

## Paper tape can help prevent foot blisters

Researchers followed ultramarathon runners around the world to test whether low-cost paper tape could reduce debilitating and painful blisters.

By Tracie White

Ten years ago, Grant Lipman, MD, an emergency medicine physician, was working as a doctor for endurance athletes who were running 25 to 50 miles a day in various parts of the world, from China to Antarctica to Chile.

Despite the harsh conditions and extreme exercise, the most common complaint that Lipman heard from the athletes was about the pain and debilitation caused by foot blisters, the same kind that plagues lots of people, from hikers to women in heels.

“What I kept hearing was, ‘Doctor, I’d be doing so well, if only for my feet,’” said Lipman, clinical associate professor of emergency medicine. “Their feet were getting decimated.”

Multiple methods of blister prevention have been tried, Lipman said, including powders, antiperspirants, lubricants, tapes and adhesive pads. But despite the numerous scientific studies on blister prevention over the years, there is little evidence to show that any of these methods work well, he said, until now.

In a new study, Lipman and colleagues report that inexpensive paper tape, the kind available at most drugstores, when applied to blister-prone areas prior to exercise, successfully reduced the incidence of foot blisters in those areas. The tape, commonly referred to as surgical tape, is used for wound treatment. It is only mildly adhesive — an advantage because it doesn’t tear the blisters if they do occur. The results were published online April 11 in the *Clinical Journal of Sport Medicine*.

“People have been doing studies on blister prevention for 30 or 40 years and never found anything easy that works,” said Lipman, who is the lead author of the study. “I wanted to look at this critically.” The senior author of the study is Brian Krabak, MD, a sports medicine physician affiliated with the University of Washington.

Over the years, in addition to the complaints from the extreme runners, Lipman has heard from military doctors, bemoaning the state of their military recruits’ feet. Blisters were keeping recruits from participating in basic training. From his experience treating athletes and listening to his patients, Lipman drew anecdotal evidence that the paper tape method could provide the best answer. Then he set out to test the hypothesis.

In 2014, Lipman and his colleagues recruited 128 runners participating in the 155-mile, six-stage *RacingThePlanet* ultramarathon event that crosses deserts around the globe, including the Gobi Desert and deserts in Jordan and Madagascar.

Paper tape was applied to just one of each of the runners' feet. The untaped areas of the same foot served as a control. (Which foot got the tape and which didn't was chosen at random). The tape was applied by trained medical assistants to either the participants' blister-prone areas or, if they had no blister history, to randomly selected locations on the foot.

The paper tape was applied in a smooth, single layer before the race and at subsequent stages of the race, Lipman said. The medical assistants followed the runners for 155 miles over seven days. For 98 of the 128 runners, no blisters formed where the tape had been applied, whereas 81 of the 128 got blisters in untaped areas.

"It's kind of a ridiculously cheap, easy method of blister prevention," Lipman said. "You can get it anywhere. A little roll costs about 69 cents, and that should last a year or two."

He added, "The best way to make it to the finish line is by taking care of your feet."

Other Stanford co-authors are former wilderness medicine fellows Louis Sharp, MD, Katherine Shea, MD, and Mark Christensen, MD; and Alexandra DiTullio, MD, emergency medicine resident.

The study was supported by a 2014 RacingThePlanet research grant. The preventive taping technique described in the study is discussed in Lipman's book *The Wilderness First Aid Handbook* and a related app, a link to which is available at <http://wildernessaid.com>