

# Can you train yourself to tolerate more pain through endurance training?

By GQ Staff, edited by Beth Lamie 9 October 2020

If you've ever completed an ultra-endurance event (a marathon, middle to long-distance triathlon, century all qualify), you'd have become part of an exclusive club whose rules stipulate that conversation surrounding such an event is a necessity, and bragging rights are warranted. Those who participate in these events have every right to be proud as they test not only the limits of human endurance and physicality, but they are just as demanding on the mind and one's own willpower.

It's not surprising that a lot of this comes down to pain. People who run marathons will be familiar with entering the "pain cave" and for some, the experience of going through that hellscape is what makes the feat of completion that much more remarkable. It isn't the finish line, it's the *doing* that counts. This experience of pain has actually been tested though. As Alex Hutchinson writes for *Outside*, German scientist Wolfgang Freund completed a study on the pain tolerance of ultra-endurance runners where a group of runners and non-athletes were asked to hold their hands in ice water for as long as possible. As you'd likely expect, non-athletes lasted an average of 96 seconds before giving up; the runners made it to the three-minute safety cut-off at which point they rated the pain 6 out of 10. The results suggest that athletes can tolerate more pain than non-athletes, with Freund even suggesting that the demands of ultra-running and endurance sports allow for greater pain tolerance.

Years on, researchers at Norway's University of Tromso have sought to dig deeper into such claims. In a recent study published in *Frontiers in Psychology*, the group compared 17 national-level soccer players with 15 elite endurance athletes and 39 non-

athletes. Three pain tests were administered along with a series of psychological questionnaires to explore what traits are associated with greater pain tolerance.

The first pain test results mirrored the results in the test conducted by Freund and, as expected, it was the endurance athletes that lasted 179.67 seconds. This open-ended discomfort is something endurance athletes are trained to embrace and so naturally, their pain *tolerance* was higher. Interestingly though, pain *threshold* differed.

To test pain threshold, heated aluminium thermode was applied to the inner forearm of subjects, starting at 90 degrees and slowly increasing to a maximum of 126 degrees Fahrenheit. The subjects had to press a button when the sensation changed from warmth to pain, with the process being repeated five times. This time, the soccer players and endurance athletes were essentially the same, both being higher than the non-athletes.

The study was illuminating, and from it two questions now loom large: why do we have different perceptions of pain, and are athletes born with these differences, or are they acquired as a result of training? Hutchinson writes that, “The most widely held view is that the big differences are psychological, as opposed to some sort of physiological dulling of pain sensors.”

He goes on to suggest, “There have been some hints in previous studies that pain tolerance is a trainable trait, and that endurance training is one way of enhancing it. On the other hand, I’d be surprised if there isn’t some element of athletes being “chosen by their sport” in part based on pre-existing psychological attributes like willingness to suffer.”