

This newsletter is brought to you by hill repeats, pasta, and a 1000-piece puzzle! If you enjoy it, I'd be grateful if you could share with one or two others!

Mt. Ascutney Vertical Backyard!

It's been interesting to experience first-hand the recovery timeline of a 100-miler. I notice that the muscles feel good but the aerobic system is still catching up, perhaps some sort of neural or hormonal lag. Mentally I'm ready to get back into training, but things like cuts and blisters are still there, reminders that recovery and adaptation timelines are variable. In the interest of respecting these things, of course I signed up for another race. To my credit, this was more of a hiking and socializing experience than a race (for me), and I think it was a good low-stress way to get back into things.

In a Backyard race, every hour on the hour runners start a "Yard." The typical Yard is 4.167 flat miles, but the Mt. Ascutney Vertical Backyard is unique with only 2.25 miles and 1200ft of mountain vert. Runners line up and complete the Yard once on the hour every hour until there is only one person left ("last man standing")! One of my takeaways from this experience was that just one bigger downhill stimulus 10 days prior to the race was needed to harden my quads for descending. Though that outing left our quads quite sore for 4 days, we didn't get sore from the 16k of vert during the event!

My full Backyard thoughts are in the report on my [blog](#)!



Excerpt:
"The Backyard format was extremely interesting. My favorite part was that it felt very casual and grassroots. The volunteers were locals, participants showed up with their families, the start line was two cones. I also liked that it encouraged socializing. Everyone had 10-20 minutes between loops to chat, eat, regroup. And then when we would start on the next lap together there would be more chatter. I am very glad that I got out of my comfort zone and talked to some of the other participants. Online, Northeast trail runners seem both intimidating and inspiring at the same time, and that was pretty true in reality!"

[Full blog here!](#)

Coaching snapshot: training for vert!

So... *why did you get so sore after the training run but then feel fine after the race? Should I be incorporating downhill running in my training?*

The phenomenon that one downhill stimulus protects the quads against subsequent downhill stimuli is called the "repeated bout effect." This is similar to how a first weight-lifting session may result in a lot of soreness, but subsequent ones don't cause as much. Several classic studies help guide how and when to train downhill to confer protection, though it's very person- and event-dependent.

[Typical downhill studies](#) are done in untrained or recreationally active men with no prior downhill or weight training. They usually run for 30 minutes on a ~15-20% graded treadmill at ~9:30/mi. The first sessions result in peak soreness around 24–48 hours, which gradually fade by around 5 days, and maximal quad and calf strength decline by ~20–30%, recovering over 5 days as well. After a second downhill session performed 2-3 weeks later, muscle damage and soreness are significantly smaller. This improved muscular resilience is the repeated bout effect doing its job.

The repeated bout effect also helps reduce biomechanical fatigue. One [2021 study](#) measured ground contact time at the 1st and the 30th minute of downhill running. Researchers found it was about 8% higher at the 30th minute during the first bout, but only 4% higher during the second. Practicing downhills will also help train coordination and focus while moving quickly over varied terrain, which are skills not quantified in studies yet.

For a deep-dive into the molecules and mechanisms behind the repeated bout effect, I direct you to the figure below and [this thorough review](#)!

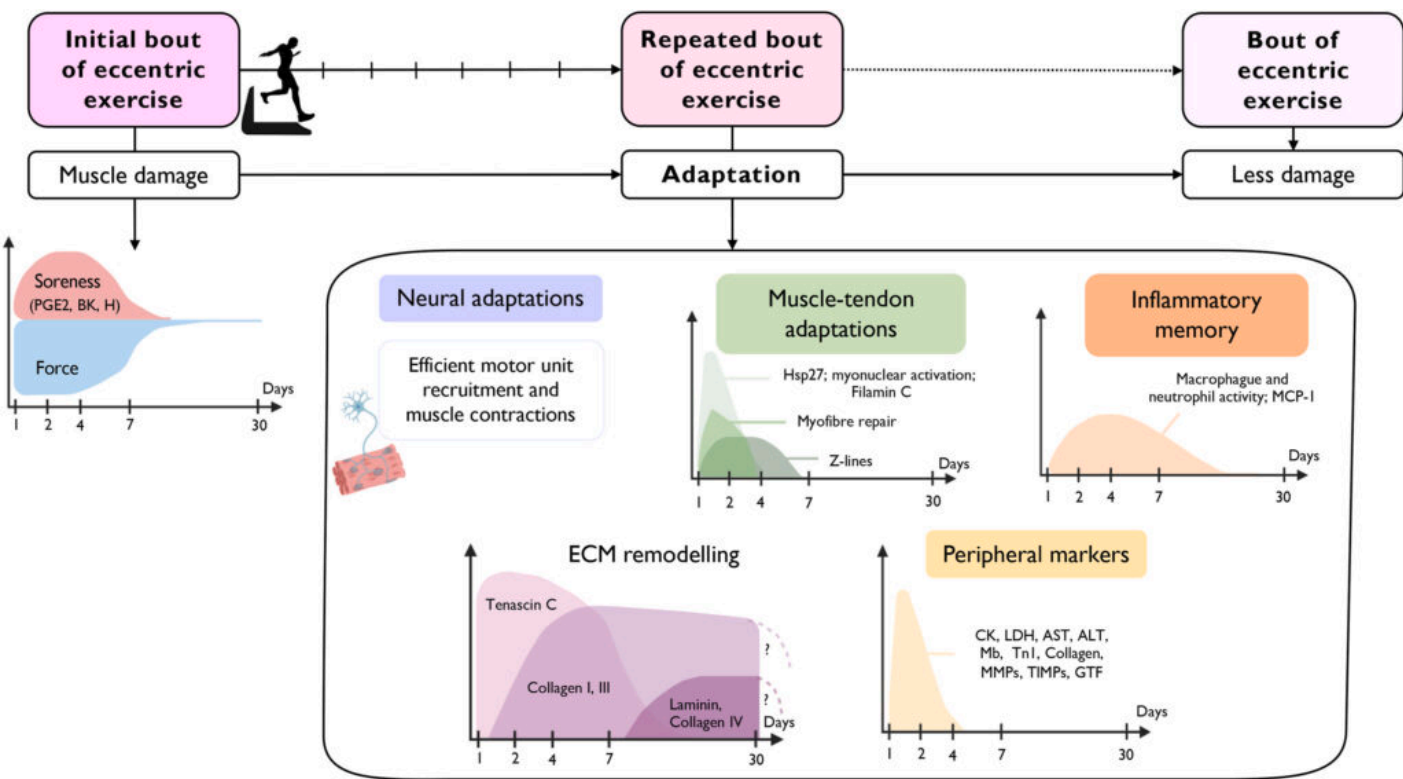


Figure from the deep-dive paper linked above, "The repeated bout effect evokes the training-induced skeletal muscle cellular memory" in *Free Radical Biology and Medicine* from 2024.

A [study](#) in untrained college males found that a downhill running stimulus 2 weeks before a hard, flat run can also attenuate post-flat run fatigue. Though a trained athlete's response timeline and magnitude may be different, I do think there's benefit to downhill running even for flat marathoners. To prepare for a hilly race or a flat marathon, I'd recommend incorporating intentional downhill running starting 6-8 weeks before the race since these adaptations have a fast timeline. The positive effects of the repeated bout effect may [last up to six weeks](#), but in practice I have seen shorter timelines for losing the adaptations, depending a lot on athlete characteristics. If you want to maintain downhill running adaptations year-round, I'd suggest [20-30 minutes](#) of purposeful, steady-effort descending every 2-3 weeks.

Reply to this newsletter or [email me](#) with questions, and I'll answer one next time!

Hi from Ramona!

She was in such a food coma, looking so content with yogurt on her nose as evidence.



If you can't tell from both of these photos, she's a little too big for her stand but loves it!

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