Rehabilitation of Hamstring Strains

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

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

**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

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

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