

Why your foot calluses might be good for you

June 27 2019, by Amy Norton, Healthday Reporter



The difference between one of the habitually shod (left) and barefoot (right) participants. Credit: Daniel Lieberman

Before you take a pumice stone to your foot calluses just because they're unsightly, you might want to consider the idea that they are actually nature's shoes.

That's one of the messages from a new study suggesting that in certain ways, walking on callused feet can be better for you than the modern luxury of cushioned shoes.

Researchers found that calluses offer the foot protection while you're walking around, without compromising tactile sensitivity—or the ability to feel the ground. That's in contrast to cushioned shoes, which provide a thick layer of protection, but do interfere with the sense of connection to the ground.

Meanwhile, although thick-soled shoes do lessen the impact of each heel strike to the ground, they actually deliver more force into the [knee joints](#)

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No one, however, is advising people to forgo shoes—especially if they have medical conditions that make barefoot walking risky.

Study co-author Daniel Lieberman stressed that the study is about understanding a fundamental evolutionary question: How does modern footwear—a recent development in [human history](#)—differ from the natural "shoes" that humans wore for thousands of years?

"I'm not anti-[shoe](#)," said Lieberman, who heads human evolutionary biology at Harvard University. "And I'm not telling people to run around barefoot."

But, he added, you might consider taking a kinder view of the lowly callus.

"Calluses are normal, and they may have some benefits," Lieberman said.



Co-authors, Nicholas Holowka (left) and Andrew Yegian (right), measuring biomechanics of an habitually barefoot individual walking across a force plate. Credit: Daniel Lieberman

That comes with some big caveats, though: People with certain medical conditions, such as diabetes, should neither go barefoot nor let calluses build up, said Dr. Jane Andersen. She's a podiatrist and chair of the communications committee for the American Podiatric Medical

Association.

People with [nerve damage](#) or poor blood circulation to the feet—from diabetes or other [medical conditions](#)—should see a foot doctor regularly and, if needed, have calluses trimmed, Andersen said. Calluses can lead to ulcers in those cases.

People with nerve-damaged feet also need to wear shoes, she said. That reduced sensation means they may not notice any cuts or other injuries they'd get while walking barefoot.

Beyond that, Andersen noted, barefoot humans of the past were not running around on hot asphalt and other modern surfaces.

The findings, published June 26 in the journal *Nature*, are based on just over 100 adults from Kenya and the United States. Both groups included people who said they were barefoot more often than not, and people who wore shoes every day.

As expected, the barefoot crowd had thicker, harder calluses. Despite that, they showed no lack of sensitivity in the soles of their feet. In contrast, thick-soled shoes do compromise tactile sensitivity when you're walking, the researchers said.

It's not clear what the implication of that might be. But, Lieberman's team points out, when your perception of a walking surface is dulled, that can affect gait and balance. So it raises the question of whether thick-cushioned shoes can contribute to falls in people at risk.

Lieberman stressed, however, that it's simply a question. He said controlled studies would be needed to figure out the answer—for example, a trial that compares cushioned shoes to "minimal footwear" in older adults.

Minimal footwear refers to shoes with thinner, harder soles—like moccasins or sandals. According to Lieberman, they more closely approximate thick calluses, compared with cushiony soles.



Custom-built device used to measure tactile sensitivity of foot at different frequencies. Credit: Daniel Lieberman

In other tests, the researchers found that cushioned shoes lessen the impact of the heel striking the ground with each footstep, compared with walking barefoot or in thin-soled shoes. Thick calluses did not have that effect.

Yet cushioned shoes sent more force up into the joints with each step.

"The load is basically delivered to the knees," Lieberman said.

Again, the consequences of that, if any, are unknown. But one question, Lieberman said, is whether modern footwear could be a contributing factor to knee arthritis.

According to Andersen, it's an interesting question—but it would be challenging to study the way footwear choices over decades could affect arthritis risk.

"People generally wear all kinds of different shoes," she said. "There are also many other factors that would affect arthritis risk."

Plus, Andersen added, many people simply find minimalist shoes uncomfortable. "Even if wearing them for 30 years lowered your risk of knee arthritis, that's 30 years of being uncomfortable," she noted.

As for calluses, Andersen said that if they are not causing problems and you're healthy, they can probably be left alone.

More information: Nicholas B. Holowka et al. Foot callus thickness does not trade off protection for tactile sensitivity during walking, *Nature* (2019). [DOI: 10.1038/s41586-019-1345-6](https://doi.org/10.1038/s41586-019-1345-6)

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