



**The  
Big 7**

# Body Breakdowns

How to avoid  
(and recover from)  
the most common  
running injuries

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## In an ideal runner's world,

every step of every mile would be 100 percent pain-free. No aches, no twinges, no lingering soreness from yesterday's workout. The reality is that many runners constantly deal with a slight (or not so slight) disturbance—a tender foot, a tight hamstring, a whiny knee. While these nagging issues often aren't serious enough to require a time-out, they are annoying, especially when they don't let you fully enjoy your time on the roads.

Think of running pains in terms of a spectrum. At one end you have severe, full-blown injuries—call it the red zone, which includes stress fractures that require time off. The other end, where you're in top form, is the green zone. Mild, transient aches that bug you one day and disappear the next sit closer to the green end. Unfortunately, many runners get stuck in the middle—the not-quite-injured but not-quite-healthy yellow zone.

Whether you land in the red, linger in the yellow, or return to the green end of the spectrum depends largely on how you

# 1 Runner's Knee

Patellofemoral pain syndrome (PFPS), or "runner's knee," is the irritation of the cartilage on the underside of the patella (kneecap). About 40 percent of running injuries are knee injuries. And 13 percent of runners suffered knee pain in the past year, according to 4,500 respondents to a runnersworld.com poll. PFPS typically flares up during or after long runs, after extended periods of sitting, or while descending hills and stairs.

## WHO'S AT RISK?

Anyone with biomechanical factors that put extra load on the knee is vulnerable to PFPS, says Bryan Heiderscheit, Ph.D., P.T., director of the University of Wisconsin Runners' Clinic. Risk factors include overpronation (excessive inward foot rolling) and weak quads, hips, or glutes.

## CAN YOU RUN THROUGH IT?

Yes, but taking extra rest days and reducing your mileage is necessary. Run every other day and only as far as you can go without pain. Some runners find that uphill running is less painful, so Heiderscheit recommends simulating hills on a treadmill. Uphill running has

the added value of working your glutes. Strong gluteal muscles help control hip and thigh movement, preventing the knees from turning inward. Avoid running downhill, which can exacerbate

pain. Bicycling may speed your recovery by strengthening the quads. Elliptical training and swimming are other knee-friendly activities.

## REHAB IT

Strengthen weak hip and glute muscles with lateral side steps, says Charlie Merrill, M.S.P.T., a physical therapist at ALTA Physical Therapy in Boulder, Colorado. Place a loop of resistance band just above your ankles or your knees. Separate your feet and bend your knees, lowering

Side Steps



down into a slightly crouched position. While staying in this position, walk sideways 10 to 15 steps, keeping your feet straight and your upper body still. Then reverse directions. Keep your feet separated to maintain band tension. When this becomes easy, try doing this on your toes with your heels off the ground. (For more butt-building exercises, see "Glute Strength," page 42.) If there's a problem in the way your kneecap tracks, athletic tape may reduce pain (Merrill demonstrates knee taping at runnersworld.com/kneetape). Postrun icing also provides relief in the early stages of this injury. Heat works best once the injury is healing and no longer in an acute stage.

## PREVENT A RELAPSE

Heiderscheit recommends shortening your stride length and landing with the knee slightly bent, which can take up to 30 percent load off the joint. Count the number of steps you take per minute and increase by five to 10 percent per minute. Keep your knee tracking correctly by strengthening your knee's support muscles like quads and glutes with exercises like lateral side steps and squats. It's also important to stretch your hip flexors.

## ELITE TREATMENT

Marathon silver medalist Meb Keflezighi was building up for the 2010 Boston Marathon last year when he slipped on ice and tweaked his knee. He took two weeks off, ran only every other day for the next two weeks, and then decided not to run a half-marathon in March. The strategy worked: He was the second American at Boston in April, running a 2:09.

## Knee Check: How to Proceed

**STOP!** Pain on the inside or outside of the knee immediately upon waking, which doesn't go away as the day progresses.

**WITH CAUTION** Twinges early in run, dissipate, come back after run. Bothersome after prolonged sitting.

**GO RUN!** Completely pain-free even after sitting through a two-hour movie or after going on a hilly long run.

react when that first stab of pain hits, says Richard J. Price, M.D., a sports physician at Rocky Mountain Orthopedic Associates in Grand Junction, Colorado. "Often it comes down to whether you take a little time off now or a lot of time off later," he says. You can reduce your risk of ending up in the red zone if at the first sign of an issue, you back off your mileage, reduce the intensity of your runs, start a treatment program, and develop a proactive long-term injury-prevention strategy, such as strength training, stretching, and regular foam-rolling. "Physical therapy is like

homework," Dr. Price says. "None of us likes having to do it, but if you don't do it, the issue will come back."

According to Price and a team of doctors and physical therapists consulted in the following pages, there are seven injury hotspots that most frequently plague runners. If you don't get a handle on them, these issues can trap you in that nefarious yellow zone, or worse, turn into an acute injury that forces you to take a layoff. Here's how you can keep annoying pains in check so you can move into—and, with hope, stay in—the green zone.





## 2 Achilles Tendinitis

The Achilles tendon connects the two major calf muscles to the back of the heel. Under too much stress, the tendon tightens and becomes irritated (tendinitis). It makes up 11 percent of all running injuries; eight percent of runnersworld.com poll respondents dealt with it this past year.

### WHO'S AT RISK?

Runners who dramatically increase training (especially hills and speedwork) and have tight, weak calves are vulnerable.

### CAN YOU RUN THROUGH IT?

"If you have any pain during or after running, stop," says Amol Saxena, D.P.M., a sports podiatrist in Palo Alto, California.

"This is not an injury to run through." If you catch a minor strain early, a few days off might be sufficient healing time. If you keep running as usual, you could develop a serious case that may take six months to go away.

### REHAB IT

Five times a day, apply ice. Strengthen the

calves with eccentric heel drops: Stand with the balls of your feet on a step. Rise up on both feet. Once up, take your stronger foot off the step. Lower down on your injured foot, dropping your heel below the step. Rise back up, return your other foot to the step. Do 20 reps. Pool-run, use an elliptical machine, and swim, but avoid cycling unless it's not painful.

#### Heel Drop



### PREVENT A RELAPSE

Strong calves protect your Achilles from flare-ups, Dr. Price says, so do heel drops daily. Avoid aggressive calf stretching and wearing flip-flops and high heels, all of which can irritate the Achilles.

### ELITE TREATMENT

Shannon Rowbury, 1500-meter bronze medalist (2009 World Championships), wears compression socks for hard workouts to relieve Achilles tightness. "It's made a huge difference," she says.

### Ankle Alert: How to Proceed

**STOP!** Severe pain and swelling above your heel, even when not running. Standing up on your toes causes pain.

**WITH CAUTION** Dull pain around your heel at the end of your run that lingers afterward but goes away when iced.

**GO RUN!** No pain when you pinch the tendon, starting at the heel and working your way up toward your calf.

# 3 Hamstring Issues

The muscles that run down the back of our thighs bend our knees, extend our legs, drive us up hills, and power finish-line kicks. So when our hamstrings are too tight or weak to perform well, we notice it. Seven percent of poll respondents say their hamstrings have bugged them this past year.

## WHO'S AT RISK?

Hamstring issues usually arise because these muscles are weak—often from being too long or too short. Counterintuitive as it might seem, very flexible people are prone to hamstring problems because

their overly stretched-out muscles are more vulnerable to damage. On the flip side, people who can barely touch their toes or who sit for long periods of time are also at risk. Tight, short muscles are under greater tension. Another factor is



## Hamstring Signs: How to Proceed

**STOP!** Sharp, sudden, strong pain and possibly even a snap or pop sound while running. The area is bruised.

**WITH CAUTION** Chronic achiness and tightness that forces you to slow your pace and shorten your stride.

**GO RUN!** Pain-free while climbing hills and doing speedwork, even after long periods of sitting.



muscle imbalance: Many runners' quadriceps overpower their hamstrings, which sets them up for injury.

## CAN YOU RUN THROUGH IT?

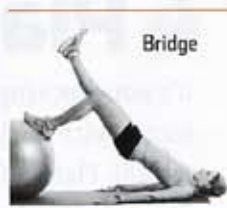
If the pain comes on suddenly and strong and the area bruises, you may have a true pull and you'll need extended rest—months—before you can run again. If it's a less severe, chronic overuse injury, you can usually run, but it'll take some time before you're back in the green zone. "Hamstring issues stink," Price says. "It takes a long time to heal them." Running a slow, easy pace is usually less bothersome than attempting intervals or hill repeats. Bicycling, pool running, and swimming are good alternative activities.

## REHAB IT

Strengthen your hamstrings with one-legged hamstring curls (raise the bar with both legs, then slowly lower it one leg at a time) and one-legged deadlifts (see "Glute Strength," page 42). Use a foam roller to alleviate tightness before and after a run, Merrill says. In chronic cases, active release technique (ART) and deep-tissue massage may be necessary.

## PREVENT A RELAPSE

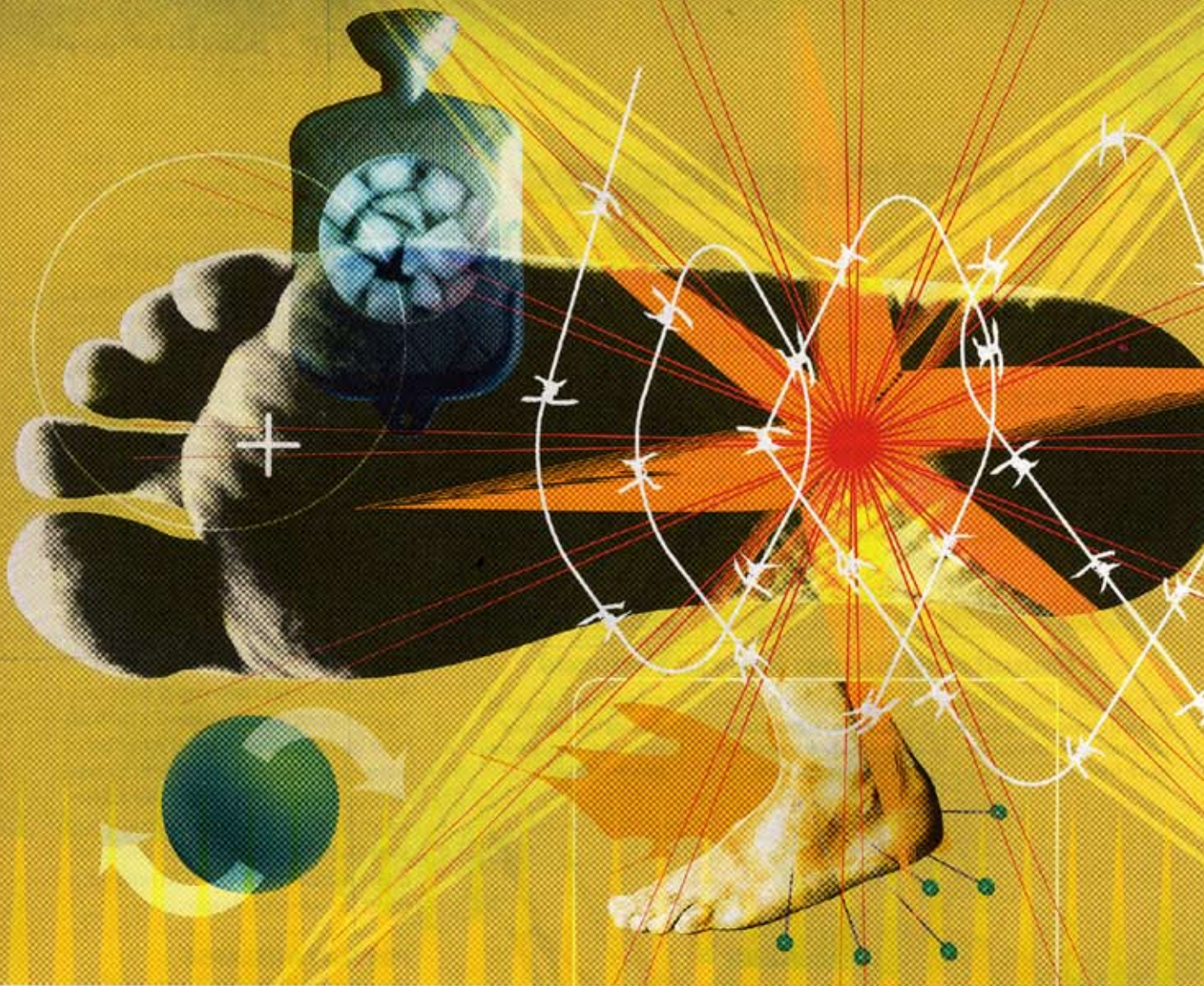
Stay strong with bridges: Lie on your back with your feet on a chair or exercise ball. Raise your hips, then lift one leg into the air. Slowly lower your hips back down to the floor, using the supporting leg. Return that leg to the ball. Repeat with the other leg. Also, compression tights (see "Home Remedies," page 55) during or after running can aid blood flow.



Bridge

## ELITE TREATMENT

When U.S. champion miler David Torrence felt his hamstring tighten up, he took the next day off and went to his chiropractor. "My pelvis was misaligned, causing my hamstring to do extra work," he says. "I took it easy for a few days, iced the hamstring four times throughout the day, and was improved within a week."



## 4 Plantar Fasciitis

It's not shocking that about 15 percent of all running injuries strike the foot—with each step, our feet absorb a force several times our body weight. Plantar fasciitis, small tears or inflammation of the tendons and ligaments that run from your heel to your toes, is usually the top foot complaint among runners—10 percent of runnersworld.com poll respondents struggled with it this past year. The pain, which typically feels like a dull ache or bruise along your arch or on the bottom of your heel, is usually worse first thing in the morning.



### Foot Wary: How to Proceed

**STOP!** Ongoing, ever-present arch pain and tenderness that doesn't seem to fade even once you've warmed up on a run.

**WITH CAUTION** Pain when you step out of bed, get up after sitting for a long time, or during the first few minutes of a run.

**GO RUN!** Pain-free all day, including your first steps in the morning. Walking barefoot on hard surfaces isn't an issue.

### WHO'S AT RISK?

Runners with very high or very low arches are vulnerable, Saxena says, because both foot types cause the plantar fascia to be stretched away from the heel bone. Other causes are extreme pronation (foot rolls inward excessively) or supination (foot rolls outward excessively) and increasing your mileage too quickly. Long periods of standing, especially on hard floors without supportive footwear, may exacerbate the problem. Tight hip flexors, weak core muscles, and a history of lower back pain can also contribute. "Back issues and core weakness can lead to subtle changes in your stride that you'll feel in the feet," Merrill says.

### CAN YOU RUN THROUGH IT?

Plantar fasciitis is one of the most notoriously nagging injuries, and running through it, while possible, can delay heal-

# Home Remedies

TOOLS TO HELP YOU STAY INJURY-FREE

ing. Recovery time can range from three months to a year, but six months is fairly typical, Saxena says. In chronic cases, a complete break from running is usually best. Pool running and swimming keep pressure off your feet. Cycling or using an elliptical can help you maintain fitness, but only if you can do those activities without pain. Wearing a Strassburg Sock (see "Home Remedies," right) while you relax keeps your arch from tightening up.

## REHAB IT

Roll your foot over a frozen water bottle for five minutes at a time, five times a day, Saxena says. To stretch your plantar fascia, sit with one leg crossed over the other so that your right ankle rests on your left knee. Grab the end of your right foot at the toes and gently pull back. Because calf tightness can be a factor, Merrill also recommends using a foam roller to loosen them up. He also stresses the importance of doing core work (planks, back extensions). "When I see someone who has had plantar pain for years, they're almost always missing core strength," Merrill says. "Sometimes all they need is some core work and their heel gets better. A stable core reduces stress on the spine and stops pain transference to the foot."

## PREVENT A RELAPSE

Make sure your shoes fit your foot type by getting an analysis at a running shoe store or from a podiatrist, says Saxena. A custom orthotic may even help. Stretch and massage the plantar fascia several times a day. In the morning, hang your feet over the edge of the bed and roll your ankles. Do core work at least twice a week.

### Plantar Stretch



## ELITE TREATMENT

Magdalena Lewy Boulet, a 2:26 marathoner, struggled with plantar fasciitis in 2007 that became so severe she contemplated ending her career. "I got on a rehab routine that included active-isolated stretching, and it cured me," she says. "Now it's part of my maintenance routine. I do it for about 15 minutes twice a day."



### THE PROBLEM

Foot, shin, ankle pain

### THE FIX

→ Zoot Active Compression socks \$60

These snug-fitting socks improve circulation, reduce swelling, and keep muscles and tendons warm. zootsports.com



### THE PROBLEM

Achy hamstrings and knees during a run

### THE FIX

→ Saucony AMP PRO2 Training Tight \$70  
Sturdy fabric may support major leg muscles in an effort to delay muscle fatigue. saucony.com



### THE PROBLEM

Hamstring weakness, knee pain

### THE FIX

→ Thera-band \$4 and up

These stretchy bands enable you to do resistance training and physical therapy at home. optp.com



### THE PROBLEM

Achilles tendinitis, calf soreness, shinsplints

### THE FIX

→ 2XU's Compression Calf Guards \$55  
Footless sleeves support the shins, calves, and Achilles. It's an alternative to taping for shinsplints. 2xu.com



### THE PROBLEM

Plantar fasciitis

### THE FIX

→ The Strassburg Sock \$40  
These socks keep your arches in a stretched position so that irritated plantar fascia can heal optimally while you rest. thesock.com



### THE PROBLEM

Sore hamstrings and knees after a run

### THE FIX

→ Zoot Recovery Compress RX \$150  
These tights are similar to training versions, but with more compression to ease postexercise soreness. They feel sort of like a massage—a soothing pressure on your sore muscles. zootsports.com



### THE PROBLEM

Tight iliotibial bands, hamstrings, calves

### THE FIX

→ PB Elite Molded Foam Rollers \$6 to \$20  
A weekly professional sports massage is great, if you can afford it. But with a foam roller, you can get many of the same benefits from self-massage at home. performbetter.com

# 5 Shinsplints

"Shinsplints" refers to medial tibial stress syndrome, an achy pain that results when small tears occur in the muscles around your tibia (shin bone). This makes up about 15 percent of running injuries; 10 percent of runnersworld.com respondents poll had shinsplints in the past year.

## WHO'S AT RISK?

Shinsplints are common among new runners and those returning after an extended layoff. They're a sign that you've done too much, too quickly, Dr. Price says. Shinsplints strike runners wearing the wrong shoe or a pair with too many miles, and those with high arches or flat feet.

## CAN YOU RUN THROUGH IT?

When the first twinges of pain strike, back off your running to a comfortable level for a few days to a week, then slowly up your mileage using the 10 percent rule (no more than 10 percent increase per week). Bike, pool run, and swim.

## REHAB IT

Rest, ice, and ibuprofen can ease the pain. Though conventional wisdom has preached calf stretching as a way to rehabilitate shinsplints, there's little evidence

that helps, Price says. Taping the shin with Kinesio Tex tape can relieve pain and speed healing. (See how at runnersworld.com/shintape.) Wearing an air cast ankle brace throughout the day—

even while running—can speed recovery. These braces stabilize the ankle so the shin muscles don't have to work so hard to support your leg, Saxena says.

## PREVENT A RELAPSE

The easiest and best way to avoid shin-



splints is to increase mileage gradually. Saxena also says to make sure you are in an appropriate shoe. Beginners, especially, can benefit from the professional help at a specialty running shop. If you have high arches, you may need a cushioned shoe. Or if you have flat feet, a rigid shoe might be the solution, he says.

## ELITE TREATMENT

Once or twice a month, miler David Torrence jumps in a game of pickup basketball or soccer. "The lateral movement uses your muscles differently than running in one direction," he says. "It's helped me manage my shinsplints."

Kinesio Tape



## Shin Signs: How to Proceed

**STOP!** Tenderness down the leg, especially if you hop on it. If walking (not just running) hurts, it could be a fracture.

**WITH CAUTION** Tight, aching pain when running, but the pain goes away when you stop. Hopping isn't painful.

**GO RUN!** Completely pain-free while running—even long after you stop applying ice and taping your shins.

# Brain Drain

## THE BIG 5 MENTAL BREAKDOWNS

### MENTAL BREAKDOWN #1

#### Seeking perfection

If you aim to make every workout perfect, you end up spending valuable time and energy recovering from the inevitable disappointment. Learn to view a few off days as part of the training process, or a lousy run or race as a learning experience, says Stan Beecham, Psy.D., a sports psychologist in Roswell, Georgia.

### MENTAL BREAKDOWN #2

#### Caring too much

Some runners never feel good about themselves, no matter how well they run. "I remind athletes that running is something they do, not who they are," he says. Once you untie yourself from your performance, you release mental energy that can be directed to running.

### MENTAL BREAKDOWN #3

#### Stressing out

Is the weather too cold? Too hot? Are the lines at the porta-potties too long? Don't stress over things you can't control. "Your performance is based on your training, not on external items," he says.

### MENTAL BREAKDOWN #4

#### Poor goal setting

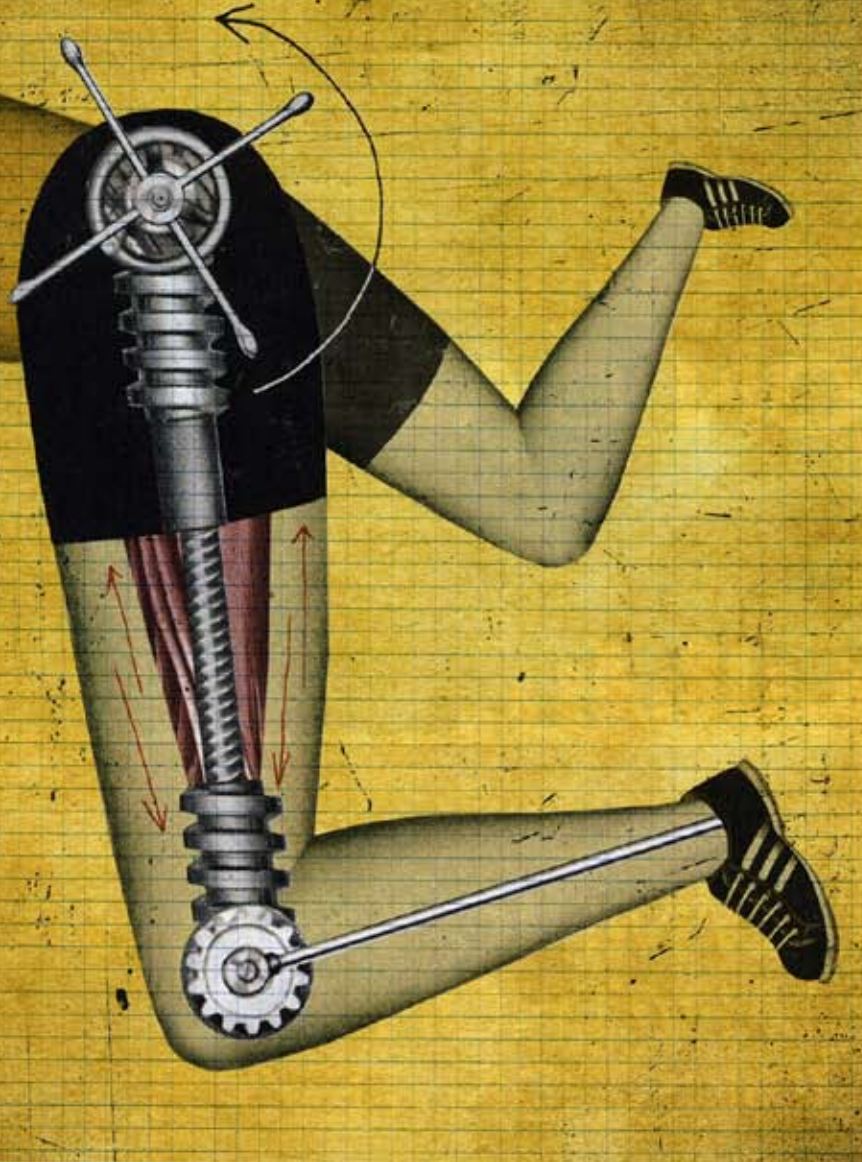
Performing at your highest level requires risk-taking and pushing yourself outside your comfort level. "A lot of runners underestimate themselves," Beecham says. "They say: 'I can cut five minutes from my time.' I say: 'How about 10 minutes?'" Don't go crazy, but push yourself.

### MENTAL BREAKDOWN #5

#### Not focusing

If you approach a race as a run or with a let's-see-what-happens attitude, you risk not meeting your goal. "You have to engage mentally," Beecham says. Set small goals, such as staying with the runner in front of you. Try it, he says, and you'll likely find the race goes by faster than expected. Your time just might be faster, too.

—MICHELLE HAMILTON



**WHO'S AT RISK?**

Runners who develop ITBS may overpronate, have a leg-length discrepancy, or suffer from weak hip abductor and gluteal muscles. "If your hip motion is not well controlled, then your IT band gets stretched with your running stride, and that can irritate it," Heiderscheit says.

**CAN YOU RUN THROUGH IT?**

ITBS is known as a stubborn, nagging injury. Take a rest day or two and back off your mileage for a week, and you could avoid a full-blown flare-up, Dr. Price says. If you ignore the first symptoms and continue training at your usual mileage and intensity, you can exacerbate it.

**REHAB IT**

Strengthen the hip abductors with lateral side steps, side leg lifts, and one-legged squats. Use a foam roller before and after you run: Rest the outside of your thigh on top of the roller, and roll your IT band from your knee to your hip. Hiking and bicycling can aggravate ITBS. Instead, swim, pool-run, and use an elliptical trainer.

Foam Roll



# 6 Iliotibial Band Syndrome (ITBS)

The iliotibial (IT) band lies along the outside of the thigh from the hip to the knee. When you run, your knee flexes and extends, which causes the IT band to rub on the side of the femur. This can cause irritation if you take up your mileage too quickly, especially if you're doing a lot of track work or downhill running. ITBS makes up 12 percent of all running injuries; 14 percent of poll respondents experienced this in the past year.



**Thigh Anxiety: How to Proceed**

**STOP!** Pain on the outside of the knee that radiates up and down your leg when just walking down a hill or stairs.

**WITH CAUTION** Twinges on the outside of the knee appear 10 minutes into a run, but disappear during a walk break.

**GO RUN!** Outer knee and thigh are completely pain-free even after running a hilly route or circling a track.

**PREVENT A RELAPSE**

Continue exercises and foam-rolling. Change directions every few laps while on a track, and limit how often you do hilly routes, Heiderscheit says. IT band issues often get better if you can learn to shorten your stride so that your weight centers on the front of the heel or the midfoot as you land. "A five to 10 percent difference in your stride length can make a huge difference," Heiderscheit says.

**ELITE TREATMENT**

Two-time Olympian (5000 meters) Bolota Asmerom, of Oakland, California, dealt with ITBS when he took up his training to 70 miles a week in 1999. "I got relief through massage, strength, and flexibility work," he says. "I've stayed injury-free since then because I take care of every ache with massage and ice. I also try to avoid doing too much track running."

DAVID PLUNKERT

# 7 Stress Fracture

Unlike an acute fracture that happens as the result of a slip or fall, stress fractures develop as a result of cumulative strain on the bone. Runners most often have stress fractures in their tibias (shin), metatarsals (feet), or calcaneus (heels). They are one of the most serious of all running injuries; almost six percent of poll respondents had one in the past year.



## WHO'S AT RISK?

Runners who overtrain. Bones need downtime to rebuild after a workout. If you increase the duration, intensity, or frequency of your running too soon, your bones can't repair themselves fast enough to keep up. Stress fractures are more common in women than men, usually due to nutritional deficits, low estrogen levels, and inadequate calorie intake. Luckily, weight-bearing exercise like running is protective, which means experience is on your side. "The longer you've been running, the lower your risk is," Dr. Price says.

## CAN YOU RUN THROUGH IT?

In a word: no. Expect to take eight to 16 weeks off from running. The amount of rest you'll need depends on the severity of the fracture and its location. Weight-bearing bones like those in the foot heal slower than those in the shin, for example. And if you ran through the pain for a while before you realized you had a fracture, your recovery could take longer, Merrill says. Avoid all impact exercise. Instead, pool-run and swim.

## REHAB IT

Listen—well—to your body. "Once you can walk without any pain, you can try a bit of jogging," Dr. Price says. "But you have to back off if there is lingering pain. It's crucial that you build your mileage slowly—start with just a few minutes."

## PREVENT A RELAPSE

Improve bone density with weight training, and make sure you're getting enough calories and nutrients. Contrary to popular belief, running surfaces don't seem to make a difference. "It makes sense that running on soft surfaces like grass would be better than roads, but studies have not borne that out," Dr. Price says.

## ELITE TREATMENT

Some people with stress fractures can maintain fitness with pool running. "When Deena Kastor suffered a broken bone in her foot during the 2008 Olympic Marathon, she had to take six weeks off," Dr. Price says. "Daily pool running kept her strong." After making a recovery, she ran a 2:28 Chicago Marathon in 2009. **W**



## Bone Scan: How to Proceed

**STOP!** Pain builds up as you run. But it doesn't just hurt when you run; just being on your feet is uncomfortable.

**WITH CAUTION** Sorry, no middle ground here. With this injury, you are either in the red or in the green zone.

**GO RUN!** Pain-free throughout a run and no lingering pain afterward, even when you've been on your feet all day.