

Rehabilitation of Hamstring Strains

I. **PHASE I: ACUTE PHASE**

Goals: Diminish pain and inflammation
Gradually improve flexibility and ROM
Retard muscular atrophy and strength loss
Enhance healing of muscular strain

Immediately following injury:

- Cryotherapy, compression wrap
- High voltage stimulation to control swelling
- Light massage when tolerable (day 2-3)
- ROM exercises:
 - Seated active and passive knee extension
 - Gradually decrease hip flexion angle
 - Initiate hamstring stretch (gentle and gradual as tolerated)
- Stretch hip flexors, quadriceps, calf and hip adductors
- Strengthening exercises:
 - Quad sets
 - Straight leg raises (3 directions)
 - Active knee extensions
 - Toe calf raises
 - Isometric hamstring contractions (knee flexion 45°)
 - Bicycle when able
- Stretch and ROM exercises: perform post-exercises regimen
- Modalities for pain

II. **PHASE II: SUBACUTE PHASE**

Goals: Improve flexibility and ROM
Enhance muscular strength and endurance
Promote healing of injured structures
Control any inflammation and pain

- Superficial heat to injured hamstring or contrast heat/cold
- Ultrasound over injured area
- Soft tissue mobilization and massage
- Active warm-up bicycle
- Stretch lower extremity musculature – manual & self-stretches (stretch hamstrings seated and supine)
- Initiate isotonic strengthening program
 - Leg press
 - Hip abd/add
 - Hip flex/ext
 - Knee extensions

- Wall squats
- Hamstring curls
- Front lunges
- Lateral lunges
- Backward lunges
- Lateral step-overs
- Forward/backward step-overs
- Toe-calf raises

- Initiate core stabilization drills (abdominal and back)
- Stairmaster
- Initiate proprioception drills
- May initiate pool exercises and running in pool
- Stretch
- Cryotherapy
- Use neoprene sleeve following workouts

III. **PHASE III: DYNAMIC PHASE**

Goals: Improve dynamic (ballistic) flexibility of hamstrings
Normalize static flexibility
Normalize muscular strength

- Active warm-up – bicycle or jog
- Stretch all major muscle groups lower extremity (stretch hamstrings seated and supine)
- Continue strengthening exercises listed above
- Initiate ballistic stretching maneuvers

- Plyometric leg press
- Fast speed hamstring work with sport cord
- Plyo front lunges
- Scissor jumps
- Scissor jumps onto box
- Side to side box jumps (plyos)
- Skip lunges
- Fast speed lateral step-overs
- Knee high running (forward) (ropes)

- Stretch after workout
- Cryotherapy
- Consider neoprene sleeve during drills

IV. **PHASE IV: SPORTS SPECIFIC AND AGILITY DRILL PHASE**

Goals: Normalize ballistic flexibility
Normalize muscular strength and agility
Gradual return to sport participation

- Active warm-up or jog
- Stretch all lower extremity muscles
- Continue strengthening program
- Continue selected ballistic stretching drills

- Initiate sport specific program
 - Side shuttles
 - Carciacos
 - Backward running
 - Forward running
 - Interval running
 - Progress to sprints
 - Running and cutting drills
 - Gradually increase intensity of running
 - Jog → run → sprint
- Stretch following drills
- Consider neoprene sleeve during drills
- Gradually return to sport participation