

**PowerBar** POWER TO PUSH

PowerBar Playbook Series | U.S. Version



# SPORTS NUTRITION FOR DISTANCE RUNNING

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PowerBar Team Elite athlete  
KARA GOUCHER

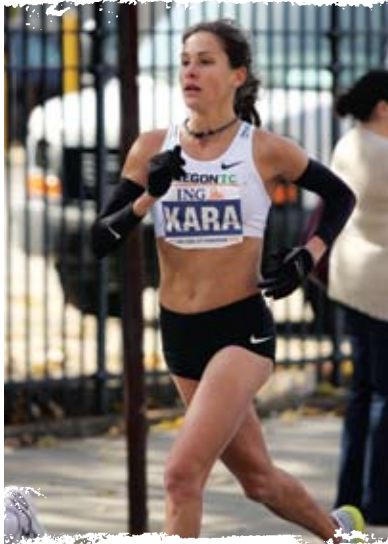


PHOTO BY: JEAN-PIERRE GARY

**The course is 26.2 miles (42.2 km) — a marathon. It winds through city streets, up and over a steep hill, down to the ocean, and then back. You've trained for this event for several months. You're at the starting line now, waiting for the pop of the starter's gun, going over in your mind each detail of the race strategy — how fast to go out, how much to expend on the hill, and the kick at the finish.**

Now fast-forward to mile 18. You made the turn at the beach and are a good way into the long ascent back towards downtown. You're well aware that there's still a punishing hill between you and your goal. This is where the race beat you last time. Tired, cramping, and dehydrated, you imploded on the hill, and it was all you could do to drag yourself across that finish line.

If you're a distance runner, you probably have a story like this. Maybe it was a half marathon, or a shorter distance event, in unanticipated hot and humid conditions, or an ultraendurance event. There are some physical challenges where if you don't have a fine-tuned race-day strategy, the course will swallow you up and spit you out. The fact is that distance running is one of those extreme challenges that puts your body, your training, and your gear to the test. Sports nutrition can make the difference between barely finishing a race and finishing strong.

## THE PHYSICAL CHALLENGE

Distance runners train for and compete in a variety of race lengths, with the most common being 3.1 to 6.2 miles (5–10 km), half marathons of 13.1 miles (21.1 km), and full marathons of 26.2 miles (42.2 km). If you're a recreational runner, you may log 30 miles (50 km) per week in training. Your events are often club races, fun runs, and maybe a half marathon or marathon every year or so. Elite distance runners log more miles, with training workouts once or even twice daily. These workouts may include long runs, track sessions, water running, and strength training.

Running seems simple enough. Just strap on a pair of shoes and go. But running long distances at a strenuous pace puts an incredible strain on your body. Contracting leg muscles are rapidly burning fuel and generating internal body heat. And that's in comfortable weather conditions. Add heat or humidity to the mix, and the physical and metabolic toll rises incrementally. If you want to maintain your running pace and achieve a strong finish, you have to stay hydrated and fueled. You can extend your endurance and keep fatigue at bay by having a well-conceived and practiced performance sports nutrition plan.

PowerBar Team Elite athlete  
FELIPE BASTOS



PHOTO BY: LELAND BLACK

## KEY PRINCIPLES OF SPORTS NUTRITION

The three most important principles of a sports nutrition strategy for distance running are to hydrate, to provide fuel for your muscles, and to promote optimal recovery after training or racing. Applying these principles correctly can help maximize the gains from your training, and help ensure that you run your best race.

### HYDRATION

The single largest contributor to fatigue when training or racing is dehydration. Your ability to pound the pavement is driven by contracting muscles that generate heat. This heat must be dissipated quickly to avoid overheating. Sweating is a crucial mechanism for thermoregulation, or ridding your body of heat, but it also causes you to lose fluid and the electrolyte sodium that you need in order to remain hydrated. Dehydration impacts your running performance when you lose just 2% of your body weight due to fluid loss. For a 150-lb (68-kg) runner, a 2% weight loss equates to just 3 lbs (about 1.4 kg). Distance running, especially in heat or humidity, can easily result in fluid losses exceeding this 2% threshold. And when you're dehydrated, your heart has to work harder and your internal body temperature is elevated. This makes every stride that much harder. The all-too-frequent results are a slow pace and a disappointing finish. Dehydration also poses serious adverse health consequences. To avoid dehydration, you need to replace the fluids and sodium you lose from sweating. You might think that thirst will drive you to consume enough fluids to meet your hydration needs, but in fact, thirst during exercise doesn't kick in until well after you're dehydrated and already suffering the effects.

# To avoid dehydration, you need to **replace the fluids** and sodium you lose from sweating.

The other side of the hydration coin is hyponatremia, or too little sodium in your blood. This can be caused by consuming too much water during exercise. And it, too, can hamper athletic performance and adversely affect your health. Fortunately, both dehydration and overhydration can be avoided. The trick is to stick to a disciplined hydration plan before, during, and after running.

PowerBar Team Elite athlete  
JOSH COX

PHOTO BY: JOHN SEGESTA

## FUELING

Your training may involve high-volume aerobic conditioning, race-pace workouts, pace training, speed work, weightlifting, or some combination of these. Your primary muscle fuels during training, as well as when you're competing, are a combination of fat and carbohydrates. Even the leanest distance runners have plenty of fat reserves tucked away. Carbohydrate fuel stores are a different matter entirely. At best, you probably have only about 2,000 calories of carbohydrate fuel on reserve. These carbs are present in your body in two forms. Glucose circulates in your bloodstream, and bundles of glucose called glycogen are stored in your liver and muscles. A single long-distance run can wipe out carbohydrate fuel reserves. In addition, back-to-back shorter workouts can also rapidly deplete muscle glycogen reserves if they aren't promptly replenished after each workout. When these fuel stores run dry during exercise, you turn to liver glycogen reserves to maintain your blood glucose level. But once liver glycogen stores are tapped, your blood sugar level drops, fatigue sets in, and you **hit the wall**. Imagine running miles 1 through 18 of a marathon at your usual 6-minute-per-mile race pace with a steady heart rate — you're feeling good. But unfortunately, you're just about to burn through your muscle glycogen reserves. And as those fuel reserves hit empty, your pace steadily slows to the point where you end up finishing your last mile in a pedestrian 9 minutes! Such are the effects of running out of glycogen. When your high-performance carbohydrate fuel runs out, you're left to burn fat as your muscle fuel source, and fat simply can't keep up with the energy demands of a race pace. So you end up dramatically slowing down. In fact, it's all you can do to even finish. The point is that it's crucial that you start your workouts and distance events with your carbohydrate fuel reserves fully replenished. And to extend endurance and delay the onset of fatigue during long runs, it's important to refuel with carbs while running.

## RECOVERY

Training and competing not only deplete your glycogen reserves, they also cause damage to muscle fibers, which require repair. If you are also weight training, your muscle tissue is being stimulated to increase as an adaptation to the increased workload. Finally, you also lose fluids and the key electrolyte sodium due to sweating during exercise. Recovery is the process of reloading depleted carbohydrate fuel stores, repairing and building new muscle tissue, and rehydrating after exercise. It's during the recovery process that you achieve the gains from your training and get ready for your next workout or race. Your body is ready to begin recovery as soon as you finish working out or competing, but the process doesn't begin in earnest until you provide the key nutritional components.

# PRACTICAL SPORTS NUTRITION STRATEGIES FOR DISTANCE RUNNING

Fortunately, there are easy-to-implement sports nutrition strategies that can help you prepare for and remain strong throughout your workouts and races, and also help ensure that you fully recover afterwards so you're ready for your next training session or competition.

PowerBar Team Elite athlete  
AMY PALMIERO-WINTERS



PHOTO BY: MICHELLO PACHULLO



## I. START FULLY HYDRATED

If you go into workouts fully hydrated, you'll be able to train harder and realize better gains. The same goes for distance events themselves — you'll be better able to sustain your race pace and achieve that personal best.

Make up for any previously incurred fluid deficits by consuming 14–20 fl oz (400–600 ml) of water or sports drink 2–3 hours before your race or workout. Keep hydrating by drinking another 8 fl oz (240 ml) prior to a workout or as you're warming up before a race, especially if conditions are hot or humid.

You can monitor your hydration status before exercise by checking the color of your urine. A light-yellow color is consistent with adequate hydration. If your urine is darker, more like the color of apple juice, that's typically a sign that more fluids are needed before you start pounding the pavement.

## 2. START FULLY FUELED

As a distance runner, your glycogen stores are being depleted with each workout or competition. This demands that you fully replenish your carbohydrate fuel stores on a daily basis. If you don't, you'll rapidly run out of carbohydrate fuel, and workouts and performances will suffer noticeably.

To top off muscle glycogen fuel stores before working out or competing, consume a pre-exercise meal somewhere between 2 and 4 hours before exercise. The goal is to start exercise fully fueled and hydrated, but also feeling comfortable. Choose familiar high-carbohydrate foods and beverages, and avoid slow-to-digest fatty and high-fiber foods prior to running. Carbohydrate-rich foods include pasta, rice, bread, cereal, vegetables, fruit, and sweetened dairy products such as flavored yogurts and milks. Experiment during training to find the right foods and timing that work best for you.

If you get hungry before a race, make sure you have easy-to-digest, high-carbohydrate snacks on hand, such as a PowerBar Performance Energy bar or PowerBar Fruit Smoothie Energy bar, and consume your snack along with fluids. The ideal time for a snack is about an hour before you run.

If you suffer from pre-race jitters and typically don't feel like eating, or you experience gastrointestinal distress when running, don't skip eating entirely. Instead, try liquid carb sources in place of solids for your pre-race meal. A fruit smoothie or a meal replacement drink is a good high-carbohydrate alternative.

Finally, don't forget to eat before morning workouts. If time is running short, try a fruit smoothie, a meal replacement drink, a Performance Energy bar, a PowerBar Gel, PowerBar Gel Blasts energy chews, or PowerBar Energy Bites along with some water.

### IDEAS FOR HIGH-CARBOHYDRATE MEALS BEFORE A RACE OR WORKOUT (2–4 hours before running)

Cold or hot cereal with fruit or fruit juice and low-fat or nonfat milk

French toast or pancakes with maple or fruit syrup

Toast with jam or honey, and low-fat yogurt

Breakfast burrito (scrambled eggs, salsa, and low-fat cheese in a flour tortilla) and fruit juice

Bagel or English muffin, with jelly and/or peanut butter, banana, and fruit juice

Pasta or cheese ravioli with low-fat, tomato-based sauce; French bread or low-fat breadsticks; steamed vegetables; low-fat/nonfat milk; pudding snack; and canned fruit

Grilled chicken sandwich with frozen low-fat yogurt, and baked potato with low-fat sour cream or salsa

Turkey sub sandwich with tomato, lettuce, and mustard; baked chips; fruit juice; and low-fat frozen yogurt

A slice of thick-crust veggie pizza, low-fat gelato, and canned peaches

Baked or grilled lean beef, chicken, turkey or fish; steamed rice; dinner roll; cooked green beans; low-fat frozen yogurt; and fruit juice

PowerBar Team Elite athlete  
COLLEEN DE REUCK

PHOTO BY: FRANK X. WILSON

## IDEAS FOR HIGH-CARBOHYDRATE SNACKS BEFORE A RACE OR WORKOUT (30–60 minutes before running)

Fruit smoothie made with mango/banana/berries and low-fat or nonfat milk or yogurt

Dried fruit and pretzels

Fresh fruit or 100% juice

Graham crackers

Low-fat or nonfat yogurt, or fat-free frozen yogurt, gelato, or sorbet

PowerBar Endurance sports drink

PowerBar Performance Energy bar

PowerBar Fruit Smoothie Energy bar

PowerBar Gel

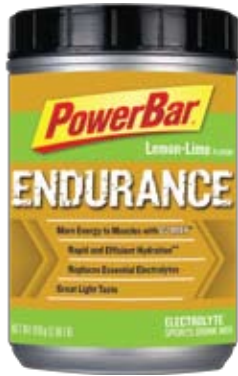
PowerBar Gel Blasts energy chews

PowerBar Energy Bites



### 3. REHYDRATING AND REFUELING WHILE RUNNING

For distance runs lasting less than 1 hour, your existing fuel stores should tide you over. Therefore, your focus can be on staying hydrated. In races that are less than 6.2 to 9.3 miles (10–15 km) in cool conditions, elite runners may not need to hydrate during the race and may not want to sacrifice any time. As distance, temperature, or humidity increases, the need for fluids increases as well. To stay hydrated in these circumstances, it is the consensus recommendation of authorities such as the American College of Sports Medicine that athletes consume fluids at a rate that closely matches sweat rate. This generally requires something on the order of 13–26 fl oz (400–800 ml) every hour of exercise, preferably in smaller amounts taken frequently, such as 3–7 fl oz (100–200 ml) every 15 minutes. However, fluid needs can vary considerably based on factors such as body size, pace, and weather conditions. Therefore, you may want to calculate your sweat rate for the various conditions in which you train and compete. Calculating your sweat rate is really quite simple. For a step-by-step guide to calculating your sweat rate and to obtain a personalized plan to meet your unique hydration needs, use the PowerBar Sweat Rate Calculator at [www.PowerBar.com](http://www.PowerBar.com).



Glycogen depletion leads to heavy legs, and low blood sugar leads to fatigue. Avoid both by initiating the refueling and rehydrating process early in a race; don't wait for your glycogen stores to run dry or your blood sugar to drop. You should consume 30–60 grams of carbs per hour for exercise lasting 1–2 hours, or 45–90 grams of carbs per hour for exercise lasting more than 2 hours.

### Water vs. Sports Drinks

Water is usually fine for short workouts or runs (e.g., less than an hour) in cooler weather. However, for intense workouts, long runs, and anytime you're exercising in the heat and humidity, a sports drink that provides carbohydrates, fluids, and sodium, such as PowerBar Endurance sports drink, is a much better option than plain water. The advantages are many: First, a sports drink provides carbohydrates to help sustain your blood

# Have a **hydration** and **fueling** regimen on race day that you know works for you.

glucose level during exercise. Second, athletes typically consume more fluids when their hydration beverage is flavored, as is the case with a sports drink. Third, the sodium and carbs in a sports drink cause the fluid in the beverage to be absorbed more quickly. The sodium also helps maintain your drive to continue drinking fluids during exercise, which is crucial to meeting your fluid needs. Finally, the sodium also helps you retain the fluid that you've consumed.



### Gels

A good option for rehydrating and refueling, especially in longer races, is to consume an energy gel and chase it with water. Make sure to select an energy gel that provides sodium along with carbohydrates, such as PowerBar Gel. These gels are designed to be consumed every 20–45 minutes during exercise and they provide the carbohydrates and sodium of a high-end sports drink.



## 4. PRACTICE IT DURING TRAINING FIRST

There's no question that starting exercise fueled and hydrated, and rehydrating and refueling during exercise, are critical elements of a successful sports nutrition strategy. Experiment with the types and timing of foods and beverages during training. Make small adjustments to your regimen as needed, and trial-run those as well. The objective is to have a hydration and fueling regimen on race day that you know works for you given the conditions in which you'll be running.

PowerBar Team Elite athlete  
MEB KEFLEZIGHI



PHOTO BY: JOHN SEGESTA



## 5. ACTIVELY PROMOTE RAPID RECOVERY

As soon as you finish a race or training session, make recovery your first priority. The recovery stage is where you make the gains from your hard work and get ready for your next run. Your body is ready to start the recovery process just as soon as you finish exercise, but you need to provide the nutritional components, including carbohydrates to restore depleted glycogen stores, protein to repair and build muscle tissue, and fluids and sodium to effectively rehydrate.

## Carbohydrates

To speed the reloading of your depleted muscle glycogen fuel stores, consume about 0.5 grams of carbohydrates per lb (1.1 grams per kg) body weight within 30 minutes of finishing exercise. You can repeat this in 2 hours, or transition to your usual high-carbohydrate snacks and meals. For a 150-lb (68-kg) distance runner, that equates to about 75 grams of carbohydrates immediately after running and then again 2 hours later. You can also rapidly refuel by consuming smaller amounts of carbohydrates more frequently if that leaves you feeling more comfortable.

Intensity Level of Training	Daily Carbs Needed	Example for 150-lb (680-kg) Athlete
Low-Intensity	2.3–3.2 grams per lb body weight (5–7 grams per kg)	345–480 grams of carbs daily
Moderate to Heavy	3.2–4.5 grams per lb body weight (7–10 grams per kg)	480–675 grams of carbs daily
Extremely Heavy	4.5–5.5 grams per lb body weight (10–12 grams per kg)	675–825 grams of carbs daily

**Rehydration will be more effective when **sodium** is included with the fluid and food you consume as you recover.**

## Protein

Muscle tissue repair and building are other important facets of recovery. Muscle tissue is made up of protein, and protein is made up of building blocks known as amino acids. When you consume protein foods, the protein is digested and broken down into its component amino acids. These amino acids are then absorbed and repackaged into the proteins your body needs, including those required to repair and build muscle tissue. For your running workouts, consume 10–20 grams of protein as soon as possible after you finish exercise. This will provide the amino acids needed for repairing muscle tissue that gets damaged when running. For resistance training workouts, consume 20–40 grams of protein just before and/or immediately after lifting, to ensure an adequate supply of amino acids for the processes of muscle tissue repair and building. The amount of protein consumed before and after resistance training **combined** is based on 0.18 grams of protein per lb body weight (0.4 grams per kg).

## Fluids and Sodium

Distance running can lead to heavy fluid and sodium losses due to sweating. Weigh yourself before and after exercise to gauge your net loss of fluids. Replace this fluid by gradually drinking about 23 fl oz of a sports drink, recovery beverage, or water for every lb (1,500 ml per kg) of weight lost. Consume sodium sources along with your fluids. Rehydration will be more effective when sodium is included with the fluid and food you consume as you recover. If your loss of fluids consistently exceeds 2% of your body weight, try to increase your fluid intake a bit to avoid dehydration. If you find that you actually gain weight during a workout or race, it's a sign that you've consumed too much fluid. This sometimes happens to slower runners who find themselves out on the course for hours at a time. To avoid overhydration, cut back a bit on your rate of fluid intake during exercise.



PowerBar Recovery beverage is a fast and convenient option for jump-starting the recovery process. Just pour two scoops of Recovery beverage powder into your sports bottle, add 16 fl oz of water, and shake. In seconds you'll have the carbs, protein, sodium, and fluids to start reloading, repairing, and rehydrating. So as soon as you cross that finish line, drink a thirst-quenching PowerBar Recovery beverage and get on the road to rapid recovery.

The following recovery options include at least 10 grams of protein and a moderate amount of carbohydrates to promote recovery.

### RECOVERY OPTIONS

Food	Protein
2 oz pretzels dipped in 2 tbsp peanut butter	14 grams
Turkey sandwich with 2 oz turkey	20 grams
2 rice cakes with 2 oz low-fat cheese slices	16 grams
2 oz string cheese with 1 apple	14 grams
1 cup low-fat yogurt	11 grams
Low-fat chocolate milk — 10 fl oz (300 ml)	10 grams
PowerBar Recovery bar	12 grams
PowerBar ProteinPlus Bites — 1 pouch	20 grams
PowerBar ProteinPlus protein bar	23 grams
PowerBar ProteinPlus 30g protein bar	30 grams

## 6. KNOW YOUR EXTRA-ENERGY OPTIONS

### Carbohydrate Loading

If you're going to be in a race that will require every last gram of muscle glycogen and more, carbohydrate loading — a technique where you taper your training one or more days before a race, while increasing your intake of carbs — may be right for you. Done correctly, the net result is a significant boost in your stores of muscle glycogen. That can translate to a performance benefit in races that are 15 miles (21 km) or longer. For more on effective carbohydrate loading, search [Carbohydrate Loading](#) at [www.PowerBar.com](http://www.PowerBar.com).

### PowerBar C2MAX Dual Source Energy Blend for Faster Fueling

For typical endurance exercise of a couple of hours or less, the consensus recommendation for refueling with carbs is to consume 30–60 grams per hour of exercise. If your running challenge exceeds the 2-hour threshold and your pace is fast, you may benefit from a faster delivery of carbohydrate fuel to your working muscles. But just any carbs won't do. Research has shown that consuming a 2:1 ratio of glucose to fructose during extended endurance exercise delivers more energy to your muscles — and better performance. The combination is important because it takes advantage of the fact that your digestive tract has two separate transport systems, one each for the absorption of glucose and fructose. If you load up on just one carb source or the other, the transporters for that source fill up and you can't absorb the extra carbs. But by consuming both glucose and fructose, you utilize the dual-transport system and get the benefit of the extra fuel. PowerBar makes it easy to take advantage of this cutting-edge research with C2MAX, which features the research-tested 2:1 ratio of glucose to fructose. You can find it in PowerBar products that are designed to be used during exercise. The carbohydrates in products that contain C2MAX can be taken in at the rate of up to 45–90 grams per hour during exercise. For more information on C2MAX, go to [www.PowerBar.com](http://www.PowerBar.com).

### Caffeine

Coffee is the world's most popular beverage, and its caffeine content is a major reason why. For many, a cup of coffee in the morning helps wake us up, and a second cup in the afternoon helps keep us going — a fact not lost on distance runners. Caffeine has been the subject of extensive research. It can boost performance in many athletes, including distance runners. The exact mechanisms are still being studied, but the benefit seems clear. Caffeine before or during endurance exercise can help reduce the perception of how hard you're working, so you may run faster and/or farther without feeling like you're working harder. However, you don't need tons of the stuff to get an effect, and some athletes are sensitive to caffeine and should avoid it. The more recently recommended dose for performance improvement is 0.45–1.4 mg caffeine per lb body weight (1–3 mg per kg). For a 150-lb athlete, that equates to about 70–210 mg. To learn more about using caffeine effectively, search [Caffeine and Athletic Performance](#) at [www.PowerBar.com](http://www.PowerBar.com).

## DAILY NUTRITION TIPS

- Aim for a well-balanced diet with a variety of carbohydrates, lean protein, and healthy fats
- Carbohydrates should be the focus of your meals
- Drink up early: Every morning when you wake up, have a large glass of water
- Keep up your energy levels: Eat 5–6 smaller meals per day

Sports Nutrition Plan			
	CARBS	PROTEIN	FLUID
BEFORE	<ul style="list-style-type: none"> <li>• 2–4 hours before running, have a high-carb, low-fat, low-fiber meal</li> <li>• 30–60 minutes before, have a high-carb snack (aim for 40–60 grams of carbs)</li> </ul>	<ul style="list-style-type: none"> <li>• 2–4 hours before running, have a moderate-protein meal</li> <li>• When doing resistance training: have 10–20 grams protein before</li> </ul>	<ul style="list-style-type: none"> <li>• Start hydrating 24 hours prior to running</li> <li>• Drink 14–20 fl oz of water or sports drink (400–600 ml) 2–3 hours before running</li> <li>• Drink another 8 fl oz (240 ml) prior to your run</li> </ul>
DURING	<ul style="list-style-type: none"> <li>• 30–60 grams of carbs per hour for runs lasting 1–2 hours</li> <li>OR</li> <li>• 45–90 grams of carbs per hour for runs &gt;2 hours</li> </ul>	<ul style="list-style-type: none"> <li>• Not required</li> </ul>	<ul style="list-style-type: none"> <li>• Drink at least 13–26 fl oz (400–800 ml) per hour</li> <li>• Aim for 3–7 fl oz (100–200 ml) about every 15 minutes (1 gulp ≈ 1 fl oz)</li> <li>• For runs &gt;1 hour and when weather is hot and humid, use a sports drink with 500–800 mg sodium per 32 oz or 1 liter</li> <li>• Calculate your sweat rate: <a href="http://www.PowerBar.com/src">www.PowerBar.com/src</a></li> </ul>
AFTER	<ul style="list-style-type: none"> <li>• Within 30 minutes after running, have 0.5 grams of carbs per lb body weight (1.1 grams per kg)</li> <li>• Repeat within 2 hours of running, or transition to high-carb meal</li> </ul>	<ul style="list-style-type: none"> <li>• Running: 10–20 grams</li> <li>• Resistance training: 20–40 grams before and/or after (total = 0.18 grams per lb body weight (0.4 grams per kg))</li> </ul>	<ul style="list-style-type: none"> <li>• Gradually drink 23 fl oz per lb body weight lost (or 1,500 ml per kg body weight lost)</li> </ul>
DAILY	<ul style="list-style-type: none"> <li>• Low-intensity training: 2.3–3.2 grams of carbs per lb body weight (5–7 grams per kg)</li> <li>• Moderate- to heavy-intensity training: 3.2–4.5 grams of carbs per lb body weight (7–10 grams per kg)</li> <li>• Extremely heavy-intensity training: 4.5–5.5 grams of carbs per lb body weight (10–12 grams per kg)</li> </ul>	<ul style="list-style-type: none"> <li>• 0.6–0.8 grams per lb body weight (1.4–1.7 grams per kg)</li> </ul>	<ul style="list-style-type: none"> <li>• Hydrate continuously throughout the day</li> </ul>









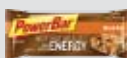





This food plan is intended to give general macronutrient and fluid guidelines while you are training and racing. It is not designed to be any particular caloric level. For a personalized daily food plan, use PowerBar PowerCoach to determine your caloric needs and obtain a daily sports nutrition plan just for you.



**POWER TO PUSH™**

# PRODUCT FEATURES AND BENEFITS

POWERBAR PRODUCTS WORK BEST IN COMBINATION:  
Mix and match products to meet your specific training and exercise needs.

		PROTEIN (GRAMS)	CARBS (GRAMS)	POWERBAR® C2MAX™ DUAL SOURCE ENERGY BLEND	KEY FEATURES	SUGGESTED USES
		6g/ bar	43g/ bar	X	Easy-to-digest carbs from natural fruit for more energy to muscles	Before and during higher-intensity exercise
		8-9g/ bar	44-46g/ bar	X	Easy-to-digest carbs for more energy to muscles	Before and during higher-intensity exercise
		0g/ packet	27-28g/ packet	X	Easy-to-digest for fast energy	Before and during higher-intensity exercise
		3g/ packet	45g/ packet	X	Customized energy delivery with bite-sized gel-filled chews	Before and during moderate- and high-intensity exercise
		0g/ 20 fl oz	43g/ 20 fl oz	X	Hydration with fast energy and key electrolytes lost in sweat	Before and during exercise
		5g/ serving	26g/ serving	X	Customized delivery of energy with bite-sized pieces	Before and during moderate-intensity exercise
		10g/ bar	42g/ bar		Long-lasting whole-grain energy with 5 grams of fiber per bar	Before and during moderate-intensity exercise
		10-11g/ bar	30-32g/ bar		Long-lasting energy with protein to support muscle growth and repair	Before and during moderate-intensity exercise
		10g/ bar	19-20g/ bar		Long-lasting energy with protein to support muscle growth and repair	Before and during moderate-intensity exercise
		5g/ bar	15-17g/ bar		Calorie-smart energy	Before and during exercise
		12g/ bar	30g/ bar		Carbs for muscle glycogen replenishing, protein to support muscle growth and repair, and fat to help restore muscle lipids	After exercise
		8g/ 20 fl oz	50g/ 20 fl oz		Rehydration with carbs for muscle glycogen replenishing, and protein to support muscle growth and repair	After exercise
		20g/ serving	34g/ serving		Provides customized protein delivery to help build lean muscle along with exercise	Before and/or after exercise
		23g/ bar	37-39g/ bar		Protein to support muscle growth and repair	Before and/or after exercise
		30g/ bar 3.5g leucine	33-35g/ bar		Protein with added leucine to support muscle growth and repair	Before and/or after exercise

\* PowerBar® C2MAX dual source energy blend is designed to have the same blend of energy sources found in breakthrough studies to deliver 20-55% more energy than glucose alone. In another study, these energy sources improved athletes' cycling times by 8%. (This study was done with a drink containing glucose alone vs. 2:1 glucose to fructose.)

‡ Take PowerBar ProteinPlus protein bars before and/or after resistance or strength training to help support muscle growth and repair.

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## POWERBAR SPORTS NUTRITION FOR DISTANCE RUNNERS

Be your best when training or racing by being prepared nutritionally before you start to exercise. Know what to rehydrate and refuel with, and when, and what's needed afterwards to promote a full recovery. PowerBar sports nutrition products and tools can help you meet your hydration, fueling, and recovery needs.



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