

This newsletter is brought to you by fruit snacks, sweaty ellipticals, and poop. If you enjoy it, I'd be grateful if you could share with one or two others!

## Running on positivity

I hope some of you had time to tune into the Javelina Jundred I mentioned in [last week's newsletter](#). It was a fall trail running celebration. You can find the second half of the livestream [here](#), which includes the top finishers and some early morning finishers as well as skeletons, fairies, and devil horns. Spooky Saturday but also really advertising trail running as a fun, community-building sport. David Roche won the mens race (nice post about it [here](#)), and [Riley Brady](#), who is non-binary, won the womens race. I think this 100k and 100-mile event in nearly 100-degree desert heat where most athletes wore some sort of costume encouraged athletes to run on things ranging from enjoyment to love to silliness to curiosity to vulnerability. I'd consider these all positive, premium, sustainable fuel sources. What are you running on today?

## Coaching snapshot: gut training!

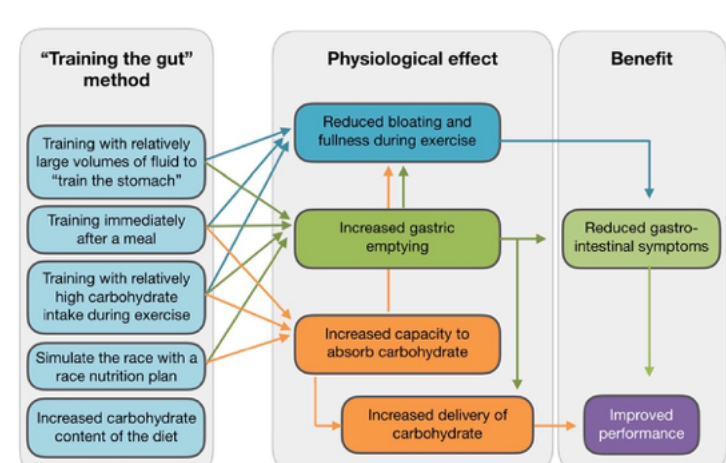
*Question: "Fueling and hydrating while I run makes me feel bloated. Will practicing it during training really make me feel any better?"*

While fueling and hydration during ultra endurance events might seem like an obvious necessity, they are equally important during "shorter" races like half and full marathons. Though one could complete the event without fueling or hydrating, these actions have been found to [both improve performance on the day and improve subsequent recovery](#). However, many athletes who do not practice fueling before their race will encounter GI upset if they try to do it newly on race day. Therefore, I recommend athletes to practice their fueling strategies in the weeks leading up to their races. In the end, this will not only benefit them on race day but also benefit their training and recovery during the build.



So, what is "training the gut" and how does it actually improve my ability to fuel and hydrate? There are a couple good articles reviewing the mechanisms behind gut training, including [this one](#) in the *International Journal of Sport Nutrition and Exercise Metabolism* from 2019 and [this one](#) in *Sports Medicine* from 2017. To pull things together, there are four areas that gut training can improve:

1. Sugar uptake: There are three main carbohydrate transporters: SGLT1 and GLUT2 for glucose and GLUT5 for fructose. It has been shown in rodents, horses, and pigs that a high-carb diet increases SGLT1 transporter density and activity. Though I didn't find any studies done in humans, if it holds, a high-carb diet could improve our ability to absorb glucose. At a point, only so much glucose can be absorbed, which is why most gels and mixes [include fructose](#) as well.
2. Stomach comfort: Just [2 weeks](#) (with only 5 sessions) practicing intake of higher fluid volumes and carbohydrate can improve stomach discomfort. Start with small, frequent sips of fluid, build your capacity to take in fluid, then add carbs, and increase as tolerated. Or think like a competitive eater.
3. Intestinal [blood supply and neurointestinal pathway](#): During high intensity or hot or otherwise stressful conditions, blood tends to be shunted away from the GI tract towards working muscles and the skin (for cooling) and the sympathetic nervous system directs efforts away from the GI system. Combined, these compromise GI motility and absorption, leading to GI inflammation and symptoms. You can modulate this area by changing intensity, doing heat training (I suppose heat training is gut training!), and employing cooling strategies.
4. Palate: It is common for endurance athletes to experience palate fatigue from ingesting gels and drinks of the same flavors and textures. [This article](#) walks through some natural food choices, like bananas and honey, that you can think about incorporating to minimize palate fatigue. Soup and salty potatoes are also common aid station foods at long events.



This is a nice [graphic](#) showing some methods athletes can start with to improve their ability to take in the levels of fuel and hydration associated with better performance.

There's also a great [iRunFar article](#) about all this. With microbiome research exploding, I'm sure there will be much more research soon!

Finally, if you're looking for some inspiration, there are some really fun and diverse [case studies](#) on the Precision Fuel & Hydration website. You can sort based on sport, weather, sex, sweat concentration, and pro vs amateur, or you can look at them all! For example, during the Women's Ironman World Championships, relative sodium intake [ranged from](#) 670 mg/L to nearly 1400 mg/L. In the 100k at Ultra Trail du Mont Blanc, pros who were tracked took in [up to 115 g carbs/hr](#).

Ok, that was a lot. What questions do you have about training and racing? Reply to this newsletter or [email me](#), and I'll answer one next week!

Also, let your friends know that I'm taking more athletes! I'm looking to work with runners and triathletes and depend on you to help spread the word :) Send them to my [website](#) to submit an inquiry or just pass along my email.



Orange food coloring goes a long way, but white chocolate ghost decorations go even further. These are cute and delicious brownies!

## Ghost brownies!

Brownies: Mix together any of your favorite brownie recipes, or use my [mud bean brownie](#) one! Spread the cheesecake layer before baking.

Cheesecake: Beat together 4 oz cream cheese, ¼ cup Greek yogurt, 1 egg, 100 grams of granulated sugar, dash vanilla, and red/yellow food coloring to make orange.

Assembly: Spread cheesecake on top of the brownie layer, then bake at 350F for 35-40 minutes. Let cool completely before decorating.

Ghosts: Melt white chocolate until it is pipe-able. Pipe it into ghost shapes directly on the cooled brownies! Add a little blue food coloring for eyes.

[Cheesecake brownie recipe](#)

## Order pickup or delivery!

S.S. Endurance is done vending at the Harvard Farmers Market for 2024. Instead, I have a new pickup system! [Order online](#) 24 hours in advance for pickup. Remember, I also do delivery or pickup from spots determined by you! For updates, make sure to follow me on Instagram [@coach\\_serena326](#). For questions, feel free to email me by responding to this email!

