

# STRAIN



## ■ ■ ■ Description

A strain is a stretched or torn muscle. Muscles that cross two joints, such as the hamstrings, calves, and quadriceps, are more susceptible to strains. Injury to muscles usually occurs at the junction where the muscle becomes tendon. Tendons serve as the insertion of the muscles into bone. There are four grades or degrees of strains. A *first-degree strain* is a small tearing of the muscle; the muscle is not lengthened, but there is pain with contraction. There may be mild bleeding or bruising. A *second-degree strain* is a partial tear of the muscle. The muscle is stretched but still functions. Usually there is pain with contraction and possibly weakness. Often the joint the muscle crosses does not fully move due to the pain of stretching the injured muscle. Usually there is bleeding and bruising. A *third-degree strain* is a complete tear of the muscle. The muscle is torn and does not function to move a joint, and the function is weak or absent. There is bleeding and bruising with this degree of injury. Another degree of strain is *delayed-onset muscular soreness*, which begins the day after exercise. These are microscopic tears of the muscle, not associated with bleeding.

## ■ ■ ■ Common Signs and Symptoms

- Pain, tenderness, redness or bruising, and swelling in the area of injury; severity varies with extent of injury
- Loss of normal mobility of the injured joint

## ■ ■ ■ Causes

Strains may occur due to sudden overload of a contracted muscle, overuse, or sudden increase or change in activity.

## ■ ■ ■ Risk Increases With

- Trauma
- Poor physical conditioning (strength and flexibility)
- Inadequate warm-up before practice or play
- Return to activity before healing and rehabilitation and conditioning are complete

## ■ ■ ■ Preventive Measures

- Appropriate warm-up and stretching before and after practice or competition.
- Maintain appropriate conditioning:
  - Joint flexibility
  - Muscle strength
  - Endurance and conditioning
- Strengthen weak muscles with rehabilitative exercises to prevent recurrence.

## ■ ■ ■ Expected Outcome

With appropriate treatment, full recovery is expected. It may take 2 to 8 weeks for recovery. Healing may take longer depending on the severity of the injury.

## ■ ■ ■ Possible Complications

- Re-injury or recurrence of symptoms, permanent weakness, or joint stiffness if the strain is severe and rehabilitation is incomplete; appropriately addressing the problem the first time decreases frequency of recurrence
- Delayed healing or resolution of symptoms if sports are resumed before rehabilitation is complete
- Excessive bleeding into muscle, especially if taking anti-inflammatory medications; can lead to delayed recovery and injury to nerves, muscle, and blood vessels; this is an emergency

## ■ ■ ■ General Treatment Considerations

Initial treatment consists of ice and medications to relieve pain, stretching of the affected joint to prevent stiffness, and modification of activity to rest the injured muscle. A brace, elastic bandage wrapping, splint, cast, or sling may be prescribed to protect affected joint for a short period. Strengthening exercises are prescribed as the muscle inflammation and pain subside. Physical or occupational therapy may be recommended to regain strength and normal use of the joint. Surgery may be necessary if tendon is torn. Usually it is not possible to surgically repair a torn muscle.

## ■ ■ ■ Medication

- Avoid aspirin or ibuprofen in the first 48 hours after the injury, because it may increase the tendency to bleed. During that time, you may use over-the-counter pain relievers, such as acetaminophen. After 48 hours, nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Topical ointments may be of benefit.
- If the strain is severe, stronger pain relievers may be prescribed as necessary by your physician. Use only as directed and only as much as you need.

## ■ ■ ■ Heat and Cold

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

■ ■ ■ **Notify Our Office If**

- Symptoms get worse or do not improve despite treatment
- Pain becomes intolerable
- You experience numbness or tingling
- Toes or fingernails become cold or develop a blue, gray, or dusky color
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

Notes:

(Up to 4400 characters only)

Notes and suggestions