

OVERVIEW

It is critical to realize that there is no magic solution to racing and fueling hydration. No specialist can tell you exactly what to do to find everlasting success. We are not building a bridge. We are managing human physiology, under stress, in variable environments. Your quest is to create a framework and then test, refine, and adapt to arrive at your best solution. You will then begin each race with a plan, but, even then, you must refine the plan based on what you experience on the day.

Here are your key elements to nail: CALORIES | LIQUIDS | ELECTROLYTES | CAFFEINE

Your individual journey is about understanding numbers for carbohydrate (calories), fluids (hydration), and sodium (electrolytes) that are optimal for you. There will be a range for each that you then apply to your event, your individual physiology, and the environment.

FUELING GUIDE

One of the most common mistakes athletes make is under-fueling in training and racing. Science, plus lessons from thousands of athletes, indicate significantly greater ability and benefit from using higher caloric intake of carbohydrates in key sessions and races. Your caloric needs are dependent on the demands of your event, ability to absorb the intake, and the physical environment.

Here's a useful visual to help you calculate caloric intake, under the important assumption that **you are starting your session well fueled and hydrated.**

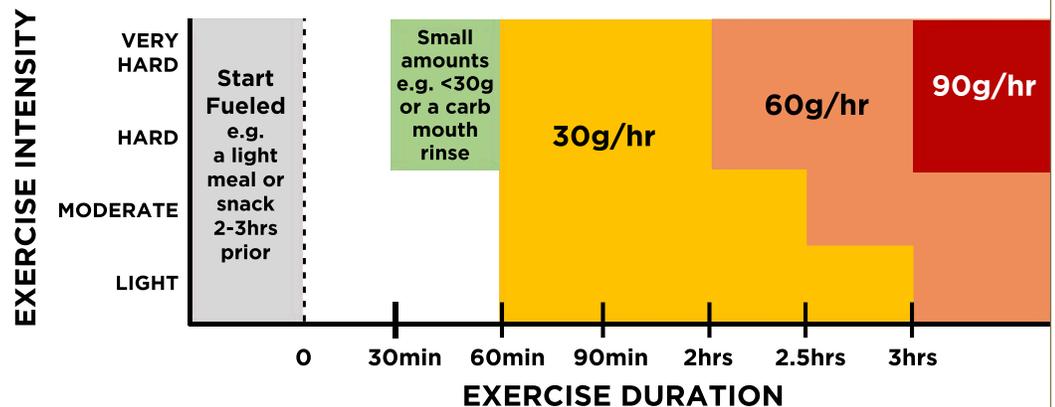
A few important notes:

- For any intake over 60g and/or duration over 2 hours, you must use a mix of glucose and fructose for your carbohydrate sources.

- We do see many cases of athletes successfully consuming up to 120g of carbohydrate per hour, and benefiting from it. They have all trained their gut to reach these levels.

Key additional points:

- In general, the longer and harder the work, the greater the benefit of increased carbohydrate consumption.
- It has been shown that more carbohydrates tolerated and consumed = improved outcomes. This means training your gut to successfully absorb them, and finding the right recipe of calories, fluids, and electrolytes for you.
- Carbohydrate is not correlated to size / weight / gender.



If you'd like further insights, [CLICK HERE](#) for a helpful blog from Precision Fuel & Hydration.

HYDRATION AND ELECTROLYTE GUIDE

Fluid intake for optimal hydration is incredibly variable between individuals and in different situations/environments. There are two major aspects to understand when it comes to hydration:

- Generic advice on quantities to drink is often totally meaningless.
 - Many typical retail hydration products are insufficient for the needs of many endurance athletes:
 - Too much carbohydrate consumption
 - The wrong dose of electrolytes for a specific athlete's physiology, usually on the low side
- You should aim to understand your own physiology, sweat rates, and sodium concentration.

Understanding Sweat Rates: Click **HERE** for a helpful link to understand and measure your sweat rate. But, be sure to do your own organized trial and error in training sessions that closely mimic race conditions to dial in strategies for different types of events.

Understanding Individual Sodium Concentration: There are two paths for this key insight.

- **Sweat Testing:** There is no better path to understand your own unique physiology than this. Click **HERE** for a global list of lab-based, Precision Fuel & Hydration-accredited facilities or **HERE** to visit the Purple Patch Center in San Francisco for a complete consultation around your hydration needs.

- **Self-Assessment:** If you don't have access to a sweat test facility, click **HERE** for a helpful guide.

A few important reminders on what to look for when assessing your own sweat concentration:

- Obvious salt marks on clothes and skin after training and racing
- Sweat tastes super salty and stings your eyes or cuts
- Faintness/dizziness on standing rapidly after training or during periods of heavy load/hot weather
- Muscle cramps are frequent during and post exercise
- You feel terrible in or underperform in the heat routinely

If this sounds like you, we recommend you experiment with more aggressive electrolyte ranges (1000-1500mg/hr sodium intake), along with additional fluids during exercise, to see if that helps performance and recovery and/or reduces cramping.

CAFFEINE GUIDE

Smart use of caffeine can provide a performance boost in racing. To maximize the gains, consider cycling off high daily caffeine use in the weeks prior to an event to allow for optimal sensitivity to its positive effects on race day. Caffeine can become effective within 20-30 minutes of ingestion (but it may be up to 45-60 minutes for some, and is dependent on the form of consumption).

NOTE: the response and tolerance to caffeine varies highly between people. Test *before* race day.

Typical Prescription & Race Scale for Intake:

3-6 milligrams per kilogram of bodyweight (200-400mg for a 70kg athlete)

5K, 10K, Half Marathon, Sprint Tri: Pre-Race Dose only

Half Marathon, Marathon, Olympic Tri: Pre-Race Dose + 2nd dose ½ way through the event

Longer Events (70.3, IRONMAN, Ultras): Pre-Race Dose + smaller regular doses during event

An example of how to incorporate caffeine for performance: A long course triathlete might drink a black coffee in the morning (50-100mg), use a caffeinated gel on the bike (100mg), another on the run (100mg), and supplement with Coca-Cola at aid stations for smaller, more consistent 'doses.'

TROUBLESHOOTING

ISSUE	SYMPTOMS	SOLUTION
Underfueling	<ul style="list-style-type: none"> • Moodiness • Pace/power dropoff • Loss of focus/motivation • Sugar cravings • Hunger 	<ul style="list-style-type: none"> • Know your target numbers • Train the gut to increase capacity • Correct on course with high sugar intake (Coke, gel, etc.)
Too much carbohydrate (or carbs not digesting)	<ul style="list-style-type: none"> • GI distress • Heat stress causing sickness and bloating • Diarrhea 	<ul style="list-style-type: none"> • Remove high-concentration caloric and carb+fluid combination type drinks • Utilize pocket fuel (e.g. gels, blocks) + hypotonic drinks • Train your gut
Confusion on your optimal approach to fuel/hydration; trying new things on race day	<ul style="list-style-type: none"> • Lack of clarity or toolbox to manage event fueling • High risk pr history of fueling and hydration issues 	<ul style="list-style-type: none"> • Understand your theoretical needs and targets • Test and adapt in training and racing regularly (and track it by writing it down) • Work with a specialist to support you (see next steps)
Cramping during training or races	<ul style="list-style-type: none"> • Muscle fatigue (neuromuscular) • Electrolyte imbalance and/or dehydration 	<ul style="list-style-type: none"> • More race-specific training to condition muscles • Short-term: back off pace / intensity • Use high-sodium concentrated electrolytes for added sodium • Review pacing, fueling, and hydration management strategies

There are other factors for you to consider in building your best fueling and hydration plan, including your pacing in an event and arriving to training and racing properly stocked with fuel and hydration. Also, you should retain a flexible mindset – where you can smartly adapt your plan as needed mid-workout or race. Let us leave you with this:

It is important to understand your needs, test and adapt in training, and set up a plan of attack for racing, but nothing is perfect. Each event requires you to use this plan as a guide and framework, then respond to events and energy on course. In addition, review your results following each event (good or bad!) to draw lessons and further the journey of improvement.

NEXT STEPS

Here are several steps you can take to enhance your approach to fueling and hydration:

Sweat Testing & Consultations: Gain valuable personal insight on your sodium concentrations and create a strategy for success.

- Click **HERE** to book a Sweat Test at any Precision Fuel & Hydration Center worldwide.
- Click **HERE** to get a Complete Consultation at the Purple Patch Center in San Francisco.

Take an Integrated Approach to Training: Align your training with education and support around fueling, hydration and race planning.

- Reach out to info@purplepatchfitness.com for a personalized call to discuss how our Tri Squad could help you across all aspects of training and performance, or click **HERE** to learn more.

Personal Nutrition and Hydration Support and Coaching: This is what we recommend if fueling and hydration is key performance challenge for you.

- Click **HERE** to book a complimentary call with Precision Fuel & Hydration team member.
- Click **HERE** to get comprehensive nutrition and hydration coaching with FUEL/N.