This newsletter is brought to you by long-overdue reading, noisy cat toys, and lots of clicks. If you enjoy it, I'd be grateful if you could share with one or two others!

## The *Endurance*

My website name, S.S. Endurance, was inspired by a few things. One, I wanted to incorporate something along the lines of "sweat and sweets," but that wasn't exactly a name (though I do have the tag line "powered by sweat and sweets" at the bottom of each page). So that's what drove the "S.S." part of the name. Most boat names start with "S.S.," and ships are really big floating freight trains that have tons of power and endurance, so I liked that. But I also wanted to make it clear this was an endurance sport-focused coaching business, so I landed on "S.S. Endurance."

Fast forward almost a year, and I finally learn the story of the ship *Endurance*. Someone vaguely had told me that it was a boat that sunk, so I brushed off the story figuring my boat would not sink! But I recently read Alex Hutchinson's *Endure* about the limits of human performance and guess what... he references the *Endurance* ship's journey within the first 10 pages! Turns out, Ernest Shackleton and his crew set out on the *Endurance* in 1915 with the goal to be the first to reach the South Pole. This ship was a huge wooden hull designed to break through ice on the way to landing on Antarctica. It did a darn good job with this until it got a little stuck and a storm hit, sinking it under an ice floe. The story of the crew's journey, however, continued. The crew spent an entire winter camped on ice until it could row itself to another island. Shackleton and a few others continued to row another 800 miles to civilization where they initiated a rescue mission for the rest of the crew. A true story of endurance, intelligence, compassion, resilience, adventure, and a respectable DNF!

There's also a National Geographic documentary series and a book about the discovery of the ship in 2022.

## Coaching snapshot: heat training!

*Question: How should I be heat training? Is there a difference between using a traditional vs infrared sauna?*

Buckle up! I got a little carried away so this is a bit of a deeper dive than usual...

Disclaimer: Heat training carries a lot of risk. It can be extremely dangerous. Ask your doctor before trying it -- numerous medical conditions, pregnancy, medications, drugs, and supplements can interfere with the body's thermoregulatory mechanisms and/or innately put you at higher risk for heat stroke.

New Danish marathon record holder Jacob Simonsen (who also holds the world record for fastest half marathon with a stroller!) cites heat training as the major contributor that helped him improve performance. He worked directly with researcher Lars Nybo from the University of Copenhagen to refine his heat training strategy prior to the record attempt.

There is a plethora of evidence on the positive effects of heat training for cyclists and also for rowers, runners, boxers, skiers, the military, and more. A meta-analysis from 2016 reported that "heat acclimation has a moderate to large beneficial effect on subsequent exercise capacity and performance in the heat" and went on to cite an average of 7% "performance" improvement. The major drivers of improved performance and capacity following heat acclimation protocols include increased sweating, blood vessel dilation, and hemoglobin mass. The first two are thought to help the body initiate cooling earlier and more effectively to keep core body temperature lower for longer. The latter is thought to improve oxygen carrying capacity.

Usually heat training protocols call for more frequent exposures for two weeks followed by lower-frequency exposure to maintain adaptations. The exposures generally occur at a given temperature or require an athlete to achieve a certain body temperature. I am not by any means suggesting that you should engage in heat training and must preface all of this with SAFETY FIRST! However, here are a few examples of heat training in research:

- In a 2022 study from Norway, researchers had cyclists do five 50-minute heat sessions per week for 5 weeks using a heat suit or heat chamber. They found a ~2.5% increase in hemoglobin mass for both heat training interventions as well as increases in threshold and 1-minute power outputs (~3.5-7%) for the group that trained with a suit. Following this, they decreased the heat exposure to three 50-minute sessions per week and found sustained increases in hemoglobin mass (did not test for performance).
- In a recent 2024 study, cyclists did or did not do heat training following a 3-week altitude camp. Three active heat exposures per week maintained hemoglobin mass gains (4.1%) from altitude camp, while the control group lost the gains.
- Research on passive heat training (think sauna, hot tub) is more limited. One 2018 review suggested that to maximize benefits of passive heat training, it should happen immediately after exercise bouts, for at least 30 minutes, 6-7 days per week. A recent study involving military personnel found that performance improvement following a heat acclimation protocol could be maintained with 2-3 30-minute passive heat exposures per week in either a sauna or hot bath. Another study found that passive heat exposure post-resistance exercise may stimulate further hypertrophy response compared to resistance exercise alone.
- Very few studies have included female participants, and there may be sex differences in heat response; for example, females may require more sessions before experiencing the same adaptations as males, but the mechanisms are unclear.

If you're considering heat training in a sauna, what type of sauna do you choose? This article highlighting the particularly positive effects of Finnish saunas compares the health benefits of different passive heat training modalities. By calculating the heat index as a measure of overall heat intensity, according to their temperature and humidity ratings for each type of heat, I find infrared saunas to have a heat index of 81-95°F (dry heat), compared to whopping heat indices of 226-642°F for wet saunas (more humidity) and 167-551°F for Finnish saunas (dry but hotter). In my brief search, I couldn't find any studies directly comparing the modalities, but it seems to me the exposure intensity is quite different. I'd recommend trying a few different modalities and measuring your performance improvement, heart rate, and body temperature response to find what works for you.

Finally, it's interesting to note that with the rise of continuous, comfortable core temperature sensors, heat training may become more individualized and based on maintaining a particular core temperature rather than withstanding a certain temperature exposure.

What questions do you have about training and racing? Reply to this newsletter or email me, and I'll answer one in a few weeks (happily got a little backup now!).

> **Let your friends know that I'm taking just a couple 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. Thank you so so much!**

## Lemon curd!

Looking for something refreshing post-heat? This refreshing lemon curd can be put in pies, cake layers, or tart shells.

Ingredients: ½ cup sugar, ½ cup lemon juice (about 3 lemons), 3 egg yolks, lemon zest, 2 tbsp butter, ½ pint cream.

1. Bring sugar, lemon juice, egg yolks, and lemon zest to a boil. When the mixture becomes a pudding-like consistency, transfer to a bowl and cool completely.

2. Whip the cream. When the lemon mixture is cooled, beat in butter and fold in cream. Enjoy!

Recipe here!

## Help me grow!

As an extremely small business, I rely on word of mouth to grow. Please share my website (ssendurance.com), Instagram (@coach_serena326), or newsletters with anyone and/or over social media! Reach out with any questions or comments by responding to this email. Thank you all!