

EATING ON THE RUN

BY CARYN HONIG, RD, LD



Proper Nutrition for Marathon Running

It's holiday time which means food, food, and more food. It's also marathon season which means worrying about what foods and drinks to consume for proper training and peak performance. So, what's a runner to do?

"It is very important that runners follow a sound sports nutrition diet because there is a direct correlation between proper sports nutrition and strength, conditioning, endurance and injury prevention," says Jennifer Lindsay MS RD LD, dietitian at The Healthy Weigh. "Runners (and other athletes) often grab what is easy and quick and ignore proper nutrition – which is so badly needed," she says. Or worse yet, they follow the ill advice from someone who is not a licensed or medically trained nutrition expert.

Houstonian Glen Ewing was a young Exxon employee and an avid runner and triathlete. He decided to run his first marathon at the Houston Marathon in 1992. Allegedly, his "trainer" encouraged him to drink a high potassium drink throughout the entire 26.2 mile race. Reportedly, he bypassed the official marathon aid stations which provided water and a safe sports nutrition beverage (such as Powerade or Gatorade) and only drank a special high potassium drink. Ewing collapsed near the finish line and died of cardiac arrest. Upon autopsy, a very high level of potassium was cited. Ewing was in his mid-20s when he died.

One year during the Chicago Marathon, Luke Roach drank water every two miles and dressed lightly for the 50-degree weather. Nevertheless, heat stroke killed him near the finish line. Dehydration was cited as the main cause of death.

During the 1998 Chicago Marathon, Kelly Barrett became disoriented around the 24th mile and went into cardiac arrest, apparently from drinking too much water. She died three days later. Hyponatremia (low sodium) was

the cause of death. A few other runners have died from hyponatremia and many have been treated medically for it. As a matter of fact, to decrease the risk of hyponatremia, the Houston Marathon spreads the water/Powerade stations out. Instead of every mile, water stops are now every mile and a half.

As you can see, proper nutrition and hydration is to be taken very seriously. Not only can it make or break an athlete's performance, it can also cause injury or death.

CARBOHYDRATES (CHO)

During training and racing, a high carbohydrate diet should routinely be followed. A proper sports nutrition plan should include approximately 50-60% of calories coming from carbohydrates. This composition will give runners the energy to train and compete at their best while minimizing glycogen (energy stores) depletion. There are two types of carbohydrates: complex and simple. Complex carbohydrates, such as starch in plant foods and glycogen in muscles, are formed when sugars link together to form long, complex chains, similar to a string of hundreds of pearls. Complex carbohydrate-rich foods include bread, crackers, bagels, pasta, noodles, rice, potatoes, cereal, and couscous. These complex carbohydrates are digested into glucose, then either burned for energy or stored for future use as glycogen. This glycogen is readily available for energy during exercise.

Simple carbohydrates are found in fruit, vegetables, milk products (lactose), and refined sugars (colas, candy, cakes, pies). The body digests any type of sugar or carbohydrate into glucose before using it for fuel. Your muscles and brain both require blood glucose for energy. Hence, adequate sugar from the blood is essential for the brain to function optimally. Athletes with low blood sugar tend to perform poorly because the

poorly fueled brain limits muscular function and mental drive.

How to figure out your carbohydrate needs:

1) Figure out how many calories per day you consume.

2) Figure out what 50-60% of the calories are.

3) There are four calories per gram of carbohydrates.

4) Divide total calories by four to get the number of grams needed.

Example: 3,000 calorie diet

60% of 3,000 is 1,800

1,800 divided by 4 = 450 grams of carbohydrates per day

~450 grams is what this person should be consuming.

The following list of carbohydrate-rich foods can help you keep a tally. Food labels also provide carbohydrate information:

Food	Amount	Carbs (G)
Wheat bread	1 slice	15
Lender's bagel	1	30
Pita pocket	½	22
Pancake	2 X 4	30
Eggo Waffle	1	17
Oatmeal	1 pckt	30
Raisin Bran	½ cup	21
Baked potato	1 lg	55
Baked beans	1 cup	50
Spaghetti	1 cup	40
Rice	1 cup	35
Fig Newtons	1	11
Poptart	1	35
Maple syrup	2 T	25
Apple Juice	8 oz	30
Gatorade	8 oz	10
Cola	12 oz	38
Beer	12 oz	13
Chocolate milk	8 oz	25
Apple	Medium	20
Banana	Medium	25
Raisins	¼ cup	30
Corn	½ cup	18
Peas	½ cup	10
Green beans	½ cup	7

CARBO-LOADING FOR THE MARATHON

The most effective sports nutrition diet is to routinely consume 50-60% of calories from carbohydrates, then just before the marathon:

- reduce your training and rest your muscles to allow them to become saturated with carbohydrates and
- eat a higher carbohydrate diet (~70%) for three days prior to the event.

When choosing carbohydrates, be sure to get a balance of complex and simple and pick wholesome, nutrient rich foods including bran muffins, whole wheat bread, whole grain cereals and pasta, and fresh fruits and vegetables.

EATING ON THE RUN

Presently, there is an abundance of endurance performance nutrition products on the

market. You can choose from thousands of drinks, gels, energy bars, etc. It can get a bit confusing. The current problem is not that there aren't enough nutritional options available, but that there are too many.

Each body has a certain amount of calories it can absorb when exercising at marathon intensity. The experienced and trained stomach might be able to consume 250 calories an hour, while the inexperienced stomach can absorb around 200 calories per hour. Any food not absorbed will either just sit in your upset stomach, or pass through your intestines in the form of waste. Unwanted calories might lead to time spent in the "port-a-johns" late in the marathon.

The best advice is to practice using sports gels and energy bars. In general, most sports bars will have between 200 and 300 calories. Gel packets usually contain between 75 and 100 calories, often with higher percentages of carbohydrates than bars. Gels often throw in some caffeine and branched-chain amino acids to give you some extra pep. Bars, on the other hand, offer up more extra nutrients in the form of vitamins, minerals and fiber.

Keep in mind that not all sports bars and gels are created equal. Watch out particularly for the ones that are high in fat. While fat does in fact provide you with energy, it is not nearly as efficient a fuel as carbohydrates for running.

As to which is better, gels or bars, there is really not a huge difference. Gels typically come packed with fewer calories but also have a higher concentration of carbohydrates. Provided that you take your gel or sports bar with fluids, the carbs in both should be absorbed at roughly the same rate, so you probably don't get a faster energy boost from either. And you really should take both with fluids. Not only will it aid digestion, but 8 to 12 ounces of water will also help you swallow a relatively dry sports bar in the middle of a race.

Keep in mind that if you are planning to start using bars and gels, you should experiment with them before, during and after training runs to see how they sit with you. Do not eat them for the first time before, or especially during, a race, or you may risk an upset stomach.

PROTEIN

Believe it or not, eating extra protein does not build muscle mass – only exercise builds muscle mass. The best sports nutrition diet contains adequate but not excess protein. Protein is important to build and repair muscle tissue, to grow hair and fingernails, to produce hormones, and to replace red blood cells. The following are safe recommendations for protein intake (keep in mind that research has yet to define the exact protein needs of athletes because their needs vary):

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Grams of protein/pound body weight

Sedentary adult	0.4
Active adult	0.4-0.6
Growing athlete	0.6-0.9
Adult building muscle mass	0.6-0.9

Example: A 150 lb endurance runner (150 X .9 = 135 grams of protein)

Keeping track of your protein intake is simple. Just write down everything you eat and drink during a 24 hour period and then total the protein consumed. The following is a list of the protein amounts of some foods. Food labels will also list the amount of protein per serving of food.

Food	Serving Size	Protein (G)
Meat, poultry, fish	3 ounces	21
Beans, dried peas, lentils	½ cup cooked	7
Egg	1 large	7
Milk	1 cup	8

Most fruits, vegetables, and juices provide less than 1 gram of protein per serving. Butter, margarine, oil, sugar, candy, soda, alcohol, coffee, and tea contain no protein.

FAT

A proper sports nutrition diet should include fat – in moderation. Monounsaturated fat and vegetable fats such as olives, avocados, nuts, the fats in fish can all be part of a healthy diet. Approximately 20-25% of a runner's diet should be comprised of fat.

HYDRATION

It is important to be well hydrated before, during and after training. The best way to ensure this is to drink early and often. When you exercise, your body loses water through sweating and through vapor on your breath. If this water is not replaced you will become dehydrated. Even a slight amount of dehydration can have negative effects: your body will not be able to regulate your core temperature and you will overheat. You may also experience nausea and light headedness. You also could collapse. Unfortunately, thirst is not a good indicator for hydration. By the time the brain signals thirst, a person will have lost 1-2% of body weight – by then it is too late. That amount of dehydration is enough to cause fatigue, sore muscles and heat problems. A 2% loss can decrease the work capacity by 10-15% of one's maximum potential.

The general daily recommendation for sedentary adults is to consume eight cups of water per day. Marathon runners should consume those eight cups plus three to six ounces for every 20 minutes of vigorous exercise. But, depending on the weather and how much a runner sweats, this could be too little or too much. During training and racing, water is adequate up to 60 minutes of exercise. After 60 minutes, it is important to add carbohydrate drinks such as Gatorade or Powerade. The reason is because the carbohydrate loading a runner does prior to the race will only last a certain amount of time. After that, the body becomes depleted and needs more fuel. That's where the energy drinks come in handy. After 60 minutes, runners should aim for drinking 150 ml-200 ml (5-7 fluid ounces) every 15 minutes. However, if it is a hot day or your exercise route is hilly (higher intensity) you will need to drink more. When choosing a sports drink, make sure that the carbohydrate

content is less than 10%. Otherwise, it will keep the fluids from leaving your stomach and you can become dehydrated.

Recent studies have shown that sipping sports drinks during exercise may also help to protect the immune system. This is good news for athletes who, in general, are more susceptible to infection than non-athletes because of what is described as an 'open window' of impaired immunity that follows heavy or prolonged exercise. The 'window' may be open for between 3-72 hours after exercise.

The early weeks, as you build up your training distances, are a good time to practice drinking during training. Find a sports drink that you like the taste of. Find out what sports drink will be offered on the race course. Make sure it agrees with you. Experiment with different brands and homemade versions of drinks until you find one you like. It is easier to drink a cool rather than a very cold drink so it is a good idea to take your fluid bottle out of the fridge an hour before you start training. Finally, drinks should not contain caffeine or alcohol. Avoid carbonated/fizzy drinks also as they tend to cause gastric distress.

PREVENTING HYPONATREMIA

Hyponatremia means a low concentration of sodium in the blood. Sodium is a required element for normal body functions. Sodium, potassium and chloride contribute to many important physiological functions. Even a slight depletion of sodium in the body can cause problems including confusion, agitation, vomiting, nausea, muscle cramps, slurred speech, and inappropriate behavior. Severe hyponatremia can result in seizures, coma, and even death. The best ways for runners to avoid hyponatremia is to:

- Train with a sports drink containing sodium. If you drink only water, you can make the situation worse
- If possible, eat salty foods before, during, and after training and competition
- Understand your individual fluid needs
- Increase salt intake several days before endurance training or competition
- Progress slowly in regards to running a marathon or other endurance events.

Foods that provide sodium include crackers, pretzels, soups, cheese, tomato juice, pickles, soy sauce, olives, lunchmeats, processed foods.

PRACTICE, PRACTICE, PRACTICE

Choices of what to eat before, during and after training and racing vary greatly from person to person. There is not one standard diet to follow. Every athlete needs to learn through trial and error what works best for his or her performance – and what doesn't work. Some runners can eat almost anything – others need very special foods.

Whatever you do, do not try anything new before or during a race. Test out all foods and drinks during training to see how well you tolerate them. Practice during training and stick to what works for you.

Caryn Honig is a Registered and Licensed dietitian whose specialties include eating disorders and sports nutrition. She owns a private nutritional counseling practice called The Healthy Weigh. Caryn worked for five years as the Nutrition and Exercise Coordinator at Texas Children's Hospital Wellness Center. She has completed over 20 marathons, numerous triathlons, and one full Ironman Triathlon and may be reached at (713) 622-6422.



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