

Sensible Sports Nutrition

When you read the words "sports nutrition", thoughts of *Power Bars, Gels, Gatorade*, and protein shakes may come to mind, along with a myriad of more obscure and expensive products and supplements. Clinical observation and a literary review quickly find that too many convenience foods disguised as "performance enhancing" products may be sabotaging your performance, waist-line, and possibly your health. This article aims to make sense of sports nutrition and how making the right food choices can help you reach your goals.

High Quality Food For the High Quality Athlete

Before worrying about expensive supplements or timing of nutrients, make sure you have your food quality in order. Your diet should be high in nutrient dense foods which support optimal performance and health.

Animal proteins are the richest source of branched chain amino acids (amino acids are the building blocks of proteins). B.C.A.A's are just three out of 21 total amino acids, yet they make up 1/3 of skeletal muscle. B.C.A.A's play an important role in building and repair of muscles and increased B.C.A.A. intake may reduce recovery time and lead to a more productive "next" workout. A few good choices are fish, eggs and egg whites, white-meat chicken with skin removed, and lean cuts of beef such as loins (top loin, sirloin, etc.) or rounds (bottom round, eye of round, etc.). An athlete should strive to consume 0.7-1.0 grams of protein per pound of bodyweight per day from high quality sources (Ex. a 160 pound athlete would aim for 112-160 grams of protein per day). Typically, one ounce of meat, one egg, or one cup of milk contains 7-8 grams of protein.



Picture courtesy of CrossFit Wright-Patterson AFB

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Vegetables and fruits are largely concentrated with vitamins and minerals that are typically more useful to the body in their whole-food form than they are in supplemental form. This is important to performance because deficiency in any nutrient may lead to fatigue (recently, Chris Kaman of the L.A. Clippers was diagnosed with Vitamin D deficiency after experiencing lethargy and a significant drop in performance). Additionally, fruits and vegetables promote an alkaline (non-acidic) state in the body and help to neutralize the acidic by-products of exercise. An alkaline state in the body helps to reduce or prevent muscle protein breakdown. Nutrient dense foods also support optimal immune-system functioning; allowing athletes to train more consistently free of colds and illness.

Real, whole foods are higher in fiber, higher in potassium, and lower in sodium, and sugars. As a result, the athlete can improve their blood pressure, body composition, cholesterol, and other health factors while they simultaneously improve physical performance and reduce fatigue. In addition to lean meats, vegetables, and fruit, fats in the diet should come from healthy sources such as nuts, seeds, avocados, coconut and olives. When grains are consumed, they should come from minimally processed sources such as brown rice or whole oats.

Before Your Workout: Go "low glycemc"

The glycemic index of a food indicates how quickly carbohydrate-containing foods are broken down into a sugars which enter the bloodstream. If the carbohydrates get into the blood too quickly (high glycemc), a carbohydrate storing hormone (insulin) will be released in excess. This results in a rapid decrease in blood sugar, a sluggish workout, and increased hunger. Several studies (Thomas et al 1991; Thomas et al 1994; Wu et al 2003; Stevensen et al 2006. To name a few) have found that low-glycemc, pre-workout meals increase performance and increase the amount of fat burned during exercise. So skip the corn-syrup filled energy bar or sports drink—instead, choose a low glycemc meal (such as fruit with a hard-boiled egg or plain yogurt) about an hour before exercise, and you will give the body adequate time to digest the foods and re-stock your muscle's energy stores for a more productive workout. More information on the glycemic index and charts of food values can be found easily on-line.

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During Your Workout: Skip the Gatorade, Especially if Less Than 60 Minutes

Dehydration by just 2% of bodyweight significantly impairs power and performance. Further levels of dehydration can put you at significant health risk. Thus, it is very important to match fluid, and electrolyte (sodium and potassium) intake to the rate at which one is sweating (4 oz. of fluid for every 15 minutes of exercise is recommended for “normal” climates/conditions). However, before you reach for the sports drink, take a look at the nature of your workout and your goals. During the first 60 minutes of exercise (even longer if exercising at lower intensity), most of your carbohydrate energy comes from the muscle’s fuel stores of sugars (glycogen). The International Olympic Committee is amongst numerous sports nutrition agencies that have concluded that for most activities lasting an hour or less, drinking anything other than water is unnecessary provided you have consumed sufficient energy during the previous few days—performance will not be improved by drinking a sports drink. Furthermore, drinking a carbohydrate beverage before or during your workout may significantly reduce the proportion of fuel that comes from body fat stores. So if achieving weight loss is your primary goal, then a carbohydrate containing beverage would not be recommended unless the workout is more than 2-3 hours of continuous moderate-high intensity movement.

Post workout: Meal Replacement Right Now, or Balanced Meal at Home?

The body can replenish muscle glycogen (stored carbohydrate) more quickly when carbohydrate is consumed within the first 2 hours following exercise, and fastest if consumed within 30 minutes. The addition of protein to the carbohydrates consumed in the post workout window has been shown to further increase glycogen storage. Therefore, a common practice amongst exercising individuals is to consume a shake, smoothie, energy bar, or other “meal” immediately after their workouts. What this practice commonly overlooks is that there *is* a limit to your human fuel tank—on average, humans have the potential to store about 500 grams (enough to run about 19 miles) of carbohydrates within their muscles (~400g) and liver (~100g). Whether you fill these stores rapidly in the “post-workout” window or you fill them slowly over the next 20-24 hours, your body will generally achieve the same total amount of energy stored before your next workout. Therefore, the *International Olympic Committee Consensus on Sports Nutrition* recommends that “During longer recovery periods (24 h), the athlete should organize the pattern and timing of carbohydrate-rich meals and snacks according to what is practical and comfortable for their individual situation.” And that: “There is no difference in glycogen synthesis when liquid or solid forms of carbohydrate are consumed.” Conversely, if the period of time before your next workout is shorter (<8 h), post-workout nutrition becomes increasingly important, and feeding should begin as soon as possible to improve performance for the next bout. Simply put, if you are working out twice a day or have very short windows between bouts of exercise, take in some energy as soon as possible. If you’re exercising once per day or less, you would be better off waiting to get home and eating a fresh whole-foods meal, rather than slamming down a sugar-filled smoothie as soon as you get off the treadmill.

Eat For Your Type of Exercise



Fat sources are the primary source of that our body used to sustain lower intensities of activity or rest. As intensity increases, carbohydrates contribute progressively more to the energy that is used. Carbohydrate is used almost exclusively during high-intensity anaerobic work such as 200 meter sprint. Protein does not contribute significantly to the energy used for activities under normal conditions. For endurance training, the longer the bout, the greater total energy will be spent; and the source of fuel will vary depending on the intensity as explained above. When performing strength training such as heavy weightlifting, the proportion of fuel coming from carbohydrate may be higher than during endurance training due to the higher intensity of the effort, but the total amount of energy spent may be much less due to the amount of time spent “resting” in between sets during traditional resistance training. Adequate protein becomes even more important due to the stress imposed by heavy loads. If performing cross-training or high-intensity circuits, such as those often incorporated into *Total Fit* workouts, CrossFit, or other high-intensity functional programs, you may get a heavy dose of multiple stimuli—continuous high-intensity work output, increased stress to various bodily systems, and minimal rest/recovery during the workout. Eat a sufficient amount of protein and energy to meet the demands of your workout and goals and recover adequately between workouts.

What about supplements?

Thousands of supplements are marketed to us through the internet, television, magazines, and otherwise. It is a multi-billion dollar industry that is beyond the scope of this article. Some supplements such as protein powders, multi-vitamins, caffeine, and creatine are relatively harmless when dosing directions are followed by healthy individuals and sufficient fluids are consumed. Conversely, various products have caused serious side effects including liver or heart failure or even death. If you are considering taking a new supplement, please research the product through reputable sources such as the [United States Pharmacopeial Convention](#) and consult a health professional.



The Final Word: Eat According To Your Goals

The recommendations above are designed to help the general population with maintaining energy and focus during athletic performance while simultaneously facilitating improved health and optimal body composition. However, your needs may differ depending on if you intend to lose, maintain, or gain weight, and what level you wish to perform at. Those working to achieve weight loss will benefit from the more conservative recommendations given above—avoid sugary foods before your workout, skip the “performance-ade” beverage unless your workout is greater than 2-3 hours, and after your workout wait till you get home to eat a balanced meal. Competitive athletes and those who have reached their body composition goals may benefit from additional measures before, during and after their workout. In addition to a slow digesting snack before the workout, a carbohydrate/electrolyte beverage during exercise may improve performance if the activity is greater than 60 minutes, and an immediate post workout meal will be beneficial if you plan to exercise again in less than 8-20 hours. Individuals with unique circumstances or particularly long/intense workouts may need more aggressive feeding strategies and would be well served by doing further research and/or seeking a sports nutrition specialist. For those interested in gaining weight, take advantage of every opportunity to consume calories—meals before, during, and after workouts, and several meals and snacks throughout the day will help you to add on pounds. Think about your goals and apply the concepts above, and you will be well on your way to a more athletic *you*.

Additional References:

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