

Running Barefoot

1 Natural and Healthy

2 Going **barefoot** isn't just for strolling on the beach: Running barefoot **reduces** stresses on your feet and may **prevent**
3 **injuries** known to afflict traditionally shod runners, a new study says. In his bestselling book Born to Run,
4 Christopher McDougal revealed that the best **long-distance** runners on the planet may be Mexico's Tarahumara
5 Indians, who race barefoot or in thin sandals through the **remote** Copper Canyons of Chihuahua state. The new study
6 used high-speed video and a bathroom scale-like **device** called a force plate to digitally dissect the moment-by-
7 moment stresses on the feet of 63 runners as they ran barefoot. The research **revealed** that running barefoot changes
8 the way a person's feet hit the ground.

9 Runners in shoes tend to land on their **heels**, so sports shoe makers have spent years designing **footwear** with gels,
10 foams, or air pockets in the heels to reduce the shock of **impact**. But barefoot runners more often land on the
11 forefoot, near the base of the **toes**. This **causes** a smaller part of the foot to come to a sudden stop when the foot first
12 lands, allowing the natural **spring-like** motion of the foot and leg to **absorb** any further shock. "This form of landing
13 causes almost no collision **force**," lead author Daniel Lieberman, an evolutionary biologist at Harvard University,
14 said in an email. Not that the **benefits** of barefoot running should be a surprise, he added: "Humans were able to run
15 for millions of years without shoes or in just sandals."

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17 What about performance?

18 Barefoot and minimally shod runners tend to take shorter, faster strides than shod runners, **regardless** of speed. And
19 this is generally a good thing. There are some interesting **tradeoffs** between stride length and **frequency**, but in
20 distance running, elite athletes have a **turnover** of around 180+ steps per minute, where non-elite runners tend to
21 have turnover rates of about 140-160 steps per minute. Shod runners also tend to run at 140-160 steps per minute,
22 regardless of speed. This simple statistic suggests that minimalist footwear, which puts the foot more under the **hip**,
23 helps to **promote** an elite level cadence and reduces over-striding.

24 On the other hand, research also shows that rearfoot strikers consume a bit less **oxygen** than midfoot strikers when
25 running at under 15 km/hr. Theoretically, this could translate to better **performance**. Yet midfoot strikers still
26 perform extremely well at energy-taxing ultra-marathon **events**, to take just one example. In other words, it looks as
27 if no one **variable** tells the whole story about performance.

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29 Running on Sticks and Stones

30 The work, published online today by the journal Nature, is "really interesting and **useful**," according to coach,
31 exercise physiologist, and author Jack Daniels. "There is no doubt impact is a **major** source of injury," Daniels said
32 **via** email, and reducing injuries is a key **goal** of all runners and coaches. Daniels himself has done much of his own
33 running barefoot. "I **eventually** got to where I could go barefooted for five miles [eight kilometers] on a **concrete**
34 sidewalk," he said, though he **admits** he prefers grass and well-cushioned tracks. Even the **latter**, he added, takes
35 **practice**. "One main problem is the abrasion factor," he said. "You have to toughen up the skin on the bottom of your
36 feet."

37 Luckily the choice won't be between shoes or no shoes for long. Shoe companies have been scrambling to design
38 "minimalist" footwear that still protects the feet from **rocks**, **thorns**, and broken glass while allowing people to run
39 more naturally. "If you start with a thick shoe and slowly whittle down, at what point does the person start to run like
40 they're barefoot?" pondered Sean Murphy, manager of **advanced** products engineering and sports research for shoe
41 maker New Balance. "We've completed those studies and **come up with** some pretty solid lines of thinking on how
42 you make the foot work as naturally as possible and at the same time protect [it] from the **elements**," Murphy said.
43 "I'm pretty **confident** you're going to see more and more products in that vein."

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45 Adapted from: www.nationalgeographic.com