Supercharge your stride

Happy feet will make you a happier runner—and chances are, yours could use a tune-up. Follow these simple techniques and TLC tips to go longer and stronger.

By SARA ANGLE

INSIDER'S GUIDE
Taking a new look at your feet—from the way you lace your sneakers to how you land—can boost your running efficiency.

You probably don't realize it as you're running, but your feet are pounding the pavement some 1,000 times per mile and taking a bit of a beating—a force of two to four times your body weight with each foot strike. No wonder up to 79 percent of runners experience some kind of foot injury each year, according to research in the *British Journal of Sports Medicine*.

"There are a large number of sensory nerve fibers in your feet," explains Luke Bongiorno, the managing clinical director at Orthology, a physical therapy and sports medicine clinic in New York City. "If you don't take care of your feet, you won't properly stimulate those nerves, which can throw off your proprioception [the body's ability to know where it is in space] and thus cause the wrong muscles to fire." For example, during a run, when you push off your big toe, its nerves signal your body to activate your glute muscles; but if you are not able to get those feelings through your toe, the glutes won't mobilize, and other, less powerful muscles will compensate. →

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Keeping your feet in top running order takes some dedication, but the payoff is worth it. Whether you hit the treadmill, track, trail, or street, follow our expert advice.

Strength-train your soles

"When your feet are stronger, you'll have better propulsion, which can help you run faster and more efficiently," Bongiorno says. He recommends big-toe raises as you sit or stand to help strengthen the small, deep muscles of the foot that help control its running motion: With your feet placed firmly on the ground, try to lift just the big toes; do three sets of 10 on each foot, alternating sides. Then, before you go to bed, increase your arch strength by standing with your bare feet on the ground and pushing down through your heels and toes, pulling them closer together so that you're lifting through the arches. Both of these drills are especially key for those who wear high heels on the regular, says Jackie Sutera, a podiatrist in New York City for Vionic Shoes. "Heels can cause painful inflammation in the arch, which can easily turn into plantar fasciitis," she says. "They also shift all your weight to the ball of your foot and toes, which can pinch nerves there."

40%
Percentage you'll reduce blisters by when you cover high-rub spots on your feet with paper surgical tape. This drugstore find creates a slippery surface, which reduces the friction that causes blisters.
SOURCE: *Clinical Journal of Sport Medicine*

Rethink your sneaker type

The theory used to be that runners with flat feet automatically looked for sneakers with extra arch support, that those with high arches sought out more cushioning, and that the rest would go for more pared-down sneaks. Then came a wave of research suggesting that all of us should take off the training wheels and try minimalist sneakers. "This older way of thinking just looked at people's feet while they were standing," says Geoffrey A. Gray, the founder of and head of research for Heeluxe, a company that specializes in scientific testing of footwear. "Now we look at people in motion to see how their foot interacts with a shoe." (See "Which Shoe Is for You?" below, for the new rules on how to choose.)

It boils down to this: According to the latest research, the best predictor for a good running shoe is the comfort you experience when wearing it. A review in the *British Journal of Sports Medicine* concluded that simply choosing running shoes that were the most comfortable resulted in fewer injuries. "You should feel supported through the instep, or the top part of the arch, and feel as if the shoe disappears from the ball of the foot to the toes," Gray says. You also want a snug fit at the navicular, or top of the foot by the ankle: Lace your sneakers up through the very top eyelets, which usually don't come laced, he suggests. →

NO-SLIP SOCKS
Stance Plyo styles are designed for running, with elastic arch support that gives your feet an extrahugged feeling; a tab at the heel adds padding to help your sneakers fit snugly and reduce rubbing. ($15, stance.com)

WHICH SHOE IS FOR YOU? Biomechanist Geoffrey A. Gray breaks down how to find your sole mate.

Minimalist
What it is: A barely cushioned, low- to no-rise running shoe that enables you to feel the ground better.
Who it's for: Runners who want to strengthen their feet and have a desire for a more flexible push-off or a faster pace (thanks to less drag).

Nike Free RN Flyknit
($130, nike.com)

Maximalist
What it is: A sneaker with a supersize midsole designed to provide extra cushioning for the feet and joints.
Who it's for: Anyone who wants softer landings, or slow-paced runners, who put in more foot strikes per mile than their speedy counterparts.

Hoka One One Infinite
($120, hokaoneone.com)

Neutral
What it is: The classic—a lightweight shoe with a slightly raised heel and a soft, flexible upper and midsole.
Who it's for: Most runners; those who don't feel as if they need training wheels but want a substantial shoe.

ASICS FuzeX
($110, asicsamerica.com)

Stability
What it is: A shoe with extra bolsters built into the midsole and upper side to limit the twisting movement of the foot.
Who it's for: Runners who feel foot fatigue as they increase their distance and/or speed.

Mizuno Wave Catalyst
($110, mizunousa.com)

Be in the strike zone

Where your foot hits the ground as you run can make all the difference in how your feet—and joints—feel postworkout. Heel strikers tend to have a higher risk of injury (for example, stress fractures and plantar fasciitis) as compared with forefoot strikers, a Harvard University study showed. Likewise, switching to a forefoot strike could reduce the stress on your knee, according to a study in *Medicine & Science in Sports & Exercise*. "Landing on your forefoot is naturally softer, because your calf helps to cushion the landing," explains Irene S. Davis, Ph.D., the director of the Spaulding National Running Center at Harvard Medical School. But even if you can't retrain yourself to land differently, it doesn't mean you're doomed to injury. When Harvard researchers studied a group of heel-striking recreational female runners, they discovered that those who had never been injured had one thing in common: They landed more softly than runners who had experienced injury. If you can actually hear your foot strike the ground when you run, you're probably landing too hard, Davis says. Next time you run, adjust your form to see if you can make your strikes softer sounding, she advises.

Pamper your soles

Before your run, a dynamic warm-up (high knees, walking lunges, butt kicks) will bring blood flow to your muscles, including the small ones in your feet, prepping your whole body to move more efficiently. After your run, gently massaging your feet for at least 10 minutes can prevent and alleviate foot pain and injury. It also stimulates the nerves of your feet, increasing your awareness of how your foot hits the ground, Bongiorno says. If you don't have a dedicated foot-massage tool (see our "Get on the Ball" picks, above), a lacrosse ball will do the trick. While standing (or seated, for less pressure), roll the ball slowly along the arch and through the toes, stopping when you find a point of tension and resting on that spot as you take five slow, deep breaths. Another option? Freeze a water bottle, then use it to roll out your feet for five minutes postrun.

Take a rest day

Just like the muscle and bones in your limbs, those in your feet need time to recoup, says Dennis Cardone, the chief of primary care sports medicine for NYU Langone Medical Center. Avoiding two or more successive days of running is the best way to prevent overuse injuries, but if you're training for a race, make sure to work in at least one recovery day and cross-train on alternate days: Bike, swim, lift weights, do yoga—anything without jumps and jolts. And if you're trying to up your mileage, do it gradually, increasing by 10 to 20 percent each week, Cardone notes.

BETTER FOOTING
If a sneaker is more comfy with a special insole, go for it. Insoles by **Superfeet** can help perfect your fit ($45 to $55, superfeet.com), but inserts designed to correct your alignment aren't necessary, says Benno M. Nigg, Ph.D., a professor emeritus of biomechanics at the University of Calgary in Canada.

FEET RELIEF

Podiatrist Jackie Sutera tells you how to overcome these common runner bummers.

Plantar fasciitis

Inflammation and pain on the bottom of the heel and in the arch

THE FIX Ice and massage your arch and heels, wear shoes with good arch support, and do calf stretches like the runner's stretch: Stand facing a wall three feet away with left foot staggered in front of right. Lean forward from ankles and press palms against wall at shoulder height; hold for 15 to 20 seconds. Switch sides; repeat.

Achilles tendinitis

Inflammation, and pain in the tendon that attaches the calf muscle to the back of the heel

THE FIX Wear a heel lift or a heel cup in your shoe, apply ice, and stretch your calf.

Metatarsalgia

Inflammation and pain at the base of the toes and under the ball of the foot

THE FIX Add a cushioned insert to any shoes that aren't well padded. Ice and light massage help, too.

GET ON THE BALL
For deep pressure: The **TriggerPoint MBX Massage Ball,** above, isolates specific spots. ($20, tptherapy.com)
For everyday aches: The nubbly **Gaiam Restore Ultimate Foot Massager** relieves tightness. ($7, gaiam.com)
For a custom rub: **The Sklz Adjustable Massage Roller** lets you rearrange its massaging balls for just-right pressure. ($40, sklz.com)

Also, give your go-to pair of sneaks a time-out. "The foam in your shoes becomes compacted as you run, then it slowly rebounds to its normal height after your workout," Gray explains. "The recovery period varies for each shoe and depends on how much you weigh and how fast you run, but the more time between your runs, the more the foam rebounds." If you do run on back-to-back days, keep two pairs of the same-style sneakers so you can swap them out.

Retread every 425 miles

Your rate of impact begins to increase dramatically when a running shoe reaches the 425-mile mark, regardless of the brand, according to data from Milestone Sports, a sports technology company. "The goal is to replace your shoes before you start feeling aches," says Bennett Grimes, a product-line manager of footwear at Brooks Running. The cushioning is usually the first thing to break down, because midsoles are designed to absorb shock and protect the body, he says. If you have an older pair of running shoes that you haven't your tracked mileage on, you can also look at the tread. "If there is any wear and tear on the tread, it's time to replace them," Grimes advises. ★