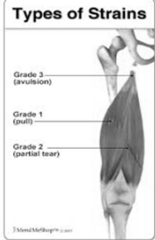


HAMSTRING INJURIES

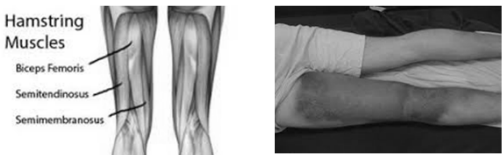
Donald A. Chu PhD, PT, ATC-retired, CSCS

GRADES OF INJURIES

- grade 1 – a mild muscle pull or strain
- grade 2 – a partial muscle tear
- grade 3 – a complete muscle tear




HAMSTRING MUSCLES/SEQUELAE OF INJURY



Hamstring Muscles

- Biceps Femoris
- Semitendinosus
- Semimembranosus

RECOGNITION DURING SPORT



- Hunter Pence SF Giants Right fielder
- 2016
- Athlete “pops” straight up
- Immediate discomfort
- Immediate inability to cycle legs
- Immediate deceleration
- Never “just a cramp”

CAUSES

- Risk Factors
 - Muscle overload
 - Muscle tightness.
 - Tight muscles are vulnerable to strain. Athletes should follow a year-round program of daily stretching exercises.
- Imbalance
 - When one muscle group is much stronger than its opposing muscle group, the imbalance can lead to a strain. This frequently happens with the hamstring muscles. The quadriceps muscles at the front of the thigh are usually more powerful. During high-speed activities, the hamstring may become fatigued faster than the quadriceps. This fatigue can lead to a strain.
- Poor conditioning
 - If your muscles are weak, they are less able to cope with the stress of exercise and are more likely to be injured.
- Muscle fatigue.
- Fatigue reduces the energy absorbing capabilities of muscle, making them more

CAUSES

- Choice of activity
 - Anyone can experience hamstring strain, but those especially at risk are:
 - Athletes who participate in sports like football, soccer, basketball
 - Runners or sprinters
 - Dancers
 - Older athletes whose exercise program is primarily walking
 - Adolescent athletes who are still growing
 - Hamstring strains occur more often in adolescents because bones and muscles do not grow at the same rate. During a growth spurt, a child's bones may grow faster than the muscles. The growing bone pulls the muscle tight. A sudden jump, stretch, or impact can tear the muscle away from its connection to the bone.

TREATMENT



- Nonsurgical Treatment
- Most hamstring strains heal very well with simple, nonsurgical treatment.
- Rest. Take a break from the activity that caused the strain. Your doctor may recommend that you use crutches to avoid putting weight on your leg.
- Ice. Use cold packs for 20 minutes at a time, several times a day.
- Compression. To prevent additional swelling and blood loss, wear an elastic compression bandage.
- Elevation. To reduce swelling, recline and put your leg up higher than your heart while resting.
- Immobilization. Your doctor may recommend you wear a knee splint for a brief time. This will keep your leg in a neutral position to help it heal.
- Physical therapy. Once the initial pain and swelling has settled down, physical therapy can begin. Specific exercises can restore range of motion and strength.
- A therapy program focuses first on flexibility. Gentle stretches will improve your range of motion. As healing progresses, strengthening exercises will be added to your program.

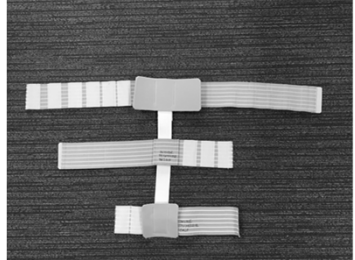
TREATMENT (CONTINUED)

- Surgical Treatment
- Surgery is most often performed for tendon avulsion injuries, where the tendon has pulled completely away from the bone. Tears from the pelvis (proximal tendon avulsions) are more common than tears from the shinbone (distal tendon avulsions).
- Surgery may also be needed to repair a complete tear within the muscle.
- Procedure. To repair a tendon avulsion, your surgeon must pull the hamstring muscle back into place and remove any scar tissue. Then the tendon is reattached to the bone using large stitches or staples.
- A complete tear within the muscle is sewn back together using stitches.

TREATMENT (CONTINUED)

- After surgery, you will need to keep weight off of your leg to protect the repair. In addition to using crutches, you may need a brace that keeps your hamstring in a relaxed position. How long you will need these aids will depend on the type of injury you have.
- Your physical therapy program will begin with stretches to improve flexibility and range of motion. Strengthening exercises will be added to your plan.
- Rehabilitation for a proximal hamstring reattachment typically takes at least 6 months, due to the severity of the injury. Distal hamstring reattachments require approximately 3 months of rehabilitation before returning to athletic activities.

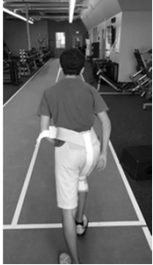

REHAB



- Hamstring Brace – Hamstring Helper™
- Running drills
- Strength Drills
- Dynamic Flexibility
- Recovery Activity

HAMSTRING HELPER

- Hamstring Helper™
 - Hamstring substitute
 - Resists hip flexion (avoid excessive stretch on Hamstring muscle group)
 - Provides elastic recoil of entire leg; facilitates pulling the body over the foot during running gait.
 - Helps with recovery of the lower leg by the Hamstring.

RUNNING DRILLS

“Butt kickers”




Backpedal



STRENGTH DRILLS


Glute Ham start Glute Ham mid Glute Ham finish



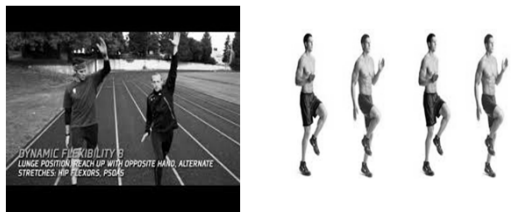
STRENGTH DRILLS (RAZOR CURLS)



RAZOR CURL WITH MED BALL



DYNAMIC FLEXIBILITY



DYNAMIC FLEXIBILITY B
LUNGE POSITION REACH UP WITH OPPOSITE HAND, ALTERNATE
STRETCHES HIP FLEXORS, PIRIS

RECOVERY ACTIVITY



SUMMARY

- Evaluation – recognition of the issue.
- Determine the extent of the disability
- Acute care
- Subacute care
- Chronic care
- Prevention better than treatment.
- Balance the system; avoid overload; teach specificity