

Toe socks are an old idea but, as the recent experience of two prominent brands shows, their ability to help runners, walkers, cyclists and other active people improve balance and body posture is winning new admirers for this five-toe phenomenon all the time.

Let your feet feel the way

The human foot is a complex piece of kit. Most with an interest in footwear know that the number of bones in the foot is 26, with 33 joints, but the number of nerve endings is much higher – 250,000 in the sole alone.

Reflexologists argue that, as a result of all this feeling, their skill in manipulating particular areas of the feet can help a patient with a kidney problem, or migraine or a peptic ulcer. All of us could tap into the foot's ability to feel its way around to improve our balance, our posture and our athleticism thanks to the phenomenon of proprioception, in which sensory neurons pick up stimuli from the ground and sends information about the body's movement to the brain.

Most socks and shoes restrict our feet, especially our toes, too much for proprioception to help us in every day life, but toe socks, the ones with a separate space for each toe like the fingers on a glove, are a simple way of making more of our ability to feel with our feet and are gaining in popularity.

Natural mechanics

Long-time UK producer of performance toe socks ToeToe is so convinced of the benefits athletes can gain from wearing toe socks that it recently launched its own elite athlete programme.

Kent-based ultra-marathon runner Mimi Anderson, holder of several extreme running world records, was among the first elite athletes to join Team ToeToe. At the time of the announcement, Ms Anderson said: "For an ultra,



Athletes at all levels have found that five-toe socks help them improve their posture, balance and overall performance.



runner, nothing is more important than the right preparation and equipment, socks and trainers are possibly the most important equipment I have. Wearing ToeToe socks helps me prevent race-threatening skin abrasion and blisters, regulate my foot temperature and helps me achieve my optimal body posture and balance. All crucial, particularly when I am running in extreme conditions."

The company's product range draws on over 10 years' experience in proprioception research with chiropodists and podiatrists and the belief that in order to maximise performance it is essential to use footwear that works in concert with the natural mechanics of the foot. Team ToeToe's primary focus remains translating this expertise into producing high-performance products with the needs of athletes, including everyday gym-goers, in mind.

ToeToe's founder, Sinan Yilmaz, argues that conventional socks limit feedback to the brain by forcing the toes to act as one unit, which is no more natural for the toes than it is for the fingers. If a person's fingers are all bound together, she can still hit the keys of a piano, but she will struggle to play a Chopin nocturne. Similarly, toe socks allow each toe to move individually, increasing the foot's potential to provide proprioceptive feedback, which the brain can interpret and make the body adjust to improve balance and posture in the way Mimi Anderson describes.

Further elite athletes will join Team ToeToe in the months ahead, including figures from tennis, golf, cycling and climbing, as well as walkers and mountaineers, ToeToe has stated.

A plan from Japan

Mr Yilmaz relates that the idea behind ToeToe is an old one in some parts of the world, notably Japan. He remembers that in 1997 he and his wife received visitors from Japan who brought toe socks as a gift. "They were already a well established industrial product in Japan," he recalls. "The first machines there to make them on an industrial scale came out in 1978, which isn't to say toe socks were invented then; they already existed as a product before that." After receiving this gift and trying the socks out for himself, he decided to make his own version.

Originally from Turkey, Sinan Yilmaz has a 20-year track record in the knitting industry and still carries out his production there. The Turkish textile sector is very pro-technology, he says, which, with good labour and raw materials costs, makes it a competitive place to construct finished products. He adds that socks, specifically, is a sector that is growing very rapidly in Turkey at the moment.

With regard to his own venture into toe socks, he explains that it took two years from his initial



experience of the gift from Japan to get investors in place and launch ToeToe. Now he makes the product in five ranges, 50 styles and a wide array of colours and fibres. Running different ranges of toe socks is a relatively recent development, starting around 2008. The five ranges are everyday, outdoor, sports, yoga and pilates, and fashion. The socks that Mimi Anderson and other athletes wear have cushioning for targeted parts of the foot.

Cycle-specific

In July 2012, ToeToe added a new collection of socks specifically for cycling to its range. The cycle toe socks are specially designed to provide cushioning in the areas that cyclists need most, namely on the toes, the ball of the foot and the Achilles tendon. Zonal knitting helps ensure a firm hold to prevent the socks from slipping around the foot and, overall, the products will offer cyclists improved balance, blood circulation, foot shape, hygiene and comfort, promoting a 'barefoot' sensation to the wearer. Sinan Yilmaz says this development is the result

UK-based brand ToeToe brought out a new cycling range of socks in July 2012 in response to customer demand.

 ToeToe



*Performance Series
Midweight toesocks
from Injinji available in
no show and mini-crew
lengths.*



of having received many requests from “toe separation converts” to extend his company’s range to the world of cycling apparel. Coolmax yarn features in the collection because of its moisture-wicking capabilities. Nylon also features in the blends for its durability and softness. The socks are calf-length.

Feet on the ground

“We take our feet far too much for granted,” the ToeToe founder continues. “It is our feet that connect us to the ground, and when the flow of information from the nerve endings becomes more efficient, which I am certain it does with toe socks, our awareness changes for ever.”

He explains that some people can make this transition after just two weeks of wearing toe socks, whereas for others it can take longer (customer feedback suggests up to six weeks). What is common is that many people who get into the toe socks experience vow never to wear conventional socks again. Conventional socks “do not interact with our anatomy”, he says. ToeToe has had feedback from sufferers of Raynaud’s phenomenon, in which cold or stress can cause a person’s hands and feet literally to turn blue. “These people do not, and will not, wear conventional socks any more,” the company founder says. “They say they can’t. They are not cured, but the socks and the connected mechanics help them.”

There are also benefits in terms of hygiene. Separate material covering each toe restricts the amount of dead skin that can build up inside a sock, while the choice of moisture wicking and thermoregulating materials such as Coolmax

can keep the levels of heat and moisture down. So while toe socks don’t kill bacteria, they reduce the three growth factors (dirt, moisture and heat) that the bacteria depend on, making for more hygienic feet. This, and protection from friction from bare toes rubbing against each other, helps runners, walkers, cyclists and other athletes avoid blisters.

Protective interface between the toes

Keeping blisters at bay is one of the biggest selling points that another toe socks brand, California-based Injinji, is experiencing for its wide range (with different colour, length and fibre options) of products. Marketing director Deirdre Ostrowski says that for ten years Injinji was a one-product company, but that its line of toe socks has expanded “based on the needs of loyal customers”. It now has performance, outdoor and yoga series in its sock range (the yoga line include a sock with the ends cut off the toes), with Coolmax, Lycra, nylon and Australian merino wool (under a proprietary name, nüwool) all in the material mix. Injinji too has a line-up of sponsored athletes who swear by the socks, including triathlete Felipe Bastos and ultramarathon runner Akos Konya.

Ms Ostrowski describes the five-toe design as “a protective interface between toes”, even the thinnest and most lightweight socks in the range protect feet well and help align toes properly. She acknowledges that runners and walkers and others are used to sock brands extolling the benefits of wool, Coolmax and other fibres that manage moisture well, but she makes the point that a lack of moisture-wicking material between

the toes will defeat the purpose to an extent.

She, too, raises the issue that toe socks fit better, and not just at the toes. A properly fitting product in the toe area will also help at the heel, preventing the painful rubbing that can occur if the heel slips. And having attended podiatry conventions to listen to and discuss the matter with medical professionals, she also has an appreciation of how important toe socks can be in aiding recovery after bunion surgery thanks to their ability to help wearers align their toes properly.

Feet are not puncture-proof

"Running is our core, though," she adds. "We have a loyal following among runners." She is less than convinced that this is about bringing runners closer to the barefoot-running experience that has become so fashionable. She explains that many runners who use minimalist footwear are enthusiasts of combining the shoes with toe socks, especially when it's cold, using them as another protective layer for the foot. "We don't have puncture-proof feet," says Ms Ostrowski, "the feet need protection, and lots of runners get that. I think we have an interesting relationship with the barefoot movement, and it's a growing

category, but we are not being pigeon-holed as a minimalist product."

The Injinji line continues to expand and for spring 2013 there are further new versions. One example is a trail sock that has a double cuff and a more ventilated, breathable top. People who are committed to the five-toe design have no less a demand than other sports and outdoor enthusiasts for high-tech performance, according to Ms Ostrowski.

Promise no miracles

High levels of the functionalities that technical textiles can offer are a fundamental part of the sock brands' offering, but ToeToe founder Sinan Yilmaz is careful not to let wearers become carried away in their expectations. "Toe socks are not a miracle cure for anything," he repeats, "and I offer no promise that they will help people lose weight, or anything like that; I'm not interested in any of that. I don't know everything about this subject and I am still learning. I'm not afraid to make mistakes and I'm not afraid to start again. But I love learning and I love sharing what I know and I think the proof that toe socks help people is in the customer loyalty we have achieved. More than 90% of the people who try our socks stay with us." 



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