

UW Medicine

SPORTS, SPINE &
ORTHOPEDIC HEALTH

Hamstring Injuries In Runners

INTRODUCTION

Hamstring injuries are all too familiar to runners, especially those training for long distance races. These injuries can be debilitating and potentially serious. Knowledge of injuries of the hamstring, how to treat them and most importantly, how to prevent them, is useful for any serious runner.

PHYSIOLOGY AND BIOMECHANICS

The hamstrings are a group of three muscles on the back of the thigh that act to bend the knee and extend the hip. From a functional standpoint, the hamstring plays a key role in deceleration of the leg as it swings forward during running, a type of muscle contraction called “eccentric contraction”. It is during this period of the run cycle that the hamstring is most at risk for injury. For a runner, this means that the hamstring is most at risk during sudden stopping or starting.

WHAT’S IN A NAME?

Hamstring injuries go by different names but they all don’t necessarily mean the same thing. A posterior thigh injury is a nonspecific term indicating that the injury is on the back of the thigh, but is not specific for the hamstring. A hamstring “strain” is microscopic tears of the muscle, commonly caused by over stretching. Hamstring “tendinopathy” is an injury to the hamstring tendon, which attaches the muscle to the bone. A hamstring “tear” is a macroscopic tear of the muscle or tendon. Tears can be partial or complete.

RISK FACTORS

A wide variety of potential risk factors contribute to hamstring injuries.

Modifiable risk factors include:

- Inadequate warm up
- Inadequate training volume
- Hamstring inflexibility
- Hamstring weakness/relative weakness compared to the quadriceps muscle

Non-modifiable risk factors include:

- Previous injury (especially if appropriate rest and rehabilitation were not performed)
- Older age.

PRESENTATION OF INJURY

Hamstring injuries will generally present with sudden posterior thigh pain experienced during activity. Some people report a pop (especially in partial or complete tears) or a feeling of localized warmth in the area. Runners are most at risk when moving at a high speed. Hamstring injuries can also occur with stretching when the muscle is lengthened beyond its elastic capability. After a hamstring injury, swelling or bruising may develop in the following hours or days. Additionally, the muscles may be tender to the touch and painful to stretch. Significant bruising, a large bulge of the back of the thigh, or an inability to bend the knee against gravity may indicate a hamstring tear.

MANAGEMENT OF INJURY

While hamstring injuries are painful, most can be managed without seeing a doctor. Medical attention should be sought if there is:

- Severe pain
- Pain that persists for a week, even with rest from usual activities
- Significant swelling or bruising
- Inability to bend or straighten the knee
- Inability to bear weight

For mild hamstring injuries, standard conservative approaches to treatment including rest, ice, compression and elevation (RICE) are recommended. This approach helps to minimize any bleeding, swelling, and pain that may be associated with a strain. For compression, an elastic wrap or taping are often used. Ice can be applied to the area of pain for 20 minutes at a time. Ice can also be alternated with heat for acute sprains. Acetaminophen or ibuprofen are both generally adequate for pain relief. It is important to not use higher doses than those recommended on the bottle unless directed by a doctor to avoid injury to the liver, kidneys and stomach.

Rehabilitation after hamstring injury should be delayed 2-6 days to reduce reinjury rates. A rehabilitation program should progress as the runner is pain free with the previous activities. Generally, a rehabilitation program starts with light stretching that progress to strength training and sport specific training. Returning to full participation in a running program can safely be done when full strength, range of motion, and replication of sport specific movements can be achieved without pain.

For some chronic hamstring tendon injuries (tendinopathy), certain types of injections may be helpful to manage pain and even improve the tendon structure.

For severe hamstring injuries, seek medical attention. If you do seek medical care, your physician may want to obtain X-rays, ultrasound imaging or MRI to further evaluate your injury and consider surgical referral if appropriate.

PREVENTION

The best management of a hamstring injury is to avoid it altogether. Prevention strategies include sufficient warm ups (especially before sprints) strength training, progressive increase in running frequency and distance, and avoiding sudden stops/starts or sharp changes in direction.

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