



This newsletter is brought to you by thawing trails, daisy shoots, and an Amacx nougat bar. If you enjoy it, I'd be grateful if you could share with one or two others!

## Sponsorship

Riley Brady is an incredible trail runner and just secured a Nike sponsorship. They won the Javelina 100M and the Black Canyon 100k (trail races) wearing Nike Vaporflys (road supershoes), so although I know nothing about this topic, it seems about time. Hopefully this deal helps elevate trail running as a sport companies care about!

I recommend [the Trail Network podcast](#) to hear more from Riley on their progression as an athlete and the Javelina race.

## Coaching snapshot: recovering hard!

*I'm sore. Does compression like Normatec actually work? Should I take an ice bath? How do I recover better?*

I'm glad you're thinking about recovery because that's when we adapt to stress and get stronger! My number one recommendation for recovery is to make sure you're executing on the basics like sleep, nutrition (during and outside of training), and mitigating life stress to the best of your ability.

This [2018 systematic review and meta analysis](#) published in *Frontiers in Physiology* evaluated active recovery, massage, compression garments, cold water immersion, contrast therapy, cryotherapy, electrostimulation, and stretching on subjective feelings of delayed-onset muscle soreness (DOMS), fatigue, and inflammatory markers. Massage was found to best reduce DOMS and perceived fatigue with compression and cold water immersion (below 59°F) also effective. Some of the measured markers of muscle damage and inflammation were also lower after massage.

There are a number of limitations to this review as well as the primary literature. First, study protocols vary in the levels of athletes they study, the amounts and timing of the recovery modalities, and the use of placebos. Second, few studies look at or find differences in performance outcomes even as they measure proxies for being recovered. Finally, the goal of training and rest is to spur adaptation. Some adaptations require an inflammatory response, and there is the lingering question of how much inflammation we truly want. For example, there is lots of conflicting research and opinions on cold water immersion as recovery because of this idea: too much cooling may dim the inflammation too much to prompt the desired adaptations.

Since there aren't many "evidence-backed" recovery options, my recommendation is to do things that make you feel good. For some athletes that's stretching, yoga, putting the feet up against a wall, napping, compression boots, massage, ice bath, sauna or hot bath, foam rolling, eating a lot, lying on the couch, or doing nothing at all!

If you're unsure where to start, check out the intro video on foam rolling [on my YouTube!](#)

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!**

## Hazelnut cupcakes!

These cupcakes are moist and not too sweet — excellent with some simple chocolate icing! They also double as muffins to make a great pre-morning workout snack!

Ingredients: 4 tbsp oil, 200g sugar, 1 egg, 1 cup (240g) buttermilk, 1 tsp vanilla, ½ tsp almond extract, 180g all purpose flour, 120g hazelnut flour, 1 tsp baking powder, ½ tsp baking soda.

Butter and line a muffin tin. If necessary, prepare buttermilk with milk + vinegar or lemon juice. In a bowl, mix together oil, sugar, egg, extracts, and hazelnut flour. In a measuring cup, stir together all purpose flour, baking powder, and baking soda. Alternate pouring the buttermilk and the flour mixtures into the batter and stir until just combined. Bake at 350°F for ~25 minutes until tops are springy. Top with simple chocolate icing (melt 3 oz chocolate with 2 tbsp milk).



[Recipe](#)

## Coaching snapshot in review: carb utilization!

This is a repeat from a few newsletters ago, which I believe went to most subscribers' spam --

In the 1980s, researchers discovered that eating carbs during endurance exercise improved performance. I've gotten a few questions on why and how, so let's zoom out and talk about what's providing energy for exercise to begin with.

The two main sources of energy are fat and carbohydrates. At nearly all intensities of activity, we are using both (a higher proportion of fat at lower intensities, a higher proportion of carbs at higher intensities). Generally, we have sufficient fat stores such that we do not need to eat fat during exercise. On the other hand, we can only store enough carbs to fuel 2-3 hours of intense activity. This is one explanation for why inexperienced marathoners encounter the "bonk" at mile 20: they have run out of carbs for fuel and must lower their intensity to rely more on fat.

Carbohydrates are sugar molecules put together. (You might notice on nutrition labels that "total carbs" is not always equal to "sugar," and that is because fiber is also a carbohydrate, though it is not absorbed as energy by the body.) The sugars best absorbed and used during exercise are glucose and fructose. (Fun fact: table sugar is 50% glucose and 50% fructose.) Many sports drinks and gels (or chews... or waffles...) are made of glucose and fructose mixtures that can be easily absorbed and quickly converted into energy. Mostly, carbs not used immediately as energy go into storage as glycogen in muscles or in the liver.



Since the 1980s much more research on carb intake during and around exercise has been done! Some of the takeaways are:

- We can only absorb and use up to a certain amount of carbs per hour during exercise. This can be trained and is intensity-dependent, but ranges from [60-120+ grams](#) of carbs per hour.
- Our [muscles can increase their carb storage capacity](#) ("supercompensate"), through training and adequate, timely (i.e. within 40 minutes) replenishment.
- Consuming carbs during exercise can [reduce deterioration of performance](#) and [reduce central neuromuscular fatigue](#) the next day.

## Help me grow!

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## Hi from Ramona!

Not sure if she hates the outdoors or hates the leash more. She always runs back towards the door. We hope whatever the weather that you get some nice time outside this week though. Sending more snuggles, purrs, and encouraging meows!

