Fueling Endurance Sports for Optimal Performance

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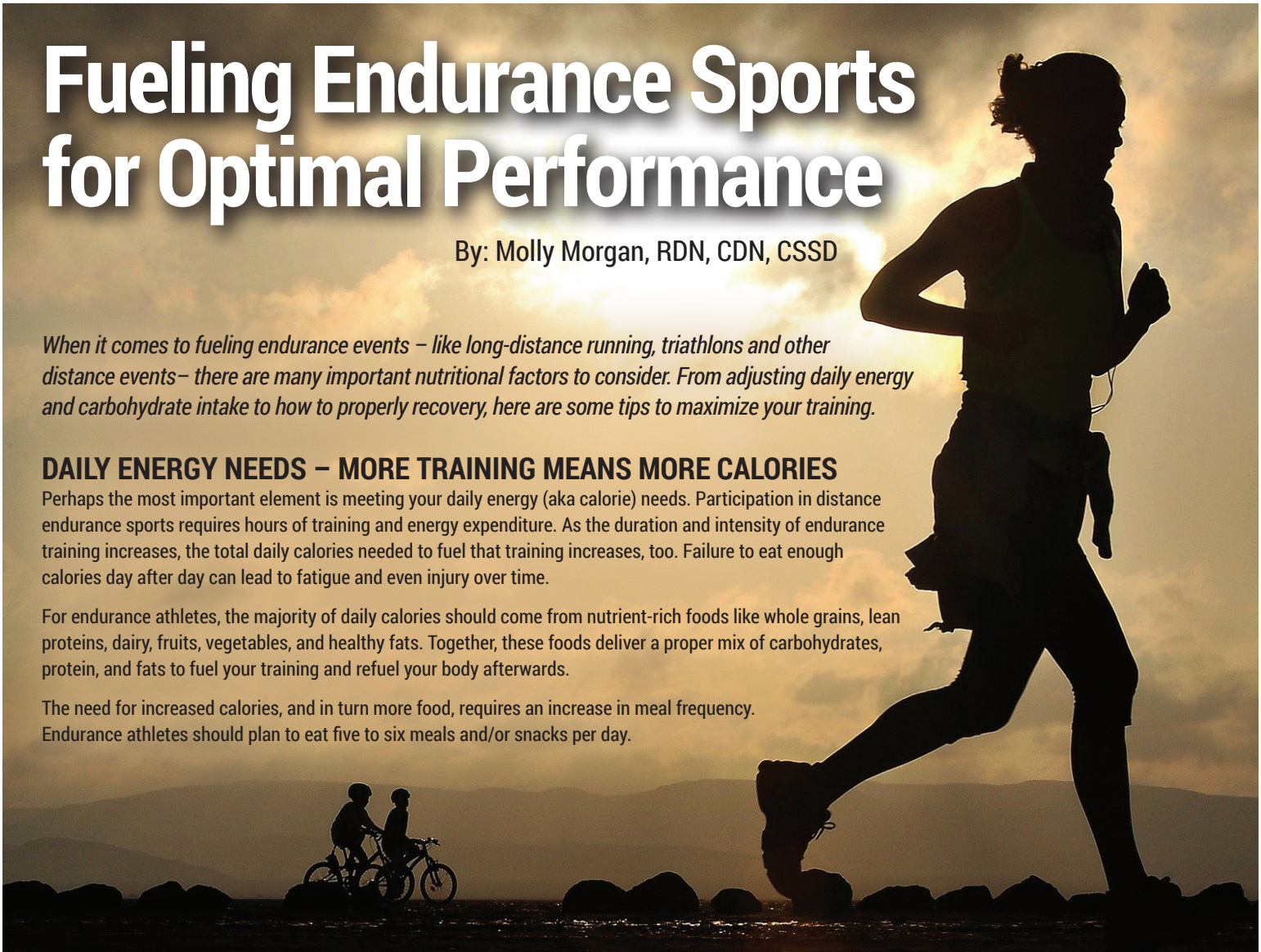

When it comes to fueling endurance events – like long-distance running, triathlons and other distance events– there are many important nutritional factors to consider. From adjusting daily energy and carbohydrate intake to how to properly recovery, here are some tips to maximize your training.

DAILY ENERGY NEEDS – MORE TRAINING MEANS MORE CALORIES

Perhaps the most important element is meeting your daily energy (aka calorie) needs. Participation in distance endurance sports requires hours of training and energy expenditure. As the duration and intensity of endurance training increases, the total daily calories needed to fuel that training increases, too. Failure to eat enough calories day after day can lead to fatigue and even injury over time.

For endurance athletes, the majority of daily calories should come from nutrient-rich foods like whole grains, lean proteins, dairy, fruits, vegetables, and healthy fats. Together, these foods deliver a proper mix of carbohydrates, protein, and fats to fuel your training and refuel your body afterwards.

The need for increased calories, and in turn more food, requires an increase in meal frequency. Endurance athletes should plan to eat five to six meals and/or snacks per day.

CARBOHYDRATES – THE PRIMARY FUEL FOR ENDURANCE SPORTS

While carbohydrates, proteins, and fats are all important nutrients, carbohydrates are the preferred fuel source for working muscles. Endurance athletes in particular rely more heavily on carbohydrates than the other two nutrients as a fuel source. Carbohydrates generate more cellular energy (aka ATP or adenosine triphosphate) per volume of oxygen, compared to fat. And, long-distance endurance activities require a continuous oxygen supply and carbohydrates as primary fuel in order to keep your body going.

After you eat carbohydrate-rich foods, the body stores it as glycogen in your muscles and your liver. There is some glucose in the blood stream, as well. It's recommended to eat carbohydrate-rich foods prior to exercise so that you start long-distance activity with glycogen-filled muscles and have a steady stream of fuel while you train.

There's only one issue. Unlike fat, the body doesn't have the capacity to store unlimited amounts of carbohydrates. Once your glycogen stores are used up, they are gone. Carbohydrate depletion can be linked to fatigue and reduced performance, making daily carbohydrate intake crucial to achieving optimal performance.

HOW TO DETERMINE DAILY CARBOHYDRATES NEEDS

Endurance athletes need adequate carbohydrates to maximize performance and training gains. However, the amount of carbohydrate the body needs can vary throughout training cycles. Daily carbohydrate recommendations are based on the duration and intensity of the exercise.

Use the following guide to help you understand your daily carbohydrate needs:

- Moderate exercise (1 hour/day): consume 5 – 7 grams of carbohydrate per kilogram of body weight, per day
- Moderate to high intensity exercise (1 – 3 hours/day): consume 6 – 10 grams of carbohydrate per kilogram of body weight, per day
- Ultra-endurance athletes/extreme daily activity (4 – 5 hours): may need to consume up to 8 – 12 grams of carbohydrate per kilogram of body weight, per day

TIP: To calculate your body weight in kilograms, divide your body weight by 2.2.

For Example: a 150- pound athlete would be 150 / 2.2 = 68 kg

WHY SHOULD YOU CONSUME CARBOHYDRATES DURING EXERCISE?

Carbohydrates play an important role during exercise, especially endurance training or competitions lasting longer than 60 minutes. For short training sessions, lasting less than one-hour, consuming carbohydrates during activity typically isn't needed. You can, however, use your shorter training days to trial nutrition strategies and products to see how your body responds to them and how they make you feel.

If you plan to compete in an endurance event that will have fueling stations along the route, try to find out what products will be offered, and trial those products during your training. That way, you will know if you like the product and whether or not your body tolerates it. There is great variation in what one person tolerates compared to another, so it's important to identify what works for you.

I mentioned above that the human body has a limited ability to store carbohydrates. Once your glycogen stores get depleted, your performance will start to decline. To keep going, you may need to consume additional carbohydrates during exercise or your event.

HOW MANY CARBOHYDRATES SHOULD YOU CONSUME DURING ENDURANCE EXERCISE?

Just like calculating your daily carbohydrate needs, how much you need during exercise depends on the duration and intensity of the activity. Use the following guidelines to help you understand how much carbohydrate to consume during your exercise session or event.

- **Activity lasting 1 – 2.5 hours: 30 – 60 grams of carbohydrate per hour, consumed every 10 – 15 minutes to spare carbohydrates stores in muscle (glycogen)**
- **Activity lasting > 2.5 hours: 30 – 70 grams of carbohydrate per hour or up to 90 grams of carbohydrate per hour, if tolerated**

During exercise, it is best to vary the sources of carbohydrates. Absorption and utilization of carbohydrates is maximized when your body gets a combination of sugar sources. For example, eating too much fruit can lead to an overconsumption of fructose, or fruit sugar. That can lead to gastrointestinal distress during your activity. When selecting products, check the sources of carbohydrates to see if they contain both glucose and fructose. Try to consume a combination of both sugar sources, to reduce your chance of developing gastrointestinal distress.

REFUELING WITH CARBOHYDRATES AFTER EXERCISE

Your refueling meal or snack should also contain carbohydrates. A post-exercise balanced meal will allow you to refuel the body and replenish stored carbohydrates (glycogen) within a 24-hour period. If recovery time between training sessions or competition is less than four hours, a more aggressive carbohydrate refueling strategy will be needed.

If you need to refuel quickly after exercise, a snack that contains both carbohydrates and protein is best. A great example would be chocolate milk as it contains the ideal ratio (3:1) of carbohydrates to protein.

Something quick and easy, like a smoothie or a shake, can deliver a balance of carbohydrates, protein, and fluids. Here is my favorite recovery recipe. It's an easy and delicious Peanut Butter (PB) Chocolate Banana Shake!

PB CHOCOLATE BANANA REFUELING SHAKE *Serves 1*

Ingredients: 1 cup 1% chocolate milk • 1 frozen banana • 2 tablespoon peanut butter

Directions: Combine all the ingredients in a blender. Blend until icy and smooth. **Tip:** buy a bunch of bananas, peel, and place in a container in the freezer to add to refueling shakes!

Nutrition Facts: 470 calories, 19 grams fat, 5 grams saturated fat, 300 milligrams sodium, 63 grams carbohydrates, 7 grams fiber, 44 grams sugar (from both glucose and fructose), 18 grams protein.

There are many nutrition strategies on how to properly fuel and refuel for endurance training and competition that go beyond those discussed here. However, a solid hydration plan and a customized daily intake plan can all be helpful to maximize your performance. For additional help building a strong, individualized nutrition plan that supports your training efforts, consider consulting with a local sports dietitian.