



# *Sports Nutrition Basics*

*Energize, Hydrate, Recover*

**PowerBar.**

**NUTRITION IS A KEY SUCCESS FACTOR** in endurance sports and there are a number of nutritional strategies that, combined with proper training, can boost performance, quicken recovery and ensure proper hydration.

On the following pages you'll find practical guidelines based on time-honed scientific principles, 'pro tips' based on the latest research and personal advice from elite athletes and coaches of various disciplines, all to help you to reach your athletic goals.



## ***HEALTHIER EATING IN TWO SENTENCES***

Here are some basic guides for making healthier choices at meal time:

**1. Emphasize nutrient dense foods, good-for-you carbs and unsaturated fats:** Fruits, veggies, whole grains, nuts, seeds, beans, reduced fat dairy, fish, lean meats, soy and olive and/or other vegetable oils

**2. De-emphasize (doesn't mean eliminate) 'empty calorie' foods, refined carbs and saturated and trans fats:** Foods and beverages featuring white flour, sugar, butter, margarine and partially hydrogenated vegetable oils

## **PRE-WORKOUT: TOP OFF FUEL STORES**

**Your pre-workout goal is to be fueled, hydrated and comfortable. Most people find that the right time for a pre-workout meal is two to four hours beforehand. The closer to a workout, the less you can eat and be comfortable. Higher intensity exercise usually requires a bit more time for digestion.**

- Your pre-workout meal should be high in carbohydrates to top off muscle fuel stores, moderate in protein and relatively low in fat and fiber for quicker digestion.
- For early morning workouts or to further top off fuel supplies in the hour before your workout, eat some or all of a carb-rich, low-fat POWERBAR PERFORMANCE bar or POWERBAR POWERGEL.
- Drink an extra 16 oz two to three hours before exercise. Choose water, juice or a sports drink, such as POWERBAR ENDURANCE.
- Experiment! Differences between people can be significant.

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*“There’s often a big time gap on race morning between breakfast and an athlete’s wave. Nervous energy and preparation can burn many of those precious calories – that gap can be filled perfectly with a PowerBar to keep energy stores topped off.”*

*— Ian Murray, Triathlon Coach*

## PRO TIP

How many grams of carbs do I need per day to train and race at my best?

The latest recommendations for carbohydrate intake for endurance athletes are based on the number of grams of carbs needed per day. This is further refined by the athlete's body weight and intensity of training. See [powerbar.com/carbs](https://www.powerbar.com/carbs) for more on this topic. The following recommendations are a starting point based on a large number of clinical studies and can be fine-tuned as needed.

- For light training, 5–7 g of carbohydrates per kilogram of bodyweight per day (g/kg/day)
- For moderate-heavy training, 7–12 g/kg/day
- For extreme training (4–6+ hours/day), 10–12 g/kg/day. For example, a 150-pound (approx 70 kg) individual with a moderate-heavy training day planned should target getting 490–840 g of carbs in the prior 24-hour period



## **DURING WORKOUT: STEADY FUELING**

**Consuming 30 to 60 grams of carbs per hour is proven to boost endurance performance (exercise over an hour). If you weigh closer to 100 pounds shoot for 30 grams/hour, if you're closer to 200 pounds – 60 grams/hour. Experiment within this range to find what works best for you. Remember, higher intensity exercise burns carbs faster. Also, fueling frequently is best but takes conscious effort and practice.**

during workout

POWERBAR ENDURANCE sports drink – the easiest way to meet carb needs while also hydrating. It can be easily transported while cycling, running, walking or kept on the pool deck while swimming.

POWERBAR POWERGEL energy gel – a convenient source of carbs that can be easily carried while running or cycling and should be consumed with water to meet hydration needs. Great for when you don't have easy access to your sports drink, such as during a long training run or marathon.

POWERBAR PERFORMANCE energy bar and/or fruit – with water works best for cyclists and walkers.

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*“ I drink PowerBar Endurance and substitute with PowerGels and/or PowerBars. I aim for 60 grams of carbs per hour, with at least one PowerGel in the last 45 minutes of a race. The key for me is to start early and fuel often. ”*

*— Jed Schneider,  
Professional Bike Racer*

The following are some carb-rich foods that have been used by athletes to fuel their workouts:

## CARBS THAT COUNT

Food	Carbs (g)
Apple	20
Banana	25
PowerBar PowerGel	26
Grapes (1 Cup)	29
Fig Bars (3)	30
PowerBar Endurance (20 oz)	42
PowerBar Performance bar	45
Bagel	50
Raisins (1/2 Cup)	57

### PRO TIP

Why does it seem like everyone dilutes their sports drinks?

Recent evidence suggests that mammals (rats and humans) become more sweet-sensitive after a couple hours of exercise, leading to a preference for less sweet-tasting drinks. This may explain the tendency to dilute sports drinks. Diluting sports drinks lowers the carbohydrate concentration and can lead to sub-optimal muscle fueling. Choose lighter-tasting sports drinks, like PowerBar Endurance – formulated to be less sweet for exactly this reason, so you won't have to dilute. See [powerbar.com/sweet](https://powerbar.com/sweet) for more on this topic.



*during workout*

## ***DURING WORKOUT: THE HYDRATION ZONE***

Replacing fluid lost as sweat is critical for maintaining performance and preventing dehydration. However, drinking too much water or low sodium beverages during longer exercise sessions and/or in high temperatures, can lead to hyponatremia (low blood sodium) which can be dangerous, especially in extreme cases (see [powerbar.com/hyponatremia](https://www.powerbar.com/hyponatremia) for more info).

during workout

- Pre-workout – check hydration status by looking at urine color – light colored, like lemonade, is the goal. If dark, like apple juice, drink some more.
- The American College of Sports Medicine suggests drinking between 6 and 12 oz of fluid per 15–20 minutes during activity.
- Occasionally weigh yourself pre and post-workout. If you lost weight, drink more next time (each pound is equivalent to about 16 oz). If you gained weight, drink less. Your goal is to stay between your pre-exercise weight and 2% less at all times, for example, between 147 and 150 if your starting weight was 150.

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*“Nutrition and hydration are the easiest components of performance to control, however they are often overlooked or undervalued.”*

— Derick Williamson,  
Carmichael Training Systems Senior Coach

## WHAT TO DRINK

Water provides necessary fluid without carbs. Most juices and soft drinks are too heavy in carbs and can slow hydration. Sports drinks can deliver the right level of carbs along with fluid and electrolytes. Look for:

- 14–20 g of carbs per 8 oz serving
- 150 mg or more sodium, the key electrolyte, per 8 oz serving
- A lighter taste so you won't feel like diluting
- POWERBAR ENDURANCE sports drink is light tasting with 17 g of carbs and 160 mg of sodium per 8 oz serving

### PRO TIP

What can I do to prevent getting both dehydrated and overhydrated?

As sweating rates vary widely, sports medicine authorities have begun to suggest individualized hydration planning. By performing a one-hour test workout you can learn how to more closely balance your fluid intake and fluid losses.

Detailed instructions and a handy online calculator are available at [powerbar.com/hydration](https://powerbar.com/hydration).



*“You can tell POWERBAR ENDURANCE was developed for endurance athletes. It doesn't have a bite and isn't too sweet, which helped me drink more than usual. I couldn't have broken the record without it.”*

*— Josh Cox, Elite Marathoner,  
World record, treadmill marathon*

*during workout*

## ***POST-WORKOUT: REFUEL AND REHYDRATE***

**Recovery is an essential component of your training program and nutrition plays a crucial role in activating the body's recovery process.**

- 30–60 g of fast-absorbing carbs combined with some protein within the first 60 minutes after exercise jumpstarts the muscle recovery process and can be repeated over the next few hours for maximum muscle refueling.
- Approximately 16-24 oz of fluid need to be consumed for every pound of weight lost to accomplish rehydration.
- Sodium, the key electrolyte lost in sweat, helps facilitate rehydration. Foods and beverages with relatively high levels of sodium are appropriate after longer, harder work-outs.
- Since it can be difficult to eat immediately following a workout, sports beverages may be the easiest way to jumpstart muscle recovery while rehydrating at the same time.
- POWERBAR RECOVERY sports drink contains the right levels of carbs and protein for post-exercise muscle recovery, along with relatively high levels of sodium for rehydration.
- The PowerBar Post-Exercise Recovery Calculator at [powerbar.com/recovery](https://powerbar.com/recovery), can help you determine how to meet both glycogen and rehydration needs post-exercise.

**PRO  
TIP**

## Does fat play a role in muscle recovery?

Intramyocellular lipid (IMCL) is fat that is stored in muscle (as opposed to your hips), similar to carbs stored in muscle as glycogen. A recent study showed that a high carb diet did not fully restore IMCL stores even two days after a tough workout, though a somewhat higher fat diet did. This and related research suggests that fat is an important recovery nutrient for endurance athletes. The best time to incorporate fat into meals is likely after the post-exercise window of opportunity for glycogen re-synthesis when carbs and protein are important. Of course, unsaturated fats are more heart-healthy than saturated fats. See [powerbar.com/IMCL](https://powerbar.com/IMCL) for more on this topic.

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*“As an Ironman triathlete, I train 2-3 times per day. It is very important that I recover quickly from each workout. As soon as I walk in the door, I make a PowerBar Recovery drink and drink it while I stretch. 30 minutes later I have a ‘regular meal’. Then 30 minutes before my next workout, I’ll have a PowerBar and a banana and I’m ready for my next workout. ”*

— Kim Loeffler, Professional Triathlete  
2004 Ironman National Champion



# RACE DAY NUTRITION CHECKLIST

## BEFORE

- Eat your favorite carb-rich foods and hydrate well the day or two before the event – urine should be light colored, like lemonade, not dark, like apple juice.
- Do not experiment with new foods during race weekend.
- Plan ahead to make sure you'll have ready access to your favorite pre-exercise foods. By now you should be comfortable with the quantities, components and timing of your pre-race meal.
- Drink an extra 16 oz of fluid 2–3 hours before the event.
- Eat a POWERBAR PERFORMANCE bar or POWERBAR POWERGEL in the hour before the event with some water, if this has successfully worked for you during training.

## DURING

- Plan ahead to access your race day nutrition en route:
  - Sports drink powder, e.g. POWERBAR ENDURANCE
  - Energy gels, e.g. POWERBAR POWERGEL
  - Energy bars, e.g. POWERBAR PERFORMANCE
  - Fruit
  - Water bottles (or other hydration system)
- Start drinking right away and keep drinking every 15–20 minutes. Fluid intake rate is based on what you've learned and practiced during training.
- Your carb schedule should follow your drinking schedule, or if you're using a sports drink they are the same – every 15–20 minutes for a total that falls in the range of 30–60 g per hour.
- Consider how weather conditions may affect your nutrition choices (e.g. hotter weather may make you want to get more of your carbs in liquid form).

## AFTER

- Start muscle process with a combination of carbs and protein such as is found in POWERBAR RECOVERY.
- Rehydration requires 16–24 oz of fluid per pound lost during the event, sodium helps to retain those fluids.

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*“The bike portion of a half Ironman should be viewed like a rolling buffet. After settling into the bike, I take in a PowerGel followed by some water, and again after 50 minutes into the bike. At 1:20, I take in half of a PowerBar and stick it right to my top tube. I follow this with another PowerGel at 2:05. On the run, I take in a PowerGel at mile 3, 7, and if I need a last minute pick-me-up, mile 11. Rehearse your plan in your training. When race day rolls around, you'll feel focused, fueled, and ready to go! ”*

*— Elizabeth Fedofsky, All-American Triathlete*





POWERBAR® PERFORMANCE, the original performance energy bar, is low-fat, highly nutritious and specially formulated to deliver sustained energy for a performance edge.

FLAVORS: Chocolate, Peanut Butter, Vanilla Crisp, Cookies & Cream, Raspberry & Cream, Chocolate Peanut Butter, Oatmeal Raisin, Cappuccino (caffeinated), Wild Berry, Apple Cinnamon, Banana, Malt Nut



POWERBAR® BEVERAGE SYSTEM is a two-product system that delivers optimal hydration, energy and recovery during and after endurance activity with a great light taste that you don't have to dilute.

POWERBAR® ENDURANCE sport drink: Optimally balances energy delivery and hydration with a 7% carb concentration and a high level of the key electrolyte, sodium with a great tasting lemon lime flavor.

POWERBAR® RECOVERY drink: Speeds glycogen restoration and muscle repair with mixed carbs and protein while re-hydrating more efficiently than water or lower sodium sport drinks in a light orange flavor.



POWERBAR® POWERGEL® is a concentrated carbohydrate gel that delivers rapidly-absorbed, immediate energy with 100% carbohydrate and 180 mg of the electrolytes: sodium, potassium and chloride.

FLAVORS: Vanilla, Raspberry Cream, Tropical Fruit, Lemon Lime, Chocolate\*, Strawberry Banana\*, Green Apple\*, Tangerine\*\*

\*Caffeinated \*\*Double Caffeinated



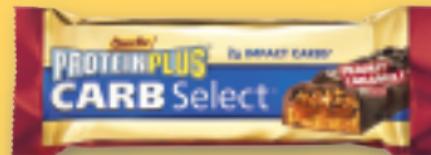
POWERBAR HARVEST®, is a great tasting, natural, whole grain energy bar that delivers sustained energy with 7 g of protein and 16 essential vitamins and minerals.

FLAVORS: Toffee Chocolate Chip, Peanut Butter Chocolate Chip, Double Chocolate, Cinnamon Roll, Iced Oatmeal Raisin, Apple Crisp, Strawberry, Cherry Crunch, Banana Nut, Carrot Cake



POWERBAR® PROTEINPLUS™ helps maximize lean muscle gains from strength training and provides sustained energy with a combination of 24 g of fast and slow releasing proteins.

FLAVORS: Chocolate Peanut Butter, Chocolate Fudge Brownie, Vanilla Yogurt, Cookies & Cream



POWERBAR® PROTEINPLUS™ CARB SELECT™ is the great-tasting, high-protein snack for those looking to limit their impact carb intake with 20–22 g of high quality protein and 2 g of impact carbs.

FLAVORS: Peanut Caramel, Chocolate Caramel Crunch, Chocolate Peanut Butter, Double Chocolate

## **LIKE THE INFO YOU GOT HERE?**

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