

Hamstring Strain

JOSEY MEYER

Undergraduate Biology; Hardin-Simmons University; Abilene, TX

Category: Undergraduate

Advisor / Mentor: Ruot, Chuck (cruot@hsutx.edu); Edwards, Lindsay (Ledwards@hsutx.edu)

ABSTRACT

CLINICAL PRESENTATION & EXAM: A patient with a hamstring strain will have pain and tenderness on his or her posterior thigh. The patient may also complain of difficulty extending the knee and sitting comfortably. Depending on the severity of the injury, there could be bruising and swelling in the thigh area causing a loss of hamstring strength. If one of the hamstring muscles is completely torn; the patient would feel a “popping” sensation upon injury. Thus, the patient would be unable to use the injured leg. A hamstring strain typically comes from muscle overload during an eccentric contraction. A muscle overload can occur when the hamstring muscles are stretched during a sprint or loaded while the muscles help the back leg push off from the ground. The specific type and severity of the injury can be diagnosed upon palpation of maximally painful and swollen areas. **ANATOMY & PATHOLOGY:** When a hamstring muscle is strained there is a partial or complete tear of the muscle. The tear typically occurs in the muscle belly but also can occur where the muscle fibers join the tendon. There are three hamstring muscles: semitendinosus, semimembranosus, and biceps femoris. The hamstring muscles are located on the posterior thigh extending from the ischial tuberosity to the top of the tibial tuberosity or fibula in the lower leg. The main function of the hamstrings is to decelerate the movement of the lower leg in the sagittal plane when running or kicking. The hamstring muscles also are responsible for knee flexion, hip extension, stabilizing the knee, and internal and external rotation of the lower extremity. Any activity such as climbing or running actively involves the hamstring muscles. **DIAGNOSTIC TESTING & CONSIDERATIONS:** A hamstring strain can be diagnosed through a physical examination. The physician pinpoints the exact location of the muscle and/or tendon that has been damaged through palpation. Practitioners can assess the severity of the hamstring strain based on the range of motion and muscle strength of the injured leg compared to the healthy leg. MRIs and ultrasound imaging can be used to view the muscle or tendon tears. In rare cases, an avulsion fracture can occur when a small piece of bone is detached from the main bone when the hamstring tears. X-ray images are used to detect if an avulsion fracture is present. **TREATMENT & RETURN TO ACTIVITY:** After a hamstring injury occurs, the patient should immediately halt any athletic or strenuous activities. Equipment such as crutches or a cane may be used to keep weight off the injury. Wrapping the injury to provide compression, icing the injured area, and elevating the affected leg helps reduce inflammation. Most hamstring strains are nonoperative. However, if the hamstring muscle is completely torn away from its connecting bone, then surgery will be necessary to reattach the muscle. Once the swelling subsides, the patient can work with a physical therapist to strengthen the hamstring muscles and increase flexibility/mobility. Therapists focus on eccentric strength training, neuromuscular control of the lumbopelvic region, and therapeutic massage. Biking and walking are some simple exercises that will help strengthen the hamstring muscles before fully returning to activity. Most hamstring tears take at least a few weeks to recover and some can take months depending on the location and cross-sectional area of the muscle tear.