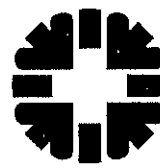


Sports Nutrition

Sports Medicine Systems, Inc.
Nancy Clark, MS, RD



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THE PRE-COMPETITION MEAL

When it comes to pre-competition eating, each person has individual food preferences or aversions. Hence, no one single food or "magic meal" will ensure top performance. Whereas some athletes (runners or those in sports involving running and jumping) may prefer to eat nothing before competition, others (cyclists, skiers) may perform better after having eaten a light snack (50-200 calories) or small meal (300-500 calories). The following guidelines offer points to consider regarding your own personal pre-exercise eating program. Because each person is unique, you should experiment to learn which foods (if any), and how much of them, work best for *your* body.

- The goal of the pre-competition meal is to enhance stamina and endurance without causing any stomach discomfort. The pre-competition meal or snack helps to:

1. maintain a normal blood sugar and prevent performance problems associated with hypoglycemia, such as light-headedness, blurred vision, needless fatigue and indecisiveness.
2. settle the stomach, absorb some of the gastric juices and prevent you from feeling hungry.
3. provide energy to fuel your muscles.

Although eating too much food can have adverse effects (nausea, stomach cramps), so can eating too little (lack of energy). If you get very nervous, stressed or have a sensitive stomach, you may prefer to abstain completely from food. You should make a special effort to eat extra food *the day before* to be well fueled for the competition.

- Choose carbohydrates before an event because they digest quickly and are readily available for fuel. Some popular choices include cereal, bananas, bread, bagel, crackers and pasta. Protein-rich foods (eggs, tuna, steak) take longer to digest and may increase the need to urinate. Fats (fried foods, peanut butter, greasy burgers) stay longest in the stomach and may feel heavy and uncomfortable.

- Pay attention to meal timing. In general, you should allow 3-5 hours for a large meal to digest; 2-3 hours for a smaller meal, 1-2 hours for a blenderized meal (liquids are absorbed more rapidly than solid foods), .5-1 hour for a small snack. Always eat extra carbohydrates the day prior and do little or no exercise so your muscles can refuel. Before morning events, eat a hearty, high carbohydrate dinner and bed-time snack the prior night. That morning, eat a light meal (such as 1-2 slices of toast and/or cereal) as tolerated to stabilize your blood sugar, absorb some of the gastric juices and keep you from feeling hungry.

Before afternoon events, eat a hearty breakfast and a light carbohydrate-based lunch.

Before evening events, eat a hearty breakfast and lunch, then a light snack as tolerated 1-2 hours prior.

Some athletes break all the rules and enjoy a big meal with no problem within an hour of the event. Others can eat nothing for four hours prior. *You simply have to experiment during training* to determine what foods (if any) settle comfortably, when you should eat them (one, two or three hours prior?) and how much you can eat.

- Always eat familiar foods prior to competition -- don't try anything new! Experiment with new foods *during training* to determine if they settle well, cause "acid stomach", gas, heartburn, cramps or intestinal discomfort.

- Eat a high carbohydrate diet *every day* to prevent chronic glycogen depletion and ensure adequate glycogen replacement. One pre-event meal inadequately compensates for a poor training diet.

- When traveling, you might want to bring your favorite sports foods such as a tried-and-true cereal, muffin, fruit or sandwich. This way, you can worry less about fueling yourself and be free to focus on performing.

- The pre-competition meal may have a greater *psychological* than physiological value. For example, if you firmly believe that a steak dinner helps you perform best, then eat it even though this meal "breaks the rules" regarding pre-game suggestions! (But you should also experiment during training with pasta or another high carb, low fat choice to see if this more appropriate food settles better and offers an energy advantage.)

Sample high carbohydrate, low fat pre-competition food suggestions:

Breakfasts: cereal, lowfat milk, banana; toast, juice; muffin or bagel, yogurt; french toast or pancakes, syrup.

Lunches: sandwich with thick bread, little mayo; soup, crackers; thick-crust pizza (single cheese, no meat).

Snacks: crackers, bagel, toast, canned or fresh fruit, yogurt, small turkey sandwich, leftover pasta.

Dinners: spaghetti, tomato sauce; extra rice, noodles, potato, vegetables with small serving of chicken, fish.

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FLUIDS, DEHYDRATION and THIRST QUENCHERS

Drinking adequate fluids is essential for top athletic performance. Body fluids have important jobs: fluid in the blood transports glucose to the working muscles and carries away lactic acid; urine eliminates waste products; sweat dissipates heat via the skin. If you sweat heavily and lose too much fluid, you reduce your ability to provide adequate circulation to both the muscles and body surface. This not only hurts your performance but also can endanger your health.

Unfortunately, many people who exercise pay too little attention to including adequate fluids in their sports diet. They suffer needless fatigue and perform sub-optimally. The following tips may help keep you well hydrated.

Prevent dehydration during training.

On a daily basis, make sure that you drink adequate fluids. You can easily determine if you have had enough to drink by monitoring the amount and color of your urine.

--You should urinate frequently throughout the day.

--The urine should be a clear, lemonade color, and in significant quantity.

If the urine is dark, concentrated and scanty, you need to consume more water, juice and other fluids.

(Note: If you take vitamin pills, your urine may be dark colored. Monitor hydration by the *quantity* of urine and *darkness* of color.)

- To increase awareness of sweat losses during exercise, weigh yourself before and after a hard workout. Each pound lost represents one pound (two cups) of sweat. Replace it accordingly -- and try to lose less than 2% of your weight!
- You don't have to drink *only* water for fluids. Juice, sports drinks, soft drinks and watery foods such as yogurt, oranges, lettuce, and melon all have a high water content that contributes to your overall fluid balance.
- Be aware that coffee, tea, beer and alcohol have a dehydrating effect; they cause you to urinate and lose fluids. Hence, if you choose to drink beverages with alcohol or caffeine, do so after having quenched your thirst with other fluids. I.e., first drink two or three large glasses of water, then have a beer if desired.

Prior to hard endurance exercise:

1. The day before, drink extra water, juice and other fluids to be sure your body is well hydrated.
2. The morning of the event, drink 2 to 3 large glasses of fluids up to two hours prior to the start. Because the kidneys require 45-90 minutes to process liquids, two hours allows you time to empty your bladder before the start of the event.
3. Five or ten minutes before start-time, "tank up" on another 1-2 cups of water or sports drink.

During hard exercise:

1. Drink as much water, sports drinks or diluted juice as you can tolerate, ideally 8-10 ounces every 20 minutes. Because you may be sweating off three times this amount, you may still have a fluid deficit.
2. **Prevent dehydration** by taking adequate fluids early in the event. Drink *before* you get thirsty! By the time your brain signals thirst, you will have lost 1% of your body weight (1.5 lbs or 3 cups of sweat for a 150 lb. person). By 2% dehydration (3 lbs. of sweat loss), you may have reduced your work capacity by 10-15%.

After exercise:

1. Drink to quench your thirst, and then drink even more. Because the thirst mechanism inadequately indicates whether or not you've taken enough fluids, you'll have to tell by monitoring your urine. If several hours pass without your having to urinate, you are still dehydrated. Keep drinking...
2. Juices (such as orange, apple and cranberry) replace not only fluid but also more carbohydrates than you'd get from a sports drink. Drinking 16-24 ounces within one hour post-exercise can help you quickly recover from a hard workout.

Water vs. Sports Drinks: For the recreational athlete, water is always appropriate. Water is convenient, familiar and satisfies your body's needs. For endurance athletes or those expending large amounts of energy for more than 60 to 90 minutes, a sports drink, dilute juice or soft drink that contains 50-80 calories / 8 ozs. offers an energy advantage during exercise that can enhance stamina and endurance. Experiment *during training* to learn which fluids settle best in your stomach.

Electrolyte Replacement: Sweat contains not only water but also small amounts of sodium, potassium and other electrolytes that keep your body in fluid-balance. You lose small amounts of these electrolytes when you sweat, but you do not deplete yourself except possibly under extreme circumstances. Hence, you can easily replace the losses after exercise by eating fruit, juice, yogurt and other wholesome foods. Commercial fluid replacement drinks are generally weak sources of electrolytes compared to natural fruits, juices and recovery foods. Water plus wholesome foods do a great recovery job!

TOP SPORTS FOODS: SOME HEALTHFUL CHOICES

When you are training hard and juggling exercise with school, work and social activities *plus* trying to eat healthfully, you may feel frustrated that you have no time to eat the proverbial "three square meals" every day. Never-the-less, you *can* maintain a healthful diet. The trick is to eat a variety of nutrient-dense, low fat foods.

The following list includes foods that you can easily find in a convenience store, sandwich shop or salad bar, or can keep stocked at home. These nourishing choices invest in your health within a moderate to low calorie price. Since none are nutritionally complete, you need to choose a variety of foods to get a balance of the vitamins, minerals, carbohydrates and proteins necessary for top performance and good health.

<u>FOOD</u>	<u>IMPORTANT NUTRIENTS</u>	<u>COMMENTS</u>
Milk, yogurt lowfat	calcium, protein riboflavin	*Plan to eat lowfat dairy products 2-4 times each day for calcium, a mineral important throughout lifetime to maintain strong bones. Pizza (with lowfat mozzarella cheese) is another calcium-rich choice.
Broccoli	vitamins A, C	*One stalk (cooked) offers 100% ADA for vitamin C. Frozen and fresh are nutritionally similar, because freezing doesn't destroy vitamin C.
Spinach	vitamins A, C, folic acid	*Add to salads, for more nutrients than offered by pale lettuce. Keep frozen spinach stocked at home for a quick dinner vegetable.
Green peppers	vitamin C	*Half a pepper offers 100% ADA for vitamin C. Add to salads, pizza; munch on a raw pepper for a low-calorie snack.
Tomatoes	vitamins A, C, potassium	*Boost intake by adding sliced tomatoes to sandwiches; choose foods with tomato sauce (pizza, pasta, etc.); drink tomato juice.
V-8 Juice	vitamins A, C, potassium	*An easy, cook-free way to get nutrients from eight vegetables. Keep small cans stocked for a snack or lunch-time beverage.
Baked potato	potassium, Vitamin C carbohydrates	*Be sure to eat the skin; it contains 75% of the vitamin C. For a low-calorie topping, add yogurt. Or mash the baked potato with milk to add moistness without the fat and calories of butter or sour cream.
Orange juice, oranges	vitamin C, potassium folic acid, carbohydrates	*Six ounces (fresh or from frozen) offers 100% ADA of vitamin C. A great post-exercise "recovery food" for potassium, carbohydrates, fluid. Orange juice is nutritionally superior to many other fruit juices.
Bananas	potassium, carbohydrates vitamin C	*To prevent over-ripening, store bananas in the refrigerator. Their skin may turn black, but the fruit will be fine. Add bananas to cereal; eat with peanut butter and a glass of milk for a balanced meal-on-the-run.
Cantaloupe	vitamins C, A	*Half a small melon offers 100% of the ADA for vitamin C for few calories. Enjoy with lowfat cottage cheese for a quick, lite lunch or snack.
Chicken, turkey protein		*Thigh and leg meat has more iron and zinc than does breast meat. To reduce fat, calories and cholesterol, remove the skin.
Lean beef	protein, iron, zinc	*Beef is among the best sources of iron and zinc. Avoid fatty meats, i.e., choose a lean roast beef sandwich, rather than a greasy burger.
Fish, tuna	protein, fish-oil	*The oil in salmon, albacore tuna, sardines protects against heart disease. Avoid fried fish; use low-fat mayonnaise with tuna, if possible.
Bran cereal enriched	Fiber, carbohydrates iron, B-vitamins	*Bran is excellent for fiber (to help prevent constipation). Select "fortified" and "enriched" cereals for the most iron; drink orange juice with cereal to enhance iron absorption.
Muffins, bran, corn	carbohydrates, B-vitamins fiber	*Preferable to doughnuts or breakfast pastry. Try to buy lowfat whole wheat, corn or bran muffins -- not rich, cake-like muffins. Top with jelly (rather than butter) for extra carbohydrates and moistness.
Bread, bagels, whole grain	carbohydrates, B-vitamins fiber	*Dark, whole-grain breads (rye, whole wheat, multi-grain) are preferable to breads made with refined white flour. Breads are not fattening if you limit butter, margarine, cream cheese and mayonnaise.
Pizza, thick crust	calcium, protein, Vitamin A carbohydrates	*Of fast foods, pizza with thick-crust, single-cheese, vegetable toppings (not pepperoni, sausage!) is preferable to burgers. If the pizza is oily, blot off the grease with a napkin.
Popcorn, air-popped	carbohydrates, fiber	*A wholesome, lowfat snack that is preferable to greasy chips. Be cautious of even "lite" commercial brands of popcorn; they can be half fat

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CARBOHYDRATE LOADING: Tips for Endurance Athletes

For 2-3 days prior to a marathon, triathlon or other endurance event that lasts for more than 90 minutes of strenuous exercise, you should super-fuel your muscles by eating a hearty amount of carbohydrate-rich foods. About 60-70% of your calories (3-5 grams carb/lb body weight) should come from grain foods (pasta, rice, cereal), fruits, juices and vegetables. Include small amounts of protein to protect your muscles, but limit fatty foods.

- **Be sure to choose low fat carbohydrates.** When selecting your diet, be careful to choose high carbohydrate foods - not high fat foods. The two often come together, such as *butter on potato* and *cream* in ice cream.

Best choices (highest in carbs):

Poorer choices (lower in carbs):

Spaghetti and pasta meals with tomato sauce	Pizza and pasta meals with lots of meat and cheese
Rice, potato, yams, stuffing - without butter, gravy	French fries, fried rice, buttery potato
Lentils, chili with beans, split pea soup	Meals with lots of meat or cheese
Bread, muffins, bagels - plain or with jam	Donuts, croissants, danish pastry
French toast, pancakes, cereal	Eggs, omelets and breakfast meats
Jam, jelly, honey, syrup	Butter, margarine, cream cheese
Fruit - bananas, pineapple, raisins, figs	Cookies, chips, high-fat snacks
Apple crisp, date squares, fig newtons	Desserts made with lots of butter
Juices - apple, grape, apricot, orange	Beer, wine, alcohol (dehydrating effect)
Blenderized fruit and juice drinks	Milk shakes, frappes
Sherbert, ice milk, frozen yogurt	Ice cream - especially gourmet brands

- **Exercise less.** In addition to eating a high carbohydrate diet, you should exercise less to rest your muscles and allow them the opportunity to stock-up on carbs. The week prior to the event, gradually taper off your exercise, so that you are training only 20 minutes two and three days prior to the event; nothing the day before. Eliminate any last-minute endurance training; you will simply fatigue yourself at a time when rest would be more beneficial.
- **Eat reasonably.** To avoid "getting fat" due to the reduced amount of exercise, eat reasonably, not gluttonously. Focus on carbohydrates, with small amounts of lean protein (to protect your muscles) and minimal amounts of fat. If you have carbo-loaded correctly, you will gain weight -- water-weight (not fat-weight). For every one gram of carbohydrate that you store in your muscles as glycogen, you also store three grams of water. This water becomes available to you during exercise and helps to prevent dehydration.
- **Drink extra fluids.** Lack of fluids can seriously hurt your health and performance. *Prevent* dehydration by drinking extra water and juice when you carbo-load; limit alcohol (which has a dehydrating effect). You should be urinating frequently; the urine should be very light colored, not dark and concentrated.
- **Eat a pre-event breakfast.** The food you eat the days before the event will fuel your muscles. The food you eat the morning of the event helps maintain a normal blood sugar level to fuel your brain and help you think clearly. Eat a comfortable meal 4 hours prior, such as 100-400 calories of toast, cereal or whatever you normally eat prior to your training sessions. Don't try unfamiliar foods that might upset your stomach or digest poorly.
For fluids the morning of the event, drink at least three glasses of water, sports drink or juice up to two hours before the start. (The kidneys will process this liquid in about 90 minutes, allowing time to empty the bladder pre-event.) Drink one to two glasses of water or sports drink 5 to 10 minutes before the start.
- **During the event, drink on a schedule.** Plan to drink about 8 ounces every 20 minutes. Because you need both fluid (to prevent dehydration) and about 60 grams (240 calories) carbohydrate/hour (to enhance stamina), sports drinks or water + solid carbohydrates (banana, sports bars, hard candy) are good choices during the event.
- **After the event, refuel with carbohydrates.** Enjoy the victory dinner, keeping in mind that your muscles need carbohydrates to refuel, as well as sodium, potassium and other electrolytes. Feed them wholesome foods - oranges, bananas, juices, yogurt, fig newtons, potatoes, pasta, pretzels - just as you did prior to the event. Add salt, if you crave it. Drink plenty of non-alcoholic fluids until your urine is a clear-color.

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BREAKFAST IS FOR CHAMPIONS

Every breakfast skipper has a reason for missing this important meal of the day. "I don't have time", "I'm not hungry in the morning" and "I'm on a diet" are three common excuses. Unfortunately, athletes who skip breakfast generally train less effectively, suffer needless fatigue and may perform sub-optimally. They also tend to have trouble concentrating, and work or study less efficiently in the late morning. If you are a breakfast skipper who routinely misses out on this energizing meal, try this experiment: Eat breakfast for three consecutive days and observe the obvious energy advantages. You'll quickly discover that breakfast is indeed the meal of champions!

To help incorporate breakfast into your morning routine, here are some answers to the excuses:

- "I don't have time": You really do have time to do what you want to do. If you can make time to train, you can also make time to invest in your training program by appropriately fueling your muscles. You'll discover that you:
 1. Can think and work better if you've fed yourself within two hours after a morning workout.
 2. Have much more energy during an afternoon workout if you've fueled yourself with a substantial breakfast. If you don't eat breakfast at home, then simply eat breakfast on the run -- a pocket breakfast (bagful of nuts, raisins and granola) at the bus stop, a cheese sandwich on the way to school or work, or a yogurt and muffin at morning break. You don't have to eat breakfast immediately upon rising, but rather within three hours of waking.
- "I'm not hungry in the morning": If you rearrange your current meal patterns, you probably *will* be hungry. Most often, athletes who lack a morning appetite ate their breakfast at bedtime. Evening snacks can certainly curb one's morning appetite...and also contribute to weight gain (if you over-eat), dietary deficiencies (if you replace a wholesome breakfast with nutritionally poor snacks) and muscular fatigue (if you eat inadequate carbohydrates). Chips, cookies, ice cream and other popular evening snacks are high fat foods. Fats don't fuel your muscles. You will better invest in top performance with a carbohydrate-rich sports-breakfast of cereal, pancakes or bagels.
- "I'm on a diet": You'll lose weight better by eating a substantial breakfast, rather than a large dinner. Research indicates that you're more likely to burn off calories that you eat during the daytime, in comparison to eating the same calories in the evening. A wholesome, carbohydrate-rich breakfast not only fuels your muscles but also prevents you from getting too hungry, at which point you simply "don't care" about what you eat and are likely to over-eat "junk food", blow your diet, and cheat yourself of the vitamins, minerals and carbs that you need for top performance. Remember: You're going to eat the calories eventually; you might as well eat them in the morning to prevent yourself from getting too hungry, then overeating. Breakfast invests in losing weight -- not gaining fat.

What's best to eat? Any breakfast is better than no breakfast, but some choices are better than others for your sports diet. Most athletes eat more than enough protein at lunch and dinner. Hence, breakfast is a convenient time to boost carbohydrate intake. High carb choices include cold or hot cereal, pancakes, waffles, french toast, muffins, english muffins, bagels, toast, banana bread, fruit, juice, flavored yogurt, or whatever high-carb foods might be readily available for a non-traditional breakfast -- pasta, baked potato, crackers, thick-crust pizza.

One quick and easy "breakfast of champions" is ready-to-eat cereals with lowfat milk, banana and orange juice. This simple meal can provide important nutrients that support your athletic program:

- * **Carbohydrates** -- the best source of muscle fuel. Carbohydrates should provide at least 60% of the calories in your diet. A breakfast with cereal, lowfat milk, banana and juice provides about 90% carbohydrates -- excellent!
- * **Iron** -- a mineral important for carrying oxygen from the lungs to your working muscles. An iron-rich diet reduces your risk of becoming anemic and experiencing needless fatigue during exercise. By drinking a glass of orange juice along with *iron-enriched* cereals, you'll absorb more iron. Note: the "all natural" cereals such as granola, shredded wheat or GrapeNuts have no additives -- hence no iron added to them. Combine them with enriched brands to enhance your iron intake.
- * **Calcium** -- from the milk or yogurt that you eat along with cereal. Calcium is important for strong bones, as well as muscular contractions. Try to choose *lowfat* milk / yogurt; it is a heart-healthier source of calcium than whole milk products.
- * **Potassium** -- a nutrient that you lose in sweat. Bananas, orange juice and whole grain cereals are potassium-rich foods.
- * **Fiber**-- if constipation is a problem, fiber promotes regular bowel movements and thereby reduces the risk of unwanted pit stops during exercise. Select raisin bran, bran flakes, All-bran, corn bran or any bran cereals.

In summary, breakfast can be a high carbohydrate energy booster for athletes who need to fuel and/or refuel their muscles. Without this morning meal, you're likely to run on fumes, perform less effectively and reduce your intake of nutrients that contribute to top performance. Try these carbohydrate-rich meals for a high energy day:

1. Cereal, banana, orange juice, lowfat milk.
2. Muffins or bagels with jam, yogurt, dried fruit (raisins, apricots, dates, figs, etc.).
3. Pancakes, french toast or waffles with syrup, juice, lowfat milk.
4. Pita with 1-2 slices lowfat cheese, fruit and/or juice.

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RECOVERY AFTER HARD EXERCISE

To fuel the demands of strenuous exercise, you should not only feed your muscles high carbohydrate foods *prior* to strenuous exercise, but also refuel them *afterwards*. By choosing carbohydrate-rich foods and fluids *after* rigorous training and competitions, you will recover faster and minimize chronic fatigue. You might be neglecting your recovery diet if you commonly eat:

- 1) *too much protein*, by filling up on steak, for example, rather than extra potato, rolls and other carbohydrates at the recovery dinner.
- 2) *too many greasy, fatty foods*, such as "eat 'n runners" who survive on whatever is convenient ... often donuts, burgers, hot dogs, mayonnaise-filled tuna subs, french fries, chips and other high fat choices.
- 3) *too few carbohydrates*, such as easily happens if you get *too* hungry and ravenously devour potato chips, peanut butter, cheese chunks, ice cream, cookies and other handy high fat goodies.
- 4) *too few total calories*, such as weight-conscious athletes who mistakenly think that carbohydrates are fattening and thereby diet on protein-rich cottage cheese, tuna, turkey and fish. The rest of their diet (often salads, vegetables, fruits and rice cakes) generally offers too few carbs to replace depleted glycogen stores.

To integrate an optimal recovery diet into both your post-training and post-competition meals:

- #1. **Focus your recovery meal on carbohydrate-rich foods**, because your muscles rely upon carbohydrates for glycogen. For example, choose pancakes (carbs) rather than eggs (protein/fat) for a post-marathon breakfast because your muscles can't store as glycogen the protein and fat in the eggs.
- #2. **Eat these carbohydrate-rich foods as soon as tolerable after a hard workout**. Your muscles are most receptive to replacing glycogen within the first two hours post-exercise. This recovery meal is particularly important if you train twice per day or compete in double events, such as at a swim meet.
- #3. **Eat 200 to 400 calories (50 to 100 grams) of carbohydrate within two hours of the hard workout**. Suggestions: a bowl of cereal with fruit for breakfast, or two cups of orange juice and a banana; a dinner with double servings of rice and vegetables, single serving of chicken. If you have no desire to eat after a workout, simply drink some juice. The fruit sugars will replace the carbohydrates as well as quench your thirst. Target 0.5 gm carbohydrate / pound body weight. Repeat this "dose" two hours later.
- #4. **Eat wholesome fruits, vegetables and juices that contain potassium**, a mineral (electrolyte) that you lose in sweat. Some excellent potassium and carbohydrate-rich choices include oranges or orange juice, bananas, raisins, dried apricots, potatoes and winter squash.
- #5. **If you crave salt, sprinkle a little on your food or select a salty food** such as soup, pretzels or salted crackers. Although you lose a little bit of salt when you sweat, you are unlikely to totally deplete your body's supply unless you exercise hard under extremely hot conditions for more than 4 to 6 hours. You can easily replace salt losses via a hearty recovery meal. Typically, American foods contain 6 to 12 times the amount of needed salt. Typically, hungry athletes consume far more!
- #6. **Drink enough fluids to quench your thirst -- and then more**. If you've become very dehydrated (as indicated by inability to urinate), you may need 24 to 48 hours to totally replace this fluid. Since thirst is a poor indicator of whether or not you've had enough to drink, you should keep sipping fluids until your urine is clear-colored and of significant amount. Dark colored urine is still concentrated with metabolic wastes. It indicates that you are not yet in water balance.
- #7. **Drink natural juices more often than commercial fluid replacers**. Natural juices are rich in potassium, vitamins and carbohydrates - all nutrients that enhance recovery. In comparison, fluid replacement drinks are more dilute (because they are designed for use *during* exercise). Orange juice, for example, contains 20 times more potassium than an equal amount of many popular fluid replacers. Post-exercise juices of all types tend to have more nutritional value as well as more carbohydrates.
- #8. **Keep eating carbohydrate-rich foods for at least two days** after exhaustive endurance exercise to adequately replace depleted glycogen stores. Your muscles need time to carbo-reload.
- #9. **Rest your muscles to allow them the opportunity to store (rather than burn) glycogen**. Rest is an important part of both the training and recovery program. You aren't "being lazy" if you take a day off. You are investing in your future performance.

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