

December 1, 2010

The rise of barefoot running

Kate Kift took up running two years ago to improve her health, but things didn't quite work out that way at first. Within a few months, she developed stress fractures in her heels. Her doctor recommended that she stop running. But Kift, who is 37 years of age, didn't stop. Instead, she ditched her running shoes, joining the growing community of people who believe running barefoot is better for the body than running in supportive footwear.

"It became quite evident that, when I was in shoes, I was striking severely on my heels," says Kift.

People who run barefoot tend to have shorter strides and land on the front or middle of their feet instead of their heels. Advocates of barefoot running say this style of running decreases the severity of impact with the ground and reduces injuries. But not everyone agrees.

Critics of barefoot running, including many podiatrists, note that there is no scientific evidence that indicates running barefoot is better than running in shoes, and say that even if running barefoot reduces some types of injuries it may cause other types of harm, such as puncture wounds on the soles and stress fractures in the metatarsals.

Dr. Michael Nirenberg, a podiatrist who practises in Crown Point, Indiana, is not among those critics. Nirenberg has been a runner off and on throughout his life, and has suffered from plantar fasciitis, a painful inflammation of the main ligament in the foot's arch. This led him to conduct research on ways to strengthen the muscles in feet, which in turn led him to become a fan of going barefoot.

"I started reading about our feet and shoes and supportive shoes. I became intrigued with the idea that once you support the arch of the foot, you don't use your foot muscles as much," says Nirenberg, who writes about barefoot running and other topics on his blog (www.americaspodiatrist.com). "If you start doing barefoot activity, be it running or walking, you start to build up the muscles in your feet."

His views aren't common in his profession, which tends to focus on using orthotics to correct foot problems. Orthotics do relieve pain quicker, Nirenberg acknowledges, but he recommends that people with foot problems transition over time to less-supportive footwear, and eventually incorporate some barefoot activity into their lives. As for barefoot running, Nirenberg agrees with the critics that there is no proof of its benefits — at least, not yet.

"Right now, there is no proof that running barefoot is better for you, but there is a lot of research that is leaning in that direction," he says.

Still, despite the paucity of research in this area, the barefoot running trend is growing. The Barefoot Runners Society, founded in the United States just over a year ago, has 1500 members (www.barefootrunners.org). And more people are becoming interested in running sans shoes everyday, says Tamara Gerken, the society's president

and co-founder. Gerken threw away her running shoes after developing a painful condition called Morton's neuroma.

“Like many people suffering with running shoe-related injuries or conditions, I came to a realization that I wasn't the one who was defective, it was the shoes,” Gerken writes in an email. “Running should be carefree and natural, not bound and controlled.”

Kift, who lives in British Columbia and is president of the newly formed Canadian chapter of the Barefoot Runners Society, is now injury free. Six months after being diagnosed with heel fractures, she ran a half-marathon. She plans on running many more races next year, including a 50-kilometre trail race. Kift writes about barefoot running on her blog (barefootkatiek.blogspot.com), and says that making the switch from the traditional running style may cause some initial discomfort, but it eventually makes people into more careful runners.

“There is always transitional pain during the period of transition when your body is running in a completely different way,” says Kift. “But when you run in shoes, you zone out a little bit. When running barefoot, you have to be very aware of what's in front of you, very aware of the terrain and very aware of the environment.”

The positive reports of the health benefits of running with naked feet, however, are all anecdotal. Though interest in research into barefoot running is growing, much like the trend itself, there is little in the way of hard evidence to back up the enthusiastic stories of barefoot runners.

“There is not a shred of research that indicates running barefoot or running in minimalist shoes reduces injuries,” says Dr. Kevin Kirby, an adjunct associate professor at the California School of Podiatric Medicine in Oakland. “There is also no research that indicates running shoes reduce injuries. It's a wash as far as research is concerned.”

Kirby, who has been a sports podiatrist for 25 years, is himself an accomplished runner, having completed more than a dozen marathons, with a more-than-respectable personal best of two hours and 28 minutes. He even has experience in barefoot running. In university, where he ran competitively, he sometimes trained in bare feet on the grass of a baseball field. For advanced runners, says Kirby, incorporating barefoot running into their training can be useful.

As for beginners shedding their shoes because of running-induced injuries, Kirby is skeptical. Often, a person picks up running after a few years of sedentary existence and trains too hard, pounding the pavement with reckless zeal while carrying 10 or more kilograms of excess body weight. Injuries often ensue, and running shoes make a convenient scapegoat.

Running barefoot on extremely hot pavement or in extremely cold weather might also damage the soles of your feet, Kirby warns. Then there are nails and glass and pebbles and other objects that can puncture the soles of feet or lead to stubbed toes. And even if heel strikes are eliminated by running barefoot, shorter strides means the feet hit the ground more often, so what's gained by reducing the force of impact might be offset by the increase in frequency of impact. The benefits of barefoot running are being oversold, says Kirby, and it is novelty that's driving the trend.

“It's another fad, something that drives a new cycle,” says Kirby. “It's interesting and it's something to talk about. In running, there's not much you can do differently, so this generates discussion.”

That discussion can sometime get heated. Runners often trade training tips and seek advice on Internet forums, and barefoot advocates are no exception. If anything, barefoot converts are so enthusiastic that they twist the findings of research papers to support their claims, says Craig Payne, a senior lecturer in the department of podiatry at La Trobe University in Melbourne, Australia.

“The barefoot running community have an appalling track record at how they misinterpret, misuse and misquote research,” Payne writes in an email. “The simple facts are that not one risk factor study on running injuries has linked high impacts to running injuries, yet the barefoot running community claim that the evidence shows this and consider high impacts as the cause of all injuries.”

A recent paper frequently cited by barefoot runners is “Foot strike patterns and collision forces in habitually barefoot versus shod runners,” which states that “Fore-foot- and mid-foot-strike gaits were probably more common when humans ran barefoot or in minimal shoes, and may protect the feet and lower limbs from some of the impact-related injuries now experienced by a high percentage of runners” (*Nature* 2010;463:531-5).

On their website, however, the authors of the paper make it clear that they are not advocating for barefoot running, stating that they have no data on how people should run and calling for controlled studies on this topic (www.barefootrunning.fas.harvard.edu).

“People are jumping to conclusions on both sides of the debate, but we must rely on evidence,” says Dan Lieberman, one of the paper’s authors and a professor of human evolutionary biology at Harvard University in Cambridge, Massachusetts. “The media is distorting the science or just leaving it out. The key thing is not being barefoot, but using a barefoot style, and not colliding into the ground with your heels.” — Roger Collier, *CMAJ*

Editor’s note: Part one of two. Coming tomorrow: minimalist running shoes

DOI:10.1503/cmaj.109-3745

December 2, 2010

Low-tech running shoes in high demand

The barefoot running trend has taken off in recent years, but in some environments running year-round without shoes is simply not an option. Barefoot enthusiasts who live in these places — where winters are extremely cold, or the terrain is too rough, or the sun gets hot enough in summer to turn sidewalks into stovetops — often use so-called minimalist shoes to protect their feet. Some barefooters swear by these low-tech shoes, but others wonder if their new-found popularity is merely the result of good timing and good marketing.

Many runners are shedding traditional running shoes — with their padded heels and gel sacks and air pockets and arch supports and “motion control” technology — because these shoes may weaken the muscles in the feet and encourage runners to forcefully strike the ground on their heels. Running barefoot, on the other hand, encourages people to take shorter strides and to land more softly on the middle or front of their feet, which some people believe reduces injuries and strengthens foot muscles (www.cmaj.ca/cgi/doi/10.1503/cmaj.109-3745).

People who want minimal insulation and protection, however, opt for lightweight shoes with thin soles that simulate the barefoot experience. Popular brands include Vivobarefoot, Feelmax and Vibram FiveFingers, the last of which look like gloves for feet and which, according to the company’s website, “enhance your sense of touch and feel, while improving foot strength, balance, agility, and range of motion” (www.vibramfivefingers.com).

British Columbia resident Kate Kift, president of Canadian chapter of the Barefoot Runners Society, runs barefoot on asphalt but not on the gravel trails where she does 80% of her running. “I use minimalist shoes for gravel trails,” she says. “The trails are so spiky that you need something on your feet.”

Dr. Michael Nirenberg, a podiatrist in Crown Point, Indiana, is also an avid runner and a fan of minimalist footwear. “There’s an idea that our feet need a lot of help or support. The truth is that feet are really strong and resilient,” he says. “There are four layers of muscle in our feet. The majority of the muscles are used less, if at all, when the feet are in supportive footwear.”

People who have studied how footwear affects running styles note that there is no scientific evidence that all the cushioning in high-tech running shoes provide a health benefits.

Dan Lieberman, professor of human evolutionary biology at Harvard University in Cambridge, Massachusetts, coauthored a paper comparing the foot strike patterns of barefoot versus shod runners which states that although “cushioned, high-heeled running shoes are comfortable, they limit proprioception and make it easier for runners to land on their heels. Furthermore, many running shoes have arch supports and stiffened soles that may lead to weaker foot muscles, reducing arch strength” (*Nature* 2010;463:531-5).

“People are running in shoes with heels that are three centimetres high that encourage people to crash into their heels. I’m amazed that in the past 30 to 40 years, nobody has asked whether these shoes help anybody, especially in light of the fact that so many runners get injured,” says Lieberman. “At least a third of all runners get repetitive stress injuries. If you ask me, that is a completely unacceptable number.”

Mauricio Morales, who operate the website barefootcanada.org and goes by the nickname “Barefoot Moe,” owns three pairs of Vibram FiveFingers. Yet he has mixed feelings about minimalist footwear.

“I have injured myself more wearing sandals than in bare feet,” says Morales, who does a lot of walking in bare feet but isn’t a runner. “I have a scar on my left foot from it rubbing on a sandal strap and becoming infected.”

Morales lives in Toronto, Ontario, and wears minimalist shoes when temperatures approach freezing. They are better than regular shoes, he says, because they allow the foot to move more freely. They also promote the barefoot lifestyle and are useful for getting into places, such as stores and restaurants, that don’t permit entry to nude-footed patrons.

But there are more than a few cons to minimalist footwear, says Morales. They are usually worn without socks, he says, and therefore promote foot odour and fungal infections. And just having anything on your feet, even a thin-soled slipper, can lead someone to subconsciously revert to their old heel-striking ways.

“Whenever I wear minimalist footwear, my brain reverts to thinking that I’m wearing shoes now, and I have to remind myself to walk as if I was barefoot,” he adds.

Morales is also skeptical about the sudden popularity of minimalist footwear. After all, sandals and moccasins and other thin-soled shoes have been around for hundreds of years. Are shoe companies just jumping on the barefoot running bandwagon and giving fancy names to a few scraps of fabric and rubber?

“Another beef I have with them is that they are outrageously expensive,” says Morales. “You can’t find anything under \$80. They are saving money on material and overcharging people because it is such a novelty.” — Roger Collier, *CMAJ*

DOI:10.1503/cmaj.109-3747