Editorial

Requirement of Food and Fluid for Body Fitness Before, During and After Exercise

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Recently, the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine published a joint position statement regarding nutrition and athletic performance that included recommendations about food and fluid consumption before, during, and after exercise[1].

Appropriate fueling before, during, and after exercise can assist in supporting all of the following: energy balance, weight management, health, and fitness.

Before Exercise:

In general, before-exercise meals should be consumed 3 to 4 hours before exercise. Meals should contain between 1 to 4 g CHO/kg or 0.5 to 2 g CHO/lb of body mass[1] (e.g., whole grains, cereals, pasta, rice, potatoes, vegetables, fruit), moderate protein (e.g., chicken, tofu, fish, low fat dairy, eggs), and some fat (e.g., olive oil, nuts). To meet weight loss goals, half of the plate should be from vegetables and fruit, one fourth of the plate from lean protein, and the rest from whole grains or legumes (e.g., beans, lentils). This approach offers a balanced, nutrient-dense meal that is relatively low in calories but satisfies the appetite[2].

Thus, more processed, easily digestible CHO, including starchy vegetables, are appropriate for prolonged exercise, high-intensity or intermittent-type physical demands because these foods can be absorbed quicker than less processed starches, and if consumed in higher amounts and sufficiently before the onset of exercise, they contribute to stored energy (e.g., liver and muscle glycogen) for the exercise session.[3]

Four hours before a workout, individuals are advised to drink 5 to 7 mL of water or sport drink/kg body mass (~1.5 to 2 cups)[4].

During Exercise:

CHO intake during exercise has been shown to maintain energy levels and improve exercise capacity and performance of endurance and intermittent type sports.[5,6,7]

Fluid replacement during exercise should occur according to sweat rate, which can vary with environmental factors such as heat and humidity, exercise intensity, sport, age, and sex.[4]

After Exercise:

The aim of recovery nutrition is to replace what is lost during exercise (e.g., fluid, glycogen) and to support an optimal hormonal and metabolic environment to promote muscle building and repair, ultimately resulting in training adaptations. Therefore, the initial strategy for recovery nutrition should include fluid, electrolytes (e.g., sodium), CHO, and protein.

To achieve optimal rehydration after exercise, 1.5 times more fluid should be consumed than what was lost. Consuming rehydration beverages with electrolytes or consuming water with a snack and continuing to rehydrate with subsequent meals/ snacks will optimize fluid and electrolyte replacement.

The window for optimal recovery of muscle energy (glycogen) stores ranges from 30 minutes to 4 hours after exercise. To fully replenish glycogen stores (e.g., after a marathon, soccer match, or heavy 2-hour lifting protocol), 24 hours are needed generally[8].

Generally don't need to refuel with carbohydrates after a modest activity like a brisk walk. If your exercise was more intense, it probably depleted your glycogen reserves, which is the body's preferred energy source for intense exercise. Muscle tissue starts to break down when the muscles' glycogen stores are low. Eating carbs is essential for supporting the body's repair and regrowth. "Carbohydrates help the body release insulin after exercise, which replenishes the glycogen stores that were just depleted during your workout. Pairing carbs with protein improves how well they accomplish this. The pace at which the body stores glycogen is accelerated by the combination of proteins and carbohydrates.

Carbohydrates help prevent post-workout fatigue. Reintroducing carbohydrates to your diet can make you recover more quickly and with less fatigue. Additionally, studies show that eating carbohydrates after exercise increases one's capacity for endurance during subsequent workouts.

Carbohydrates help blood sugar control and blood sugar levels drop when you exercise in most cases. Never hold off on grabbing a food that is high in carbohydrates to bring your glucose back in the positive range. By doing this, you can avoid unpleasant hypoglycemia symptoms including trembling, headache and a quick heartbeat.

Carbohydrates aid in Muscle Recovery. Although you may believe that protein is the only macronutrient that helps you gain muscle, carbohydrates also play a supportive role in this process. Amino acids are the building blocks of protein, and carbohydrates help them reach muscles more quickly, accelerating muscular growth and recovery.

Carbohydrates lower cortisol levels. In response to low blood sugar, cortisol – often referred to as "the stress hormone" – increases. It's possible that replenishing your carbohydrate reserves to maintain a stable blood sugar level will also lower cortisol levels.

After exercise complex carbohydrate foods include whole grains, vegetables, beans, and potatoes, which are also high in fibre. Eating high-fibre foods soon after engaging in vigorous exercise may occasionally cause digestive issues. Simple carbohydrates may be tolerated better post-workout.

The Academy of Nutrition and Dietetics advises consuming carbohydrates an hour after a strenuous activity.

Recent research suggests that consuming approximately 15 to 25 g of protein, typically found in milk (8 g of protein per cup), a Greek yogurt (15 to 20 g of protein per cup), or commercially available recovery products (e.g., CHO protein mix, CHO-protein bar), is the maximum needed to stimulate muscle repair and growth after exercise. Protein should be ingested as part of a recovery snack or beverage as soon as is possible after exercise, especially after resistance exercise.[9]

You can add after heavy exercise the following proteins;

Hard-Boiled Egg

Make a batch of hard-boiled eggs and keep them in the refrigerator for a quick, gluten-free, grab-and-go snack. Each large egg provides 6 grams of protein, 5 grams of fat, and less than a gram of carbohydrate. Egg whites offer 4–5 grams of protein and almost no fat. The yolk provides about 2.7 grams of protein and different types of fat, including healthy mono- and polyunsaturated fats.

Cottage Cheese with Blueberries

A 3.5 ounce serving of 2% low-fat cottage cheese provides 11 grams of protein, 84 calories, 2.3 grams of fat, and 4.3 grams of carbohydrate.

Chia Pudding

Chia seeds are full of fibre, protein, and healthy omega-3 fatty acids. One ounce of chia seeds provides 4.7 grams of protein, 138 calories, 8.7 grams of fat, and 12 grams of carbohydrate.

Tuna Salad

Fresh, canned, or water-packed tuna is a great source of protein and there are so many ways to prepare and eat it. A whole can (165g) of tuna provides 42 grams of protein, 191 calories, 1.4 grams of fat, and 0 grams of carbohydrate.

Mixed Nuts

Plain or roasted nuts are delicious, crunchy, and easy to eat,15 making them a perfect high-protein snack. Have a generous handful (about ¼ cup) to get 6 grams of protein. Almonds may be one of the most popular nuts, but you also can choose pecans, macadamia nuts, or even Brazil nuts. All have plenty of protein.

Chilled Shrimp

Cooked, chilled shrimp is a great high-protein snack to grab when you need something light but meaty. A single 3-ounce (85 gram) serving of shrimp provides about 20.4 grams of protein, 84 calories, 0.2 grams of fat, and 0.2 grams of protein. The number of shrimp in a single serving will vary depending on the size and the type of shrimp you buy. Shrimp is also a great source of energising vitamin B12, and brain-boosting choline along with zinc, iron, and selenium.

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