



Staying on top of the latest sports nutrition information is a challenge. That's why I attend the annual meeting of the American College of Sports Medicine (ACSM). ACSM is a professional organization for sports medicine doctors and health-care providers, sport dietitians, exercise physiologists and sport science researchers. More than 3,000 ACSM members gathered in Minneapolis (May 2018) to share their knowledge and latest research. The following summarizes a Sports Nutrition Update session presented by many leading exercise scientists from around the globe.

## **Fat vs. Carb.**

Gareth Wallis PhD, Univ. Birmingham, UK

Which will better enhance athletic performance: A high carbohydrate or a high fat sports diet? Despite growing interest in a high fat sports diet, research does not support it for athletes who exercise at high intensity. Rather, research supports consuming 3 to 4.5 grams carbohydrate per pound (7-10 g carb/kg) body weight per day to be well fueled for hard training and competitive events.

Grains, fruits and veggies are obligatory if you want to exercise hard. Some runners eat a high fat diet for training and then switch to carb-loading before a competitive event. Bad idea. The enzymes involved in metabolizing carbohydrate become less active, so the muscles are less able to access carbs for fuel when it is needed for a winning sprint or surge.

## **Protein for Athletes.**

Nicholas Burd PhD, Univ Illinois and Trent Stellingwerff PhD. Canadian Sport Institute

If you want to build muscle, when is the best time to eat protein: before, during or after you lift weights? It might not actually matter because resistance exercise stimulates a muscle-building effect that is most robust within the first 4 hours but lasts for 1 to 2 days. You need not carry a protein shake around the gym! More important is to pace your protein intake evenly throughout the day.

Resistance exercise is far more potent than a high protein diet for increasing strength and muscle gains. That said, most athletes could expect to see only a gain of about 2 pounds (1 kg) of muscle in 13 weeks. That's not very much compared to what they really want to see.

Maximal anabolic (muscle-building) effects are seen with about 25 to 30 g protein per meal. More precisely: 0.75 g protein per pound of body weight per day, or 0.1 to 0.2 g protein per pound per meal in young men. More than that has little or no further benefit. However, these recommendations do change with age. If you are >50 years old, you should target an additional 10 grams of high quality protein (milk, egg, fish, soy) per meal. That's just a little bit more: a glass of milk or 1.5 ounces of meat-fish-chicken.

Despite rumors, protein does not damage the kidneys nor cause a decline in kidney function. Even people with chronic kidney disease should consume the RDA for protein (0.8 g/kg). A high protein diet also does not cause bone loss. Bone is 40% to 50% protein (collagen).

Over-consuming protein is not only a waste of money but it also stresses the environment. As runners, we need to take a holistic and whole-foods approach to our diets. Natural protein-rich foods, as opposed to processed supplements, are best (if compatible with your training schedule) because they offer a complex and complete matrix that is more effective than processed proteins. One example of the benefits of whole foods can be seen with eggs. A whole egg promotes 40% greater muscle protein synthesis in the 5 hours post-exercise as compared to eating just the egg white (van Vliet AJCN 2017). Nutrient interactions seem to facilitate a more robust response when compared to eating isolated protein.

## **Sport Supplements**

Eric Rawson PhD RD, Messiah College

There is no one single sport supplement that works for all athletes. To better understand why, we need a more specific scientific approach to studying supplements based on age, sex, body size, training status, sport, and genetics. That would help us give better advice to target groups of runners, rather than simply make population-wide recommendations. Many athletes take multiple supplements, so research with “stacked” supplements would also be helpful. Here's some of what we do know:

Creatine enables an athlete to lift harder in the training room—and build more muscle. But not everyone is a responder. For example, 3 of 11 subjects in a research study had a strong positive response, 5 had a slight response—and 3 did not respond at all (Syrotuik, Bell 2004). Why not? Maybe their daily diets impacted their baseline creatine levels?

Creatine is found in meat and other animal proteins. When a meat-eating athlete goes on a meat-free lacto-ovo-vegetarian diet (milk, eggs, beans) for 26 days, his or her creatine levels will drop. (Lukaszuk, 2005). To normalize the level, athletes could take creatine monohydrate supplements (the most effective form of creatine).

Caffeine is a known energy-enhancing sport supplement. Your response to caffeine will depend on your genetics. Caffeine works best when you are starting to fatigue. Runners can consume it in coffee, tea, soda, gels, gum, and pills, preferably consumed with carbs.

Sodium bicarbonate is used by some sprinters to buffer the lactic acid that builds up during intense bursts of exercise. Research suggests peak response times can vary widely, from 40-165 minutes. (Jones 2016 ISSN). This variability makes it hard for exercise scientists to offer firm recommendations; hence, outcomes vary. Sub-elite athletes seem to respond better than elite athletes. Because sodium bicarbonate easily causes nausea and vomiting, a solution is to take it in gastro-resistant capsules.

### **Fluids and Hydration**

Lindsay.Baker@Pepsico.com

When you sweat, you lose proportionately more water than sodium, hence sodium levels in the blood increase with dehydration. The amount of sodium you lose in sweat varies from a lot to a little, related to both sweating rate and how well you are acclimated to exercising in the heat, among other factors. A high concentration of sodium in your blood stimulates thirst.

Thirsty runners have three ways they deal with replacing fluid losses: hit-or-miss ad lib drinking as desired; drinking to quench thirst; and drinking on a set schedule. The effectiveness of these strategies depends on the individual athletes, availability of fluids, the weather, and exercise intensity and duration. If you happen to have a lot of tattoos, take note: tattooed skin may sweat less and excrete saltier sweat.

Nancy Clark, MS, RD counsels both casual and competitive athletes at her office in Newton, MA (617-795-1875). Her best selling Sports Nutrition Guidebook and food guides for marathoners and new runners offer additional information. They are available at [www.NancyClarkRD.com](http://www.NancyClarkRD.com). For her popular online workshop, see [www.NutritionSportsExerciseCEUs.com](http://www.NutritionSportsExerciseCEUs.com)

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