



HAMSTRING REHABILITATION

Important Information

Pain in the hamstring does not always mean that you have damaged the hamstring. The hamstring is a common site of referred pain from other structures. In particular, irritation of the Sciatic nerve can mimic a hamstring tear, as can referred pain from an irritated Sacro-Iliac joint, lumbar vertebra or disk. Unless the pain was immediate and disabling during a heavy training session, you may well want to get the opinion of a musculo-skeletal therapist as to the actual problem. Engaging a therapist should speed recovery and make recurrence less likely.

Management protocol

First 48 hours

- Rest Ice Compression and Elevation (RICE)
- Pain free active seated knee extension after 10 minutes of ice, see Figure 1

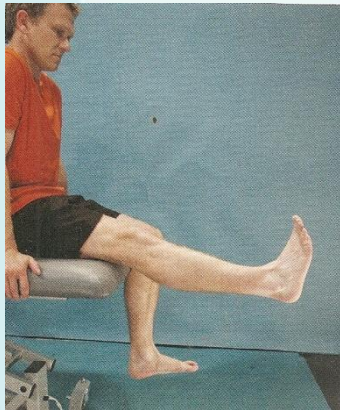


Figure 1 Active knee extension

Subsequent Program for recovery and reducing likelihood of recurrence

- Stretching
 - Hamstrings
 - Antagonists (Quadriceps, Iliopsoas)
- Strengthening
 - Hamstrings, Concentric and Eccentric
 - Gluteals and Adductor Magnus
- Massage





- Hamstrings and Gluteal trigger points (not described here)
- Neural stretching (not described here)
- Spinal mobilization (not described here)
- Running program
- Stability program

Stretching

During the acute phase, the first 4 to 5 days, full pain free range of motion should be achieved as

soon as possible. This can be achieved through gentle stretching, as In Figure 2 below. To stretch the proximal hamstrings (up near the gluteals), bend the knee a little and lean forward.

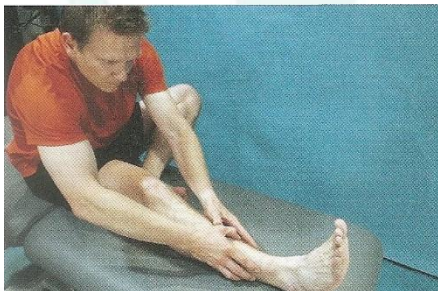


Figure 2 Hamstring stretch

It is important to stretch the antagonist muscles, iliopsoas and quadriceps. The following is a link to a Youtube video that I think is a good one for you. There are more aggressive ones, but I think that this should be strong enough for you at the moment. <http://www.youtube.com/watch?v=er0EeR6Rh60>

Strengthening

Hamstring injury is normally caused by inadequate eccentric contraction strength. Eccentric contraction is one where the muscle is under load, but is lengthening, as when you are putting down a heavy object using your biceps. Therefore, strengthening rehab should focus on excentric

contraction of the hamstrings. The recommended exercise for this is the “Nordic eccentric” for this you either need a partner or a low beam under which to trap your ankles. See Figure 3

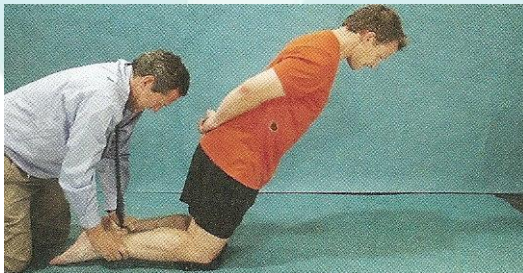


Figure 3 Nordic eccentric contraction exercise

Strengthening protocol

<u>Week</u>	<u>Sessions per week</u>	<u>Sets and Repetitions</u>
1	1	2*5
2	2	2*6
3	3	3*6-8
4	3	3*8-10
5-10	3	3 sets descending reps 12.10.8

Be careful doing this exercise. The first attempt at this should be performed with your therapist in attendance. Do not over stress the hamstring. If pain occurs stop the exercise and report to the





therapist. Once this regimen is complete a mix of concentric and excentric exercises are useful to build strength and resilience.

Running program

Early commencement of a **progressive** running program is vital to hamstring recovery post injury. The following approach, whilst not backed by scientific study is the result of many years experience developed by coaches and therapists.

Initial stages

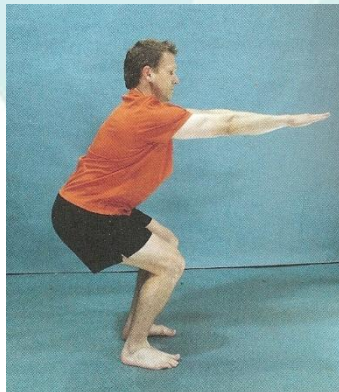
Start program 48 hours after injury

- Run for 20 minutes twice a day
- Do 10 minutes of gentle hamstring stretching before the run
- Start the run with small paces, shuffle if necessary
- Increase stride length slowly over the session, as the pain allows
- Interval running over 100metres with acceleration, maintenance and deceleration phases
- If there is even the slightest increase in pulling in the hamstring the session should stop immediately, ice applied for 10 minutes and attempted again 12 hours later
- Stretch for 10 minutes and then apply ice for a further 10 minutes

Stability program

Pelvic stability is essential for the optimal functioning and recruitment of the hamstrings. The following exercises have been shown to provide core stability helpful to pelvic control.

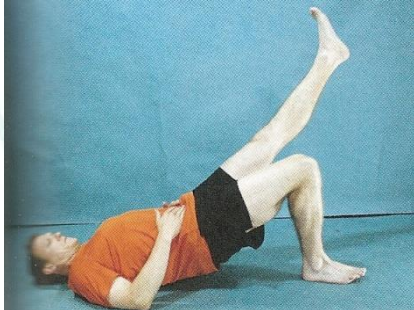
Squats



Squats provide good core and gluteal strengthening. To improve technique consider that you are squatting over a dirty toilet whilst trying to hold closed a door with no lock. Initial reps 15-20. Build over time to 20 reps whilst maintaining good form, keeping the knees in line with the second toe.

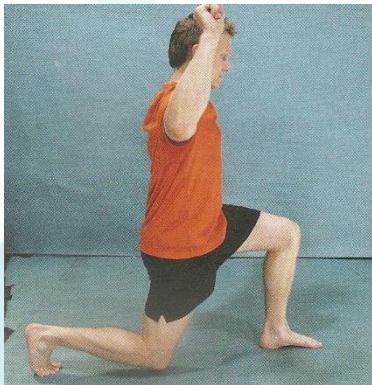


Hip strengthening



This exercise strengthens the hip muscles, the pelvic floor and the transverse abdominus muscles. Start with the arms wide to provide stability and as you gain more core stability you can place your arms across your chest. Do 5 reps per leg, holding each one for between 10 and 20 seconds.

Split squat

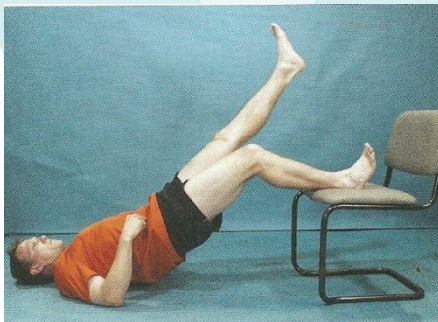


The split squat should be performed by stepping back from a feet together position. This exercise provides good neuromuscular feedback and strengthens the gluteal muscles. 20 reps on each leg, moving to 50 reps.

Agility and stabilization

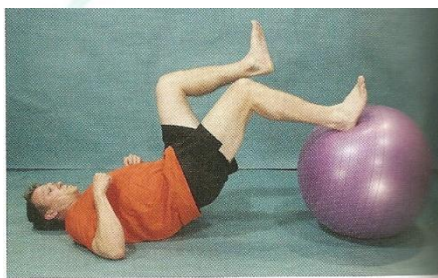
Whilst a certain amount of core stability is provided by the above program, exercises in a position of reduced stability will improve neuro muscular control and balance.

Bridge catch



As per the hip strengthening exercise, create a bridge using a chair to make the exercise more severe. Again, start with the arms wide and then wrap them across your chest as you progress. This time, hold the core position and swap from leg to leg. 10 reps increasing to 20.

Single leg ball roll out

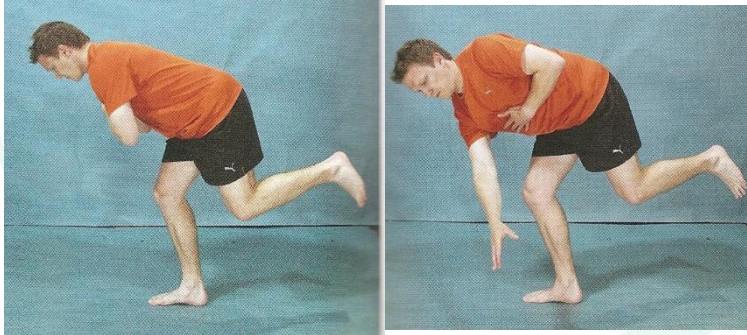


If you have a swiss ball the following exercise works both the hamstrings and core stability. 10 roll outs per leg increasing to 20.





Single leg stance work



To improve proprioception in the legs and coordination through the trunk, the following exercise is useful. Stand on one leg, as in the first picture and then rotate the body and bend to try and touch the floor, then return to the starting position. Repeat 5 times per side, increasing to 10 times.

