

HYDRATION IS ONLY THE BEGINNING: DEVELOPING A COMPREHENSIVE NUTRITION PLAN

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The purpose of this guide is to provide you with the tools necessary to optimize your running performance. Practice the following strategies during your training and develop a reliable plan for fueling your body during races.

BEFORE

Plan ahead. If you are dehydrated less than 24 hours before your run or race, it will be difficult for you to “catch up”. Do not rely on your thirst to stay properly hydrated. Rather, drink regularly in amounts that keep your urine clear to light yellow in color and your body weight consistent. Caffeinated and alcoholic beverages are fine in moderation, but their diuretic effects make them ineffective as re-hydrators. 2-3 hours before running, drink 14-20 fluid ounces of water or sports drink. During active warm-up, drink another 8 fluid ounces or about 8 swallows/gulps.

Stay focused on carbohydrates; low-carb diets are not appropriate for athletes. Keep your carbohydrate stores “topped off” by eating a well-balanced diet and eating a high-carb, moderate protein, low-fat meal 2-4 hours before exercise. If you have more time before your exercise session, eat more. If you have less time, eat less to avoid stomach distress. Good examples of pre-exercise meals include:

- Cold or hot cereal with low-fat milk; fruit juice
- French toast or waffles with maple or fruit syrup
- Toast with jam or honey; low-fat yogurt
- Turkey or ham sandwich with veggies, mustard; baked chips; juice
- Bagel with peanut butter; banana
- Pasta with tomato sauce; French bread; salad with low-fat dressing; milk
- Baked or grilled chicken; rice; steamed vegetables; roll and low-fat frozen yogurt

Eating a high-carbohydrate snack 30-60 minutes before exercising will get you started on the right foot. Aim for 30 to 60 grams of carbohydrates at this time. Quick-to-digest options are:

- GU energy gel (1-2 packets)
- Sharkies Sport Chews (1 bag)
- GU Chomps (1 bag)
- GU Brew electrolyte drink (20 ounces)
- Fruit smoothie made with banana/berries and low-fat milk or yogurt (8 ounces)
- Fat-free frozen yogurt or sorbet (1 cup)

DURING

Blood carries oxygen to the muscles. When sweating, some of the **water** content of your sweat is taken from the blood supply. When blood volume decreases, heart rate needs to increase to pump the same amount of oxygen. Therefore, dehydration must be accompanied by a decrease in pace at a given heart rate. Studies show that there is a 3% decrease in pace for each 1% decrease in bodyweight due to dehydration. As an example, consider a 150-pound runner. It would not be unusual for him to sweat out 3-4 pounds of water per hour on a warm day. At this rate, he would lose 6-8 pounds during a 2 hour run, representing a 4-5% loss in bodyweight and resulting in a 12-15% pace reduction. For most runners, that would be approximately 1 extra minute per mile. To avoid losing more than necessary during your workouts, drink 13-26 fluid ounces of water or sports drink per hour. Drink small amounts often. To avoid uncomfortable "sloshing", do not exceed 7 ounces in any 15 minute period.

Sodium and **potassium** are minerals that work together to regulate the cellular electric charges and water flow. Both are lost in sweat, therefore replacing lost sweat with water alone can lead to harmful imbalances. Hyponatremia is a dangerous condition caused by too little sodium in the blood. This water/sodium imbalance can lead to many of the same symptoms as dehydration and heat stroke: headache, nausea, vomiting, extreme fatigue, and dizziness. A lack of potassium has been linked to muscle cramping and other performance-limiting conditions. When running, never drink plain water without supplementing with sodium and potassium, especially when exercising for over 1 hour or when it is hot or humid. There are many different electrolyte supplements available (drinks, capsules, energy chews, and gels), each with different amounts of sodium and potassium. Some also include magnesium, chloride and calcium, other electrolytes that are lost in sweat and important for those who sweat heavily. Experiment to find the supplement formula that works best for you.

When running, the body burns a mixture of **carbohydrate** and fat. As the miles add up, your carbohydrate stores become progressively depleted and your body tries to conserve what's left by burning more fat. The problem is that fat is a less efficient energy source. Therefore, when you start running low on available carbohydrate, you are forced to slow down. As such, you need to continue to take in carbohydrates while running. Be sure to get 30-60 grams of carbohydrates per hour (for workouts lasting 1-2 hours) and 45-90 grams of carbohydrates per hour (for workouts lasting longer than 2 hours). Easy to digest sources such as gels, energy chews and sports drinks are best. Taking in more than these recommended amounts of carbohydrate is not recommended, since too much carbohydrate in the digestive tract actually results in slower absorption and may inhibit re-hydration.

AFTER

Recovery starts as soon as your exercise session ends, so try to consume foods or fluids with a combination of carbohydrates and protein as soon as possible after a workout to jump start the recovery process. Carbohydrates replenish depleted muscle glycogen stores and protein contains amino acid building blocks needed for tissue repair and the building of new muscle tissue. Sports drinks, energy/protein bars, gels and chews make convenient and portable recovery foods. Within 30 minutes after training (which is especially vital when exercising again within 24 hours), consume a combination of carbs and protein to kickstart the recovery process. Aim for 30-60 grams of carbohydrates and 10-20 grams of protein. Good options for recovery are:

- Promax bar
- Endurox R4 drink
- Clif Bar; low-fat milk
- Bagel or pretzels with peanut butter
- Fruit smoothies made with low-fat milk or yogurt
- Crackers; string cheese

In addition to food, your body will need fluids and sodium to complete the rehydration process. Gradually drink some sports drink, recovery beverage, or water until your urine is pale yellow or clear in color. The rehydration process will be more effective when sodium is included in the fluids and foods you consume.

PUTTING IT ALL TOGETHER

BEFORE

- Start hydrating 24 hours prior to exercise
- High-carbohydrate, moderate-protein meal 2-4 hours before exercising
- Drink 14-20 fluid ounces of water or sports drink 2-3 hours before exercise
- High-carbohydrate snack 30-60 minutes before exercise
- During your active warm-up, drink 8 fluid ounces

DURING

- 30-60 grams of carbohydrates per hour for exercise lasting 1-2 hours; 45-90 grams per hour for exercise sessions longer than 2 hours
- Drink 13-26 fluid ounces per hour and stay in your hydration zone. Avoid losing or gaining weight by under/over-consuming fluids.
- Use a sports drink or supplement that contains essential electrolytes sodium and potassium (and magnesium, chloride, and calcium if you sweat heavily)

AFTER

- Consume 30-60 grams of carbohydrates and 10-20 grams of protein as soon after exercise as possible
- Gradually drink fluid until your urine is pale yellow or clear in color