

# mindful *running*

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**Love to run? Or not a big fan but run for the exercise? You are not alone.** Over 50 million people run or jog at least once a day, according to a national survey taken in 2011 by the Sporting Goods Manufacturers Association (SGMA). 19 million of whom run or jog 100 or more days a year. However, because running is a high-impact sport, injuries are prevalent. These side effects of this popular exercise may affect all types of runners such as beginners and marathon champions. According to a study done in 2012 published in the *International Journal of Sports Physical Therapy*, about 19% to 79% of runners may experience an injury each year.

The good news for runners are that injuries from running can often be prevented and, when caught early, have very similar treatment methods. Since most running injuries are caused by recurring factors, recognizing and paying attention to the first sign of sudden or persistent pain can greatly shorten a runner's rehabilitation time and prevent future injuries.

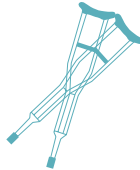
## when are you most prone to running injuries?

According to the *American Orthopaedic Society for Sports Medicine*, there are four periods of time when runners are most vulnerable to injury:

- 1 During the initial four to six months of running



- 2 Upon returning to running after an injury



- 3 When the quantity of running is increased (distance)



- 4 When the quality of running is increased (speed)



## common causes of running injuries:

**The most common source of injury according to the American Orthopaedic Society for Sports Medicine are from training errors, particularly the lack of adequate stretching, rapid changes in mileage, an increase in hill training, interval training, and insufficient rest between training sessions.** It is also good to keep in mind and pay attention to one's anatomic abnormalities, if any, that may affect his or her body while running. Some runners may have minor deformities or weaknesses in specific areas that may cause increased pain while running. For example, ankle laxity can lead to frequent ankle sprains and pain.

In addition, an individual's foot type can be related to foot problems. There are three basic foot types: normal arch, flat arch, and high arch. The types are based on the height of one's arch and affects one's pronation. Pronation is the movement of rolling in of the foot and is critical to proper shock absorption. Those who have flat arch feet are overpronators resulting in excessive foot motion, whereas those who have high arch feet are underpronators who experience more shock when putting pressure on their feet. Both types are more susceptible to injuries because of their foot anatomies.



## general treatment methods of common running injuries

> Take a well deserved break: Taking a break from running until the pain resolves is the first step to a speedy recovery. Depending on the type of injury, the resting period will vary, but generally one can gradually return to run when there is no pain in the targeted area.

> Consider over-the-counter medication: In addition to rest, taking non-steroidal anti-inflammatory medication such as acetaminophen (e.g. Tylenol) or ibuprofen (e.g. Advil, Motrin) can help reduce pain and inflammation.

> Treat your body by stretching and massaging: Stretching targeted areas to strengthen specific muscles is a way to prevent future injuries and managing soreness. Ice massaging the injured area is another general method to relieve pain.

> Active Rest: Consider alternative forms of exercising! Running injuries, if not severe, do not stop one from exercising entirely. There are other ways to be active without straining one's injury. For example, cycling is one great alternative that has lower risks of developing injuries such as Chronic External Compartment Syndrome. It also may speed one's recovery time by strengthening the quadriceps muscles. Even going on brisk walks, if possible, is a great way to stay active while recovering.

## why running can result in various injuries?

Running is a high-impact exercise that primarily puts stress on one's lower body. An example of a type of general injury that can occur anywhere in the lower body is a stress fracture. Stress fractures are small cracks in the bone and are typically caused by the overuse of the bone. The repetitive application of force makes the bone breakdown and buildup in response to the stresses of running. Most stress fractures in runners occur in the lower limbs, commonly in the tibia and foot. Stress fractures of the lower extremity account for up to 80% to 95% of all stress fractures, with the majority involving the tibia. In a 2003 study published in the *American Journal of Sports Medicine*, long-distance runners (cross-country and track) were more likely to develop stress fractures compared with athletes in other sports.

Stress fractures are caused by an increase in training that occurs more quickly than the body is able to build up the bone, according to Steven Karas, a physical therapist, athletic trainer, and orthopedic clinical specialist. Some symptoms of stress fractures may include localized pain over the affected bone, earlier onset of pain with each successive workout, and/or continued pain at rest as the damage progresses. Swelling may also occur.

### Stress fractures in the leg:

A break in the fibula or tibia can cause a stress fracture. Like other stress fractures, one has localized pain over the affected bone. In addition to the general treatment, stress fractures in the some parts of the leg have different procedures to follow. For example, posteromedial tibial stress fractures are considered low risk and can be treated conservatively with ice and pain medicine, but anterior tibia stress fractures are high risk and should be treated aggressively for longer periods.

The treatment for stress fractures follow the general methods for running injuries but do have specific treatments depending on where the fracture occurs.



### Stress Fractures in the foot:

Fatigue or stress from frequent and overuse of the foot from running can cause stress fractures. One has localized pain over the affected bone and the treatment is for rest and immobilization. One can resume running gradually after four to six weeks.

### Common lower body areas prone that are to running injuries:

Running injuries can target specific areas in the lower body. Below is a list of the most common injuries both novice and advanced runners may come across. It is important that at the first sign of pain, one must pay attention where the pain occurs and take action to prevent further injury. While many pains may feel and seem minor, try not to ignore them as these injuries can become more serious over time if not properly treated at an early stage. Most of the common running injuries can be relieved with proper rest.

## at risk area: feet

### Plantar Fasciitis

**What is it?** Plantar fasciitis occurs when the thick band of tissue on the bottom of the foot is overstretched or overused. This can be painful and make running more difficult. According to a 2012 study published in *Sports Medicine*, plantar fasciitis is one of the main general running-related musculoskeletal injuries.

**What causes it?** Long distance runners and runners who have foot arch problems such as flat feet and high arches may experience this injury. Plantar fasciitis is commonly known as an injury that causes small tears or inflammation of the tendons and ligaments that run from a runner's heel to his or her toes. However, according to a 2006 study published in *Physical Medicine and Rehabilitation Clinics of North America*, more recently, studies have suggested that plantar fasciitis is more of a degenerative process rather than inflammation. Although there has not been a consensus between the two sides of research, it can be concluded that plantar fasciitis brings discomfort disturbs runners.

**Symptoms:** Plantar Fasciitis typically presents itself as heel pain from weight bearing actions. The most common complaint are pain and stiffness in the bottom of the heel. The heel pain may be dull or sharp. The bottom of the foot may also ache or burn. The worst pain is experienced with the first steps in the morning or early in running. However, the pain often lessens with activity.

**Additional treatment tips:** Try heel and foot stretching exercises. Warming the foot and arch by stretching before running can help reduce discomfort early in the activity.

## at risk area: leg

### Chronic External Compartment Syndrome (CECS)

**What is it?** CECS is an exercise-induced muscle and nerve condition that causes pain and swelling. If severe, CECS can cause disability in the affected muscles of one's legs or arms.

**What causes it?** This syndrome occurs when there is an increased pressure within a muscle compartment (muscles and neurovascular structures bound by soft connective tissue and bone). When one is exercising, the blood supply to the working muscles increases, which in turn makes the muscles expand. However, when the connective tissue that holds the muscle fibers together in a compartment does not expand, pressure builds up in the compartment. When this happens, the pressure cuts off some of the muscle's blood supply which leads to CECS.

Although anyone can develop CECS, it is more common among runners because of the repetitive impact that running requires.

**Symptoms:** There is an aching, burning or cramping pain in the affected limb. A tightness or numbness may be felt in the affected area. The pain typically follows this pattern: 1) begins soon after you start exercising the affected limb 2) progressively worsens as long as you exercise 3) stops within 30 minutes after the affected limb comes to rest 4) over time, the pain may begin to persist longer after exercise, possibly lingering for a day or two.

**Additional Treatment Tip:** According to a 2012 study published in *Sports Health*, the only evidence-based treatment is activity modification and rest. If the pain is still persistent, surgical measures may be taken.







## Achilles Tendinitis

**What is it?** Achilles tendinitis is when the tendon (Achilles tendon) that connects the back of your leg to your heel becomes swollen and painful near the bottom of the foot.

**What causes it?** Achilles tendinitis may be more likely to occur if one is running on hard surfaces such as concrete, running too often, or wearing shoes with improper support while running.

**Symptoms:** Having pain in the heel and along the tendon when walking or running. The area may feel painful and stiff in the morning. In addition, the tendon may be painful to touch or move. The area may also be swollen and worn. Standing up on one toe may be difficult to do.

**Addition Treatment Tips:** Stretching should be incorporated to improve the flexibility of the calf muscles. (try "wall stretch" - picture) Maintaining strength and flexibility in the muscles of the calf will help reduce the risk of tendinitis. Surgical treatment is frequently needed in the event of complete rupture. It may take at least two to three months for the pain to go away.

## Medial Tibial Stress Syndrome (Shin Splints)

**What is it?** According to a 2012 study published in *Sports Medicine*, medial tibial stress syndrome is one of the main general running-related musculoskeletal injuries.

**What causes it?** Shin splints occur when there is pain along or just behind the tibia (shinbone), which is the large bone in the front of your lower leg. They cause pain and discomfort in the leg from repetitive activity on hard surfaces due to forceful, excessive use of the foot flexors and too much force being placed on one's shine bone and connective tissues. Furthermore, shin splints are frequently associated with runners who have suddenly changed running surfaces or level of mileage or are using worn-out shoes. In addition, weakness of the involved leg muscles can contribute.

**Symptoms:** Tenderness, soreness, or pain along the inner part of your lower leg. There can also be mild swelling in the lower leg. In the early stages, the pain may stop when you stop running or exercising; however, if left untreated the pain may be continuous.

**Additional Treatment Tips:** Shin splints can be relieved with rest but further prevention and other methods such as physical therapy to stretch and strengthen the calf muscle can be beneficial.

Futhermore, rigid orthotics may help to correct foot hyperpronation. In a 2010 study published in *Foot and Ankle Specialist (FAS)*, a group of runners with MTSS treated with calf stretching and off-the-shelf-orthoses resulted in 15 of the 23 patients showing a 50% reduction of their symptoms after three weeks intervention. They concluded that orthoses may be used as part of the treatment in shin splints but should be combined with other methods.

## at risk area: knee

### Patellofemoral Joint Pain - Patellofemoral pain syndrome (PFPS), or better known as runner's knee

**What is it?** Runners put heavy stress on their knees, an area that is very sensitive. The kneecap, or patella, is a small bone in the front of your knee that moves with the knee as it flexes. The patella protects the other bones in the knee against collisions and falls. One experiences runner's knee when there is pain around the front of the knee (patellofemoral pain). According to a 2012 review published in *Sports Medicine*, PFPS is most common in runners who participated in ultra-marathon races.

**What causes it?** Patellofemoral pain may be the result of irritation of the soft tissues around the front of the knee. Overuse, muscle imbalance, and inadequate stretching are other contributing factors to patellofemoral pain. Furthermore, pain that begins in another part of the body, such as the back or hip, may cause pain in the knee. It should be noted that in some people with runner's knee, the kneecap may be out of alignment. If this is the case, running on it may cause excessive stress and wear on the cartilage of the kneecap leading to pain and irritation around the area.

**Symptoms:** The most common symptom is a dull ache (think of a constant ache, not a sharp pain) underneath the kneecap while walking down stairs, squatting or getting up after sitting for long periods of time.

**Additional Treatment Tips:** Relative rest and stretching and strengthening to correct for the muscle imbalance is important. Try stretching your hip flexors. Also, performing lateral side steps and squats strengthen your knee's support muscles such as the quadriceps and glutes. In addition, ice should be incorporated after running.

Light running is okay if this injury is mild, and Bryan Heiderscheit, Ph.D., P.T., director of the University of Wisconsin Runners' Clinic, recommends shortening your stride length and landing with the knee slightly bent, which can take up to 30% of the load off the joint. In addition, uphill running is actually beneficial as it works the glutes. Gluteal muscles help control hip and thigh movement which prevents the knees from turning inward. However, running downhill should be avoided because it can exacerbate pain.

## At Risk Area: Thigh/Knee

### Iliotibial Band Syndrome (ITBS)

**What is it?** When you flex and extend your knee, the iliotibial band, which runs along the outside of the thigh can become irritated from repetitive rubbing over the outside of the knee.

**What causes it?** There are several causes of this syndrome, including weak gluteal muscles, over-pronation (excessive inward rolling of the foot), and running on uneven surfaces. According to a 2012 study published in *Sports Medicine*, ITBS is the most common injury of the lateral side of the knee in runners, with an incidence estimated to be between five percent and 14%.

**Symptoms:** Pain or aching on the outside of the knee, usually occurring in the middle or at the end of a run.

**Additional Treatment Tip:** In addition to decreasing your running mileage, try stretching the outer thigh and strengthening the hip abductors with lateral side steps, side leg lifts, and one-legged squats. Unlike some of the common running injuries, bicycling can aggravate ITBS. Try swimming or using an elliptical machine to exercise while recovering.

### takeaways:

Although running is a popular activity for health benefits, the risk for running injuries should not be neglected. Knowing how to spot, treat, and prevent running injuries, especially for beginner runners, will promote running consistency. It is best to catch injuries early on and avoid ignoring them. This will prevent runners from having to stop running for long periods of time. Another prevention technique is to maintain strength and flexibility in the muscles to reduce any injury risks. Remember that more is not always great. Moderation is key. Decreasing mileage and taking breaks will not only prevent injuries but improve one's running experience overall in the long run.