

Hamstring Strain/Tear Non-Operative Rehabilitation Protocol

Dr. Jeffrey Witty, M.D.

General Notes:

- The protocol has two components:
 - **Askling Exercises**
 - This rehabilitation program is outlined in Askling et al British Journal Sports Medicine 2013. This consists of hamstring loading during periods of lengthening mainly during eccentric muscle actions, and eventually loading at maximum dynamic lengthening.
 - Best if started within 5 days of injury, but not necessary.
 - Speed and loading increased overtime and adjusted so that there is no pain provocation during the exercise
 - Incorporated into phases outlined below
 - **Phases I through V**
 - First determine extent of injury
 - Minor
 - Suggested by minimal pain, full ROM, ability to generate normal power against resistance
 - Proximal extent of the injury
 - More proximal = more time needed for rehab
 - Can often be progressed quickly from Phase I to II or even III depending on symptoms
 - Major
 - Marked pain, decreased ROM, limp, weakness, inability to resist extension in prone position
- Must have no pain to move to next phase.
 - Any pain mandates need to drop to previous phase or lower speed, resistance, etc to get to pain free motion.

Modalities:

- Ice
 - 20 minutes on and off as needed 2 – 4 x /day
 - During initial 48 – 72 hrs from injury perform up to every 2 hrs to minimize edema/swelling and hemorrhage
- Compression
 - Foot to mid-thigh high compression sleeve

Hamstring Strain/Tear Non-Operative Rehabilitation Protocol
Dr. Jeffrey Witty, M.D.

Phases:

	Weightbearing	ROM	Exercise
Phase I	Crutches and PWB if needed for pain and limp and progress gait training until athlete/ patient can walk without antalgic gait.	Start gentle, early controlled mobilization and stretching of muscle mass guided by pain tolerance AAROM or PROM if too painful	Start "The Extender" exercise
Phase II	Progress to WBAT	Full ROM hip and knee	Continue Phase I Once WBAT without pain or limp add "The Diver" and "The Glider" exercises - If unable to do "The Glider" in this phase, STOP and add it to Phase III Start submaximal prone isometrics E stim as long as not painful Pain-free pool therapy for ROM but no added resistance as long as pain free Maintain cardiovascular fitness: Examples <ul style="list-style-type: none"> - Upper body exercise - One leg bike - Swimming with pull buoys (no legs)
Phase III	WBAT	Full ROM	Continue Phase II Add isotonic lower extremity exercise Add heat for muscle stretch
Phase IV	WBAT	Full ROM	Phase III as above Start light eccentric isokinetics Start light jog and progress to sprint Add sport specific movements Progress isolated hamstring strength and flexibility as tolerated

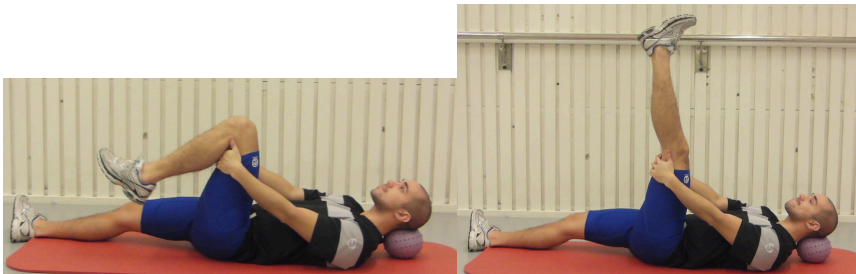
Hamstring Strain/Tear Non-Operative Rehabilitation Protocol
Dr. Jeffrey Witty, M.D.

Phase V	WBAT	Full ROM	RTP Criteria: Must pass Askling "H" test Isokinetics within 15% opposite side 30 yard sprint x 3 and figure 8's done painfree

Modalities:

- Ice
 - o 20 minutes on and off as needed 2 – 4 x /day
 - During initial 48 – 72 hrs from injury perform up to every 2 hrs to minimize edema/swelling and hemorrhage
- Compression
 - o Foot to mid-thigh high compression sleeve

Askling Exercises:

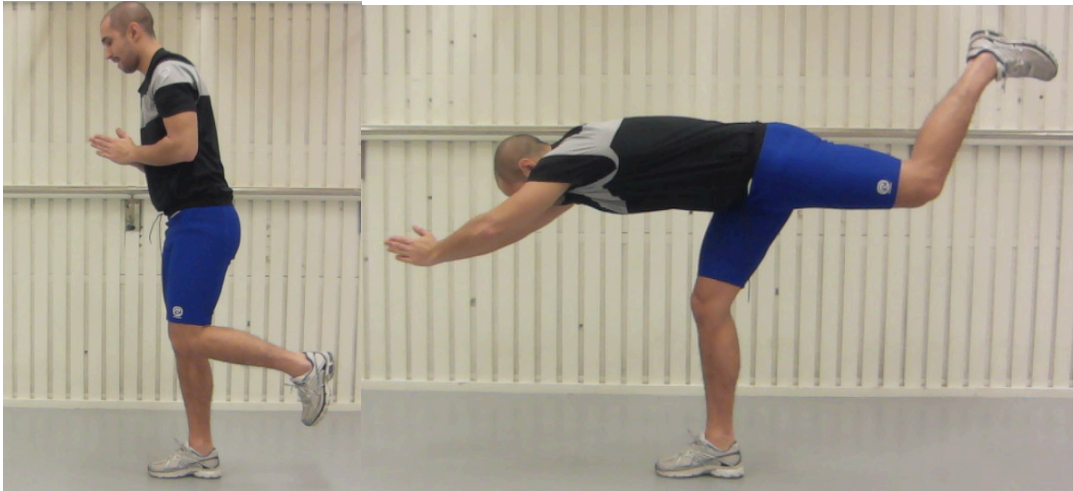


Askling CM, et al. *Br J Sports Med* 2013;47:953–959. doi:10.1136/bjsports-2013-092676

The "Extender"

- Hip flexed to 90 degrees
- Stabilize and hold thigh as shown
- Perform slow knee extensions to point just before pain is felt
- Two times everyday, 3 sets, 12 reps

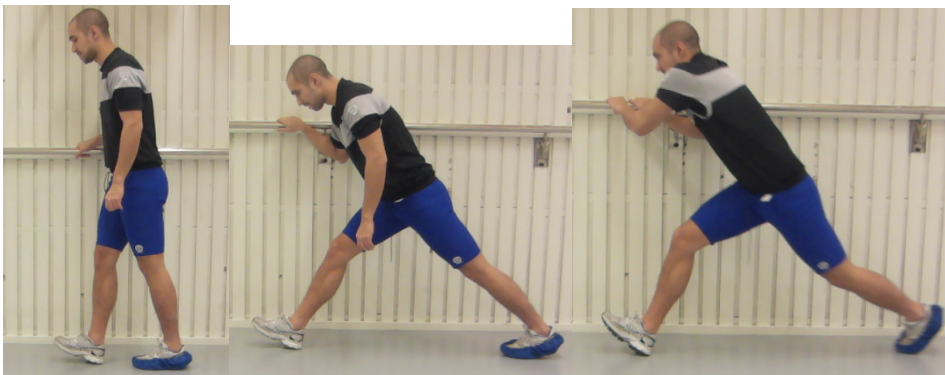
Hamstring Strain/Tear Non-Operative Rehabilitation Protocol Dr. Jeffrey Witty, M.D.



Askling CM, et al. *Br J Sports Med* 2013;47:953–959. doi:10.1136/bjsports-2013-092676

The “Diver”

- Stand on injured leg as shown
- Hands together like diving into a pool
- Trunk upright
- Bend over at hip so that hip bends at 90 degrees
- At same time stretch arms forward
- Attempt maximal hip extension of the lifted leg and keep pelvis horizontal
- Standing leg knee maintained at 10 – 20 degrees
- Lifted leg knee at 90 degrees
- Start very slowly at first and progress motion as strength, balance, and pain allows. Do not push through any pain. Motion should be pain-free for injured leg.
- Perform once, every other day, 3 sets, 6 reps



Askling CM, et al. *Br J Sports Med* 2013;47:953–959. doi:10.1136/bjsports-2013-092676

The “Glider”

- Start up right with one hand holding support as shown
- Non-injured side’s foot has a sock for low friction on floor
- All body weight should be on injured side (shown without blue sock in figure)
- Injured side knee should be in about 10 – 20 degrees flexion

Hamstring Strain/Tear Non-Operative Rehabilitation Protocol
Dr. Jeffrey Witty, M.D.

- In a controlled manner, glide backward on the other leg (blue sock)
 - Go as low as possible but before pain is reached.
 - Motion should be slow and steady
- Return to start position by pulling up with both arms on the support to return to start position, NOT the injured leg.
- Progress by increasing the gliding distance and speed of the exercise.
- Perform once every 3 days, 3 sets with reps

Adapted from:

Levine et al *American Journal of Sports Medicine* 2000

Askling et al *British Journal of Sports Medicine* 2013

DeLee and Drez's *Orthopaedic Sports Medicine* 3rd Edition

Askling et al *Knee Surg Sports Traumatol Arthrosc* 2010