

A JOURNEY TO THE DEEPEST POINTS ON EARTH + CONSPIRACY THEORIES + MESSAGES TO THE FUTURE + SECRET DIARIES OF NASA ASTRONAUTS + SEA CREATURES...ON DRUGS

POPULAR SCIENCE

Fall
2019

this is a
weird one



O U T
T H E R E

THE FRINGES OF
WHAT WE KNOW



RETROFITNESS

runner vs. nature:
what if both can win?ROBERT COKER, EXERCISE PHYSIOLOGIST AT
THE UNIVERSITY OF ALASKA AT FAIRBANKS

The Montane Yukon Arctic Ultramarathon is no ordinary foot race. The 430-mile winter trek across Canada's Yukon Territory can last up to two weeks, with temperatures as low as minus 40 degrees Fahrenheit. I've been studying how participants' bodies respond to this extreme haul since 2015.

You can't go into this unprepared—even if you're just collecting data. I pack additional warm clothes, sleeping bags, and food because lots of things can go wrong in such an extreme environment. In 2017, as I made my way from my home base in Fairbanks, Alaska, to the race 600 miles south in Whitehorse, the temperature was so low that the oil cap seal on my SUV burst, and I unknowingly traveled much of the way without any oil in my engine. Fortunately, I didn't have to break out my bedroll: The cap somehow resealed itself, and I was able to continue once I added oil. I'm still driving that car today.

Athletes obviously face even more danger. If they so much as remove a glove, they risk frostbite within minutes. Plus, it's impossible to replicate the environment in training, so the race itself is an incredible feat, for even the most prepared ultramarathoners. My team of researchers took health assessments at baseline, at two checkpoint stations, and at the finish. Given the enormous challenges, I predicted that participants would lose a lot of lean muscle mass as their bodies burned it for energy. But despite the intense cold and caloric expenditure, that didn't happen. We found that runners completely preserved their muscles throughout the race, and selectively used and lost fat mass—a much healthier outcome.

Ultramarathoners use three to four times more calories than the average person, so extrapolating this to the everyday jogger is difficult. But the results are a reminder that our bodies, much like my car, were made to move.



CLIFF HANGER

sound asleep
at 1,000 feetKOLIN POWICK, CLIMBING CATEGORY
DIRECTOR AT BLACK DIAMOND EQUIPMENT

A portaledge is like a cot designed to hang off a cliff thousands of feet above the ground. Rock climbers sleep on them during multi-day climbs up big bluffs. They're pretty fun once you get used to dangling. I help ensure that all our portaledges do what we advertise: secure you to the rock face. So, for quality assurance, we take one out of every 200 we make and totally destroy it.

We guarantee the bed supports 1,000 pounds. To achieve this, the cots have an aluminum frame overlaid with burly nylon. Six webbing pieces hang from the frame to anchor it. Each one holds 500

pounds. We test all these weight thresholds with a machine that stretches the webbing until the nylon breaks—usually at around 700 pounds. It's actually the teeth of the built-in buckle (which allows climbers to adjust the height of the ledge) that cuts the fabric at that weight. The material alone could withstand 1,250 pounds before breaking.

A lot of the testing we do on the portaledge system is about satisfying our own standards more than convincing customers. I'm the guy who needs to sleep at night knowing that people are also snoozing high up there somewhere, trusting their lives to our product.

