

## Why Aren't Shoes Preventing Running Injuries?

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It's the hope of many a runner: Lace up a new pair of brightly colored running shoes and feel the aches and pains of running melt away. But despite the bold colors and additions of gels, foams, air pockets, and arch supports, more than 50 percent of runners [still get injured in a given year](#), a rate virtually identical to that of 30 years ago. Running has been (perhaps unfairly) saddled with the perception that it's to blame for [arthritis](#) and general orthopedic wear and tear, but the sport is linked with an [injury rate](#) that might make the NFL seem reasonable.

Many assume though, thanks to the not so subtle prodding of marketing, that expensive running shoes can reduce this chance of injury. This expectation was highlighted with news that [Vibram](#), the company at the forefront of the barefoot running movement, recently [settled a multi-million dollar lawsuit](#) that alleged the company misled shoe buyers into believing that their popular minimalist footwear could reduce injury.

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However, it's difficult to judge the supposed failure of modern shoe technology to reduce injury rate without first considering that the characteristics of the "average" runner has changed greatly since the introduction of the modern running shoe. In the past 30 years running has changed from something done by trained runners who competed for sport, to an activity that is enjoyed by the masses. According to the Sports and Fitness Industry Association, [almost 30 million people](#) in the U.S. ran at least 50 times in 2012. And those numbers are increasing.

Making matters more difficult, studies have identified many confounding factors that predict running-related injuries. Certain running injuries are [more common](#) in females, in males, in the young, [in the old](#), those that [weigh too much](#), those that weigh too little, and, well, injuries are also more common in those that have already been injured. Confused yet? It's a wonder anyone makes it back home after a jog in the park.

But can we really blame these injuries on the shoes runners are wearing? Blaming your running shoes for injuries seems somewhat akin to faulting golf clubs for a bogey. In fact, says Brian Metzler, editor in chief of the running magazine *Competitor*, "The notion that running shoes can prevent injury is fallacy." To blame it all on shoes, you ignore other, more likely contributors to running's high injury rate, namely training errors and new people who come to the sport from a non-running background. Metzler asserts there are those within the running shoe industry that maintain that advancements in shoe technology have prevented the rate of injury from rising even higher.

But it doesn't take a sports scientist to realize that the case for running as a high-risk activity lies with the repetitive impact of every stride. Every joint, bone, muscle, and tendon from the feet to the lower back experiences [an impact](#) of up to five times the person's body weight and so far, attempts to stifle that energy by changing what is laced to the foot hasn't resulted in reduced injury. However, the belief that injury risk is solely defined by how hard and how many times the foot hits the ground is fundamentally flawed. Rather, the manner in which the body's muscles and nervous system respond to this impact is a critical determinant of stress to the body. After all, the running stride is a wonderfully individualistic and intricate melding of foot, ankle, knee, hip, and upper body motion. Trying to control injury risk must always contend both with the complexity of the running stride and its inherent individuality in every runner.

Nike's introduction of gas-filled membranes in the sole of the Tailwind that is often cited as the [launching point](#) of the traditional running shoe and until recently, the design of this modern running shoe was varied by changing the rigidity and arch support of the shoe. Advances in the cushioning material of the shoe, not necessarily the design itself, were the measuring stick for innovation.

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"Part of the problem" says Jay Dicharry, a physical therapist and expert in biomechanical analysis, "is the shoe industry as a whole does a really horrible job of matching footwear to feet...All the methods used to fit feet to shoes don't really hold up as valid ways to classify runners and to match shoes."

The book [Born to Run](#) fueled a second wave of runners, one that believed that runners had been duped by the shoe industry into wearing a shoe that interrupted millions of years of evolution, forcing runners into a running style that actually caused more problems than it fixed. Riding a surge of testimonials and popular media, [sales of minimalist shoes](#) increased 300 percent in 2012, compared with a 19 percent increase in traditional running shoe sales in that same year.

The barefoot movement was partly fueled by research that based the theoretical benefit of barefoot running on the observation that native barefoot runners [run differently](#) than those of us that grow up running in shoes. The observation that those runners preferentially land on the front part of the foot with each stride was presented as evidence of how we were evolutionary designed to run and that running in this manner would greatly reduce impact and therefore injury. Minimalist shoes are meant to closely mimic the low to the ground feel of barefoot running, theoretically encouraging a change in running style.

But the barefoot running shoe's inability to make a dent in injury statistics lies not with faulty science or untruths but rather the inescapable conclusion that changing the way we run is challenging for most. The Achilles heel of barefoot running, as it were, is that it assumed that adopters would be able to quickly change to a fundamentally different running style and leave behind the familiar heel-toe pattern. Even with those that have been able to adopt the style of barefoot running, long-term studies haven't been able to show any reduction in injury risk, with some even suggesting that barefoot running may [increase the rate](#) of certain types of injury.

Even so, many in the running community would agree that barefoot running shoes injected change into an industry that plodded along for three decades, churning out shoes that didn't necessarily reflect evolving sports medicine research.

More recently, the shoe industry has seemingly abandoned low cushioning and low to the ground minimalist shoes in favor of high cushion "maximalism" shoes such as the [Hoka One One](#). While the shoe design seems based on the "more is more" concept, it actually borrows from some of the concepts of minimalism, namely lightweight materials. Initially designed for ultrarunners, the maximalism design has been [increasingly marketed](#) to all runners. Although, intuitively, adding additional support should dampen the high forces of running much like springs on a car, the benefits of the maximalist shoe remains largely unresearched.

So do runners need align themselves as fervent believers of minimalism or maximalism? "No," Metzler says, "I believe that a runner can have several different shoe types, each with a specific use." Metzler believes the thicker cushioned maximalist shoes are more suitable for slower recovery runs, while light low to the ground shoes are better for faster workouts.

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Carson Caprara, a senior product manager for Brooks Running, acknowledges that the difficulty with designing a shoe to reduce injury is trying to fit the unique characteristics of each runner, stating, “That is why we have shifted our focus away from standardized baselines or a 'right way' to run, to using the individuality of runners as the starting point. The future of running shoe designs is designing a shoe that helps runners maintain their regular motion patterns.”

We may all be born to run, but we may not be born to run well. In a similar fashion to learning the sport of basketball or tennis, the skills that make a runner more efficient and potentially injury-resistant take more practice than commonly perceived. Few though, bother with acquiring these skills before tackling a 5k or marathon.

A change in footwear can affect the amount of impact the body absorbs during running, but it doesn't change the fundamental stress of the activity. If you put all your faith in the idea that either barefoot running or running with highly cushioned shoes will enable you to run long distances without injuries, you'll likely be disillusioned. In fact, Dr. Daniel Lieberman, the Harvard professor whose research partly fueled the barefoot movement, himself states, “How one runs probably is more important than what is on one's feet, but what is on one's feet may affect how one runs.” Confronted with the baffling array of running shoes, the prevailing wisdom seems to be to pick a shoe that fits your running style, not to hope a shoe will change you.