

Nutrition for Endurance: Cycling

Superior cycling ability comes from good training. However, without good food choices and the correct timing of meals, your training and performance will suffer.

You need a fueling plan that includes the right balance of carbohydrates, protein, fat, vitamins and minerals, and the correct amount of fluids.

General and Daily Nutrition for Cyclists:

Carbohydrates:

Carbohydrates are the best fuel for working muscles. Plan to include carbohydrates in all of your meals and snacks.

Carbohydrates are your pre-dominant fuel source during moderate to high-intensity exercises with extended duration (>90 minutes).

Storage forms of carbohydrates in the body are blood glucose, liver glycogen, and muscle glycogen. However, these amounts are limited so consuming adequate amounts of carbohydrates on a daily basis is necessary to replenish the limited glycogen storage between daily training sessions.

Fat and protein cannot supply enough energy at an efficient rate to ensure optimal performance.

Daily carbohydrate needs are based on your hours of training per day and your weight regardless of gender. Your daily carbohydrate needs are as follows:

- 1 to 2 hours of training per day requires about 2.5 to 3.5 grams of carbohydrate per pound of body weight per day.
- 2 to 3 hours of training per day requires about 3.5 to 4.5 grams of carbohydrate per pound of body weight per day.
- 4 to 6 hour or more of training per day requires about 5 to 6 grams of carbohydrate per pound of body weight per day.

For example: a 160 pound person that is training an average of 2 hours per day will need 560 grams of carbohydrates for the entire day (e.g. $160 \times 3.5 = 560$ grams of carbohydrates).



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Choose foods with lots of carbohydrates, such as rice, pasta, potatoes, yogurt, fruit smoothies, cereals, fruits, crackers, breads, rolls, muffins, energy bars or sports drinks.

Some commonly eaten foods while training and their corresponding grams of carbohydrates listed below:

½ cup cooked pasta, rice, potato or any other grain provides about 15 to 20 grams of carbohydrate.

1 medium size piece of fruit, **½ cup** of fruit juice and **¼ cup** of fruit provides 15 grams of carbohydrate.

1 cup of milk and **¾ cup** of non-fat plain yogurt provides about 15 grams of carbohydrate.

Protein:

You need protein for muscle growth and to repair muscle damage after exercise.

You also need protein to make red and white blood cells. Red blood cells move oxygen to the muscles and white blood cells make up your immune system.

Your body uses protein to make hormones and enzymes, which help regulate metabolism.

Recommended protein intake per day is 0.6 to 0.8 grams per pound of body weight per day.

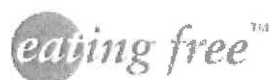
Good sources of protein include fish, chicken, turkey, beef, low-fat milk, cheese, yogurt, eggs, nuts, and soy.

Fat:

You need fat for energy.

Fat also helps your body to use some vitamins as well as plant chemicals known as “phytochemicals.” Phytochemicals are antioxidants which help your immune system.

Fat helps move substances in and out of cells, and it helps keep your brain and nervous system healthy.



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Cyclists should eat at least 0.45 grams of fat per pound of body weight per day. Choose heart-healthy fats, such as canola oil, olive oil, avocado and nuts.

Vitamins and Minerals:

Vitamins and minerals do not give you more energy, but they help to unlock the energy stored in food so your body can use it as fuel.

Take a multi-vitamin/mineral supplement to ensure you are getting adequate amounts.

Training Nutrition for Cyclists: Fueling before, during and after training

NOTE: The following recommendations are for days that you are training 90 minutes or more.

Pre-cycling Fueling

Eating prior to your cycling event, maximizes your endurance potential by “topping off” muscle and liver glycogen stores. The timing and the amount of carbohydrates consumed are key components to starting your training session with a full tank of glycogen.

Recommendations for pre-cycling fueling:

1 to 2 hours before you train consume 0.5 to 1 gram of carbohydrate per pound of body weight. For example, a 160 pound person should consume 80 grams of carbohydrate one hour before his/her ride (e.g. $0.5 \times 160 = 80$ grams of carbohydrate)

Avoid high fiber carbohydrates and experiment with different sources of carbohydrates until you find what works for YOU. The source of carbohydrate is not as important as the amounts of carbohydrate consume. Choose sources of carbohydrates that you can tolerate. This is the time to experiment so when the big week comes you know what works for YOU.

Meal samples for pre-cycling include:

- 1 cup cooked oatmeal (30g) + 3 Tbsp of raisins (23g) + yogurt with fruit flavor (30g). Total carbohydrate = 83 grams
- 1 bagel (60g) + 1 Tbsp of jam/jelly (15g). Total carbohydrate = 75 grams



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- Smoothie: 1 large banana (30g) + 8 fl. oz fruit juice (30g) + Yogurt non-fat plain (15g). Total carbohydrate = 75 grams
- 1 Clif bar (45g) + 1 large apple (25g) + 8 oz of Powerade (17g). Total carbohydrate = 87 grams

Note: It is acceptable to eat plus or minus 10% of your calculated amount.

During cycling fueling

Fueling while riding will improve performance by maintaining blood glucose levels and carbohydrate oxidation. It is important to experiment with different types of carbohydrates during your training period in order to choose what works best for YOU.

Energy bars, gels, and drinks can boost calorie intake and can be eaten on the bike. When choosing an energy bar, look for one that gets most of its calories from carbohydrates, not from protein or fat. If you use gels, remember that they are concentrated carbohydrates that should be washed down with fluids.

Find an energy bar that tastes good to you, and try eating it while training well before the event. Never try anything new during the AIDS/LifeCycle event.

It is recommended that riders take in 0.3 grams of carbohydrates per pound of body weight for every hour to improve endurance performance either as food or fluid. For example: a 160 pound person should consume 50 grams of carbohydrate for every hour he/she is riding ($0.3 \times 160 = 50$ grams of carbohydrate)

Sample meals:

- 1 Clif Shot block (24g) + 16 oz Powerade (32g). Total carbohydrate = 56 grams
- 2.5 Scoops of performance drink (55g). Total carbohydrate = 55 grams
- 1 banana (30g) + 1 Luna bar (25g). Total carbohydrate = 55 grams

After cycling fueling

Having food after you ride facilitates rapid refilling of carbohydrate stores in order to



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prepare for your next training session. Fueling after your training is very important for those weekends when you are training both days Saturday/ Sunday and specially during the AIDS/LifeCycle event.

Right after your training ride day approximately 15 minutes and no later than 30 minutes you should consume 0.6 grams of carbohydrate per pound of body weight plus 6 to 20 grams of protein.

Then 2 hours after the last post-exercise meal, you should again consume 0.6 grams of carbohydrate per pound of body weight plus 6 to 20 grams of protein.

Many times right after the exercise a rider may prefer a recovery drink. Find a recovery drink that meets your nutrition requirements. You can always just eat food and not a recovery drink, again it is not the source that is important but the amounts of carbohydrates needed.

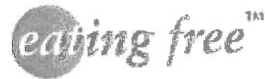
For example: a 160 pound person should consume right after his/her ride 96 grams of carbohydrate + 6 to 20 grams of protein and two hours later again consume 96 grams of carbohydrate + 6 to 20 grams of protein.

Sample meal:

- **Right after:** 4 scoops of recovery product drink (64g of carbs + 20g protein) + cliff bar (45g carbs + 10g protein). Total carbohydrate and protein= 109 grams and 30 grams, respectively.

Right after: 16 oz of low fat chocolate milk (60g of carbs + 16g of protein) + 1 large banana (30g). Total carbohydrate and protein = 90 grams and 16 grams, respectively.

- **Two hour after:** 1 bagel (60g) + 8 oz of fruit juice (30g) + 3 slices of low fat cheese or 3 oz of chicken/turkey breast (21g of protein). Total carbohydrate and protein = 90 grams and 21 grams, respectively.
- **Two hour after:** 2 cups of cooked pasta (100g) + 1 cup marinara sauce (10g) + 3 oz of chicken/turkey breast. Total carbohydrate and protein = 110 grams and 21 grams, respectively.



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During the week of the AIDS/LifeCycle Event

This is the time that you will put all your training to the test.

Don't try anything new. By the time you begin the week you should know what carbohydrates work best for you and what amounts of carbohydrates, protein and fat you should be consuming.

During this week you will be riding many hours per day for about seven days. Therefore, you may need to consume the higher range of carbohydrates per day.

4 to 6 hours or more of training per day requires about 5 to 6 grams of carbohydrate per pound of body weight per day.

Use the same guidelines that you use for fueling before, during and post cycling while training.

Fluids

It can be challenging to get enough fluids when you ride. Road cyclists can only carry two water bottles or hydration pack. Even so, you need to be sure to drink enough.

Below are some common factors that influence sweat losses:

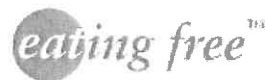
- Duration and intensity
- Environment condition
- Type of clothing
- Body weight
- Genetic predisposition
- Heat acclimatization state
- Metabolic efficiency

General Guidelines for Your Fluid Intake

Pre-cycling:

Two hours before cycling you should consume between 14 to 22 ounces of fluid.

During cycling:



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Consume 6 to 12 oz every 15-20 minutes, depending on calculated sweat rate (explained below). You should consume an average of 1 gram of sodium per hour.

After cycling:

Drink 16 to 24 ounces for every pound lost during exercise. You should incorporate beverages and snacks that contain sodium.

Tips:

If riding in a hot and humid environment, use extra sodium.

Consume higher sodium foods 1 or 2 days before long rides.

Drink fluids that contain sodium. (i.e. sports drinks such as Powerade) during and after exercise.

Calculating your fluid needs

Not everyone needs the same amount of fluids. One size does NOT fit all. Figure out your sweat rate so you can create a fluid plan that meets your needs.

Guidelines for calculating your fluid needs:

Your weight before exercise minus your weight after exercise = pounds lost through insensible losses and sweat

Insensible losses are the water that passes through the skin and is lost by evaporation, and evaporative water loss from the respiratory tract.

Weighing before exercise:

- No clothing or very little clothing
- Do not drink any water after weighing. (Note: It is ok to drink water before you weigh)
- Do not urinate after weighing

Then go and perform 1 hour of vigorous exercise. **DO NOT** drink any water while training for this hour.

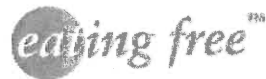
Weighing after exercise

- No clothing
- Do not drink any water before weighing
- Do not urinate before weighing

For every pound lost you must consume 16 oz of fluid.



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For example: A person's weight was 160 pounds before exercise and trains for one hour. After training the scale shows their weight to be 158 pounds. Since 2 pounds were lost and you must consume 16 oz for every pound, this person must consume 32 ounces of fluid per hour of riding.

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