



# Hamstring Repair

## Post-Operative Rehabilitation Protocol

### 0-6 weeks

- NWB with crutches and brace x 6-8 weeks
- Brace:
  - Week 0-2: locked at 60 degrees
  - Week 2-4: locked at 40 degrees
  - Week 4-6: locked at 20 degrees
- Precautions
  - **Avoid** hip flexion coupled with knee extension (hamstring stretch)
  - **Avoid** unsafe surfaces and environments
- Suggested Therapeutic Exercises
  - Quad sets
  - Ankle pumps
  - Abdominal isometrics
  - Passive knee range of motion (ROM) with no hip flexion during knee extension
  - Post-operative weeks 3-4: Begin pool walking drills (if incision healed, without hip flexion coupled with knee extension), hip abduction, hip extension, and balance exercises
  - Scar mobilizations
  - Cardiovascular Exercise: Upper body circuit training or upper body ergometer (UBE)

### 6-12 weeks

- Begin WBAT progression starting at 6 weeks: advance to PWB (25% then 50%) then continue to progress until full WBAT
- Begin weaning off crutches once gait is normalized and non-antalgic
- Rehab Goals:
  - Begin pain-free functional movements
    - Step up/down
    - Squat
    - Partial lunge
    - **\*\*Do NOT exceed 60° of knee flexion\*\***
- Precautions
  - **Avoid** dynamic stretching

### Weight Bearing Status

NWB x 6-8 weeks

### Post-op Brace

0-2 weeks: locked at 60°  
2-4 weeks: locked at 40°  
4-6 weeks: locked at 20°

### ROM Restrictions

Avoid hip flexion coupled with knee extension



- **Avoid** loading the hip at deep flexion angles
- **No** impact or running
- Suggested Therapeutic Exercises
  - Non-impact balance and proprioceptive drills—beginning with double leg and gradually progressing to single leg
  - Stationary bike
  - Gait training
  - Begin hamstring strengthening—start by avoidance of lengthened hamstring position (hip flexion combined with knee extension) by working hip extension and knee flexion moments separately
  - Begin with isometric and concentric strengthening:
    - Hamstring sets
    - Heel slides
    - Double leg bridge
    - Standing leg extensions
    - Physioball curls
  - Hip and core strengthening
  - Cardiovascular Exercise: Upper body circuit training or UBE
- Progression Criteria:
  - Normal gait on all surfaces
  - Ability to carry out functional movements without unloading the affected leg or pain while demonstrating good control
  - Single leg balance greater than 15 seconds
  - Normal (5/5) hamstring strength in prone with the knee in a position of at least 90° knee flexion

## 12-16 weeks

- Rehab Goals:
  - Good control and no pain with sport and work specific movements, including impact
- Precautions
  - No pain during strength training
  - Post-activity soreness should resolve within 24 hours
- Suggested Therapeutic Exercises
  - Continue hamstring strengthening—progress toward strengthening in lengthened hamstring positions; begin to incorporate eccentric strengthening with single leg forward leans, single leg bridge lowering, prone foot catches, and assisted Nordic curls



- Hip and core strengthening
- Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to the other and then 1 foot to same foot
- Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities
- Initiate running drills, but no sprinting until Phase IV
- Cardiovascular Exercise:
  - Biking
  - Elliptical machine
  - Stairmaster
  - Swimming
  - Deep water running
- Progression Criteria:
  - Dynamic neuromuscular control with multi-plane activities at low to medium velocity without pain or swelling
  - Less than 25% deficit for side to side hamstring comparison on Biodex testing at 60° and 240° per second

## >16 weeks

- Rehab Goals:
  - Good control and no pain with sport and work specific movements, including impact
- Precautions
  - No pain during the strength training
  - Post-activity soreness should resolve within 24 hours
- Suggested Therapeutic Exercises
  - Continue hamstring strengthening- progress toward higher velocity strengthening and reaction in lengthened positions including:
    - eccentric strengthening with single leg forward leans with medicine ball
    - single leg dead lifts with dumbbells
    - single leg bridge curls on physioball
    - resisted running foot catches
    - Nordic curls
  - Running and sprinting mechanics and drills
  - Hip and core strengthening



- Impact control exercises beginning 2 feet to 2 feet, progressing from 1 foot to other and then 1 foot to same foot
- Movement control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities
- Sport/work specific balance and proprioceptive drills
- Stretching for patient specific muscle imbalances
- Cardiovascular Exercise: Replicate sport or work specific energy demands
- Return to Sport/Work Criteria
- Dynamic neuromuscular control with multi-plane activities at high velocity without pain or swelling
- Less than 10% deficit for side to side hamstring comparison on Biodex testing at 60° and 240° per second
- Less than 10% deficit on functional testing profile



Exercise	Week																
	1	2	3	4	5	6	7	8	9	10	12	16	20	24			
<b>Initial Exercises:</b>																	
Scar mobilization	█																
Quad Series	█																
Abdominal isometrics	█																
Passive knee ROM (no hip flex w/ knee ext.)	█																
Ankle Pumps	█																
Crutch weaning	NWB					█											
PROM hip extension, abduction					█												
Non-impact Balance/Proprioceptive drills						█											
Hip and Core strengthening						█											
<b>Weight-bearing Strength Exercises:</b>																	
Standing leg extensions						█											
Double Leg Bridges						█											
Physioball curls						█											
Single leg forward leans											█						
Single Leg Dead Lift											█						
Nordic curls											█						
Sports Test Exercises													█				
<b>Cardiovascular Exercises:</b>																	
Bike with both legs-no resistance						█											
Bike with both legs-resistance								█									
Upper body circuit training	█																
Aqua walking (pending incision healing)						█											
Treadmill-walking 7% incline								█									
Swimming and deep water running											█						
Elliptical Trainer											█						
Rowing											█						
Stair stepper											█						
<b>Agility Exercises:</b>																	
Running Progression											█						
Initial-Single Plane											█						
Advance-Multi Directional													█				
Functional Sports Test													█				
<b>High Level Activities:</b>																	
Golf Progression													█				
Outdoor biking, hiking, running													█				
Return to Full Sport at 6 months post-op													█				

Adapted from post-operative protocol created by Howard Head Physical Therapy, Jill Monson, PT, OCS and Jon Schoenecker, PT, OCS, CSCS