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Clearing Up Common Nutrition Myths

by Janet Walberg Rankin, Ph.D., FACSM



Who hasn't been confused by conflicting reports about what to eat? Let's take a look at recent scientific evidence to clear up five very common nutrition myths.

Myth 1: Calcium will guarantee strong bones.

Most adults should consume between 1000-1300 mg of calcium per day in order to promote good health, including bone health. However, even this level of calcium intake should not be considered an insurance policy against bone loss. Exercise, hormones and vitamin D are major contributors to bone health. Some believe that most people don't need to worry about vitamin D because our skin naturally produces it after sun exposure. However, recent research broke this myth wide open.

Growing evidence of the importance of vitamin D led some scientists to propose that we triple the previously recommended 400 IU (international unit) daily amount of vitamin D. Experts at the Institute of Medicine (IOM) recently took on this volatile topic to develop a consensus. In Dec. 2010, the IOM report on vitamin D and calcium bumped the recommended vitamin D intake to 600 IU per day for children and adults and up to 800 IU per day for those over 71 years. Over-supplementing, defined as an intake greater than 4000 IU, can damage kidneys and contribute to kidney stones, so experts caution against consuming too much calcium.

Myth 2: Low-carb diets are the best for weight loss.

Several large-scale studies have compared popular weight loss diets head-to-head, and none of the diets emerged as the clear winner. This may be partly due to the fact that although people adhere carefully to the restrictions initially, they digress toward old eating habits over time. The boring conclusion is that the people who adhere most closely to the diet recommendations are most successful in their weight loss, regardless of which diet they follow.

When health factors other than weight loss are measured, most studies report the greatest reduction in blood triglycerides for low-carb diets and the greatest reduction in blood cholesterol levels for low-fat diets. Although my professional opinion holds to a low-fat diet rich in fruits, vegetables and whole grains as the best for weight loss, I would consider agreeing to a low-carb diet for someone who prefers this, as long as they agree to careful monitoring of their micronutrient intake and blood cholesterol levels.

Myth 3: Water is just as good as a sports drink for athletes.

This myth needs clarification. Although water is a good hydrator for most people under most 

INSIDE THIS ISSUE :

- 1 | Letter from the Editor
- 1 | Clearing Up Common Nutrition Myths
- 2 | Q&A with ACSM
- 3 | Top 10 Simple Ways to Eat Healthy on a Budget

- 4 | Deriving Essential Nutrients from Vegetarian and Vegan Diets
- 5 | Preventing the "Low-Fuel Light" in Endurance Exercise
- 5 | Dietary Supplements for Aging: A Fountain of Youth or Deluge of Dollars?
- 7 | The Athlete's Kitchen

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LEADING THE WAY

Letter from the Editor

by Dixie L. Thompson, Ph.D., FACSM

Welcome to the spring 2011 edition of the ACSM *Fit Society*® Page, sponsored by Liberty Mutual. Physical activity and nutrition are both critical components of the energy balance equation, and this issue is dedicated entirely to nutrition. This issue will help you clear up common nutrition myths, find simple ways to eat healthy on a budget, derive essential nutrients from a vegetarian or vegan diet, keep yourself fueled during endurance exercise and select the appropriate dietary supplements for your unique needs. We hope these articles equip you with the knowledge you need to make smart choices about what you eat.

Please look over this information that ACSM experts have prepared for you, share it with friends and family, and enjoy the fitness opportunities afforded by good nutrition.

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conditions, athletes are anything but typical. Highly competitive athletes may experience significant reduction of glycogen stores and dehydration during an intense, prolonged competition or workout. Sports drinks provide carbohydrate as well as the electrolytes and fluid that replenish critical energy reserves and delay fatigue. I believe if exercise is less than an hour, or of only moderate intensity, water is sufficient. High-intensity, longer performance may be improved by regular consumption of a sports drink.

Myth 4: I eat only 1,200 calories per day, but I can't lose weight.

Few people are good at estimating portion sizes of their food. This can cause them to underestimate their true calorie intake. For example, a USDA study found that the average baked potato is 2.5 times the defined

serving size. So, using the food table calories for one potato may substantially underestimate actual intake. Alternatively, maybe you only ate 1,200 calories one day, but you splurged the next with 2,500 calories. It is difficult to accurately determine how many calories you should consume each day to lose weight (it's best to consult a dietitian), but you can get a rough estimate of your daily goal by multiplying your weight in kilograms by 35 and subtracting 500-600 calories.

Myth 5: Avoid coffee.

This is my personal favorite myth, as I am rarely seen first thing in the morning without my coffee. Recent research does not vilify coffee; rather, it finds health benefits in consuming this brew. Coffee consumption has been associated in some research studies with lower risk of diabetes, stroke and Parkinson's disease. In fact, one recent study of more than 86,000 nurses reported that the risk of dying

was 26 percent lower among those who drank four to five cups of coffee per day compared to those who abstained. People with heart or sleep problems, or women who are pregnant, should consult their doctor first, but most of us can drink our morning coffee without worry.

So, why do we get conflicting messages about nutrition? Scientists are a naturally skeptical bunch who continually question "truths" to be sure they are correct. One must look for the consensus out of the many research studies. Since most of us can't put the time into reading all that research, one of the best ways is to use good online sources like Nutrition.gov or the USDA National Agriculture Library. You can also talk to a dietitian. Either way, rely on the experts to sift through the latest claims and scientific discoveries to steer you down the right path.

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Q&A

by Anthony Luke, M.D., FACSM

Q: I've heard of athletes drinking chocolate milk for recovery. Is this for real?

A: Chocolate milk has been shown to be effective as a recovery beverage following a period of increased training. During long bouts of exercise, an athlete's energy stores (known as glycogen) can get depleted. Chocolate milk is rich in high-quality protein and carbohydrates. Drinking a beverage like chocolate milk, which has more carbohydrates and proteins than water or some sports drinks, may improve recovery because it increases muscle glycogen storage as well as replenishes fluids.

In a recent study of cyclists riding twice with a recovery period of two hours between rides, athletes who drank chocolate milk performed better than those who did not. Similarly, a recent study of soccer players showed lower markers of muscle damage (creatinine kinase) in athletes who drank chocolate milk as opposed to a recovery beverage with similar calories. Milk also has the benefits of calcium, potassium and magnesium, which can be helpful for athletes. Low-fat chocolate milk can be a good recovery drink for athletes.

Q: I'm a female runner in my 30s, and I run regularly. What do I need to consider for vitamin and mineral supplements? Do I really need them?

A: Athletes are commonly low in vitamins and minerals such as calcium, vitamin D, the B vitamins, iron, zinc, magnesium and some antioxidants, such as vitamins C, E, A-carotene and selenium. Calcium, vitamin D and iron are particularly important for women. [ACSM's updated Position Stand on Nutrition and Athletic Performance](#) recommends that, "Vitamin and mineral supplements are not felt to be needed if an athlete has adequate dietary intake from a variety of foods to supply energy and maintain body weight. However, athletes who are at risk for nutritional issues, including those who restrict energy intake, use severe weight-loss practices, eliminate one or more food groups from their diet, or consume unbalanced diets with low micronutrient density, may require supplements." In the end, a healthy diet is still the best solution for making sure your body gets the nutrients it needs.

Q: Is kale a new superfood?

A: Kale is a leafy green vegetable in the cabbage, broccoli and cauliflower family. There are nutrients in kale that have powerful antioxidant and possible anti-inflammatory properties. Kale has sulforaphane, which is thought to have potent anti-cancer effects. Kale is also rich in beta-carotene, vitamin K, vitamin C, lutein and zeaxanthin, and it contains some calcium. More than 45 flavonoids

(continued on page 8) ►

Top 10 Simple Ways to Eat Healthy on a Budget

by Stacy Mitchell, R.D., L.D.



Healthy and inexpensive? Many people don't think these words belong in the same sentence. Simple, smart planning with your food can make it happen every week. Prioritize the foods in your diet, and go for nutrient-dense foods first, such as fruits, vegetables, whole grains, lean protein and low-fat dairy. Cut the junk out of the grocery cart, as you get the biggest bang for your buck with healthier foods.

Eating healthy won't cost a fortune if you follow these ten simple tips:

1. Shop the weekly ad.

Shopping the sale advertisement from your local grocery store is the first step to stretching the food dollar the healthy way. Take some time to plan weekly meals using healthier ad items.

2. Embrace seasonal fresh produce.

Fresh fruits and vegetables in season are not only a great buy in the weekly ad but they are also at their peak flavor. Pick a new fruit or vegetable each week to add some variety.

3. Plan a meatless Monday.

The largest food dollar in the meal comes from the protein source. Substituting a lower-cost protein can save \$10 to \$20 per week. Try beans, eggs, nut butters or even cheese in your Monday meal.

4. Stretch your meat with beans.

Another way to save some money in the protein department is to substitute a can of beans, or two cups of dried beans, for every half pound of ground meat. For example, add one can of mashed black beans to a half pound of ground beef. Add taco seasoning and sauce to the dish, and your family will never know your little secret!

5. Go for store brands.

Private labels can save you an average of 15-25 percent over the national name brand. Find some especially great savings in the grain group with private labels—go for 100 percent whole wheat or whole grain for best nutrition.

6. Find fruits and veggies at the salad bar.

The goal is always adding more fruits and vegetables to daily meals, but it can be difficult to keep produce fresh if you are buying for just one or two people. To avoid wasting food, take a look at the salad bar and buy per pound. Pick up your favorite veggies, and purchase only what you will actually eat. Some stores even have some pre-packaged veggies in snack-size bags for less than one dollar! These are perfect for a lunch bag or snack.

7. Don't forget frozen veggies.

Frozen vegetables are a staple to any meal. From broccoli to spinach, frozen veggies are loaded with antioxidants and essential nutrients, and they can be added to your favorite pasta dish or soup in a snap. Look for private labels for only a few dollars per large bag.

8. Get back to basics.

Skip the packaged meal kits, and make your meal from scratch! Don't worry—it can still be simple to put a meal together. Instead of buying a box of Hamburger Helper, purchase whole grain noodles, sauce and a can of fire-roasted, low-sodium diced tomatoes. You'll save up to a dollar per serving and up to 500 milligrams of sodium. Packaged items are loaded with sodium—watch out!

9. Reduce fat in ground beef.

Eighty-five percent lean ground beef can still be a part of the grocery list, but make sure you drain excess fat from the beef crumbles for a healthier option. One study by the American Dietetic Association found that simply rinsing cooked beef crumbles with hot water and patting excess fat with a paper towel can reduce the fat content of cooked ground beef by as much as 50 percent! (If you have to follow a low-fat diet, 90 percent lean beef is still recommended.)

10. Eat more meals from home.

Something as simple as eating at home can really add up to big savings. Plus, you can cook once and serve twice by using leftover ingredients for lunch the next day.

Don't let your budget be a barrier to eating healthy. These ten simple steps are just a few ways that you can eat healthy on a budget.



Deriving Essential Nutrients from Vegetarian and Vegan Diets

by Pamela S. Hinton, Ph.D.



A vegetarian is someone who does not eat meat, poultry or fish, although self-described vegetarians come in many forms. Some eat fish, but not meat or poultry (semi-vegetarians). Some eat dairy products and eggs (lacto-ovo vegetarians). Some eat only plant-based foods (vegans).

There are many reasons people adopt a plant-based diet, such as economic reasons, religious beliefs or concerns for personal health, the environment or animal welfare. Regardless of the motivation for choosing this diet, vegetarians can be healthier than their omnivorous counterparts. However, by not eating animal foods, vegetarians eliminate prime sources of protein, n-3 fats DHA and EPA, iron, zinc, calcium and vitamins D and B12 from their diets. These potential deficits can be overcome with some careful planning and wise food choices.

Dietary protein is broken down into its essential elements, amino acids, which the body uses as building blocks to make new proteins. Animal-based proteins contain the essential amino acids needed for protein synthesis, and they are considered “complete” or “high-quality” proteins. Although legumes, grains, nuts and seeds contain protein, they do not provide the ideal mix of amino acids that the body needs, so they are said to be “incomplete.” In addition, plant sources of protein tend to be harder for the body to digest, so less of what we eat is available for use. However, eating the right combination of plant proteins can give a vegetarian the needed mix of amino acids. Plant proteins that provide the required amino acids when combined complement each other to make a complete protein source. For example, whole wheat bread and peanut butter or beans and corn are complementary proteins. Complementary proteins should be consumed within the same day, but they do not have to be eaten simultaneously.

Vegetarians who do not regularly eat fatty fish—such as salmon, tuna or cod—may be short on the essential n-3 (also called “omega-3”) fats DHA and EPA, which are important for cardiovascular, emotional and cognitive health. The n-3 fat found in plant sources—such as flax seed, walnuts, canola oil and soy—is α -linolenic acid (ALA). Unfortunately, the body converts only a small percentage of ALA into DHA and EPA, so vegans should increase their intake of ALA-containing foods. While the most common DHA/EPA supplements are derived from fish oil, there are microalgae-produced supplements available for vegetarians who want extra assurance they are meeting their DHA/EPA requirements.

The minerals iron and zinc—which are needed for oxygen transport, energy production, immunity, brain and nervous system health and muscle function—are likely to be lacking in a plant-based diet. There are compounds in plants that tie up iron and zinc so only a small fraction can be absorbed. The reduced bioavailability of iron is so significant that vegetarians need nearly twice as much iron each day as omnivores. Food-preparation techniques, such as soaking and sprouting beans and grains and leavening bread, allows more of the zinc and iron in these foods to be absorbed. Other strategies to increase the amount of iron and zinc absorbed are to consume them with a source of vitamin C and to avoid drinking coffee or tea, which naturally contain compounds that reduce mineral absorption, at meals. It is preferable to use wise food selection to meet zinc and iron

requirements, rather than take dietary supplements, because ingestion of large doses of a nutrient at one time can interfere with the absorption of other nutrients.

Vegans, who do not consume milk and dairy products, are missing important sources of dietary calcium and vitamin D. Although these are especially important during childhood and adolescence when the skeleton is growing, calcium and vitamin D are also essential for skeletal health in adults, and low intakes of these nutrients might explain why vegans have a higher risk of bone fracture. Although there are plant-based foods that provide calcium, some of these (e.g., spinach) also contain compounds that tightly bind calcium, preventing it from being absorbed. Good sources of usable calcium include broccoli, kale, tofu and calcium-fortified products, such as soy and rice milk or fruit juice. Products that are fortified with calcium also are typically fortified with vitamin D, but check the label just to be sure. Foods are supplemented with either vitamin D3 or D2. Although vitamin D3 is animal-derived, vegans can opt for products or supplements containing vitamin D2, which is made from yeast.

Vegans need to either regularly consume foods fortified with vitamin B12 or take a supplement, as active vitamin B12 is present only in animal-based foods, such as dairy and eggs. The typical vegetarian diet contains enough folate to hide the early signs of a vitamin B12 deficiency, so the condition might go undetected until symptoms of nerve problems emerge.

By following the suggestions above, vegetarians and vegans can derive the health benefits of a plant-based diet and meet requirements for these key nutrients, which are needed not only for optimal health but to maximize the positive effects of exercise. Vegetarians can get enough of the right amino acids in the right combinations to build muscle mass and strength with weight training. Likewise, a well-planned, plant-based diet can provide the iron needed to improve fitness with regular aerobic exercise and the calcium and vitamin D needed to increase bone mass following weight-bearing activity. Regardless of a person's dietary preferences, it is critical to consume a diet with essential nutrients in order to maximize health.

Preventing the “Low-Fuel Light” in Endurance Exercise

Andrea Hacker Thompson M.S., R.D.



Endurance athletes spend months training for a marathon or triathlon with a performance goal in mind. Often, nutrition is mistakenly left out of their plan. Nutrition should be a fundamental tool in every endurance athlete's toolbox. During the training season, athletes should practice and sharpen their nutrition plan so they feel confident in it on race day.

ACSM defines an endurance athlete as one who trains and competes for 90 minutes or longer. A nutritional plan is especially important for endurance athletes because they are at high risk of bonking, or as I call it, having the “low-fuel light” come on.

The body of an endurance athlete is like a race car with two fuel tanks. The duration and intensity of the activity determines which tank is the primary fuel source. Tank A is the body's fat stores, which contain about 70,000 calories of fat that are available during lower-intensity aerobic exercise. Tank B is the body's carbohydrate stores, which are glycogen stored in the muscle and liver. As the intensity of a workout increases, the ability to use the fat in tank A as fuel decreases, and the body

becomes more dependent on carbohydrates in tank B for fuel. The body can only store around 2,000 calories of glycogen at a time, which fuels both the working muscles and brain. When our glycogen stores get low, the low-fuel light comes on. Both the brain and muscles send signals of fatigue.

When we exercise for less than 90 minutes, tank B has sufficient stores to power us through the activity. However, when we exercise for more than 90 minutes, we need to have a nutritional plan to prevent the low fuel light from turning on.

There are four key areas to focus on if you want to prevent a low-fuel light—fueling before exercise, fueling during exercise, fueling after exercise and daily fueling.

Fueling Before Exercise

A race car never starts a race without new tires and a full tank of gas, so an endurance athlete should not start a workout without fueling. Eating before a workout guarantees that the body starts with a full tank of glycogen.

If you have three or four hours, eat 300-600 calories, primarily of carbohydrate (2-3g/kg body weight), moderate in protein and low in fat. Minimize the amount of fiber in this meal to prevent stomach discomfort during exercise. Even if you are not hungry, you should have something to eat before a long workout. Think of it as fueling your body so it can perform optimally.

Pre-exercise meals can include:

- Oatmeal with milk, fruit and nuts
- Turkey sandwich with fruit
- Cottage cheese with crackers and fruit
- Toast and peanut butter

Three to four hours before you work out, drink 2-4 cups of fluids. One hour before you work out, drink 1-2 cups of fluids.

Fueling During Exercise

This fueling opportunity is the well-planned “pit stop.” The fuel should be simple, easily digestible carbohydrates that the body needs to maintain energy and prevent fatigue.

Fuel every 45-60 minutes during a long workout. ACSM guidelines recommend 30-60 grams of carbohydrate (120-240 calories) per hour. Remember that for optimal performance, we also need to provide the body with fluids and electrolytes. If the workout is less than 90 minutes, but at a high intensity, you may want to drink an energy drink instead of water or bring an energy gel with you.

Mid-exercise foods can include:

- Gels
- Energy beans
- Energy beverages
- Honey
- Bananas
- Oranges

During endurance exercise, drink 6-12 oz. of sports drink or water every hour.

Eating After Exercise

The goal for post-workout fueling is recovery. Fueling will help you replenish glycogen stores used during the workout, optimize protein synthesis to repair damaged muscle tissue and stimulate the development of new tissue, and replace fluids and electrolytes that were lost in sweat.

Within 30 minutes of exercise, an endurance athlete should have a snack of 300-400 calories containing carbohydrate (75-100 grams) and protein (6 grams). The carbohydrate-to-protein ratio should be 2:1 in short, low- to medium-intensity workouts or 3:1 in long, high-intensity workouts.

Post-exercise foods can include

- Chocolate milk
- A high-density nutrition bar (e.g., Clif bar)
- Smoothie with yogurt and fruit

After exercise, drink two cups of fluid for every pound of body weight lost.

Daily Fueling

The fourth way to prevent your low-fuel light from turning on is to eat a diet consistently high in carbohydrates. A diet full of whole grains, fruits, vegetables and lean protein (not in cookies and chips) will ensure that your muscles have fuel when you hit the road.

A good pit crew at the Indianapolis 500 is a key part of a winning performance. A good fueling plan is equally as important for an endurance athlete, making the difference between running out of fuel and taking a victory lap.

Dietary Supplements for Aging: A Fountain of Youth or Deluge of Dollars?

by Jessica Mailet, M.S., R.D., L.D.N, CPT-ACSM



For centuries, humans have sought out elixirs and potions to extend one's youthfulness and longevity. In the last 100 years, medical advancements and access to health care have made living longer a reality.

In the 2005 U.S. Census, about 12 percent of the population was over age 65. This percentage is expected to double in the next 25 years as a result of the aging baby boomer population and longer life spans. As our population's average age rises, the health concerns most prevalent in this age group will need to be addressed.

In addition to seeking medical treatment, eating a healthful diet and participating in regular physical activity, individuals look to dietary supplements as an addition, enhancement and even cure for a variety of

age-related issues. A 2009 market report projected that by 2015, \$291 billion dollars will be spent annually on anti-aging goods that range from skin care products, anti-aging technologies and dietary supplements.

Older adults require fewer total calories each day. This, in addition to dietary behaviors that tend to change with advancing age, makes it difficult for older adults to get the nutrients they need. Can dietary supplements enhance their diets?

First, it is best to get nutrients through food first and supplements second. Only about 3-4 percent of Americans meet the recommended nutrient goals for maintaining good health. Dietary supplements may have the potential to fill in some of those gaps, but there are also downfalls to this solution. One must proceed with care and caution to avoid toxicity of certain nutrients, false claims and unreliable products.

So how do popular dietary supplements stack up for conditions in which the older population is contending?

Bone Health and Osteoarthritis

The requirement for bone-strengthening vitamins and minerals increases when adults reach 50 years of age. Women over the age of 50 and men over the age of 70 need 1,200 mg of calcium per day. For vitamin D, the recommendation also increases in men and women when they reach 70 years of age. In addition to nutrient-rich foods, a multivitamin with calcium and vitamin D may help reach these increased daily requirements.

Glucosamine and chondroitin may have some effect on pain relief in moderate-to-severe osteoarthritis sufferers, but gentle exercise has also been shown to relieve pain caused by osteoarthritis.

Gastrointestinal (GI) Health

Maintaining a healthy gut is key in preventing gastrointestinal diseases like colon cancer and diverticular disease. High-fiber foods act like a broom, cleaning out your intestines and keeping them healthy. It is unclear whether fiber supplements have the same effect on GI health as the fiber found naturally in whole grains, fruits and vegetables. High-fiber diets require adequate amounts of fluid, so be sure to consume lots of fluid throughout the day. Probiotics may also help improve the health of the intestines, so supplement your diet with yogurt that includes active cultures.

Heart Health

Consumption of omega-3 fatty acids through fish or fish oils reduces risk of adverse outcomes from cardiovascular disease, like heart attack and cardiac death, and appears to have a dose-dependent effect on triglyceride levels.

Urinary Tract Health

Cranberry juice has been shown in some studies to prevent recurrent urinary tract infections. In a study published in Jan. 2011, however, researchers showed that cranberry juice might not actually be beneficial in preventing recurrent UTIs.

Skin Health

Antioxidants help protect cells from free radicals, the compounds that cause damage to cells. Alpha-tocopherol, a form of vitamin E, may protect the skin from the damaging effects of free radicals like sun exposure. But, vitamin E can interfere with medications, and you should consult with your doctor before taking a supplement.

Memory and Memory-Related Diseases

Early studies showed that ginkgo leaf extract may improve symptoms of Alzheimer's disease and dementia, but more recent studies are conflicting. At this time, it is unclear whether people can benefit from taking it.

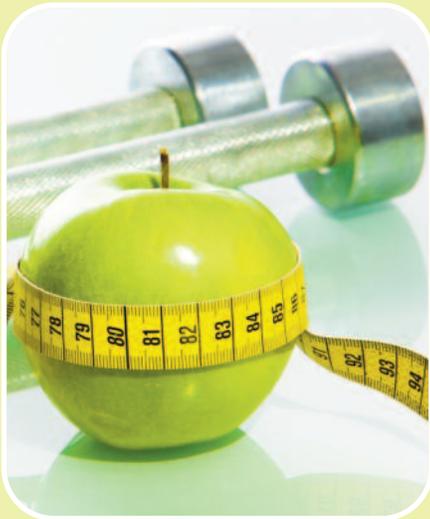
Eye Health

A large study called the Age-Related Eye Disease Study (AREDS) showed that certain antioxidants and zinc slow the progression of vision loss in people diagnosed with age-related macular degeneration. A follow-up study (AREDS2) is currently being conducted to research the effects of other dietary components.

Eating a diet rich in whole grains, fruits, vegetables, lean protein, low-fat dairy and healthy fats, in conjunction with regular physical activity, will keep your body healthy and functioning well. A multivitamin and omega-3 supplement that meets no more than 100 percent of the age-appropriate recommended dietary allowance appears to fill the gaps if proper nutrition is not met, but it is still unclear how effective supplementation is in delivering nutrients when not consumed as food. Plus, some supplements may interfere with medications, so talk to your doctor before beginning any supplements.

Sports Nutrition Guidelines

by Nancy Clark, M.S., R.D., C.S.S.D., FACSM



In 2009, three prominent nutrition and exercise associations—the American Dietetic Association, American College of Sports Medicine and Dietitians of Canada—released the [“2009 Joint Position Stand on Nutrition for Athletic Performance.”](#)

While there is little earth-shattering news in this document, the authors comprehensively reviewed the research to determine which sports nutrition practices effectively enhance performance. Here are a few key points and the reminder that what and when you eat powerfully impacts how well you can perform. I hope this information entices you to think again if nutrition is your missing link.

- Avoid obsession on body fat percentage or weight. What you weigh and how much body fat you have should not be the sole criterion for judging how well you are able to perform in sports. That is, don't think that if you get to a pre-determined body fat, you will run faster. First, all techniques to measure body fat have inherent errors, so precisely determining body fat is difficult. Second, optimal body fat levels depend on genetics and what is optimal for your unique body. Pay more attention to how you feel and perform than to a number on the scale.
- Protein recommendations for both endurance and strength-trained athletes

range from 0.5 to 0.8 grams per pound (1.2-1.7 g/kg) body weight. For a 150 lb. athlete, this comes to about 75 to 120 g protein per day, an amount most athletes easily consume through their standard diet without the use of protein supplements or amino acid supplements. Vegetarian athletes should target 10 percent more, because some plant proteins (not soy, but legumes) are less digestible than animal proteins. If you are just starting a weight-lifting program, you'll want to target the higher protein amount. Once you have built up your muscles, the lower end of the range is fine.

- Athletes in power sports need to pay attention to carbohydrates, not just protein. That's because high-intensity strength training depletes muscle glycogen stores. Carbohydrates are critical to not only the exercise bout itself but also the recovery period.
- Athletes who eat enough calories to support their athletic performance are unlikely to need vitamin supplements. But athletes who severely limit their food intake to lose weight (such as wrestlers, lightweight rowers, gymnasts), eliminate a food group (such as dairy, if they are lactose intolerant) or train indoors and get very little sunlight (skaters, gymnasts, swimmers) may require supplements.
- If you are vegetarian, a blood donor and/or a woman with heavy menstrual periods, you should pay special attention to your iron intake. If you consume too little iron, you can easily become deficient and susceptible to fatigue due to anemia. Because reversing iron deficiency can take three to six months, your best bet is to prevent anemia by regularly eating iron-rich foods (lean beef, chicken thighs or enriched breakfast cereals) and including in each meal a source of vitamin C (fruits or vegetables).
- Eating before hard exercise, as opposed to exercising in a fasted state, has been shown to improve performance. If you choose to not eat before a hard workout, at least consume a sports drink (or some source of energy) during exercise.
- When you exercise hard for more than one hour, target 30 to 60 grams (120 to 240 calories) of carbohydrate per hour to maintain normal blood glucose levels and enhance your stamina and enjoyment of exercise. Fueling during exercise is especially important if you have not eaten a pre-exercise snack. Popular choices include gummi candy, jelly beans and dried fruits, as

well as gels and sports drinks. More research is needed to determine if choosing a sports drink with protein will enhance endurance performance.

- For optimal recovery, an athlete who weighs about 150 pounds should target 300 to 400 calories of carbohydrates within 30 minutes of finishing a hard workout. More precisely, target 0.5-0.7 g of carbohydrates per lb (1.0-1.5 g carb/kg). You then want to repeat that dose every two hours for the next four to six hours. For example, if you have done a rigorous, exhaustive morning workout and need to do another session that afternoon, you could enjoy a large banana and a vanilla yogurt as soon as tolerable post-exercise; then, two hours later, a pasta-based meal; and then, another two hours later, another snack, such as pretzels and orange juice.
- Whether or not you urgently need to refuel depends on when you will next be exercising. While a triathlete who runs for 90 minutes in the morning needs to rapidly refuel for a 3-hour cycling workout in the afternoon, the fitness exerciser who works out every other day has little need to obsess about refueling.
- Including a little protein in the recovery meals and snacks enhances muscle repair and growth. Popular carb+protein combinations include chocolate milk, yogurt, cereal+milk, pita+hummus, beans+rice and pasta+meat sauce.
- Muscle cramps are associated with dehydration, electrolyte deficits and fatigue. Cramps are most common in athletes who sweat profusely and are “salty sweaters.” They need more sodium than the standard recommendation of 2,400 mg/day. Losing about two pounds of sweat during a workout equates to losing about 1,000 mg sodium. (Note: eight ounces of sport drink may offer only 110 mg sodium.) Salty sweaters (as observed by a salty crust on the skin of some athletes) lose even more sodium. If that's your case, don't hesitate to consume salt before, during and after extended exercise. For example, enjoy broth, pretzels, cheese & crackers, pickles and other sodium-rich foods. The majority of active people can easily replace sweat losses via a normal intake of food and fluids.

Final words of advice: If you can make time to train, you can also make time to eat well and get the most out of your training. Optimal sports performance starts with good nutrition!

have been identified in kale, along with omega-3 fatty acids, which are all desirable antioxidants. To maximize its nutritional value, kale can be served steamed, microwaved, chopped, minced or sautéed, as opposed to boiling, which removes some of the desired nutrients. Kale isn't really new—as it has been popular in Europe for centuries—but it can be a great new addition to your diet.



Get Answers to Your Youth Sports and Health Questions

The new ACSM REACH website is a robust, searchable database for parents, coaches, health care providers, educators and others seeking credible information about youth sports and health. Experts review and approve all material included in the database, ensuring that all content on the site is medically accurate and provides sound advice.



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