



This newsletter is brought to you by a weekend-long regatta, gratitude for the good pool re-opening, and a little basketball-watching. If you enjoy it, I'd be grateful if you could share with one or two others!

Bonkers fueling!



Cameron Wurf broke the Ironman bike record this past weekend at Ironman Texas with a blazing 3:53 time for 112 miles. He [shared](#) that this effort was built on intakes of 1500mg sodium and 200+g carbs per hour (28 gels!), which is bonkers-level high-carb fueling. I'm not suggesting you try this, but we can together appreciate that's a really remarkable feat for the gut.

Fueling is important but can also be expensive! [Stay tuned](#) as I'm excited to share I'll be working with the [Huzzah Hub](#) to bring you all more information on fueling implications and cost-effective strategies over the next few weeks!

Coaching snapshot: durability!

How do I get better at doing hills in the second half of a race like the Boston Marathon, or not let the hills at the beginning of a race tire me out, like at the SF Marathon?

[Durability](#), or fatigue resistance, is the ability to resist performance deterioration over time (i.e. maintain economy of motion and output under cumulative stress). Traditionally, endurance success has been linked to VO2 max, lactate threshold, and economy, but these measurements do not take into account change over time, under the fatigue that comes with prolonged exercise.

Fatigue arises from multiple systems, and durability is our ability to resist the fatigue from all these systems interacting. The main drivers can [depend on the intensity](#) of the endurance exercise, but here is a framework I like for identifying the drivers in the first place:

1. Peripheral fatigue: This is fatigue at the level of the muscles, including structural muscle breakdown, metabolite accumulation, and glycogen depletion. I have observed coaches train athletes to better resist this fatigue by using downhill intervals, weighted eccentric exercises, threshold work, and appropriate fueling and hydration.

2. Central fatigue: This is fatigue at the level of the brain and neuromuscular system. I have observed coaches train athletes to better resist this fatigue by using weight training, plyometrics, strides, hard efforts or hills at the end of long training sessions, and also appropriate [fueling](#).

3. Other sources: Consider psychological fatigue, heat strain, gut issues, and sleep deprivation. These can be trained with deliberate practice, heat training (accompanied with cooling strategies), and gut training.

Durability studies are relatively new. We are still elucidating mechanisms of fatigue resistance and most impactful training practices. Finally, there are potential sex-specific differences that haven't been well-studied, as most research participants have been advanced male cyclists.

Reply to this newsletter or [email me](#) with questions, and I'll answer one in a few weeks!

Let your friends know that I'm taking more athletes! Send them to my [website](#) to submit an inquiry or just pass along my email. Thank you so much!



This photo is from around midday during Bandera 100k, at a low point. I tell myself I have good durability. Perhaps in part thanks to that mindset, the race improved from here (pc: Theo)!

Bran scones!

Quick and only sweetened by dates, these scones are crispy on the outside and soft on the inside, and just so delicious right out of the oven!

Ingredients: 240g Irish flour (I like Odlums), 80g all purpose flour, 17g wheat bran, 1 tsp baking soda, 245g buttermilk (can also be oat milk with acid added), 50g walnuts, 45g dates, ½ tsp salt.

Preheat the oven to 400°F. Mix together all dry ingredients, including chopped dates and walnuts. Add the buttermilk. Coat a surface with flour and pat the dough into a rectangle (be generous with the flour coating, the dough is wet!). Slice into triangles. Bake 30 minutes.



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Hi from Slippers!

Slippers is one of Ramona's cousins. She is a mom and is Hawaiian. She is very steady, loving, and gentle. Ramona doesn't get along with any of her cousins yet, but if there were to be one that she'd befriend first, it'd probably be Slippers!

