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TOPIC ARTICLE

"Understanding and Recovering from a Muscle Strain" October 2025

We've all heard the phrase: "I pulled a hammy," and watched an athlete grab their leg mid-sprint, often collapsing to the ground. That dramatic moment is typically the result of a muscle strain.

What Is a Muscle Strain?

A muscle strain occurs when a muscle is overstretched or torn, often due to sudden force or overuse with high-speed movements like sprinting, cutting, jumping or kicking. In sports, this usually involves the hamstrings, quadriceps, hip adductors or calf muscles (gastrocnemius and soleus). It is important to see a doctor to rule out any other common diagnoses that present similar, such as avulsion fractures, stress injuries, contusions or complete tendon ruptures.

Common Muscle Strains in Athletes

Hamstrings, Gastrocnemius (upper calf) & Soleus (deep calf muscle):

- Hamstrings and Gastrocs are often strained during high-speed running or rapid acceleration/deceleration.
- Soleus is commonly affected by overuse during long-distance running, especially when pushing off the toes with the knee bent, such as with uphill running.

Quadriceps:

- Frequently injured during kicking or sudden forceful leg extension.

Adductors:

- Frequently injured during kicking, change of direction or skating.

Recovery & Rehabilitation

Recovery begins with rest and not pushing through pain. While mild strains may heal with rest and self-care, most muscle strains require a structured rehabilitation program to ensure a safe return to sport and reduce the risk of reinjury.

Key Principles of Rehab

- Pain Guidelines: Light discomfort is okay — keep pain under 4/10 on a pain scale during exercises.
- Eccentric Strengthening: Focus on strengthening the muscle while it lengthens (eccentric contractions), which is key for healing and prevention.
- Flexibility & Mobility: Regain full range of motion with both dynamic and static stretches.
- Whole-Body Approach: Address core and hip strength, balance, and movement mechanics.

Treatment Plans by Muscle Group

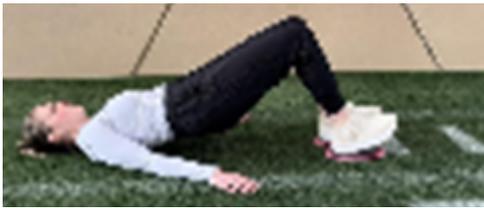
Hamstring Strain

Strengthening:

- Hip extension: bridges, Double leg and single-leg deadlifts



- Eccentric hamstrings: hamstring sliders (start bilaterally, progress to single leg) and Nordic hamstring curls.

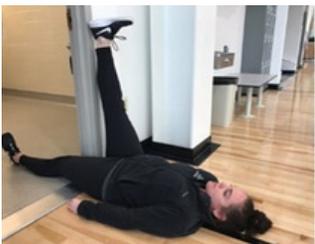


Flexibility:

- Active stretching: Lying hamstring stretches with active knee extension at 90° hip flexion, heel scoops and soldier kicks



- Passive stretching: Doorway hamstring stretches



Quadriceps Strain

Strengthening:

- Eccentric quadriceps: leg extensions with slow single-leg lowering, squats with slow descent, and single-leg dips.



Mobility:

- Foam rolling, massage for tissue release.



- Dynamic stretching: Ankle hugs



- Passive stretching: Hip flexor and quads in ½ kneel or on your back



Groin (Hip Adductor) Strain

Strengthening:

- Hip Adductor Eccentric: Band or cable resisted hip adduction with slow return, side lunge sliders and Copenhagen planks



- Hip Abductor: Resisted side leg raises, Clamshells and Side planks



Flexibility:

- Active stretches: Side lunges and Z sits



- Passive stretches: V sit and butterfly



Calf (Gastrocnemius & Soleus) Strain

Strengthening:

- Eccentric Gastrocs: Heel raises - rising on both legs, lower on the injured leg.
- Eccentric Soleus: Seated heel raises and focus on slowly lowering. Add weight as able.



Stretching:

- Gastrocnemius: Stretch with a straight knee.
- Soleus: Stretch with a bent knee.



- Include hamstring stretches as they often co-tighten with calf muscles.

Core and Glute Stability

It's critical to treat the whole body, not just the injured muscle. Strengthening the core and gluteus medius improves lower body mechanics and reduces reinjury risk.

Key Functional Exercises:

- Proper form of squats and lunges includes an emphasis on 1) muscle balance between the hamstrings and quads keeping the knees behind the toes, 2) gluteus medius stability with the knees tracking over the little toes, and 3) proper hip hinge.



Progressive Return to Sprinting

Before returning to sport, the final and most important rehab step is progressive sprinting. Sprinting too soon or too fast can re-injure healing tissue.

Based on the protocol by Hickey et al., athletes should progress as follows once they can walk with <4/10 pain:

Stage 1:

- Begin with slow jogging (~25% max speed).
- Progress to moderate-speed running (~50% max speed), as tolerated.

Stage 2:

- Introduce high-speed running (50%-80% of max velocity).
- Only advance if no pain is experienced at this speed.

Stage 3:

- Begin sprinting at full effort over short distances.
- Change of direction
- Acceleration and deceleration in sport-specific movements

Final Tip for Athletes and Parents:

Muscle strains are treatable and preventable. The key is not rushing recovery and following a proper rehab program. Partner with a sports physical therapist or athletic trainer to individualize care and ensure a safe, strong return to performance. These exercises can also be incorporated to aid in preventing injury to build resilience.

References:

Hickey JT, Opar DA, Weiss LJ, Heiderscheit BC. Hamstring Strain Injury Rehabilitation. Journal of Athletic Training. 2022;57(2):125-135.

Thorbord, K. Current Clinical Concepts: Exercise and Load Management of Adductor Strains, Adductor Ruptures and Long-Standing Adductor-Related Groin Pain. Journal of Athletic Training. 2023;58(7-8):589-601.

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EMERGENCY

In a crisis call "911" immediately

● If considering self-harm, call "988"
The National Suicide Intervention Lifeline

SEXUAL MISCONDUCT

To speak to a counselor,

Call (800) 656-4673
RAINN

BULLYING/HAZING, VIOLENCE, ADDICTIONS & SUBSTANCE ABUSE

For helpful resources,

thebmsproject.org/Safety

CHILD ABUSE

To report suspected child abuse,

Call (800) 422-4453

Childhelp National Child Abuse Hotline

It is recommended that incident(s) of serious misconduct be reported to law enforcement.
Minors should report incidents of misconduct to their parent(s) or guardian(s).