PERFORMANCE NUTRITION

Fueling Your Endurance Sport

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Nutrition for Athletes: Why it Matters

As an athlete, you're constantly chasing progress—setting goals, putting in the work, and fine-tuning every detail of your training. However, one of the most important pieces of the performance puzzle often gets overlooked: nutrition. How you fuel before, during, and after training directly impacts how well you adapt, recover, and perform. When you learn to fuel your body intentionally, you're not just checking a box - you're giving yourself the tools to train harder, bounce back faster, and reach your full potential.

Step 1: Eating Enough

To train strong and recover well, your body needs enough fuel - not just to support your workouts, but also to power the basics of daily life. When you consistently under-eat (known as low energy availability), your body lacks the necessary resources to adapt and thrive. Over time, this can lead to fatigue, slower recovery, hormonal disruptions, mood changes, menstrual dysfunction, and increased risk of injury.

Food is your foundation for performance. If you're in a state of low energy availability, no amount of training tweaks or recovery tools can make up for it. Fueling enough is the first (and most important) step toward performing your best and feeling your best in sport and everyday life.

Underfueling Red Flags

- Constant fatigue or low motivation
- Poor recovery from training
- Bonking or "hitting the wall" mid-workout, or feeling weak, dizzy, and wiped out after training
- Changes in mood (such as increased anxiety or irritability)
- Getting sick and/or injured more often
- Poor sleep quality
- Menstrual irregularities

A Note on Carbohydrates

(AKA Your Best Friend)

Endurance athletes and carbs — a tale as old as time. But why?

It's no secret that endurance sports are high-output activities that demand A LOT of energy. Just like your car doesn't run well without gas, your body doesn't perform well without its preferred source of fuel - glucose.

When you eat carbohydrates, they break down into glucose, which enters your bloodstream to supply energy for your brain, muscles, and every system that keeps you moving. Your body also stores some of that glucose as glycogen in your muscles and liver - your built-in fuel tank. During exercise, you tap into those glycogen stores to power your effort. The harder or longer you train, the more glycogen you burn. When glycogen runs low, fatigue sets in, pace drops, and the dreaded "bonk" hits. Maintaining steady blood glucose through glycogen breakdown AND carbohydrate intake during exercise is essential for taking your fueling strategy to the next level.

In recent years, many endurance athletes have seen major performance breakthroughs by increasing their carbohydrate intake—both during training sessions and throughout the day. With more consistent fueling, athletes are able to hold higher outputs longer, recover faster, feel stronger in back-to-back workouts, and reduce the risk of injuries associated with underfueling. Adequate carbs don't just fuel a single workout - they support the entire training process by improving energy availability, recovery, and overall adaptation.

Emphasizing a high-carbohydrate diet and strategically timing intake around and during training helps you train stronger, recover faster, and perform at your best.

A Note on Hydration

While proper hydration is crucial to endurance performance, this guideline will focus primarily on carbohydrates. Stay tuned for a future guide on hydration (fluid and electrolytes) for athletes!

Pre-Workout Nutrition

Your nutrition in the days, hours, and minutes leading up to your event has a major impact on your overall performance. At this point, you know the importance of eating enough, but what does this actually look like?

Every athlete is unique, but these general fueling principles offer a great starting point as you learn what helps you feel and perform your best.

The Day Before:

A high-carbohydrate diet the day before a hard effort is necessary to ensure glycogen stores are fully topped off. Depending on the duration and intensity of the upcoming effort**, 6-10g of carbohydrate per kilogram of body weight is idea**l. Aim to spread this out across the day.

For longer races (marathon and up!), you may want to extend this to a 48-hour “carboload”. This sounds fancy, but we’re really just increasing carbohydrate intake to 10-12g of carbohydrate per kilogram of body weight.

If those numbers sound a little crazy, don’t worry—your body is incredibly adaptable and can quickly learn to tolerate (and thrive on) a higher-carbohydrate fueling plan.

Example:
A runner weighing 150lbs (68kg) should consume at least 400g, and up to 800g of carbohydrates in the days leading up to a long effort.

Try increasing your carbohydrate intake with easily digestible, low-fiber, and familiar foods. While fiber is great for overall health, more isn’t always better, especially when performance is the goal. During this phase, the focus is on fueling efficiently, not maxing out nutrient density.

The same goes for protein and fat. If you’re already consuming enough of these nutrients, there’s no need to add more right now. The goal is simple: boost your carbohydrate intake to top off glycogen stores and give your body the energy it needs to perform its best.

1-4 Hours Before:

If you have 2–4 hours before your event, aim to consume 2-4g of carbohydrate per kilogram of body weight. Research shows this intake range helps improve race times, delay fatigue, and sustain higher power output toward the end of long events.

If you have at least two hours before your event, adding a small serving of protein can help steady energy levels and support muscle function - think an egg on your bagel, a slice of turkey on your sandwich, or a scoop of protein powder in your oatmeal. Keep the meal low in fat and fiber to promote easy digestion.

For early-morning events, eating 3-4 hours before the start often isn't realistic. **In this case, aim for 1–2g of carbohydrate per kilogram of body weight, about 1-2 hours before your event.**

Carbohydrates should be simple and easy to digest, providing quick energy without upsetting your stomach. Great options include granola bars, fruit, quick oats, pretzels, or bagels. Avoid high-fiber and high-fat foods, as these can slow digestion and increase the risk of gastrointestinal discomfort. We are also looking to avoid protein in the hour leading up to an event.

The volume and timing should always be tested in training (not first used on race day) to verify gut tolerance!

To Summarize:

If you have 2-4 hours before you start, aim to consume 2–4g of carbohydrate per kilogram of body weight.

If you only have 1-2 hours before you start, aim for 1–2g of carbohydrate per kilogram of body weight

Example Pre-Race Fueling Targets

Body Weight (kg)	Carbohydrate Range (2-4 hr before)	Carbohydrate Range (1-2 hr before)	Example Meal Ideas
50 kg (110 lb)	100–200g	50–100g	2 bagels with jam + banana *(2–4 hr) OR* Granola bar + pretzels + sports drink *(1–2 hr)*
60 kg (132 lb)	120–240g	60–120g	Oatmeal made with milk + honey + banana *(2–4 hr) OR* Bagel + applesauce + sports drink *(1–2 hr)*
70 kg (154 lb)	140–280g	70–140g	Pancakes + syrup + low-fat yogurt *(2–4 hr) OR* Granola bar + banana + toast with honey *(1–2 hr)*
80 kg (176 lb)	160–320g	80–160g	Turkey sandwich + fruit + sports drink *(2–4 hr) OR* Oatmeal + pretzels + juice *(1–2 hr)*
90 kg (198 lb)	180–360g	90–180g	Rice bowl with eggs + fruit + juice *(2–4 hr) OR* Bagel + banana + granola bar *(1–2 hr)*

<1 Hour Before

Surprise! Carbohydrates remain important in the 30-60 minutes leading up to your event. Research supports 1-2g of carbohydrate per kilogram of body weight in this time period. If this isn't feasible, aim for at least 30g to stabilize blood glucose, ensuring readily available energy when you start!

Nutrition During Exercise

Remember:

- Carbohydrates are the main fuel source for moderate to high-intensity endurance activity.
- Research consistently shows that consuming carbohydrates during exercise improves performance in events lasting longer than ~90 minutes, and can also help when pre-exercise carbohydrate intake is insufficient.
- Carbohydrate intake helps maintain blood glucose levels, delays fatigue, and supports higher power outputs and endurance.

How Much?

- General endurance events (90–180 minutes):
  - Aim for **60–90 grams of carbohydrate per hour**, ideally in frequent intervals (every 15–20 minutes).
  - Timing can be easier with a timer or reminder system to avoid forgetting during tough training or races.
- Ultra-endurance events (>3 hours):
  - Research shows that athletes can tolerate **up to 90–120 grams per hour** when using multiple carbohydrate sources (e.g., glucose + fructose).
    - Using multiple carbohydrate types uses different intestinal transporters, increasing absorption and minimizing gastrointestinal distress.
    - Check your sports nutrition products! We are looking for 2:1 glucose-to-fructose ratio.

If these numbers seem daunting, know that the gut is extremely adaptable. We can slowly increase carbohydrate intake over time until this intake is achieved!

Common carbohydrate sources during training and racing include gels, sports drinks, blocks/chews, candy, low-fiber fruit, waffles, pretzels, crackers, and flat soda.

Post-Workout Nutrition

The goal of your post-exercise meal is simple: replenish glycogen and support muscle recovery. During training and racing, you depleted your glycogen stores to access glucose. Now, it's time to "top off the tank" and give your muscles the nutrients they need to recover and adapt. Research shows that with adequate carbohydrate intake, muscle glycogen can be fully restored within 24 hours. This is particularly important if you have back-to-back long training sessions or races, where recovery time is limited.

Carbohydrates:

- Timing: Ideally, consume your first post-exercise meal as soon as you can after finishing. While there's no strict "magic window", early carbohydrate intake can maximize glycogen replenishment, especially after long or intense sessions.
- Amount: **Aim for about 1.5g of carbohydrate per kg body weight** in your first meal, then continue with 1–1.5 g/kg every 2 hours for the next 4–6 hours.

Protein:

- Protein isn't just for building muscle in the gym - it's necessary for endurance athletes too! Consuming protein post-exercise supports muscle repair, reducing soreness and helping prevent injuries.
- Amount: **Aim for roughly a 3:1 or 2:1 carbohydrate-to-protein ratio.**

Body Weight (kg)	**Carbohydrate Target** (≈1.5 g/kg)	**Protein Target** (2:1–3:1 CHO:PRO)	**Example Recovery Meals & Snacks**
50 kg (110 lb)	~75g	25–38g	Yogurt with granola + bananaorChocolate milk + peanut butter toast
60 kg (132 lb)	~90g	30–45g	Rice bowl with eggs and fruitorProtein smoothie with oats and berries
70 kg (154 lb)	~105g	35–52g	Turkey sandwich + fruit + pretzelsorOatmeal with protein powder + berries
80 kg (176 lb)	~120g	40–60g	Burrito with rice, beans, and chickenorChocolate milk + granola bar + apple
90 kg (198 lb)	~135g	45–68g	Pasta with lean meat sauce + breadorProtein shake + cereal + banana

HAVE MORE QUESTIONS?

Get in Contact!

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