighing 50–150 kg.Healthy protein sources include:FatFats are essential in the diet to maintain bodily processes, such as hormone metabolism and neurotransmitter function.Including healthy fats in the diet also helps satiety and can serve as a concentrated fuel source for athletes with high energy demands.The ISSN recommends athletes consume moderate fat intake, representing around 30% of daily calories. However, they can safely consume up to 50% of their daily calories as fat to meet higher volume training needs.Athletes seeking to decrease their body fat may reduce fat intake to 20% of their daily calories.Some athletes may choose to eat a ketogenic diet and consume higher amounts of fats. However, the ISSN review indicates there is not sufficient evidence to support the diet’s effectiveness.Healthy fat sources include oily fish, olive oil, avocados, nuts, and seeds.Athletes should ensure they consume the essential vitamins and minerals they need to support their general health and sports performance.People can usually achieve adequate intakes of essential vitamins and minerals by eating a varied, balanced diet.Some athletes may choose to take vitamin or mineral supplements or ergogenic aids, such as creatine. The ISSN recommends that consumers evaluate the validity and scientific merit of claims that manufacturers make about dietary supplements.There is little evidence to support the efficacy or safety of many dietary supplements, including:However, scientists have shown that other ergogenic aids, such as caffeine and creatine monohydrate, are safe and effective for athletes.It is important to be aware that some athletic associations ban the use of certain nutritional supplements.Moreover, athletes should ensure they maintain adequate hydration. According to the ISSN and other sports nutrition experts, when a person loses 2% or more of their body weight through sweat, it can significantly impair their performance.Given that sweat losses are a combination of fluids and electrolytes, such as sodium and potassium, athletes may choose to and benefit from using sports drinks, milk, or both to meet some of their hydration needs.Athletes require sufficient calorie intake to match their energy expenditure through activity.The ISSN suggests that athletes training intensely for 2–6 hours per day 5–6 days of the week may burn over 600–1200 calories per hour while exercising.As a result, athletes engaging in this level of activity may require 40–70 calories per 1 kg of body weight per day, compared with the average less active individual, who typically requires 25–35 calories per 1 kg of body weight daily.According to the ISSN, athletes weighing 50–100 kg may require 2,000–7,000 calories per day. It also notes that athletes weighing 100–150 kg may need to consume 6,000–12,000 calories daily to meet training demands.The timing of meals and snacks can be vital to an athlete’s performance. The timing and content of meals can help support training goals, reduce fatigue, and help optimize body composition.Guidelines for the timing and amount of nutrition will vary depending on the type of athlete.For example, the ISSN advises strength athletes consume carbohydrates and protein on its own up to 4 hours before and up to 2 hours after exercise.The American College of Sports Medicine (ACSM) also notes the importance of consuming protein both before and after exercise for strength athletes.By contrast, endurance athletes would need to consume mostly carbohydrates and a small amount of protein roughly 1–4 hours before exercise.Both the ISSN and ACSM emphasize the role of meal timing in optimizing recovery and performance and recommend athletes space nutrient intake evenly throughout the day, every 3–4 hours.Some people may find that consuming meals too close to the beginning of exercise can cause digestive discomfort. It is therefore important to eat an appropriate amount and not exercise too quickly after eating.Athletes have different nutritional requirements depending on which sport they do.People who are training or racing at peak levels may find it challenging to consume enough food for their energy requirements without causing gastrointestinal (GI) discomfort, especially immediately before an important workout or race.For example, the ISSA highlights the importance of hydration and carbohydrate loading for competitive swimmers.At the same time, it emphasizes consuming easily digestible carbohydrates, such as bananas and pasta, prior to events to avoid GI discomfort.Athletes may need to work with a sports nutritionist, preferably a registered dietitian, to ensure they consume enough calories and nutrients to maintain their body weight, optimize performance and recovery, and plan a timing strategy that suits their body, sport, and schedule.Athletes need to eat a healthy and varied diet that meets their nutrient requirements.To enhance nutritional quality, it is preferable to eat whole foods rather than processed foods.Choosing whole grains and other fiber-rich carbohydrates as part of a daily diet generally promotes health.However, immediately prior to and during intense trainings and races, some athletes may prefer simpler, lower fiber carbohydrates to provide necessary fuel while minimizing GI distress.The following is an example of what an athlete might eat in a day to meet their nutritional needs. Portion sizes and calories will vary depending on a person’s sex, weight, and activity levels:Breakfast: eggs — either boiled, scrambled, or poached — with salmon, fresh spinach, and whole grain toast or bagelLunch: stir-fry with chicken or tofu, brown rice, broccoli, green beans, and cherry tomatoes cooked in oilDinner: a baked sweet potato topped with turkey, bean chili, or both, served with a watercress, peppers, and avocado salad drizzled with olive oil and topped with hemp seedsSnacks are an important way for athletes to meet their calorie and nutrition needs and stay well fueled throughout the day. Options include:Athletes need to plan their diet to optimize their health and performance. They should consider their calorie and macronutrient needs and ensure they eat a varied diet that provides essential vitamins and minerals.Hydration and meal timing are also vital for performing well throughout the day. Some athletes may choose to take dietary supplements. However, they should be mindful of safety and efficacy issues and ensure that their sporting association allows them.Both amateur and professional athletes may benefit from consulting with a sports nutritionist to help them plan the optimal diet for their individual needs and goals. Last medically reviewed on April 20, 2021Nutrition / DietSports Medicine / FitnessMedical News Today has strict sourcing guidelines and draws only from peer-reviewed studies, academic research institutions, and medical journals and associations. We avoid using tertiary references. We link primary sources — including studies, scientific references, and statistics — within each article and also list them in the resources section at the bottom of our articles. You can learn more about how we ensure our content is accurate and current by reading our editorial policy.