HAMSTRING MUSCLE INJURIES IN RUNNERS

THE INJURY

Runners are often guilty of showing their hamstrings no love, until they demand it. Hamstring issues usually arise because the muscles are weak. Long and weak or short and tight hamstrings all pose injury risks, as do muscle imbalances with over-powering quadriceps on the front of your thigh.

The hamstring consists of 3 muscles, that run down the back of your thigh from your buttock to just below your knee. They work over two joints – both flexing (bending) the knee and extending (straightening) the hip joint. The hamstrings work throughout each stride, but are especially active when you are bending your knee and extending your hip at the same time, for example when driving yourself up hills, and powering into the finish. Approximately 7% of running injuries are hamstring-related. Pushing through hamstring pain can morph into a debilitating tear.

Running-related hamstring injuries can be one of two things: a more commonly known hamstring strain (pulled/torn muscle) or an overuse injury called hamstring tendinopathy.



Hamstring Strain

An acute injury that usually occurs during dynamic running activities: sprinting, jumping, fast stop/starts.
The strain is graded:
Grade 1 – minor tear of a few muscle fibres
Grade 2- tearing of a larger number of fibres but muscle still intact
Grade 3 – complete rupture of the muscle

Symptoms:

- Sudden onset of pain whilst running
- Sharp, stabbing, possibly even a snap or pop sound
- Bruising on back of the thigh
- Swelling
- Can have associated back and buttock pain
- In Grade 2 or 3 injuries you may have difficulty walking

Management:

Acute phase:

- R.I.C.E – rest, ice, compression, elevation and refer yourself to a physical therapist after 48-72 hours
- Physical therapy to promote tissue healing and ensure minimal scar tissue formation
- Massage and manual therapy to release tight surrounding structures and address any underlying back or hip issues
- Exercise therapy – slow and progressive over stages depending on the severity of the initial tear

Rehabilitation:

- Strengthen pelvis and core including the gluteus (buttock) muscles as they work together with the hamstrings.
- Manage any muscle imbalances in weakness or flexibility through exercise correction
- Neural mobilisation stretches
- Progression to full leg strengthening exercises, squats, deadlifts and finally eccentric strengthening of the hamstring.

Training:

- Complete rest may be advised depending on severity of injury. Otherwise reduce intensity and training volume
- Avoid speed and hill work
- Find a comfortable pace and distance that elicits no pain and stick to that 3 x week with a rest day in between
- Train on softer surfaces like grass and dirt roads
- Cross train with cycling, water running, swimming, elliptical trainer
- Address underlying contributing factors like biomechanics (do you need orthotics for your arches?) or a leg length discrepancy.

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ADVICE HANDOUT

Hamstring Tendinopathy

An overuse/overloading of the muscle tendon attachment at the origin of the hamstring on the ischial tuberosity deep in your buttocks.
History of increased load, more hill running, increased speed work, unaccustomed deep lunges, yoga and deadlifts.
The tendon has poor bloodflow which makes healing and recovery slow.



Symptoms:

- Buttock pain
- Point-specific pain on, or just below, the ischial tuberosity (sitting bone)
- Chronic stiffness
- Aggravated by periods of sitting and driving, deep lunges, hamstring stretches and running at high speeds and uphill
- Stiffness or soreness first thing in the morning followed by a 'warming up period' where the pain disappears
- Following exercise pain may be delayed by 24-48 hours

Management:

Early stages:

- Icing regularly through the day
- Stop stretching your hamstring as this compresses/squashes the tendon
- Sit as little as possible, use a cushion under your buttock to relieve pressure on the tendon
- Physical therapy to mobilise tight structures and promote tissue healing using massage, acupuncture and other modalities
- Isometric exercises 2-3 x week especially if still painful

Rehabilitation:

- Load modification. Manage muscle imbalances in weakness and flexibility through exercises.
- Strengthen the core, pelvis and gluteus (buttock) muscles
- Neural mobilisation stretches
- Eccentric strengthening in latter stages of rehabilitation.

Training:

- Complete rest may be advised depending on severity of injury. Otherwise reduce intensity and training volume
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PREVENTION

Healthy hamstrings are vital for running performance. Hamstring injuries can be stubborn and take anywhere from 6 weeks to 9 months to fully recover.
Prevent the injury by:

1. Strengthening your hamstrings, back, gluteus muscles and core – they work together stabilising your pelvis and pushing power through your legs when you run
2. Good flexibility and neural mobility
3. Regular massage to maintain healthy tissue and pick up any tight niggles early
4. Compression tights during or after running to aid blood flow and recovery
5. Treat underlying back problems through physical therapy will help you avoid hamstring injury
6. Eccentric strengthening is proven effective in injury recovery and prevention. These are advanced exercises that may need some initial guidance and should only be done 2-3 x week
7. Warm up before a run
8. Graduate training load and intensity increases.

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HAMSTRING STRETCHING

The data tells us that one of the best ways to reduce the risk of hamstring injury is to maintain flexibility in the muscles around the lower back, gluteals and upper leg (hamstrings and quadriceps). These exercises are designed to help you achieve this goal.

SUPINE LUMBAR TWIST STRETCH



Lying flat on your back, cross one leg over the other by twisting your hips and spine. Keep your opposite arm outstretched. You can hold on to your knee to make the stretch stronger if you feel comfortable.

Repeat 3 times
Hold for 20 seconds

Video:
http://youtu.be/BzYBkAvdCJY

DOUBLE LEG BACK STRETCH



Lie flat on your back, and bend your knees towards your chest. Hold this position and feel a gentle stretch in your back. If you get any groin pain while doing this exercise, stop and inform your therapist. Relax, and repeat as necessary.

Repeat 3 times
Hold for 20 seconds

Video:
http://youtu.be/ZEz8OzvkUv4

LUMBAR AND THORACIC SIDE FLEXION SITTING



Sitting with good upright posture, run your arm down the side of the chair leg by side-bending your spine. Repeat to the other side. This is a good mobility exercise for the upper and lower back while sat down, if you feel your back is starting to get stiff.

Repeat 3 times
Hold for 20 seconds
Perform both sides

Video:
http://youtu.be/Rze6cxfJpOQ

GLUTE STRETCH SUPINE 3



Lie on your back, and bend your knee to 90 degrees (i.e. pointing straight up). Place your ankle across your opposite knee and pull your knee towards your chest to feel a stretch in your bottom. You can also use a towel to assist you.

Repeat 3 times
Perform both sides

Video:
http://youtu.be/zpaExOK4S8M

EXTERNAL ROTATION TABLE GLUTE STRETCH



This is an alternate to lying on the floor. Place your foot on a table, with your leg turned inwards. Lean forwards slightly to feel a stretch in your buttock. Hold the stretch.

Repeat 3 times
Hold for 20 seconds
Perform both sides

Video:
http://youtu.be/Nh3gioc_x4I

FOAM ROLLER HAMSTRING STRETCH



Sit down placing a foam roller under your Hamstrings (back of the legs). Your feet should be off the ground, and you can balance using your arms. Roll the roller up and down your Hamstrings to create a stretch. You can cross your legs to emphasise the stretch on one side.

SETS	REPS

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HAMSTRING CONDITIONING

After ensuring that the muscles and tissues around the low back, gluteals and upper leg are flexible, the most important aspect of preventing hamstring injury is to build hamstring strength and ensure there is no neural tension in the nerves running from your spine, down your leg. These exercises will help achieve this.

SCIATIC NERVE GLIDE FLOSS 3



Sit with good posture, and straighten your affected leg and bend your ankle towards you, as you extend your neck. Then bring your neck towards your chest as you relax the ankle. This will glide the sciatic nerve.

SETS	REPS

Video: http://youtu.be/HkXkUjffCYw

SHOULDER BRIDGE 3

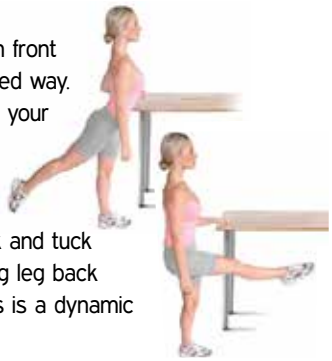


Start position is shoulder bridge level one, with a neutral pelvis and the spine rolled away from the mat. Inhale to prepare, exhale to lengthen and straighten your leg. Avoid tilting the pelvis. Inhale and fold your leg back to the mat, ready to repeat on the opposite leg. Exhale, as you roll the spine down vertebra by vertebra to finish.

Repeat 5 times | Perform both sides

Video: http://youtu.be/R7yrLlC0uJs

LEG SWING



Hold on to a table, and swing your leg in front of you and then behind you in a controlled way. It's a great way to dynamically warm up your leg and hip,but also used to gain more mobility to your hip joint. As you swing your leg forward in front of you, pull your foot upwards and slouch your back and tuck chin to chest. (slump) Then as you swing leg back behind you straighten your back up. This is a dynamic nerve stretch.

Repeat 5 times | Perform both sides

Video: http://youtu.be/Rze6cxfJpOQ

FULL SQUAT SINGLE LEG CUP REACH



Place 5 cups in front of you, and stand in the middle of them. Squat down (on one leg), and reach for one cup then come up, then repeat with the second cup, etc. Be careful to maintain control to the leg, and do not perform the exercise too quickly. Always keep your foot flat on the ground, do not let your heel raise from the floor.

Repeat 5 times | Perform both sides

Video: http://youtu.be/FslkTrYqdcs

ROMANIAN DEAD LIFT



Keep your knees just slightly bent, shoulder width apart, and place a dowel rod or barbell on the blocks. Keep your back straight/flat as you bend your knees more towards the bar. Hold the bar shoulder width apart or slightly narrower, with one palm facing up, one palm down (or both palms facing down). Lift the bar up by straightening the legs and extending the back at the same time. Keep the bar close to your shins during the movement. If you lack flexibility you may need to bend your knees a little. Squeeze he shoulder blades at the top of the movement. Return to the start position.

Repeat 5 times | Perform both sides

Video: http://youtu.be/Nh3gioc_x4I

NORDIC HAMSTRING CURL



This exercise is best done with a training partner who anchors your feet. But it can be done at home if you can find something heavy to secure your feet under. Kneel on the ground—it's best if it's padded, anchor your your feet and lower your body to the ground as slowly as possible keeping your back straight ie. rigid. When your hamstrings can no longer support your weight, let yourself fall to the ground, and catch yourself in a push-up position. Your goal is to control the descent for as long as possible. Start with very low repetitions ie. 2-4 repetitions a day and only build on this if and when you're not too sore.

SETS 1	REPS 2-4

Video: http://spxj.nl/2iDFKaq

Video courtesy of Physiotutors

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