



Recovery Nutrition

1.10

Recovery Nutrition Keys

- Recovery nutrition is very important for athletes training hard daily, competing in multiple games or events within a day or two, or training multiple times per day
- A well-designed recovery nutrition plan can play a critical role in replacing energy stores, repairing muscle tissue, and making maximal athletic gains
- Taking in fluids, carbohydrates, and protein post-workout and post-competition are essential recovery components for replenishing your body
- Studies show that beginning to eat or drink your recovery meal or snack within 30 minutes after a hard workout or competition is ideal
- Increased blood flow to your working muscles post-exercise allows for rapid nutrient replacement
- Focusing on energy-containing fluids can be a good first step toward replenishing your muscles without causing stomach upset

WARNING Waiting a few hours after workouts and competitions to eat and drink appropriate foods and fluids with energy delays exercise recovery. While you may not feel like eating a large meal or a lot of solid food right after training, getting used to a small snack or liquid recovery drink can be the difference-maker for many athletes, especially during heavy training periods. Recovery nutrition is a small nutritional habit that can have a huge impact on performance.

What you need to know

The ultimate goal of post-exercise refueling is to help you fully recover and prepare for the next practice or competition. Consistently consuming a mix of foods and fluids high in carbohydrates and protein (in the right amounts and at the right time) enables you to more rapidly prepare for exercise the next day. Prolonging post-exercise refueling stalls your body in a “breakdown” mode, taking it longer to recover once you do eat.

The 1-2-3 approach to recovery: fluids, carbohydrates, and protein

- 1. Fluids:** Every recovery nutrition plan should include plenty of fluids to help your body get back to your pre-workout or pre-competition body weight. Almost all weight lost during exercise can be attributed to fluid losses. Drink 2–3 cups of fluid for every pound you’ve lost in a workout or competition. Sports drinks are a great recovery option (better than water), as they have carbohydrates (some also have protein) and electrolytes to help you retain fluids better.
- 2. Carbohydrates:** Think of carbohydrate as your body’s “muscle energy replenisher.” When you train hard in workouts or compete at a high level, you use up much of your body’s stored carbohydrate (in the muscle, liver, and bloodstream). Consuming high-carbohydrate foods within 30 minutes “re-stocks” carbohydrate stores for the next workout or competition so it’s available when you need it. Including high glycemic index carbohydrates may be optimal post-exercise. Examples include: sports drinks, fruit snacks, white bagels, waffles, muffins, sweetened rice cakes, sugary cereals or cereals like corn flakes or puffed rice, baked potato chips, melon, pretzels, jelly beans, and honey.
- 3. Protein:** Protein is essential in recovery because it helps repair muscle tissue and reduce muscle breakdown after workouts. So, while carbohydrate refuels the energy in the muscle, protein repairs that muscle so it’s ready to go for the next workout. Protein is also essential for gaining muscle mass (protein synthesis). Thus, to maximize muscle strength and size, add protein to your recovery meal or snack.

Your recovery plan

Have a post-exercise nutrition plan in place to consistently have recovery fuel options at your fingertips. Perhaps recovery shakes or bars are already set up for your team. If so, take full advantage of them every day. Or, maybe you need to bring a recovery snack with you so you hit the 30-minute recovery time slot. Or, you may be in good shape by quickly heading to a dining hall for your meal after workouts. All of these options can work well for making recovery nutrition part of your training plan.

Post-exercise carbohydrates should be easily digested and well-tolerated by you. For example, if your stomach does not tolerate milk products right after competition, it would be unwise to select yogurt. Find high-carbohydrate foods with some protein that are easy to consume and build them into your your daily post-exercise routine. Liquids could be your best option because they are easily tolerated and rapidly digested.

Alternative Meals

Consuming liquid meals and sports bars can be a good way to get carbohydrates and a small amount of protein after competition. Liquid meals digest rapidly and can be beneficial for tournaments, double-headers, or day-long events such as swimming or track and field meets. Sports bars may not provide enough calories to replace a meal, but can be a quick snack after competition.

Food Groups	Best Choices
Grains/Starches	Breads, cereal, rice, pasta, granola bars, cereal bars, potatoes, sweet potatoes, bagels, tortillas, crackers, corn, and peas
Fruits/Juices	Orange, grape, apple, cherry, or cranberry juices; bananas, grapes, apples, melon, berries, or canned fruit
Dairy Products	Milk, chocolate milk, yogurt, smoothies, cheese, cottage cheese
Liquid Meals	Recovery shakes, instant breakfast drinks, chocolate or strawberry milk
Sports Bars	High in carbohydrate (at least 20-30 grams) and moderate in protein (5-20 grams)
Other Liquids	Sports drinks, soy milk, honey

QUICK TIP For quick recovery fuel, look for foods or liquids that contain both carbohydrate and protein. Examples: recovery shakes, instant breakfast shakes, milk, chocolate milk, strawberry milk, yogurt, cereal/milk, soy milk, fruit/yogurt smoothies, peanut butter sandwiches, sports bars, trail mix, trail mix bars, a cheese stick and crackers, or 100% juice and sunflower seeds.

The Right Time and Amount

If you are training hard consistently, your recovery meal may be the most important meal you have during the day. Timing is critical. The longer you wait to refuel, the longer it takes to initiate the recovery process. Take in at least 50 grams of carbohydrates and 15 grams of protein within 30 minutes of finishing exercise AND again every 2 hours for the next 4 hours. The longer or more aerobic your activity is, the more carbohydrates you require.

Timing after workout or competition	Amount of Carbohydrates	Amount of Protein
Within 30 minutes	50 grams +	15 grams +
AND 2 hours post-workout	50 grams +	15 grams +
AND 4 hours post-workout	50 grams +	15 grams +

20 Recovery Options

Remember the 1-2-3 plan for recovery within 30 minutes:

1. Fluids (at least 20 ounces)
2. Carbohydrates (at least 50 grams)
3. Protein (at least 15 grams)

10 Recovery Options for your locker or gym bag:

- Recovery shake (e.g. Gatorade™ Protein Recovery Shake, Muscle Milk Collegiate™, Go Energy Recovery Shake™) + 16 ounces water
- 1 portable 12-ounce chocolate, strawberry, or vanilla milk (e.g. Horizon Organic™ portable cartons) + 1 granola bar + 16 ounces of water
- 1-2 portable pre-made instant breakfast drinks (e.g. Carnation Instant Breakfast™)
- 4 graham cracker/peanut butter square “sandwiches” with an 8-ounce 100% juice box + 16 ounces water
- 16 ounces sports drink (e.g. Gatorade™, Powerade™) + 1 sports bar + 16 ounces water
- 1 cup trail mix (equal parts cereal, sunflower seeds, and dried fruit) + 16 ounces water
- 24 ounces sports drink + 1/3 cup almonds
- 2 high-protein, whole grain mini bagels with peanut butter + 16 ounces water
- 2 oatmeal packets mixed with 2 Tablespoons peanut butter and hot water + 16 ounces water
- 16 ounces sports drink + 1 cup high-protein cereal (e.g. Kashi Go Lean Crunch™)

10 Recovery Options to make quickly on your own:

- Homemade recovery shake #1: 1 cup skim milk + 1 packet instant breakfast mix + 1 banana, blended with ice
- Homemade recovery shake #2: 1 cup lowfat vanilla yogurt + 2 Tablespoons peanut butter + 1 banana + 1 cup skim milk, blended with ice
- Homemade recovery shake #3: 1½ cups vanilla soy milk + 1 cup frozen unsweetened strawberries + 1 cup 100% orange juice, blended with ice
- 1–2 peanut butter and jelly sandwiches + 16 ounces 100% apple juice
- 1 can (2 cups) ready-to-eat chicken noodle soup with crackers and 2 cups skim milk
- 1 turkey/cheese sub + raisins + 16 ounces water or milk
- 1 single-serving macaroni and cheese + 16 ounces skim milk
- 1 cup yogurt with granola + 16 ounces orange juice
- 2 cups whole grain cereal + 2 cups skim milk
- 1 chicken or bean burrito + 16 ounces skim milk or 100% juice

This handout was designed by Sports Dietitians Michelle Rockwell, MS, RD, CSSD and Susan Kundrat, MS, RD, CSSD to provide general education. For specific concerns, refer to your sports medicine team.