

June 23, 2005

Kick Off Your Shoes and Run Awhile

By CHRISTOPHER McDOUGALL

UNTIL he met a reclusive tribe of near-mythical athletes at the bottom of a Mexican canyon, Micah True could never figure out why his running injuries got worse as his running shoes got better. Then, the Tarahumara Indians taught him a lesson that even Nike is now starting to embrace: the best shoe may be no shoe at all.

Mr. True, 53, from Nederland, Colo., wasn't the only one baffled by the injury mystery. For years kinesiology professors, physical therapists and athletic-shoe designers have been puzzling over the same paradox: if running shoe protection and cushioning have improved, why haven't injuries among joggers decreased?

"The technological advancements over the past 30 years have been amazing," said Dr. Irene Davis, the director of the Running Injury Clinic at the University of Delaware. "We've seen tremendous innovations in motion control and cushioning. And yet the remedies don't seem to defeat the ailments."

Since the running boom of the 70's, giants like Nike, Adidas and New Balance have rivaled Silicon Valley for speed of R. & D. rollout, releasing improved products nearly every six months. One shoe, the Adidas 1, even has microprocessors that analyze foot impact and adjust cushioning with each stride. New Balance has a motion-control shoe so finely engineered it costs \$199.99.

Still, 65 percent to 80 percent of all runners - joggers and elite marathoners alike - are injured in an average year, according to Dr. Davis. Aching Achilles tendons, sore knees, inflamed arches and hobbling plantar fascia pain are as common today as they were when boot camp grunts were jogging in canvas Converse "Chuckies."

"Since the first real studies were done in the late 70's, Achilles complaints have actually increased by about 10 percent, while plantar fasciitis has remained the same," said Dr. Stephen Pribut, the president of the American Academy of Podiatric Sports Medicine.

And so Mr. True began to wonder, does it even matter what footwear runners use? Or could protective shoes be contributing to the problems they're meant to prevent?

Mr. True had been hampered by repeated injuries while competing in ultramarathons in the early 90's. While fighting for first place in the Leadville Trail 100 Ultramarathon, a grueling 100-mile course over steep, rocky trails, he suffered a stress fracture in his tibia. It was there that Mr. True



met the Tarahumara runners, who had traveled from Mexico to win four of the top five places while wearing homemade huaraches fashioned from strips of old tires.

Hoping to discover their secret, Mr. True followed the Tarahumara back to their canyon-bottom home. There they taught him to run lightly on the front of his foot instead of heavily on his heel. He experimented with running on his own homemade huaraches before trying the Bite running sandal, with its deft mix of ancient sparseness and modern cushioning. Eleven years have passed since Mr. True changed his technique and footwear, and even though he now regularly runs 40 miles over hazardous terrain, he has not had an injury since.

"If my gringo feet could handle it, going barefoot would be even better," he said.

During the past decade two barefoot-style training methods for runners have been developed based on the same principle: that legs, not shoes, are the best shock absorbers. That is, you land on your forefoot, instead of your heel, and paw back.

Dr. Nicholas Romanov, a sports physiologist in Naples, Fla., created what he calls the Pose Method, and Danny Dreyer, a running coach in San Francisco, started a program known as ChiRunning, both of which have already won legions of disciples among joggers, trainers and triathletes. Essentially these programs teach runners something they thought they knew: how to run.

"The problem is, the fancy running shoes have allowed us to develop lazy feet," Dr. Romanov said. Pose runners, consequently, prefer the thin-soled Puma H. Street, which is actually a casual shoe.

Surprisingly, even Nike now sees the sense of running "shoeless." Just one year after releasing its most structured shoe ever - the Air Max 2004, with airbags and a motion-control footbridge - the company has switched tack by offering the Nike Free 5.0, a shoe it claims will "re-evolutionize" running by enabling people to run as if they were barefoot. With its gauzy heel, stocking-like upper, and thin sole, the Free 5.0 looks more like a slipper than a sneaker.

"We found pockets of people all over the globe who are still running barefoot, and what you find is that during propulsion and landing they have far more range of motion in the foot and engage more of the toe," said Jeff Pisciotta, the senior researcher at the Nike Sports Research Lab in Beaverton, Ore., who headed the Nike Free project. "Their feet flex, spread, splay and grip the surface, meaning you have less pronation" - twisting of the foot - "and more distribution of pressure."

Their feet, in other words, get a workout with every step.

Nike tested the theory by having a group of students at the German Sports University in Cologne run warm-ups for six months in the Frees. These students showed a significant increase in foot strength and flexibility compared with those who ran in their regular shoes, Mr. Pisciotta said. Presumably, he said, "a stronger, healthier foot means less chance of injury."

The idea for the Free was born after two Nike researchers, visiting the Stanford track team, found that their sponsored runners ran sprints barefoot. Vin Lananna, their coach, had encouraged them to take off their shoes. "I felt that as shoes became more elaborate and intricate, the feet were getting weaker," said Mr. Lananna, who is now director of athletics at Oberlin College in Ohio. Mr. Lananna had always outfitted his team in Nike's cheapest and least structured shoe. The one time he experimented with Nike's best, his team was plagued by plantar fasciitis and Achilles problems. He now likes his runners to use the Frees.

Paula Radcliffe, the world record holder in the women's marathon, also has converted to the bare-is-best philosophy. Even though the Free 4.0 will not reach the market for six months, Ms.

Radcliffe, of London, has secured a few prototypes and is wearing them for a third of her 130 weekly miles.



"The deconditioned musculature of the foot is the greatest issue leading to injury," said Dr. Gerard Hartmann, an exercise physiologist in Limerick, Ireland, who works with Ms. Radcliffe and who was consulted by Nike on the Free's design. "Only 2 to 3 percent of the population has real biomechanical problems, so we're basically creating new problems by treating ones that don't exist," he said.

But the key to successful barefoot-style running, Dr. Hartmann stressed, is learning how. Nike, he said, has had an obligation to re-educate runners, since its technology may have contributed to sloppy mechanics.

"We have discussed expanding the instructional role," said Mr. Pisciotta from Nike. "But biomechanics are so personal." All runners must find people who can tell them "what can help and what can hurt."

Dr. Davis agreed that "just slapping special shoes on your feet won't help." She demonstrated by using me as a guinea pig for a series of diagnostic tests. At 43, I have five marathons to my credit and do about 40 average weekly miles. I know how to run - or I thought I did.

First I ran in bare feet, then in the Nike Free 5.0 and finally in Nike's most popular cushioned shoe, the Pegasus. The amount of impact, Dr. Davis found, was significantly higher during the Free and barefoot sessions. But slow-motion video replay revealed that I was landing on my heel then slapping down my forefoot. My right foot was twisting outward, while my left knee was dipping to the right. These irregularities were nearly invisible, but severe enough to aggravate my twingey Achilles.

By learning to land on my midfoot, I could correct these problems, Dr. Davis said. But I should be careful, she warned, because tinkering with a new gait can suddenly load the heel and Achilles with unaccustomed stress and cause a whole new set of injuries.

The Nike Free "should be the first shoe sold with an instructional DVD," Dr. Hartmann said. "You have to respect that this shoe can revolutionize the way people run, and no revolution comes without its casualties."