

Sprains and Strains

By: Heidi M. Fiederlein, P.T., D. P.T.

Background

A *sprain* is an injury of a ligament. Ligaments connect one bone to another, creating joints. A *strain* is an injury involving muscle or tendon. A tendon is a fibrous structure that connects muscle to bone. Either of these injuries can occur from abnormal use or overloading the muscle or ligamentous structures that maintain joint stability. Here are two examples of such injuries: an ankle (joint) *sprain* and a biceps (muscle) *strain*. Sprains and strains are separated in severity by a grading method; the more damage to the muscle or ligament that occurred, the higher the number given to identify the injury. Grades I and II involve stretching and/or partial tearing of the aforementioned structures. A grade III sprain or strain would signify a severe or complete tear of the tissue. You may even hear a pop or feel something tear. Common causes of sprains and strains include falling on your arm or rolling your ankle, lifting an object (heavy or light) improperly, overusing a muscle, or twisting.

Signs and Symptoms

Symptoms of sprains and strains can vary in their presentation. Both sprains and strains can be accompanied by pain occurring with or without movement. When identifying a *sprain* however, it is important to look for any localized swelling and bruising. It is important to remember that a sprain involves compromise to the ligaments of a joint, which hold the bones together. If these are injured, it may even be difficult to use or move the joint in question. A

strain on the other hand may produce weakness and pain accompanied by muscle spasms and cramping. Each of these injuries may also result in decreased joint range of motion and muscle flexibility.

Diagnostics

Your physician and/ or physical therapist should complete a thorough evaluation and examination to determine the degree of injury that has occurred. Your doctor will perform special manual tests on the limb in question to provide stress to the muscles, ligaments and surrounding tissues to narrow down which injury has occurred. They will assess your ability to perform active movements and functional tasks such as walking and climbing stairs or reaching for and lifting an object. If necessary, diagnostics tests such as x-rays, CT scans and MRIs can be requested and performed to ascertain the specific injury that occurred.

Plan of Care

Acute injuries (less than 72 hours since the onset of injury) should be treated using the principles of RICE: rest, ice, compression and elevation. Ice is typically applied if the injury is hot, swollen, bruised and/or painful. If the injury is chronic however, heat can also be used. It is important to decrease the stress on the injury to facilitate recovery but immobility for long periods can also be detrimental, resulting in joint stiffness and muscle tightness. A physical therapist can perform, and instruct you in, gentle range of motion to facilitate the mobility of both muscles and joint

structures. Gradually, resistive exercises and stretching techniques may be introduced to facilitate strength and flexibility of the muscles and structures of the joint. Activities should be modified and performed as tolerated,

then gradually progressed toward full activity to lessen the risk of irritating damaged tissues. Maintaining your physical well being through a home exercise program may reduce the risk of such injuries occurring again.