

Evaluation of hamstring strain grade 2 injury



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A hamstring strain remains one of the trickiest injuries to rehab and take care of. Since the strain can potentially be a reoccurring issue if not healed up all the way. The strain varies from a Grade 1 which can take up to three weeks to heal if treated correctly. A grade 2 stain is going to take at least 4 to 8 weeks of proper recovery to have a chance at 100 percent strength. And a grade 3 hamstring strain is going to cause an athlete to miss up to 3 to 4 months due to recovery after surgery. Grade 3 causes a complete tear of the hamstring muscles. This paper will be covering the grade 2 strain, also demonstrating how a patient will be able to recover in the timetable that is provided above, which is up to 4 to 8 weeks of recovery.

Involved Structures, Mechanism of Injury -

“ The hamstring muscle originates at the ischium, which is the portion of the pelvic bone that we sit on, and attaches all the way down at the tibia and fibula. There are two medial hamstring muscles, known as the semitendinosus and semimembranosus. The biceps femoris is located on the lateral side, and is made up of two heads leading to a singular insertion. These large muscle bellies make up the posterior thigh musculature, with the tendons running distally, making up the borders of the space behind the knee with their corresponding tendon location. An overstretch can strain one of these three muscles acutely, with the biceps femoris being the most often strained.”(Proquest 1). The Gracilis is also a muscle in the medial part of the thigh. “ The hamstring acts at both the hip and knee joints and is primarily responsible for hip extension and knee flexion.” Knee flexion and hip extension are everything when it comes to running or participating in sports. No brainer as to why it slows athletes down so much. Literally every

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movement that an athlete does requires hamstring use. When the hamstring is strained, it also leads to imbalances in the lower back and in the quadriceps in relation to the hamstring.

The hamstring strain is an acute or chronic injury that happens when the muscle has been stretched beyond its normal limit during a muscular action. Whether it be sprinting or running there are many ways that this injury could occur. Even more so when an athlete has failed to warm up properly or when they are tired at the end of workout and exert themselves too hard. How the injury happens acutely is by a violent movement such as hitting top speed or a violent kick. The best way to avoid this from occurring or reoccurring if the athlete has already has the injury is to warm up thoroughly and remain hydrated at all times especially during time of exercise. " The predominant injury mechanism for hamstring strain injuries is high-speed running;"(Proquest 3). When it comes to the chronic side of a hamstring muscle strain, it just occurs from over exertion for an extended period of time. Athletes need to make sure that they are practicing with the correct form in what they do and also foot striking while running. The most ideal way to run is by landing with an equal distribution of your foot. The toe strike or the heel to toe strike are problematic over the long road and can lead to many imbalances down the road when it comes to tendons and muscles throughout the leg. Especially in the knees. The hamstring works eccentrically when the foot is about to hit the ground to plant for another stride, often referred as decelerators. " A lower H : Q ratio suggests a relatively poor capacity for the hamstrings to act as ' brakes' at the flexing

hip and extending knee joints during the terminal swing phase of running.”(Proquest 2)

Immediate Care

Injury Evaluation

Hamstring injuries should be treated right away directly after it occurs. Further usage after the injury could result in permanent damage. Immediately use R. I. C. E. which is going to be Rest, Ice, Compression, Elevation. The athlete should ice every day and do it for 15 minutes on and 15 minutes off. Repeating this 6-8 times in a day to minimize swelling applying to the injured part of the body. A tool to use when assessing a hamstring injury is to M. A. P. P. S. S. This stands for Mechanism of injury, Acute/Chronic, Pain, Palpation, Sounds, and Sign/Symptoms. First thing to do is find the mechanism of the injury. Find out what the athlete was doing at the time the hamstring was strained. Then ask what the pain felt like? Was the athlete able to walk afterwards or did it hurt so bad they needed crutches. This can help to find the severity of the injury. It could possibly be a few fibers loose or it could be a complete rupture of the hamstring. Next step is to see if it is an acute or chronic injury. Did the athlete warm up thoroughly? Find out if it was when they were super tired at the end of the workout. Was there soreness in the muscle prior to the injuries occurrence? Next you will assess the pain that they are feeling. Which part of the hamstring is the pain coming from? The injury is most common in the biceps femoris muscle on the lateral side of the hamstring. Ask the athlete what the pain is feeling like on a scale from 1-10 as well. When palpating the

hamstring it will feel tender to the athlete due to the bruising the strain has caused.

H. O. P. S. is the next method of to put to use when assessing an injury. History, observation, palpation, and special tests is what the acronym stands for. First, When assessing history the trainer should ask the athlete about his injury history to see if they pertain or could assist in this current problem that he has with his hamstring. When the trainer is observing, he or she should look for swelling in the injured area to see what move to make next. Also, observing how they walk can be a big indicator how hurt the hamstring is depending on how fast the athlete reported to you after it occurred. Pain will occur when flexing the leg if it is strained. And the athlete will be able to pick up on a weakness from leg to leg. And lastly the special tests will be able to finally diagnose the athlete with the strain. The Slump's test can be used by the trainer to find out what is going on and severity of the injury.

Management

Surgical Procedure

A hamstring grade 2 does not require surgery in most cases. The only time that surgery would be necessary would be if the athlete ended up further damaging the hamstring due to lack of recovery. Say the athlete gets a grade 2 sprain sits for a week goes out tries to run and it happens again escalating it to a grade 3 then it would be inevitable to get surgery. The whole Hamstring isn't usable at that point the whole muscle is torn.

Phases of Healing

The healing process is crucial when it comes to healing a hamstring muscle strain. The healing process consists of three steps, The response phase, the repair phase, and the remodeling phase. In the response phase you are going to want to be able to realize and react on the swelling, inflammation, tenderness, and how the hamstring currently functions at the time of the athlete's arrival. When it comes to the swelling and inflammation it may not show all the time from the outside. But inside it is obviously inflamed. The hamstring's function ability is going to be the dead giveaway. The athlete will also notice how tender the muscle is in a grade 2 hamstring strain. R. I. C. E. and NSAID's are going to be huge in getting the pain under control as well as any potential swelling. Rest is the most key component especially in the first week of recovery. The athlete should avoid all types of physical activity for the first week. Walking is the only type of physical activity that should be permissible pertaining to the first week of recovery. Walking would help regain some of the ROM back. If the athlete is not steady with his ROM after a week then take another week to gain more ROM. No reason to rush especially knowing that the process can take 4 to 8 weeks.

The next part of the healing process is the repair phase. In this phase of recovery, the scar tissue begins to form. It is essential that the athlete rolls out his/her hamstring with a foam roller of their choice. Also, the athlete needs to continue with the NSAID's to keep any remaining pain or swelling down. Gradually will add body weight exercises for two weeks such as squats, lunges, and pushups. After a week of doing this the athlete will then be able to start adding a small amount of weight or resistance to help strengthen the hamstring and also the other muscles around it to prevent

any imbalances due to adding strength. Add gentle stretching at this point as well. More exercises that the trainer could add to this regimen would suffice. Getting on the stationary bike would also be huge for recovery.

The last part of the recovery process is the remodeling phase. This is the part where the athlete is going to make sure that he is 100 percent recovered before he completes the program. Most of the scar tissue should start to disappear for the most part. No more passive movements in this phase. Time for the athlete to nut up and get it done.

Rehabilitation

Modalities and Therapeutic Exercise

“ After the early inflammatory phase of injury has stabilized, a treatment regimen of isometric exercise, cryotherapy, and ultrasound may be of benefit. In later stages of healing, gentle stretching within pain limits, jogging , stationary cycling, and isokinetic exercise at high speeds may be used. It is essential to incorporate closed kinetic chain eccentric exercises such as squats, lunges, and multiplanar movements. After the elimination of soreness, the athlete may begin isotonic knee curls. Full recovery may take from 1 month to a full season.”(5) Using MRIs can be prevalent in diagnosis of an injury to an athlete. Stretching PNF exercises as well as Strengthening PNF exercises for the hamstring will be used. “ The active slump test assesses pain-sensitive neuromeningeal structures that have been suggested as a potential source of pain in the posterior thigh in hamstring injuries.”(Proquest 4).

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