



FOODS & FLUIDS FOR **FITNESS ATHLETE**



Get the most out of a workout with the right foods and fluids at the right time. The following recommendations are for the fitness athlete who exercises with goals of fun, recreation, health or maintenance of body composition. When training for a specific event, follow recommendations to improve performance for the related sport. For example, if individuals are training for their first half-marathon, they should follow the recommendations for endurance athletes to ensure they get the most out of their training, perform at their best and have an enjoyable training and race experience. In another example, if an individual is joining a competitive recreational basketball league, they should follow the recommendations for team sport athletes.

PRE-WORKOUT FOODS & FLUIDS

It is not uncommon for individuals to arrive at the gym for their workout already dehydrated before they even start sweating!¹ To avoid starting at a deficit, about 4 hours before a workout drink 0.07 to 0.10 oz of fluid per pound of body weight (9-13 oz for a 130 lb woman).² The best way to determine hydration status is to monitor urine color. Prior to beginning exercise, urine should be light yellow, like lemonade (not clear). If it is dark in color, consider drinking more fluid prior to beginning exercise.

Carbohydrate is the body's powerhouse fuel and without it exercisers lack energy, experience muscle fatigue and are unable to work at high intensity. In the 3-4 hours before exercise, individuals should eat about 0.45-1.8 g of carbohydrate per pound of body weight, or about 58-234 g for a 130 lb woman,³ minimizing fiber, protein and fat.⁴ However, the exact amount of carbohydrate consumed at a given time will depend upon how the stomach reacts – athletes should use trial and error and keep a journal to find a time, type and amount of carbohydrate that works for them and provides the energy needed for their workout.

PRE-PRACTICE OR GAME KEY MESSAGES

- Fitness athletes often start a workout already dehydrated. Prepare to begin a workout in a hydrated state so you don't start at a deficit!
- Eat a carbohydrate-rich snack before a workout for the energy to start strong.



~50 G CARBOHYDRATE SNACKS

(200 calories from carbohydrate)

- 3-inch turkey sub and 12 oz of Gatorade
- 4 1/2 oz of fruit-flavored fat-free yogurt and 15 mini-pretzels
- Large banana and graham crackers (2 "sheets")
- 1 package Gatorade Prime Energy Chews (6 chews have 21 g of carbohydrate) and 12 oz of Gatorade



DURING-WORKOUT FOODS & FLUIDS

Enough fluid should be consumed during a workout to minimize changes in body weight. Remember, changes in body weight over the course of one workout are related to fluid losses, not loss of fat or gain in muscle! To determine an individual's sweat rate, measure body weight before and after a workout. Also, keep track of all the fluid you consumed. A rough estimate of your sweat rate can be obtained by using the following equation: sweat rate (L/h) = (weight loss (lbs) – fluid intake (L))/exercise time (hours). Reference the Sweat Rate Calculator on Page 8.

Exercising in hot, humid conditions such as hot yoga, cycling, running or tennis in the summer months calls for special attention to fluid intake. Dehydration in the heat can increase body temperature to dangerous levels, leading to heat illness. To feel good, stay healthy and get the most out of a workout in the heat, make sure to get adequate fluids before and during exercise.

Remember that sweat contains more than just water, and sodium is the key electrolyte lost in sweat. Consuming fluid with sodium is important because sodium helps maintain the physiological desire to drink and helps retain the fluid consumed.⁵ Consuming a low-calorie beverage with sodium, such as G2, Gatorade G Zero, GFit or Propel, can help replace the fluids and electrolytes lost in sweat.

SODIUM AND CARBOHYDRATE CONTENT OF BEVERAGES

	Carbohydrate [g/12 oz]	Sodium [mg/12 oz]
Propel Fitness Water	0	160
G Zero	0	160
Gatorade Lower Sugar	5	160
Gatorlyte	7	295

DURING WORKOUT KEY MESSAGES

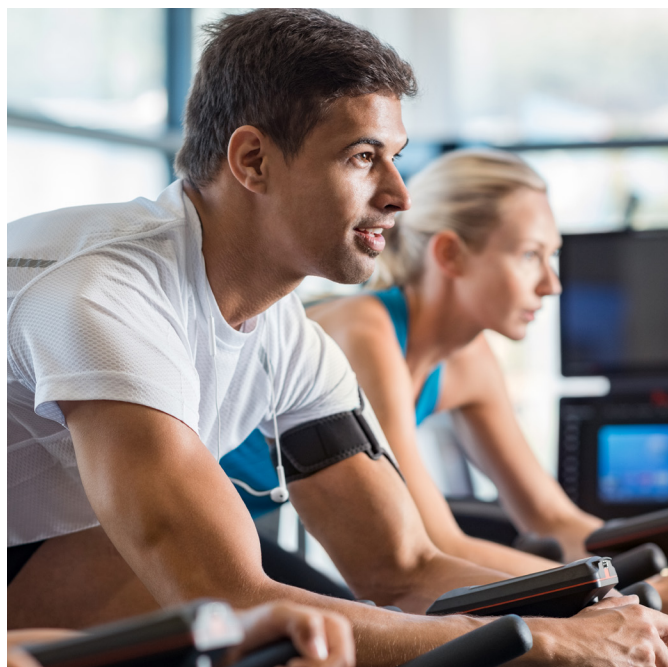
- Drinking fluid with sodium will help you to stay hydrated during your workout.
- Add carbohydrate on those days when your workout is longer and more intense, or if you are training for a specific event.



POST-WORKOUT FOODS & FLUIDS

Replacing lost fluids helps prepare the body for the next day's workout. Remember, weight lost during exercise represents fluid loss through sweat and not fat loss. Rehydrating after a workout can help you feel better for the next day's workout, so drink ~20-24 oz of fluid with sodium for every pound of weight lost during exercise.²

A small amount of high-quality protein, particularly whey and milk protein,⁶ can help repair and build lean muscle mass. Individuals focused on muscle recovery should consume ~20 g of protein shortly following exercise to enhance synthesis of new muscle proteins.⁶ For individuals looking to gain muscle as a result of their training, they can get more specific with their protein intake at 0.25-0.3 g/kg.⁷ Research is emerging on the use of plant-based proteins for recovery and muscle gain. Athletes consuming plant-based proteins should ensure they are eating a variety of foods in order to meet their essential amino acid needs to support recovery and training adaptations.⁸



POST-WORKOUT KEY MESSAGES

- Rehydrate after a workout with ~20-24 oz of fluid for every pound of body weight lost (if weight loss occurs during exercise, it's from fluid loss!)
- Eating protein shortly after exercise will improve recovery and help get the most out of a workout.

RECOVERY FOOD OPTIONS

	Calories	Carbohydrate [g]	Fiber [g]	Protein [g]	Fat [g]	Sodium [mg]
Option 1 Gatorade Protein Recovery Shake	270	45	1	20	1.5	320
Option 2 Propel Clear Protein Powder <i>mixed with water</i>	90	4	3	20	0	210
Option 3 Fruit & Yogurt Smoothie <i>2/3 cup non-fat vanilla Greek yogurt, 1 cup skim milk, 3/4 cup frozen mixed strawberries</i>	280	49	7	22	0	180
Option 4 Evolve plant-based protein powder <i>mixed with water</i>	160	21	10	20	2.5	380





AN EXAMPLE: PUTTING THE SCIENCE-BASED RECOMMENDATIONS INTO PRACTICE

ATHLETE PROFILE

Name: Mark

Age: 25

Weight: 170 lbs (77 kg)

Purpose of Consultation: Mark was a three-sport athlete in high school and remained active in intramural sports in college. In the years since college, he has played in recreational softball, basketball and kickball leagues, but now focuses on going to the gym each night after work and every Saturday. At the gym, his usual routine is a mix of cardio and strength training. Mark has been dedicated to cardio workouts for years but has lately felt the need to mix up his routine and would like to focus more on gaining muscle mass. He has hired a personal trainer at his gym, who has put together a cross-training program focusing more on strength training than Mark has done in the past. Now Mark is looking to add a nutrition plan in order to get the most out of this new program, specifically to help promote his ability to increase muscle mass.

THE SPORTS NUTRITION ADVICE

Recovery nutrition practices are important to help get the most out of adaptations to training. In Mark's case, the adaptation he is looking for is increased muscle mass with strength training. Each time he does a strength workout, a small amount of muscle tissue is broken down, which then not only repairs itself but over time can help the overall muscle become bigger (known as muscle hypertrophy). In order for this process to be most effective, Mark should be eating protein shortly after each exercise session, since the protein he eats provides the building blocks for new muscle – without eating protein, his training program will not be as effective.

Currently, after a workout, Mark goes home and eats his next meal whenever he feels hungry. He does not have a recovery nutrition strategy. We have suggested to Mark that he plan his recovery food ahead of time so he has it

at the gym with him when he is finished. Since his goal is to increase muscle mass, Mark should look to eat ~0.3 g/kg protein, or 23 g, shortly after training and then every 3-4 hours throughout the day. He was worried that 23 g wasn't enough, but we assured him research shows this is the right amount and more is oxidized (burned up) by the muscle.⁶ Luckily, Mark likes dairy foods, since whey and milk have been shown to be the most effective for muscle protein synthesis following training.

Mark is never very hungry after his workout, so we suggested a beverage or shake as his best option. His gym sells the Gatorade Protein Recovery Shake, so one of his options is to purchase that product on his way out of the gym and drink it on his way home. Another idea is to put a scoop of Gatorade Whey Protein Powder, Muscle Milk 100% Whey Protein Powder or Evolve plant-based protein powder in a container and put it in his gym bag with the rest of his equipment and he can add water after his workout.

Lastly, beyond good recovery nutrition, we suggested to Mark that he follow good overall nutrition and sports nutrition habits such as having a carbohydrate snack before a workout for energy and making sure he is hydrated throughout the day, during and after his workout. Additionally, Mark could work with a sports dietitian for an overall nutrition plan so he is meeting his energy needs to support muscle growth and incorporate the right amount of protein in snacks throughout the day.

Any opinions or scientific interpretations expressed in this document are those of the author and do not necessarily reflect the position or policy of PepsiCo, Inc.

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CALCULATIONS/YOUR WORKSHEET

1. BEFORE-EXERCISE CARBOHYDRATE NEEDS

A. Pre-exercise carbohydrate intake = _____ body weight (lbs) * 0.45 g = g carbohydrate

2. BEFORE-EXERCISE FLUID NEEDS

A. 4 hours prior to exercise:

_____ Body weight (lbs) * 0.07 oz/lb = oz

TO

_____ Body weight (lbs) * 0.10 oz/lb = oz

3. DURING-EXERCISE FLUID NEEDS

A. Pre-exercise weight = _____ lbs

B. Fluid consumed during exercise = _____ L

*(_____ fluid oz / 33.8 = _____ L)

C. Post-exercise weight = _____ lbs

D. Weight change = Pre-exercise weight _____ lbs - Post-exercise weight _____ lbs = lbs

E. Exercise time = _____ hours

F. Sweat rate = (Weight change _____ + Fluid intake _____ L) / _____ hours = L/h

4. POST-EXERCISE FLUID NEEDS

Weight change = Pre-exercise weight _____ lbs - Post-exercise weight _____ lbs = lbs

Fluid needs:

_____ Body weight lost * 20 oz = oz

TO

_____ Body weight lost * 24 oz = oz

5. POST EXERCISE PROTEIN NEEDS

About 20 g is appropriate for most athletes; however, to calculate your individual needs use this equation:

body weight _____ (kg) * 0.25 g = g protein

TO

body weight _____ (kg) * 0.3 g = g protein

