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Fast or slow, young or old, every runner has one common goal: to stay healthy. Use this **INJURY-PREDICTION CALCULATOR** to determine your risk of getting hurt—then take proactive steps to lower it



by **CINDY KUZMA** • Illustrations by **MARK MATCHO**



ATHLETIC THERAPIST Reed Ferber, Ph.D., has a nickname for injury-free runners: “golden unicorns.” Yes, they are that elusive. In fact, Ferber, who is professor of kinesiology and director of The University of Calgary’s Running Injury Clinic, says that as many as 80 percent of runners develop running-related complaints each year. His job, of course, is to fix those aches and pains. But his ultimate goal—and the focus of his current research—is to identify the biomechanical and life-style habits of the so-called golden unicorns. By doing so, Ferber hopes to create a blueprint of a healthy runner for others to follow.

His work adds to that of other researchers aiming to better understand the cause of overuse injuries. Some influences lie beyond your control, such as the way your body is built. But in other cases, there are identifiable risk factors that can be addressed, potentially warding off injuries.

So we asked Ferber and other experts—physicians, biomechanics researchers, and physical therapists—to identify common weaknesses in runners’ bodies, training programs, and lifestyles. We compiled these factors into an injury-risk scorecard to help you gauge your likelihood of getting hurt. Next to each risk factor, you’ll find strategies from our panel of experts to mitigate the danger. Combine the specific recommendations that apply to you, and you’ll have a targeted injury-prevention program. Put that advice into practice to take a big step toward becoming a golden unicorn.

1 / Have you started (or resumed) running in the past six months?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS Novice runners face about double the injury risk of more experienced runners. “Injuries start when distances increase,” says Colleen Brough, D.P.T., O.C.S., physical therapist at Columbia University. **REDUCE THE RISK** Make changes gradually. The slower you proceed with an alteration to your training, the more time your body has to adapt without strain. A rule of thumb: Increase your weekly mileage total by no more than the number of days you run per week—so five miles if you run five days.

2 / Do you run more than 30 miles a week?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS The more you run, the greater the stress on your bones and joints—plus, you amplify all your other risk factors. While some people log more miles without incident, research shows an increase in injury rate once weekly totals surpass 30 miles. **REDUCE THE RISK** If you’re healthy, you may be able to handle higher mileage. But if you’re injury-prone with several other risk factors here, consider being conservative with your mileage and supplementing with cross-training.

3 / How many days a week do you run?

- ☐ 7 days, 1 point
- ☐ 1–2 days, 1 point
- ☐ 3–6 days, 0 points

WHY IT MATTERS Failing to take rest days doesn’t let your body recover, increasing the odds that a small tweak progresses into an injury, says Jeff Gaudette, head coach at RunnersConnect in Boston. On the flip side, if you only run once or twice a week, your body never adapts to the training to become

more efficient and injury resistant. **REDUCE THE RISK** Train consistently. Using a log to track how often and how far and fast you run—and how you feel—can offer insights into your injury risk. “It helps you see a pattern—I felt good when I did this, not when I did that,” says Kevin Vincent, M.D., Ph.D., director of the University of Florida Running Medicine Clinic. Review it to check for too many hard days, too few rest days, or lack of consistency. Nip injuries by cutting back when you note a few days of aches.



4 DO YOU STRENGTH-TRAIN AT LEAST TWICE A WEEK?

- ☐ Yes, 0 points
- ☐ No, 1 point

WHY IT MATTERS In a research review, strength-training reduced the risk of overuse injuries by about half. A strengthening program helps you maintain good

form even when fatigued, and builds strong muscles that absorb impact from running, says running coach and personal trainer Jeff Horowitz, author of *Quick Strength for Runners*. **REDUCE THE RISK** Strength-train (see page 57).

5 / How many marathons do you race a year?

(as opposed to running them more slowly and relaxed for fun)

- ☐ 3 or more, 1 point
- ☐ 2 or less, 0 points

WHY IT MATTERS “Races are absolutely the hardest efforts that we put our bodies through, and marathons are especially demanding,” Gaudette says. **REDUCE THE RISK** Know your limits. While some runners can race long distances more often, those whose main goal is reducing injury would be best off limiting the number of hard, long races done in a year.

6 / Have you reduced mileage or received treatment for an injury in the past year?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS Many runners fail to address underlying causes of injury, making relapse likely. Even after you’re better, “every injury leaves crumbs,” Brough says. Leftover dysfunctions can increase your chance of developing a different injury. **REDUCE THE RISK** Strength-train (see page 57). Seek medical advice if you’ve had multiple injuries over the past three years.



7 DO YOU OVERSTRIDE?

Have a friend take a 10-second video of you from the side while you run on a treadmill. Freeze-frame it at the moment your foot hits the ground, then draw an imaginary line from your head and shoulders to the ground.

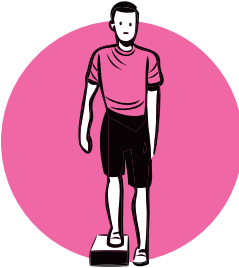
- ☐ Your foot falls far in front of the line, 1 point
- ☐ Your foot falls nearly in line, 0 points

WHY IT MATTERS If your foot hits the ground far from your center of gravity, greater impact forces travel up through your leg, increasing your risk of stress fractures, plantar fasciitis, patellofemoral syndrome, and Achilles tendinopathy, Brough says. **REDUCE THE RISK** Runners who overstride often

have a slow cadence—less than 160 steps per minute. According to recent studies, increasing your step count by about 10 percent reduces the impact on your hips, knees, and ankles, likely reducing injury risk. Multiply your starting cadence by .1, then add it to the original count for your new target. For example, say you started out at 160 steps per minute—10 percent of that is 16. So you should aim to move your feet more quickly until you’re taking 176 steps per minute.

8 / Are your hips weak?

Stand in front of a mirror on an eight-inch-tall step. Watch yourself as you step down with one leg, tap your heel on the ground, and return to standing. Do three reps on each side.



- ☐ Your pelvis slants down, 1 point
- ☐ Your knee drifts in, 1 point
- ☐ Perfect form, 0 points

WHY IT MATTERS Weakness or a faulty firing pattern leads your hip to dip and your knees to shift inward. This poor alignment could cause runner’s knee or IT-band syndrome. Other muscles, such as your hip flexors and hamstrings, compensate for the weaknesses, increasing your risk of strains in these areas. **REDUCE THE RISK** Strength-train two or three times a week (see page 57). Do the exercises in magenta circles more frequently—daily, if possible—to target and correct your hip weakness.

GENETIC LOTTERY CAN DNA REVEAL IF YOU’RE LIKELY TO GET HURT?

Scientists have identified more than 300 DNA markers linked to sports injuries. Some mutations regulate the production of collagen, the main protein in tendons, predisposing you to Achilles problems, for example. Others influence bone density and, therefore, fracture risk. While you can’t change your genes, having this intel could allow you to take targeted measures, says Stuart Kim, Ph.D., of Stanford University. Triathlete Andrew Roos participated in a study and learned his genetics placed him at risk for Achilles and calf injuries. So his coach added calf raises to his routine. Within a few years, Kim predicts, motivated runners may undergo DNA testing for injury-related mutations.

9 / Have you recently gone through a major negative life event? Are you in the midst of a trying period at work or home?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS Stress increases tension in your muscles and hampers coordination. This puts you at greater risk for an acute injury and also impairs recovery.

REDUCE THE RISK Reserve ambitious running goals for a period when you are experiencing less turmoil. Keep your running easy and low-key so it relieves stress.

10 / Do you sleep fewer than seven hours a night?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS Sleep-deprived runners fall short on human growth hormone, a compound needed to repair muscles and bones, says neurologist W. Christopher Winter, M.D.

REDUCE THE RISK Aim for at least seven hours of sleep per night. Work back from the time you need to get up to calculate your bedtime. Power down electronics an hour before you hit the sack.

11 / Have you started running in a new make or model of shoe recently?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS A sudden change in shoes can alter your gait, boosting your odds of injury.

REDUCE THE RISK Don't go from one extreme to another (stability shoe to a cushioned shoe). Choose a transitional shoe that moves you toward the shoe you ultimately wish to be in, says RW Shoe Editor Jonathan Beverly. "Run in new shoes on an easy day, then return to the old pair. Keep rotating, adding more days per week in the new pair."

12 / Do you have lofty time goals—and are you inflexible about adjusting them?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS Locking in on a big goal could cause you to train too intensely and to ignore red flags.

REDUCE THE RISK Gaudette advises runners with big goals to focus less on the outcome and more on the process, or the steps needed to improve running performance every day.



13 ARE YOU A WOMAN?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS In part because of differences in body shape and type, women may face more injuries, Brough says. Plus,

they're prone to unique risk factors (see below).

REDUCE THE RISK Strength-training (opposite page) helps keep bones strong to protect against osteoporosis and fractures as well as correct common muscle imbalances.

14 / Have you gone six months without a period?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS Training too hard, especially without eating properly, causes hormonal shifts that can stop your periods, weaken your bones, and impair your recovery.

REDUCE THE RISK Talk to your doctor, who may recommend nutrition therapy or counseling.

15 / Do you leak urine when you run?

- ☐ Yes, 1 point
- ☐ No, 0 points

WHY IT MATTERS It's a sign of pelvic floor dysfunction—weakness in the deep muscles of the abdomen, says Kara Vormittag, M.D., a sports-medicine specialist in Park Ridge, Illinois.

REDUCE THE RISK Seek medical advice. Specialized physical therapy can resolve this.

→ This Page Total

EXTRA CREDIT! The following positive behaviors reduce injury risk. Subtract a half point for each one you adhere to.

- ☐ You take an extra rest day or skip a hard workout if you're feeling off.
- ☐ You use a foam roller regularly on tight spots.
- ☐ You do a dynamic warmup before you run.
- ☐ You refuel with carbs and protein within 30 minutes of finishing a run.
- ☐ You have an active job or you get up a few minutes every hour.
- ☐ You change your running shoes at least every 300 to 500 miles.

→ Extra Credit Total

WHAT'S YOUR SCORE?

p. 54
Total

+

p. 55
Total

+

p. 56
Total

-

Extra
Credit

=

Grand
Total

→ 3 or more

RED ZONE

Few overuse injuries have a single underlying cause, experts believe. In most cases, at least two or three contributing factors conspire to push you over the edge from healthy to hurt. To back up from the brink, review the "Reduce the Risk" tips in the areas where you accumulated points and put them into action.

→ 1 to 2

YELLOW ZONE

You're probably injury-free now, but you can still make improvements to ensure your health. Adopt the "Reduce the Risk" tips in the areas where you accumulated points.

→ 0 or less

GREEN ZONE

Good work! You appear to be doing most of what's in your control to keep overuse injuries at bay. Keep it up and stay vigilant for any changes that would boost your risk.

GET STRONG, STAY HEALTHY

Experts agree that one of the best ways to prevent injuries is to strength-train. Any weakness in your kinetic chain can compromise your form, leading to gait changes that increase your risk of getting hurt. Plus, strong muscles absorb more of the force that occurs when you strike the ground, meaning less of it remains to damage your bones, joints, and ligaments. Do

this routine (designed by coach and personal trainer Jeff Horowitz) two or three times per week. Start with one set of 10 reps of each exercise and work your way up to two sets of 20 reps. Crunched for time? Do the moves in the magenta circles. Those target hip muscles that keep your pelvis stable while running, which is especially critical for injury prevention.



One-Legged Deadlift

Stand on your right leg. Tip your upper body forward while raising your left leg behind you, keeping your back, arms, and right leg straight. Return to starting position. After one set, switch to the other leg and repeat.

• **Next level** Don't touch your leg down between reps—this works your stabilizing muscles even more.



Lateral Lunge

From standing, step out to your left, bending that knee to a 90-degree angle while keeping your right leg straight. Step back to the starting position. Repeat in the opposite direction, stepping out to the right and bending your right knee, for one rep.

• **Next level** Hold a dumbbell or medicine ball close to your chest.



Deadlift and Front Swing

Stand with your legs wide, holding a dumbbell vertically with both hands. Bend forward into a deadlift position, sticking your butt back and keeping your back slightly arched. As you straighten back up, swing the dumbbell overhead. Lower to starting position for one rep.

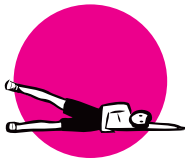
• **Next level** Use a heavier dumbbell.



Diagonal Swing

Stand holding a dumbbell with both hands. Start with the dumbbell by your left outer hip, then rotate to swing it up and above your right shoulder. Keep your arms straight and follow the weight with your eyes. Repeat on the other side for one rep.

• **Next level** Use a heavier dumbbell.



Side Leg Raises

Lie on your left side with your legs straight. Raise your right leg as high as you can, then bring it back down for one rep. After completing one set, switch to the other side and repeat.

• **Next level** Start in side plank position, resting on one elbow while raising the opposite leg.



Side Hip Raises

Start in a side plank position, balancing on your left elbow. Holding your body in a straight line, lower your hips until they're about an inch off the ground, then raise back up for one rep. After completing one set, repeat on the other side.

• **Next level** Hold your opposite arm in the air to increase the challenge to your core.



Bridges

Lie on your back with your knees bent and feet flat on the floor. Lift your hips until your knees form a straight line with your upper body. Lower back down for one rep.

• **Next level** Hold one leg straight out several inches off the floor and do the move on the other leg. Switch legs and repeat.



Pushups

Lie face down with palms just outside your armpits. Extend your elbows to raise your body, then bend to lower back down to an inch or two off the floor for one rep. If this is too hard, place your palms on a step to elevate your upper body.

• **Next level** Do with your feet on a stability ball.



Russian Twists

Sit with your knees bent, heels on the ground, holding a medicine ball (or dumbbell). Keeping your back straight, lean backward. Twist to the right and then the left—almost touching the medicine ball to the ground—for one rep.

• **Next level** Keep your feet off the floor and do the same movement.



Knee Tucks

Start in a straight-armed plank with your feet on an exercise ball. Keep your upper body steady and bend your knees, rolling the ball toward you. Tuck your legs in fully and then extend your legs again for one rep.

• **Next level** Add a pushup between reps.

THE FUTURE'S SO BRIGHT

How to stage a healthy, happy comeback, no matter why your running got off track

By Cindy Kuzma

IN A PERFECT WORLD, nothing would stand between you and your running. But life has a way of knocking you off track. A recent study found that more than one in 10 distance runners sustained an injury over a three-month period—and countless others fall away due to new babies, extra pounds, or misplaced mojo. If your training has been on pause for more than a couple weeks, you'll need a measured and thoughtful approach to resume running.

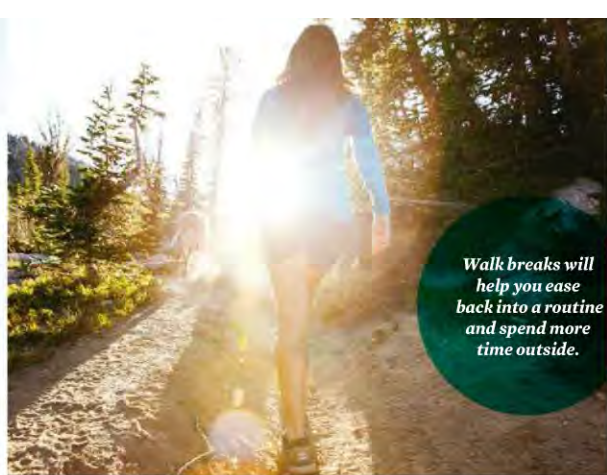
All triumphant returns have a few common characteristics, including a slow ramp-up and a mind-set that doesn't involve pining for lost fitness, says coach Lisah Hamilton, host of *The Conscious Runner* podcast. You'll likely feel rusty at first, but muscle memory means that sensation won't linger, says Ryan Warrenburg, a coach at ZAP Fitness in Blowing Rock, North Carolina.

Beyond that, approach each comeback on its own terms. Here's how to build back up, depending on the cause of your hiatus.

PHOTOGRAPHS BY JORDAN SIEMENS/GETTY IMAGES



Choose soft surfaces as you return to running to prevent aches and pains.



Walk breaks will help you ease back into a routine and spend more time outside.

"I GOT HURT."

By far the most common reason for time off, injuries require an abundance of caution upon return, especially if you've been off completely for more than two weeks. Once you've recovered or received medical clearance to run again, alternate running and walking for 20 to 30 minutes every other day, Warrenburg says. Gradually increase your running time each week or two, with pain as your guide—back off if you feel worse during or after your workout. Keep your runs easy at first, saving speedwork until you reach your desired weekly mileage. This approach prevents you from swiftly sidelining yourself again, Warrenburg says.

"LIFE GOT CRAZY."

For new parents or for accountants during tax season, say, running might temporarily take a backseat. "The quicker you can make running part of what you do again, the bet-

ter," Warrenburg says. Block training time into your schedule, preferably first thing in the morning, before conflicts arise. If your layoff involved giving birth, remember that your body has been through a huge transformation. Don't fret that you're too fragile to run unless your doctor advises against it, says Megan Lizotte, a coach at Hit the Ground Running in La Jolla, California. But do build in time for hip- and core-strengthening exercises to reduce injury risk (think bridges, planks, and donkey kicks). And for all new parents or others in a temporarily sleep-deprived state, give yourself some leeway—for instance, take an extra day or two of rest or easy running each week, and consider trading some miles for sleep if you feel completely wiped out.

"I GAINED WEIGHT."


It's a vicious cycle—time away from training can pack on pounds, which in turn weigh down your efforts to hit the road again. Carrying more body mass may slow your pace and make running harder on joints, ligaments, and muscles. Acknowledge this but don't dwell on it; instead, view your newfound heft as temporary and focus on the process of changing it, Lizotte says. As you ramp back up, eat a diet full of nutrient-rich foods like fruits and veggies, do some running on soft surfaces like dirt and grass to reduce impact, mix in other cross-training activities such as swimming and biking, and strength-train regularly: In a recent 12-week study, participants who combined cardio and weights shed more fat than those who stuck with one type of exercise alone.

"I LOST MOTIVATION."

Shaking things up can reconnect you with your love of running, Lizotte says. Pick a goal race in a fun destination, or shift your

focus from (another) half marathon PR to a fast 5K or completing an ultramarathon. If you can, build a running fund into your budget; buying cute new tights or attending a running camp can reignite your fire. So can pushing another participant in a wheelchair, serving as a running guide, or raising charity funds for your miles. "If you're getting burned out on yourself, do it for somebody else," Warrenburg says.

"I CRUSHED A MAJOR GOAL (OR DIDN'T)."

Downtime after a big event is actually a good thing, Warrenburg says. Hitting "register" too soon on a follow-up race, either to capitalize on your gains or to redeem a bad performance, deprives your body and mind of critical recovery time. In other words, taking a few short, planned breaks throughout the year can prevent longer, unexpected layoffs due to burn-out or injury. Lizotte advises taking as many days off from racing as the number of miles you raced. Then, keep running easy until you feel the urge to train seriously again. 

EASE BACK IN

How long you've been sidelined (near right) dictates how much of your previous weekly mileage you can target upon your return (far right).

8 to 15 Days



75% to 90%

2 to 3 Weeks



60% to 75%

3 Weeks to a Month



50% to 60%

More than a Month



40% to 50%

Note: Coming back after an injury may require even more time.