

How To Avoid Running Injuries

Running injuries are usually caused by bad form and/or over-training... it's really that simple! I'll break down each of these scenarios, with advice on how you can avoid injury while you continue to reach your running goals. I'll define an injury as a condition that makes all running uncomfortable or impossible, and not just quad pain from running fast down a long hill.

1). Improve Your Running Form: Running with good form is more important than training!!! If you run inefficiently by hitting the ground too hard, wobbling, or with bad posture, not only will you start to wear out your body, but you will develop bad habits! It's better to learn to run efficiently, and *then* try to increase your speed and distance. While there is no one best running form, each individual body has a way to maximize efficiency and minimize strain. Good form involves 3 main components that should be addressed in the following order.

A. Mobility: Every sport or activity requires enough mobility in certain areas of the body to perform the required movements. According to Jay Dicharry in Anatomy For Runners, you really only need flexibility in your big toe, calf, and hip flexors. Without adequate flexibility in these joints, you will put added stress and torque on your foot, knee, and low back that can lead to injuries.

Your big toe should bend back towards your ankle 45°, your ankle should be able to flex 45° (with your arch pulled up, your foot strong, and your knee coming over the center of your foot), and your thigh should be able to extend behind you at least 10° with respect to your spine (with your opposite knee pulled to your chest to flatten your low back). If you don't have enough range of motion, stretching and/or targeted soft tissue work can help.

Extra mobility can work against you; overly tight calves limit ankle flexion and force the knee and/or hip to compensate, but extra calf flexibility reduces the "spring" that helps you push off the ground. Some people (including me!) actually have *too much* range of motion due to loose ligaments. For them, it is even more important to run in perfect form and build extra strength to stabilize their hips and ankles.

B. Movement Patterns: Once you have adequate range of motion in your running joints, you need to develop efficient movement patterns. This is often hard for people who fix their mobility issues and now have to break bad habits formed over years of compensating for their structural issues.

- **Posture:** Pull in your belly button and squeeze your glutes a bit to flatten your low back. Roll your shoulders down and back to straighten your upper back. Level your head and chin- don't stare up at the sky or down at the ground. Run tall and lead with your chest like you are going to chest-bump someone!
- **Avoid Over-Striding:** Fall forward by bending at the ankles and keeping your spine straight. You should naturally feel the most force on the front or center of your foot, when your foot is directly underneath you. Don't over-stride by using your quads to leap out in front of you and then trying to use your hamstrings to pull you forward- this is the most common cause of many running injuries! Most of your power should be coming from your glutes and calves.
- **Cadence:** Many recreational runners take about 160 steps per minute, leading to over-striding (the cause of many injuries). They leap forward, slam their heel into the ground (braking and losing energy), and then jump forward... this is hard on your body! If you can train yourself to increase your cadence to 170-185 steps per minute, you can dramatically reduce your chances of getting injured. This is usually best done by occasionally running in time with music with the right beat, though running barefoot, running fast, and/or using a running watch that displays cadence can also help.
- **Relax:** Unnecessarily tight muscles waste energy and can change your running form in ways that can put added stress on your leg and core muscles. Breathe deeply and slowly to help you relax, and do an occasional body scan to see where you might be holding tension. When you

are in a relaxed state, your non-thinking brain will strive to increase your efficiency and make subtle tweaks to reduce the impact on your body.

C. Strength: Once you have good mobility and form, it's time to focus on strength if you want to run faster or farther. Even a "good" runner can fall apart and look terrible during the final miles of a marathon when they don't have the strength to keep their usual posture and running form. Running hills, doing speed work, and doing some cross-training (especially leg and core exercises like squats, dead-lifts, jumping rope, various kinds of jumps, 1-legged exercises, eccentric calf drops, etc.) will make you stronger and help you run faster and/or longer without injuring yourself.

2). Avoid Over-Training: Many people dream of being able to easily run faster and for longer distances... but if you are not yet in good enough shape to do so, pushing too hard can actually lead to reduced performance and increases the chances of getting injured. The best way to avoid over-training injuries is to increase the load on your system slowly, giving your body time to adapt.

- **Listen to your body!** If you are feeling tired or worn down all of the time (being tired the day after a hard workout doesn't count!), it is a sign that you are training too hard and are likely increasing your chance of injury.
- **Breathe deeply when you run!** Try only breathing through your nose. When you start to pant or breathe rapidly (except during a short sprint), it is a sign that you are working outside of your fitness range- which means you may be breaking down muscles, reducing your fitness, and increasing your chance of getting injured.
- **Keep 80% of your mileage easy!** This allows your body to adapt and develop a solid base to build upon. Increase your weekly and long-run mileage slowly.
- **Build an aerobic base!** By running slower at your aerobic threshold (Phil Maffetone recommends keeping your heart rate at 180 - your age for 80% of your runs), you build more capillaries and mitochondria in your leg muscles to generate more energy and carry oxygen to your muscles. Running fast or walking makes you stronger, but doesn't increase your aerobic capacity.
- **Measure your progress!** Measuring your grip strength and/or Heart Rate Variability in the morning offers a good way to know if you are over-training. If either one starts to drop, take it easy for a day (or more) until the numbers come back down.
- **Run Happy!**

Treatment: My web site has lots of self-treatment technique. After an injury, mobilize ASAP. Progress to resistance exercises, active drills, walking, walking up-hill, and finally running for short distances (in perfect form!). Progress at a rate that you can tolerate! You should definitely be making progress in a couple weeks... if not, change your approach! Try to figure out the root cause of your injury. I recommend starting with conservative therapy (massage, physical therapy, stretching, & strengthening) before injections or surgical procedures. ***And after you return to running, focus on improving your form and adding intensity at a reasonable rate so you won't get injured again!!!***



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