Sprains and Strains

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What Is the Difference Between a Sprain and a Strain?

A sprain is an injury to a ligament, the tough, fibrous tissue that connects bones to other bone. Ligament injuries involve a stretching or a tearing of this tissue.

A strain is an injury to either a muscle or a tendon, the tissue that connects muscles to bones. Depending on the severity of the injury, a strain may be a simple overstretch of the muscle or tendon, or it can result in a partial or complete tear.

Sprains
A sprain typically occurs when people fall and land on an outstretched arm, slide into base, land on the side of their foot, or twist a knee with the foot planted firmly on the ground. This results in an overstretch or tear of the ligament(s) supporting that joint.

Although sprains can occur in both the upper and lower parts of the body, the most common site is the ankle. Ankle sprains are one of the most common injuries in professional and recreational sports and activities.

Most ankle sprains happen when the foot abruptly turns inward (inversion) or outward (eversion) as a person runs, turns, falls, or lands after a jump. One or more of the lateral ligaments are injured. Wrist sprains are common when people fall and land on an outstretched hand.

Signs and Symptoms of Sprains
The usual signs and symptoms of a muscle sprain include pain, swelling, bruising, and the loss of functional ability (the ability to move and use the joint). Sometimes people feel a pop or tear when the injury happens. However, these signs and symptoms can vary in intensity, depending on the severity of the sprain.

Sprain Severity

• Grade I Sprain: A grade I (mild) sprain causes overstretching or slight tearing of the ligaments with no joint instability. A person with a mild sprain usually experiences minimal pain, swelling, and little or no loss of functional ability. Bruising is absent or slight, and the person is usually able to put weight on the affected joint.

• Grade II Sprain: A grade II (moderate) sprain causes partial tearing of the ligament and is characterized by bruising, moderate pain, and swelling. A person with a moderate sprain usually has some difficulty putting weight on the affected joint and experiences some loss of function. An x-ray or MRI may be needed.

• Grade III Sprain: A grade III (severe) sprain results in a complete tear or rupture a ligament. Pain, swelling, and bruising are usually severe, and the patient is unable to put weight on the joint. An x-ray is usually taken to rule out a broken bone. This type of a muscle sprain often requires immobilization and possibly surgery. It can also increase the risk of an athlete having future muscles sprains in that area.

When diagnosing any sprain, the doctor will ask the patient to explain how the injury happened. The doctor will examine the affected joint, check its stability and its ability to move and bear weight.

Strains
A strain is caused by twisting or pulling a muscle or tendon. Strains can be acute or chronic. An acute strain is caused by trauma or an injury such as a blow to the body; it can also be caused by improperly
lifting heavy objects or overstretching the muscles. Chronic strains are usually the result of overuse - prolonged, repetitive movement of the muscles and tendons.

Two common sites types of muscle strain are back strains and hamstring strains. Tendonitis (inflammation of a tendon) is another common type of muscle strain. Contact sports such as soccer, football, hockey, boxing, and wrestling put people at risk for strains. Gymnastics, tennis, rowing, golf, and other sports that require extensive gripping can increase the risk of hand and forearm strains. Elbow strains sometimes occur in people who participate in racquet sports, throwing, and contact sports. The two most common elbow strains are tennis elbow (lateral epicondylitis) and golfer’s elbow (medial epicondylitis).

Signs and Symptoms of Strains
Typically, people with a strain experience pain, muscle spasm and muscle weakness. They can also have localized swelling, cramping, or inflammation and, with a more severe strain, some loss of muscle function. Patients typically have pain in the injured area and general weakness of the muscle when they attempt to move it. Severe strains that partially or completely tear the muscle or tendon are often very painful and disabling.

Strain Severity
Strains are categorized in a similar manner to sprains:

- **Grade I Strain**: This is a mild strain and only some muscle fibers have been damaged. Healing occurs within two to three weeks.
- **Grade II Strain**: This is a moderate strain with more extensive damage to muscle fibers, but the muscle is not completely ruptured. Healing occurs within three to six weeks.
- **Grade III Strain**: This is a severe injury with a complete rupture of a muscle. This typically requires a surgical repair of the muscle; the healing period can be up to three months.

When To See a Doctor for a Sprain or Strain

- You have severe pain and cannot put any weight on the injured joint.
- The area over the injured joint or next to it is very tender when you touch it.
- The injured area looks crooked or has lumps and bumps that you do not see on the uninjured joint.
- You cannot move the injured joint.
- You cannot walk more than four steps without significant pain.
- Your limb buckles or gives way when you try to use the joint.
- You have numbness in any part of the injured area.
- You see redness or red streaks spreading out from the injury.
- You injure an area that has been injured several times before.
- You have pain, swelling, or redness over a bony part of your foot.

Immediate treatment tips for muscle sprains and strains
The treatment of muscle sprains and strains has two main goals. The first goal is to reduce swelling and pain; the second is to speed recovery and rehabilitation.

To reduce swelling it is recommended to follow use R.I.C.E. therapy (Rest, Ice, Compression and Elevation) for the first 24 to 48 hours after the injury.

An over the counter (or prescription) anti-inflammatory medication may also help decrease pain and inflammation.

R.I.C.E. Therapy

**Rest**
Reduce regular exercise or other activities as much as you can. Your doctor may advise you to put no weight on an injured area for 48 hours. If you cannot put weight on an ankle or knee, crutches may help. If
you use a cane or one crutch for an ankle injury, use it on the uninjured side to help you lean away and relieve weight on the injured ankle.

Ice
Apply an ice pack to the injured area for 20 minutes at a time, four to eight times a day. A cold pack, ice bag, or plastic bag filled with crushed ice and wrapped in a towel can be used. To avoid cold injury and frostbite, do not apply the ice for more than 20 minutes.

Compression
Compression of an injured ankle, knee, or wrist may help reduce swelling. Examples of compression bandages are elastic wraps, special boots, air casts, and splints. Ask your doctor for advice on which one to use.

Elevation
If possible, keep the injured ankle, knee, elbow, or wrist elevated on a pillow, above the level of the heart, to help decrease swelling.

Rehabilitation for Sprains and Strains
The second stage of treating a sprain or strain is rehabilitation to restore normal function. When the pain and swelling are reduced you can generally begin gentle exercise. A custom program is often created by a physical therapist that prevents stiffness, improves range of motion, improves flexibility and builds strength. Depending on the type of injury you have, you may go to physical therapy for several weeks, or do the exercises at home.

People with an ankle sprain may start with range of motion exercises, such as writing the alphabet in the air with the big toe. An athlete with an injured knee or foot will work on weight-bearing and balancing exercises. The length of this stage depends on the extent of the injury, but it is often several weeks.

Rebuilding strength is a slow and gradual process, and only when done correctly can the athlete consider returning to sports. It's tempting to resume full activity despite pain or muscle soreness, but returning to full activity soon increases the chance of re-injury and may lead to a chronic problem.

Also See:
Injury Rehab Protocols
When is it Safe to Play Sports After an Injury?

The amount of rehabilitation and the time needed for full recovery after a muscle sprain or strain depend on the severity of the injury and individual rates of healing. A moderate ankle sprain may require three to six weeks of rehabilitation and severe sprain can take eight to 12 months to rehab completely and avoid re-injury. Patience and learning to cope with an injury is essential to recovery.

Preventing Sprains and Strains
There are many things athletes can do to help lower their risk of muscle sprains and strains. Start by reviewing these 10 Tips for Safe Workouts

- Perform balance and proprioception exercises.
- Practice prehabilitation exercises.
- Wear shoes that fit properly.
- Replace athletic shoes as soon as the tread wears out or the heel wears down on one side.
- Ease into any fitness routine and get into proper physical condition to play a sport.
- Warm up before participating in any sports or exercise.
- Wear protective equipment when playing.
- Avoid exercising or playing sports when tired or in pain.
- Run on even surfaces.