Barefoot Running: Article by Robert Rinaldi, MD
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Lately I have been fielding a lot of questions about barefoot running. I first became aware of barefoot running with my work at Dartmouth College, when I was faced with a chronically injured member of the cross-country and track team. He was insistent on using a form of running that was being proposed by Nicholas Romanov, PhD, called the Pose Method, and I, on the other hand, was totally opposed to the idea, believing he would continue to be an injured athlete. He rejected any explanation I offered him; he had done his homework, and respectfully offered reasons why he should continue running barefoot. This caused me to begin a personal research project that continues today, more than five years later.

RUNNING IN THE USA

In 1968, Dr. Ken Cooper, then a NASA physician, published Aerobics, a book that promoted health and fitness through aerobic exercise and jogging. This was the beginning of what became known as The American Fitness Craze. It also was the beginning of running in America. Jogging/running became a national obsession.

Road races were popping up in every town across the country, and the race for leaders in the market share of running shoes was also underway. Soon enough, along came Nike running shoes, followed by New Balance, Brooks, ASICS, Adidas, and a host of other companies that entered the booming fitness market. The sales market was influenced, and even manipulated, by research that was subsidized by shoe manufacturers. Each shoe company touted that they had the shoe that was biomechanically superior, would make the runner move fastest, with the least effort, and would reduced incidence of injury.

The very first running shoes were very much like track flats made of hard canvas or even leather. They were designed much like the same track shoe Roger Bannister wore when he broke the four-minute mile on May 6, 1954. Most of these shoes had no heel and they forced the runner to have a foot strike in the forefoot, or the metatarsal heads. Newcomers to jogging/running who wore these early track-style running shoes were experiencing a high rate of Achilles injury, shin splints, and metatarsal stress fractures.

To combat these injuries, shoe manufacturers went back to the drawing board and proposed a shoe design that put the heel of the foot higher than the metatarsal head. The science of movement was born, and it suggested that running should consist of heel-to-toe movement, much like walking, where the heel strikes first, instead of the forefoot striking first.

RUNNING FORM

Both a heel-strike-first gait and forefoot-strike-first gait have always been correct. The faster runners, those running at a pace under a 6:30 mile, will not heel-strike at all. This is how barefoot runners run-striking with the forefoot first. It is completely normal, anatomically correct, and the reason that the shoe industry has always made racing flats as well as distance training shoes. The racing flat is very much like the old track shoe. It does have a heel, but the shoe is essentially flat from heel to toe. If a heel raise exists it is nominal. Wearing these racing flats is similar to running barefoot.

The training shoe, on the other hand, has substantial height to the heel. The relationship of heel to toe may vary as much as one inch. Raising the heel on training shoes made a drastic change in the incidence of Achilles injury, shin splints, and metatarsal stress fractures. ASICS began to lead the field in sales of running shoes when they introduced their 2000 series, which has the biggest heel-to-toe difference. The shoe offers the athlete a more comfortable ride and greater stability with each step.

In the early days of the running boom, the running magazines had frequent articles on a variety of issues pertinent to the sport. The need to warm-up and stretch was always emphasized, as were numerous articles on the most current running research of the day. This is the same research that was subsidized by the shoe industry. Studies time after time concluded that running with a heel strike could result in Achilles tendon injury; however, running in shoes designed for heel-strike minimized the problem. The research was legitimate, and it revolutionized biomechanics and the understanding of motion, and led to building successful treatment algorithms for a host of human motion maladies.

Is BAREFOOT RUNNING BETTER?

The book Born to Run, a popular, easy-to-read outdoor adventure story, has caused a change for runners and the running shoe industry. The author, Christopher McDougall, is an accomplished spellbinding wordsmith. In Born to Run, Chris follows the Tarahumara Indians and ultra-distance runners, and popularizes barefoot running. The entertaining book has taken barefoot running to a cult status, but is this for everyone?

As a professional who treats feet everyday, I must say that I am concerned most about the possibility of puncture wounds on the bottom of the foot. There is really little evidence and real research that this style of running is indeed better. The proponents of barefoot running support the suggestion because our ancestors moved about without shoes. So I ask, "Why did we invent shoes?"

The answers are obvious, and are all about protecting your feet. Just because Cro-Magnon moved about without shoes offers little incentive for us to begin this process again. Abebe Bikila won the 1960 Olympic gold medal at the marathon distance, and he ran the course barefoot. In 1964 he returned to the Olympic marathon venue and took gold again, but this time he set a new PR in a pair of Puma shoes.

COMPROMISE

The Dartmouth College track athlete did cause me to research and compare. The runner who strikes on the forefoot first will create increased shock-absorbing moments in the kinetic chain and this should reduce injury. The forefoot-strike-first runner will have shock absorption in the foot as the tarsal bones slide in very normal movements. The ankle piston absorbs shock and then the knee piston adds to the normal kinetic chain function of taking shock and not transmitting it to the hip and back. We will see much less back, hip, and knee injury in the forefoot-strike-first method of running.

The heel-strike runner will absorb no shock at heel strike, relying only on the shoe to contain the stresses. The very first natural shock absorber will be the knee joint as it pistons. The foot and knee come under extreme stress in heel-strike-first runners, and the results are the common running injuries of plantar fasciitis and assorted knee maladies. The transition from heel-strike-

first to forefoot-strike-first will be nothing less than awful. You will experience stiff and sore quads, Achilles, and shins, and you will initially cover your distances much slower, but I personally think the forefoot-strike-first runner will have fewer injuries and a longer running career. So, in that sense, the barefoot runner, naturally being a forefoot-strike-first runner, has an advantage.

JUST SAY NO TO BARE FEET

If you decide to proceed to forefoot-strike-first, I suggest and recommend using shoes that are designed for that style of running. As you read this article, the running shoe industry is changing gears and once again racing for their share of market sales. They are designing and manufacturing minimalist running shoes. ASICS DS Trainer, Mizuno Wave Ronin 2 or Wave Universe 3, New Balance 100, Nike Free or Lunar Racer, Saucony Grid A3 or Grid Fastwitch, and the rapidly gaining popularity Vibram Five Finger are all designed with a low profile that encourages forefoot/metatarsal strike first, yet protects the foot from inconsistencies in surface, stone bruises, and puncture wounds. New faces in the shoe industry are Newton Running, Skora Footwear, and Terra Plana Vivo. I can also recommend that using your current running shoe is not at all bad. I have been comfortably using my ASICS 2140 and Saucony Pro Grid Guide. This forefoot strike running form feels good but it will take a long time to transition from heel-strike-first running. Proceed slowly and expect to cover your distances slower. Do not expect to make an immediate transition. Changing your gait may take up to a year. Please expect frustration, but I think it will be worth the effort, time, and discipline.

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