

Rehabilitation Protocol for Non-Operative Hamstring Injury

This protocol provides guidance for clinicians and patients managing a hamstring injury without surgical intervention. It is both time-based, depending on tissue healing, and criterion-based, with variations depending on injury severity, strain grade, and injury location (muscle, myotendinous junction, tendon). Interventions should be customized to meet the individual's needs, taking into account examination findings and clinical decision-making. For any questions or concerns, contact the referring physician.

Considerations for Non-Operative Hamstring Injury

The rehabilitation outcomes for a hamstring injury can be influenced by various factors, including the duration of the injury, the specific area affected (proximal, mid-belly, or distal), the involvement of multiple tendons or muscles, pre-injury gluteal motor control and strength, and any concurrent sciatic nerve tension. Close collaboration with the referring physician is advised to address these factors effectively.

PHASE I: EARLY (WEEKS 0-2 AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> • Allow healing of injured tissue • Initiate early protected ROM • Prevent muscular atrophy • Decrease pain and inflammation
Weight Bearing	<ul style="list-style-type: none"> • As tolerated, unless otherwise noted by clinician
Precautions/Guidelines	<ul style="list-style-type: none"> • Limit stretching hamstring (trunk flexion, knee extension)
Range of Motion	<ul style="list-style-type: none"> • Active assisted and passive hip and knee flexion • Limit stretching and hip/knee ROM to avoid a "stretch/strain" sensation to injured area
Interventions	<p><i>Manual Therapy:</i></p> <ul style="list-style-type: none"> • STM along hamstring muscle group as needed • Myofascial (no lotion) release to posterolateral glute and lateral hamstring fascia/muscle (proximal 1/3 of lateral thigh) as needed • Attain and maintain neutral ilial position ipsilateral and contralateral to injured side with manual posterior rotations to ilium <p><i>Stretching:</i></p> <ul style="list-style-type: none"> • Do not stretch the hamstring, but nerve gliding (sciatic neural flossing) may be needed if neural tension exists • Hip flexors in Thomas test position (maintain neutral pelvis/spine throughout stretch) • Gastrocnemius/calf stretching <p><i>Therapeutic Exercise:</i></p> <ul style="list-style-type: none"> • Quad sets • Glute sets <p>*must be mastered before progressing any gluteal or hamstring muscle strengthening*</p> <ul style="list-style-type: none"> • AA and PROM hip and knee flexion • Upper body and core circuit training (avoiding positions which lengthen hamstring) • Upper body ergometer (UBE)
Criteria to Progress	<ul style="list-style-type: none"> • 1-2 weeks post-injury depending on severity of injury

PHASE II: INTERMEDIATE
(WEEKS 2-4 AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> • Reduce/resolve pain and edema • Good motor control and pain-free functional movements
Weight Bearing	<ul style="list-style-type: none"> • As tolerated
Precautions/Guidelines	<ul style="list-style-type: none"> • Carefully begin gentle, pain-free hip flexion with knee extension
Range of Motion	<ul style="list-style-type: none"> • Active and passive hip and knee flexion may begin
Additional Interventions *Continue with Phase I interventions	<p><i>Manual Therapy:</i></p> <ul style="list-style-type: none"> • Gentle cross friction massage to injured area if tendinous insertion proximally (including proximal to attachment on ischial tuberosity) or distally (any or all tendons involved) • Manual trigger point release as needed throughout muscle belly • Manual trigger point release as needed with ART (active release therapy) to piriformis, quadratus femoris • Anterior hip glides with and without external rotation at the hip (hip in neutral to slightly extended, prone with pillow under thigh can help maintain this position) as needed • Posterior/inferior belted hip mobilizations as needed for full flexion (belted quadruped position with active movement into child's pose) as needed <p><i>Stretching:</i></p> <ul style="list-style-type: none"> • Hip external rotation in flexion • Gentle, slow, pain-free non weighted hamstring stretching (supine with strap) <p><i>Therapeutic Exercise: (continuation of above)</i></p> <ul style="list-style-type: none"> • Low Double Leg (DL) Bridge • Side-lying hip abduction • Standing calf raises • Strengthening of uninvolved limb ok <p><i>Cardiovascular Exercise:</i></p> <ul style="list-style-type: none"> • Stationary bike • Progressive speed walking on level surfaces • Elliptical at week 4 if pain-free
Criteria to Progress	<ul style="list-style-type: none"> • 4-6 weeks post-injury depending on severity of injury

PHASE III: TRANSITIONAL
(WEEKS 4-8 AFTER SURGERY)

Rehabilitation Goals	<ul style="list-style-type: none"> • Normalized gait • Gradually progress to full ROM • Improve neuromuscular control • Increase strength • Enhance proprioception and kinesthesia
Weight Bearing	<ul style="list-style-type: none"> • Full weight bearing, no assistive device
Precautions/Guidelines	<ul style="list-style-type: none"> • Per tolerance
Range of Motion	<ul style="list-style-type: none"> • Progressive active hip and knee flexion • Active stretching all muscle groups

PHASE III: TRANSITIONAL
(WEEKS 4-8 AFTER SURGERY) CONTINUED

<p>Additional Interventions *Continue with Phase I-II Interventions as indicated</p>	<p><i>Manual Therapy:</i></p> <ul style="list-style-type: none"> • Per above phases as needed <p><i>Therapeutic Exercise:</i></p> <ul style="list-style-type: none"> • DL Bridge with thera-band around thighs • DL Bridge with ball squeeze • DL Bridge with Upper back on the bench • Plank with alternating leg lifts • Side plank with leg lift (on left knee until stronger) or oblique twists • Straight Leg Raise (SLR) • Hamstring (HS) curls antigravity • Hip extension antigravity <p><i>At 6 weeks, add:</i></p> <ul style="list-style-type: none"> • Single Leg (SL) bridge, back on floor, foot on bench • Progress to ankle weight for all leg lifts PRE • Wall slides • Clam shells • Partial squats • Step ups • Step downs <p><i>Cardiovascular Exercise:</i></p> <ul style="list-style-type: none"> • Stationary bike • Swimming arms and legs • Progressive speed walking on level surfaces • Jog/walk may be initiated at week 6 if full, symmetrical ROM and strength
<p>Criteria to Progress</p>	<ul style="list-style-type: none"> • Good control with functional movements without antalgic movement patterns • Hamstring strength 5/5 in prone with knee at 90deg flexion • Good neuromuscular control in all planes without pain • HHD testing: • To initiate plyos: <ul style="list-style-type: none"> ◦ LSI hamstring >70/80% ◦ LSI glute med >80% ◦ LSI quad >80% • To run: <ul style="list-style-type: none"> ◦ LSI hamstring >80/90% ◦ LSI glute med >90% ◦ LSI quad >90% • Single leg hop cluster (distance, triple, cross over, 6 meter timed) >85%

PHASE IV: EARLY RETURN TO SPORT
(WEEKS 8-12 AFTER SURGERY)

<p>Additional Interventions *Continue with Phase I-III interventions as indicated</p>	<ul style="list-style-type: none"> • Full ROM • Improve neuromuscular control • Improve strength/power/endurance • Enhance dynamic stability
<p>Precautions/Guidelines</p>	<ul style="list-style-type: none"> • No pain during strength training or cardiovascular activity

PHASE IV: EARLY RETURN TO SPORT
(WEEKS 8-12 AFTER SURGERY) CONTINUED

<p>Additional Interventions *Continue with Phase I-III interventions as indicated</p>	<p><i>Manual Therapy:</i></p> <ul style="list-style-type: none"> • Per above phases as needed <p><i>Therapeutic Exercise:</i></p> <ul style="list-style-type: none"> • Dynamic and static hamstring stretching • Weight training machines: Leg Press, Standing Hip Abduction, Hamstring Curl, Leg <p><i>Extension</i></p> <ul style="list-style-type: none"> • Single leg closed chain exercises • Resisted step ups using sports cord around waist from behind • Double Leg Hamstring ball roll out (eccentric portion only) --> DL eccentric and concentric --> SL eccentric portion only --> SL eccentric and concentric • Double Leg dead lift, short range --> progressing to Single Leg no rotation • Double Leg Dead lift - wide abducted leg stance with black band around forefeet - pushing into abduction during eccentric trunk lowering deadlift phase • Progress to single leg with spine rotation dead lift to work hamstrings three-dimensionally • Bridge on ball - eccentric portion only double leg > progressing to single leg <p><i>Cardiovascular Exercise:</i></p> <ul style="list-style-type: none"> • Continue to increase speed and distance for walking, incorporate uneven surfaces • Continuous jogging • Initiate interval jogging and running
<p>Criteria to Progress</p>	<ul style="list-style-type: none"> • Full ROM • No pain/tenderness • Satisfactory clinical exam including isokinetic testing

PHASE V: UNRESTRICTED RETURN TO SPORT
(WEEKS 12+ AFTER SURGERY)

<p>Rehabilitation Goals</p>	<ul style="list-style-type: none"> • Emphasis on gradual return to recreational activities • Progressively increase activities to prepare for unrestricted functional return
<p>Precautions/Guidelines</p>	<ul style="list-style-type: none"> • Neoprene support as needed
<p>Additional Interventions *Continue with Phase II-IV interventions as indicated</p>	<p><i>Manual Therapy:</i></p> <ul style="list-style-type: none"> • Per above phases as needed <p><i>Therapeutic Exercise:</i></p> <ul style="list-style-type: none"> • Progressive strengthening avoiding overload to HS • Progress speed of resisted steps and add forward lean • SL dead lift with Black tband under stance leg and hold for resistance • Reverse Lunge on Slider: Progress load bearing and add concentric/eccentric phase: <ul style="list-style-type: none"> o Part 1: Eccentric hamstring with core strength exercise: injured leg is weight bearing leg, from standing, lunge backward (weightless leg slides back on slide board) into full lunge, bend forward and then push through weightbearing leg/heel as raise back up o Part 2: in full lunge position: leg slides back as weight bearing knee bends, back leg slides forward as weight bearing leg straightens)

PHASE V: UNRESTRICTED RETURN TO SPORT
 (WEEKS 12+ AFTER SURGERY) CONTINUED

<p>Additional Interventions *Continue with Phase II-IV interventions as indicated</p>	<ul style="list-style-type: none"> • Short range Nordic HS to physio ball height progress range to ground depth • Kettle bell swing • Retro lunge slide (working leg in front, slide board slider for back leg) • Jump Training <p><i>Cardiovascular Exercise:</i></p> <ul style="list-style-type: none"> • Continue above, progressing speed, distance • Progress step ups to resisted jump onto steps • Plyometric progression <ul style="list-style-type: none"> ◦ Double leg up/down ◦ Double leg forward/back ◦ Alternating lateral bounding ◦ Single leg jump ◦ Progress plyos to resisted plyos using sports cord around waist • Agility using ladder drills • Falling start runs (fall forward, then run) - see below for details • Mini hurdle runs • Sprint progressions (5 times each) 10 yard > 20 yd > assisted deceleration with band around waist deceleration lean • 40 yard sprints at 90%
<p>Criteria to Progress</p>	<ul style="list-style-type: none"> • To RTP: <ul style="list-style-type: none"> ◦ LSI Hamstring > 95% ◦ LSI Glute >95% ◦ LSI quad >95% ◦ Single leg hop cluster (distance, triple, cross over, 6 meter timed) >95% ◦ Good acceleration, deceleration, change of direction control ◦ 60 second timed step-down test 80 bpm, excellent control ◦ 60 second timed Lateral leap 60 bpm, excellent control • Last stage, no additional criteria • Proceed with caution

For further assistance or to schedule an appointment, please contact **iOrtho - The Orthopedic Institute** at **833-464-6784** or visit our website at **iorthomd.com** to text/email us. Our team is dedicated to providing personalized care and guidance throughout your rehabilitation journey.