HAMSTRING REHABILITATION

STRETCHING PROGRAM

1- Straight leg.
Maintain straight leg/ knee, bend forwards so that chest approximates the shin/ toes but try to keep the back straight. There are several ways of achieving this. You may choose one or several depending on how it feels. Changing the foot position will vary the location of the stretch within the hamstring muscle group.
Hold for 10-20 seconds, repeat 5-10 times.

2- Just flexed.
Maintain the knee with a slight bend in it- you may choose to hold it with your hands or place something under the knee like a rolled towel. The same positions as for stretch 1 may be used.
Hold for 10-20 seconds, repeat 5-10 times.

3- Reverse-origin insertion.
The knee is bent to the chest and maintained in contact with the chest throughout. The heel is placed on a raised surface such as a chair. The knee is straightened as far as comfortably possible without the knee losing contact with the chest.
Hold for 10-20 seconds, 5-10 repetitions.

4- *Slump.*
"Slump" or slouch the back down into a bowed position, tuck the chin down onto the chest, pull the toes and foot upwards on the leg to be stretched. Next, swing the knee out as straight as it will comfortably go and back down without holding. This is a nerve stretch and should not be held like the previous muscle stretches.
Do this 10 times, for 3 sets.

STRENGTHENING PROGRAM

The following program is designed to progressively return the strength to your hamstrings muscle back to its pre-injury level or greater to decrease the chance of injury recurrence. Remember, strength exercises must be **painfree** whilst performed, and always warm-up before and stretch afterwards.

EARLY REHABILITATION PHASE:
(Isometric and gentle active contractions.)

Isometric contractions.
With foot turned outward, tighten muscles on back of thigh by pushing heel down into the floor or a table.

Light concentric/ eccentric contractions.
Using the weight of your leg only, actively bend and straighten your knee in standing (a heavy boot or other light weight may later be added to progress the exercise.
Bridging exercises may also be commenced.

MID REHABILIATION PHASE
(Resisted concentric contractions)
Using either a theraband or pulleys, resisted hamstrings contractions may be commenced.

LATE REHABILITATION PHASE (also used for chronic phase)
(Eccentric and functional contractions)

1- Use the 'hamstring curl' machine in the gym to eccentrically work the hamstrings muscle. Both legs lift the weight up (concentric), only the rehabilitating leg/ muscle lowers it down (eccentric).

2- With a weight around the ankle, the foot is lowered from the bent position. There are several variations of this exercise:

i.) actively lift the foot up and lower down by bending the knee without assistance;
ii.) use the non-injured leg to help bend the knee up, but lower the weight without assistance (eccentric training);
iii.) lean your trunk over the edge of the bed so that your hip is bent and perform the exercise as outlined in i.) and ii.). This aims to replicate running whilst crouching (ie. Sprinting or getting a ball on the run);
iv.) bend the knee up, either with or without assistance from the non-injured leg (can be done lying flat or with trunk over edge of bed), let the foot/ ankle fall from the bent position and use your (hamstring) muscles to stop the foot from crashing into the bed. This last exercise is called 'drop-and-catch' and should be trailed without a weight initially.

PROGRESSIVE RUNNING PROGRAM

The following program is a list of progressive drills aimed to improve the hamstring muscles' acceleration/ deceleration capacity and endurance tolerance* following injury. Each drill must be performed **painfree** (a mild discomfort may be tolerated). If the pain is experienced,, you must cease the drill you are performing, rest, ice and return to the previous drill/ level when ready.

Each number below represents a stage of improvement in the hamstring muscles' rehabilitaion. Once the drill/stage is completed (painfree), tick the box and progress to the next level.

REMEMBER: You **must** stretch both before and after performing the drill/s.

1- Commence light jogging (when walking is painfree): up to 3-4 km.
2- Jog at a maximum peak of 75%: up to 3-4 km.
3- Jog 1km (warm-up)
Then over **100m**: accelerate for 40m, run at 75% peak for 20m, decelerate to stop over 40m. Repeat by up to 10-15 times.
Then jog 3-4 km.

4- Jog 1km
Then over **80m**: accelerate for 30m, run at 75% peak for 20m, decelerate to stop by 30m. Repeat by 10-15 times.
Then jog 3-4 kms.

5- Jog 1km
Then over **60m**: accelerate for 20m, run at 75% peak for 20 m, decelerate to stop over 20m.
Then jog for 3-4 kms

6- Jog 1km
Then over **40m**: accelerate for 10m, run at 75% peak for 20m, decelerate to stop over 10m. Repeat by 10-15 times.
Then jog 3-4 kms.

7- Repeat step 6 (previous progression)
Then add:
i.) running backwards at 75% (minimum of 50m x4)
ii.) over 40m: 20m acceleration (to 75% speed) directly into 20m deceleration (no sustained peak speed)
iii.) over 30m: 15m acceleration (to 75% speed) directly into 15m deceleration (no sustained peak speed).

8- Jog 1km
Then over **100m:** accelerate for 40m, run at <u>95%</u> peak for 20m, decelerate to stop over 40m. Repeat by 10-15 times.
Continue running backwards drills (increasing from 75%- 95%)
Then jog 3-4kms.

9- Jog 1km
Then over **80m**: accelerate for 30m, run at 95% peak for 20m, decelerate to stop over 30m. Repeat by 10-15 times.
+/- functional drills (** see below)
Then jog 3-4kms.

10- Jog 1km
Then over **60m**: accelerate for 30m, run at 95% peak for 20m, decelerate to stop over 30m. Repeat by 10-15 times.

Continue running backwards drills (95% peak)
+/- functional drills
Then jog 3-4kms

11- Jog 1km
Then over **40m:** accelerate for 10m, run at 95% peak for 20m, decelerate to stop over 10m. Repeat by 10-15 times.
Continue running backwards drills (95% peak)
+/- functional drills
Then jog 3-4 kms.

12- Repeat step 11 (previous progression)
And add: Over 40m: 20m acceleration (to 95-100% speed) directly into 20m deceleration (no sustained peak speed)
Over 30m: 15 acceleration (to 95-100% speed) directly into 15m deceleration (no sustained peak speed)
50m sprints (as per normal training)

*tolerance- Athletes that are required to perform a significant amount of time running whilst playing their sport (eg. AFL on- ballers) will be required to perform more jogging and distance during their rehabilitation to maintain/ improve the muscles' endurance. Thus, prior to resuming your sport you need to have performed several runs that are of at least equal duration to show how long you would run for in a typical game.

** functional drills-
(a.) Football - kicking
- run with hands near ground/ tap ball along ground whilst running

(b.) Hockey - run with a stick near ground/ dribble ball along ground whilst running

(c.) Waterskiing - approximate start