

QUARTZ

26.2-MANY

Running a marathon is as traumatic for your body as having heart surgery

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📷 Too much of a good thing? (Reuters/Brendan McDermid)

Although marathon runners are widely regarded as some of the healthiest people on Earth, cranking out those 26.2 miles (42 kilometers) does a number on your body. In addition to all [wear and tear](#) it puts on your muscles, bones, and heart, it can also affect your kidneys. Researchers at the Yale School of Medicine found that 80% of runners who completed marathons had kidney function that looked similar to patients who just underwent heart surgery.

☑ Brexit begins, Westinghouse files for bankruptcy, rivers that are people. All this and more in [X](#) surgery, or a person in intensive care unit, says Chirag Parikh, a nephrologist at Yale and the lead author of the study.

The study, [published](#) (paywall) March 28 in the American Journal of Kidney Diseases, looked at 22 runners. Admittedly, this is a small number, but Parikh and his team were looking specifically at runners who had been running distances longer than 13 miles for at least five years, hadn't completed a marathon in the last four weeks, and were planning to run one in the near future. They took blood and urine samples of these runners—nine men and 13 women—the day before their race, 30 minutes after finishing, and the next day. They found that most runners had levels of creatine (a chemical produced by muscles at work) and inflammatory proteins present in levels similar to patients with acute kidney injury.

Our kidneys filter our blood, and send out the toxins through our urine. Although blood and urine analysis can only indirectly show kidney damage, these chemical indicators show how well kidneys are working. A change in how they function shows they're injured in some way.

Parikh says there is a number of aspects of running that could damage kidneys. Dehydration puts a huge, potentially harmful, strain on kidneys. Running also raises the body's core temperature, which can start to break down muscles and cause inflammation throughout the body. Both of these generate more proteins in our blood that need to be filtered out, sending the kidneys into overdrive. And finally, in an effort to prevent ourselves from overheating and our legs going, our bodies send cooling blood to the surface of the skin and muscles, diverting it from the kidneys. More work, less blood flow, and a depleted water supply for hours are almost guaranteed to hurt your kidneys.

Michael Joyner, an anesthesiologist at the Mayo Clinic and former competitive marathoner, wasn't surprised at all by the findings. And neither he nor Parikh find these results concerning for recreational distance runners: Within two days, the runners' body chemistries were back to normal. Even professional endurance

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every day for a week—make full recoveries, unless they have an underlying condition. [today's Daily Brief.](#)

Parkih is concerned, though, for field workers in tropical areas who may be exposed to heat for 10 to 12 hours a day while they exert themselves. These workers routinely experience similar physical stress to marathon runners, and have been found to have [higher rates](#) of chronic kidney disease.