HIP ABDUCTOR (GLUTEUS MEDIUS/MINIMUS) REPAIR CLINICAL PRACTICE GUIDELINE

Background

Tear Types and Impact

- Gluteus medius and/or minimus partial- or full-thickness tears can lead to significant functional impairments and chronic hip pain.
- These tears are similar to rotator cuff tears in the shoulder.
- Tears often lack a clear mechanism of injury and progress gradually.
- Degradation occurs at the musculotendinous junction and bone attachment, leading to insertional failure and tendinopathy.
- Tears can progress to complete avulsion of the abductor attachment on the greater trochanter.

Prevalence and Diagnosis

- Gluteus medius tears are more common than gluteus minimus tears.
- Partial thickness tears are more frequent than full thickness tears.
- Women are more likely to have symptomatic tears compared to men.
- These tears are often undiagnosed or misdiagnosed for a long period.

Surgical Repair

- Hip abductor repair is usually an open procedure to fully expose and repair tissues.
- An incision is made over the lateral hip, extending to the iliotibial (IT) fascia.
- The IT fascia is opened, the trochanteric bursa is removed or debrided, and gluteal tendons are cleaned.
- Anchors are placed into the greater trochanter, and stitches secure the tendons back to the bone.
- The IT fascia is partially closed, and the wound is closed through deep soft tissues and the skin.

Post-Operative Care

- Progression is based on time, healing, patient demographics, and clinician evaluation.
- Specific precautions are necessary during early rehabilitation to protect the repaired tissues.

Contact Information

For questions, contact Dr. Sujan Gogu's clinic.

Recommendations

Precautions (First 6 Weeks)

- **Weight Bearing**: 50% with walker or crutches
- **Hip Brace**: Required when out of bed
- **Movement Restrictions**: No hip flexion beyond 90°; no adduction past neutral

Corrective Interventions

- **Muscle Activation**: Ensure proper hip and core muscle activation without compensation before starting strengthening exercises
- **Neuromuscular Re-education**: Focus on balance and correction of functional movement patterns
- **Therapeutic Exercise**: Strengthen lower extremities, progressing from double-leg to single-leg activities

ROM/Manual Therapy

- **Passive ROM**: As tolerated, but no hip flexion > 90° or adduction past neutral for 6 weeks
- **Active ROM**: No hip abduction, external rotation, or internal rotation for 6 weeks

Outcome Testing

- **Frequency**: Pre-op, evaluation, at 6 weeks, and at discharge (increase frequency if needed)
- **Hip Outcome Score (HOS)**:
    - ADL: 17 items
    - Sports: 9 items

Criteria for Progression

To Initiate Plyometric Program

- **ROM**: Full, functional, pain-free range of motion
- **Strength**:
    - 80% strength in quadriceps, hamstrings, and hip compared to uninvolved leg (using hand-held dynamometer)
    - Squat > 150% body weight (barbell squat or leg press)
- **Functional**: 10 forward and lateral step downs from 8" step with proper mechanics

To Initiate Running Program

- **Plyometric Program**: Must meet all criteria
- **Hop and Hold**: Proper mechanics from uninvolved to involved leg
- **Tolerance**: 200-250 plyometric foot contacts without reactive pain/effusion
- **Running Mechanics**: No gross visual asymmetry and consistent strike pattern with treadmill or overground running

Criteria for Return to Sport/Discharge

- **Physician Clearance**: At last check-up
- **Strength**:

- 90% compared to uninvolved hip (using hand-held dynamometer)
- 90% body weight with single-leg leg press

Functional Performance

- 90% limb symmetry with single-leg hop for distance, single-leg triple crossover hop, and single-leg 6-meter timed hop (demonstrating proper lower extremity landing mechanics)
- Ability to complete sport-specific drills at maximum speed without pain

Patient Reported Outcome Measures:

- Score ≥ 90% on HOS (ADL and Sports subscales)

Criteria for discharge from physical therapy is less rigorous for those not returning to sports. Ensure the patient can perform all ADLs and recreational activities without pain, reactive effusion, and with proper functional mechanics.

Abbreviations

AD - Assistive Device, ADLs - Activities of Daily Living, AROM - Active Range of Motion, BW - Body Weight, DL - Double Leg, LE - Lower Extremity, PROM - Passive Range of Motion, OOB - Out of Bed, Pre-op - Pre-operative, ROM - Range of Motion, SL - Single Leg, WB - Weight Bearing, Wks - Weeks

Phase I: Protection - Post-Op until Discharge Assistive Device (0-6 weeks)	
Goals	• Protect healing tissues • Pain and edema control • Improve pain-free ROM • Normalize muscle activation **PT Frequency:** • Recommend 1x/week starting at week 2 or per MD instruction
Precautions	• 50% weight bearing with crutches or walker for 6 weeks, • Use hip abduction brace when out of bed for 6 weeks • No hip flexion > 90° and no hip adduction past neutral/0° • No active hip abduction • ER, or IR ROM for 6 weeks • Avoid sidelying position when sleeping • Avoid irritation of lateral hip pain • Avoid sitting > 30 minutes at a time to prevent hip flexor tightness (keep hips above knees, i.e., > 90° hip flexion)
ROM/Stretching	**PROM (pain-free):** • Hip flexion • Extension • Abduction • Prone hip IR and ER (limit hip flexion to 90° and hip adduction to 0° for 6 weeks) **Stretches**: • Prone quadriceps • Supine iliopsoas (uninvolved knee to chest) • Soft tissue mobilization as warranted (adductors, TFL, hip flexors, etc.) • Gentle scar mobilizations can begin after incisions are

Phase I: Protection - Post-Op until Discharge Assistive Device (0-6 weeks)	
	closed • Upright bike for ROM (raise saddle height so that hip flexion is 90° or less)
Neuromuscular Control	**Priority**: • Do not progress to strengthening until the patient can perform isolated muscle activation, muscle activation • Gluteal muscle activation without compensation (prone, supine, seated), transverse abdominis (TA), quadriceps
Therapeutic Exercises	**Early Exercises (weeks 0-3):** • Hip adductor isometrics (not past neutral) • Prone hamstring curls • Seated knee extension • TA progression in hooklying (respecting ROM precautions) • Advanced Exercises (weeks 4-6): • Criteria to begin this section: • Minimal reactive pain and edema • Flexion/extension SLR • Quadruped cat/camel • Quadruped weight shifts • Double-leg bridges • Standing TKE (with AD) • Gradually increase resistance on stationary bike as tolerated • Initiate hip abduction and ER isometrics at 4 weeks (begin with 50% MVC and progress as tolerated) • Recommend iliopsoas progression at 4 weeks if poor lumbopelvic control persists (*Appendix A*) • Aquatic therapy may be appropriate and can be initiated once the incision is well-healed and patient is cleared by physician

Phase I: Protection - Post-Op until Discharge Assistive Device (0-6 weeks)	
Criteria to Progress to Phase II	• Normalized gait pattern with AD • Minimal to no reactive pain and swelling with ADLs and PT exercises • Muscle activation and isolation is normalized • Pass the Prone Hip Extension Test (*Appendix B)*: • 10 repetitions • Proper gluteal muscle activation (gluteus maximus 1st, hamstrings 2nd) • Leg extends 10° past neutral

Phase II: Discharge Crutches to Pain-Free with ADLs (6-8 Weeks)	
Goals	• Achieve full PROM and AROM in all directions • Enhance strength of proximal hip musculature (gluteals, iliopsoas, hip rotators) • Normalize postural/lumbopelvic control during DL and SL activities • Attain a normalized gait at preferred walking speed for community distances without AD • Perform ADLs without pain or limitations
Precautions	• Avoid soft tissue aggravation due to early/excessive progression of activity (soft tissue irritation indicates a need to regress activities and/or exercises) • Avoid aggressive stretching into hip adduction/IR/ER, including ITB stretches • Avoid running or impact activities • Continually assess the patient's current activity level outside of PT
Crutch Progression	• Use 2 crutches or walker for 6 weeks • Progress from 2 crutches → 1 crutch or cane → no crutch (promote normalized gait mechanics if unable to

Phase II: Discharge Crutches to Pain-Free with ADLs (6-8 Weeks)	
	demonstrate appropriate mechanics with 1 crutch or cane)
Criteria for Ambulation Without Assistive Device	• Adequate hip ROM for normalized/pain-free gait pattern (10° hip extension) • Normalized gait pattern without AD (no Trendelenburg sign during stance phase of gait)
ROM/Stretching	• Soft tissue and joint mobilization to achieve symmetrical PROM, upright bike • Butterfly/reverse butterfly stretches • Consider referral to a massage therapist if the patient develops soft tissue dysfunction/irritation • (commonly affects TFL, adductors)
Therapeutic Exercise	• DL squat • Leg press • Calf raises • Forward/lateral step-ups • 4-way hip (standing) • SL balance (focus on pelvic stabilization) • Bridge progression • Quadruped progression (UE/LE lifts) • Hip rotation AROM (ER/IR) with involved knee on stool
Cardiovascular Exercise	• Gradually increase time on upright bike as tolerated (ensure the patient can perform 30 minutes with no resistance and without symptoms before adding resistance, reduce time to ≤15 min when adding resistance) • Freestyle or backstroke swimming is recommended at the end of Phase II • (use a pull buoy to keep legs in a neutral position, no kicking allowed, place the buoy at the highest point

Phase II: Discharge Crutches to Pain-Free with ADLs (6-8 Weeks)	
	between legs)
Criteria to Progress to Phase III	• Symmetrical and pain-free hip ROM to meet the demands of patient's activities • Symmetrical DL squat to 70° of knee flexion • Score of 0-1 on the Active Hip Abduction Test (*Appendix C*) with 10 repetitions • Perform 10 repetitions of 8" step-downs with good neuromuscular control • Normalized gait pattern for community distances of ambulation (no compensatory movement patterns at pelvis, no Trendelenburg sign)

Phase III: Painfree ADLs to Return to Impact Activities (8-12 Weeks)	
Goals	• Gradually progress gluteus medius/minimus strength and core/proximal hip stability • Correct abnormal or compensatory movement patterns with functional tasks • Optimize neuromuscular control, balance, and proprioception • Increase volume and intensity of non-impact aerobic activities
Precautions	• Avoid secondary muscle irritation (hip flexor and lateral hip) • Monitor ROM, quality of movement, and activity level
ROM/Stretching	• Maintain full AROM/PROM and progress through multidirectional end-range movements as needed • Use manual techniques (STM, joint mobilization) for tightness • Address persistent lumbar or pelvic dysfunctions with

Phase III: Painfree ADLs to Return to Impact Activities (8-12 Weeks)	
	manual or stretching interventions
Therapeutic Exercise	• Gradually progress gluteus medius/minimus strength • Progressive resisted hip abduction and IR/ER strengthening in NWB and WB positions • Continue progressive LE/core strength and stability • Begin to address multiplanar movements near end of phase III
Neuromuscular Control and Balance	**Balance/proprioception exercises:** • Rocker board • BOSU ball • SLS on foam pad
Cardiovascular Exercise	**Upright Bike/Elliptical/Stairmaster:** • Gradually increase resistance and/or speed (cross ramp on elliptical) as tolerated **Swimming:** • Return to freestyle and backstroke kicking; • NO kickboard • May return to elementary backstroke and dolphin dives
Plyometrics	**Criteria to Initiate Plyometric Program**: • Full, functional, pain-free ROM • > 80% strength in quadriceps, hamstring, and hip (hand-held dynamometer) • Squat > 150% BW (barbell squat or leg press) • 10 forward and lateral step downs from 8” step with proper alignment • Hop and hold with proper mechanics (uninvolved à involved x10 repetitions) • Ability to tolerate 200-250 plyometric foot contacts without reactive pain/effusion • No gross visual asymmetry and rhythmic strike pattern with treadmill or over ground running

Phase III: Painfree ADLs to Return to Impact Activities (8-12 Weeks)	
	Progressive Weight Bearing: • Shuttle plyometrics (DL à SL) • Forward hop and hold (uninvolved à involved) • DL mini hops/place jumps • Emphasize proper take-off/landing mechanics (no knee valgus, good pelvic stability, soft/quiet landing with equal force distribution) • Agility ladder if appropriate form and plyometric tolerance

Return to Running Protocol

Initiation Criteria

Full, functional, Pain-free ROM
80% strength in quadriceps, hamstring, and hip compared to the uninvolved leg (using hand-held dynamometer)
Ability to squat *150% BW* (barbell squat or leg press)
Proper alignment in 10 forward and lateral step downs from 8" step (*Appendix D*)
Proper mechanics in hop and hold (uninvolved → involved x10 repetitions)
Tolerance for *200-250* plyometric foot contacts without reactive pain/effusion
No gross visual asymmetry and rhythmic strike pattern with treadmill or overground running

Walk/Run Phases

Phase	Walk/Run Ratio	Total Time
1	4 min / 1 min	10-20 min
2	3 min / 2 min	10-20 min
3	2 min / 3 min	10-20 min
4	1 min / 4 min	10-20 min

Phase	Walk/Run Ratio	Total Time
5	• Jog every other day until able to run 30 consecutive minutes • Begin with 5 min walking warm up • End with 5 min walking cool down	40 min

General Guidelines

- **Phase Completion:** Follow the Total Time guidelines below for each phase.
    - 10 minutes x2 sessions
    - 15 min x1 session
    - 20 min x1 session
- **Progression:** After completing any phase pain-free for 20 minutes, progress to the next phase.
- **Rest:** Allow at least one day of rest between runs.
- **Distance Before Pace:** Prioritize a gradual increase in distance before increasing pace.
- **Pain Management:**
    - If pain or reactive edema occurs, stop running immediately and rest for at least one day.
    - Restart with the last walk/jog ratio cycle completed pain-free x2 before attempting the previously painful ratio cycle.
- **Ten Percent Rule:** Increase weekly mileage by only 10% of the previous week.

Phase IV: Return to Sport/Full Activity (3 to 6+ Months)	
Goals	• Initiate return to run program if not started in Phase III • Return to physically demanding job • Progressively return to sport or desired level of

Phase IV: Return to Sport/Full Activity (3 to 6+ Months)	
	function (4-6 months for full return to sport)
Precautions	• Emphasize proper landing mechanics (DL and SL) • Avoid progression of plyometric exercises if pain increases • Ensure full flexibility and pain-free ROM as strength increases • Monitor return to sport progression closely
ROM/Stretching	• Continue ROM interventions and stretches from previous phases • Include multiplanar lumbar and hip ROM/flexibility • Emphasize dynamic warm-up and stretching (e.g., walking lunges, hurdle steps) • Gradually return to end-range stretching for sport-specific movements
Therapeutic Exercise	• Focus on hip and core strengthening with an emphasis on pelvic stability • Maintain DL strength but emphasize SL strengthening (both involved and uninvolved) • Progress from static to dynamic multiplanar movements
Neuromuscular Control and Functional Performance	**Progress agility and plyometrics with higher-level activities** • Forward/backwards hopping • Side shuffles • Carioca • Cutting • Box drills • T drills • Tuck jumps

Phase IV: Return to Sport/Full Activity (3 to 6+ Months)	
	• DL/SL jump turns • Focus on hip and pelvic stability with unstable surfaces **Impact exercises:** • 2 feet to 2 feet → 1 foot to other foot → 1 foot to same foot • Single plane drills → multi-plane drills • Low velocity • Single plane activities → higher velocity, multiplanar activities • Advance dynamic stability tasks (endurance and multidirectional stability) • Sport-specific drills in clinic (moderate speed → maximum speed) • Complete entire return to run program before initiating speed training • Ensure tolerance with DL and SL plyometrics before starting power-focused or resisted • Explosive training
Cardiovascular Exercise	• **Swimming Progression:** • Return to freestyle and backstroke kicking • Able to use kickboard • Return to breaststroke and butterfly (one arm drills → double arm as able)
Return to Sport/Discharge	• Physician clearance at last check-up • **Strength**: • > 90% compared to uninvolved hip (using hand-held dynamometer) • **Strength (SL leg press):** • > 90% at body weight (# of repetitions to fatigue)

Phase IV: Return to Sport/Full Activity (3 to 6+ Months)	
	OR • >90% on Isokinetic testing with quad/hamstring ratio • **Functional Performance:** • 90% limb symmetry with SL hop for distance • SL triple crossover hop • SL 6-meter timed hop (with proper LE landing mechanics) • Crossover hop is most important for ensuring proper mechanics with increased lateral loading through hip • Ability to complete sport-specific drills with correct mechanics (at maximum speed without pain) • **Patient-reported Outcome Measures:** • Score ≥ 90% on HOS (ADL and Sports subscales)

Appendices

Appendix A: Prone Hip Extension Test

Purpose: Assesses the ability to activate the gluteus maximus while maintaining lumbo-pelvic-hip control.

Criteria to Pass the Test:

Criteria	Details
Repetitions	Perform 10 repetitions
Muscle Activation	Proper gluteal muscle activation: gluteus maximus first, hamstrings second
Leg Extension	Leg extends 10° past neutral
Pelvic Movement	No compensatory movement patterns at the pelvis (no anterior pelvic tilt)
Pain	No anterior hip pain

Appendix B: Active Hip Abduction Test

Purpose: Evaluates control of the pelvis in the frontal plane during hip abduction.

Scoring System and Cues for Examiner:

Score	Description	Details
0	Able to maintain position of pelvis in the frontal plane	Smoothly and easily performs movemen lower extremities Pelvis Trunk Shoulders remain aligned.
1	Minimal loss of pelvis position in the frontal plane	Slight wobble at initiation or throughout any movement Noticeable effort or "ratcheting" of moving limb.
2	Moderate loss of pelvis position in the frontal plane	At least 2 of the following: **1.** Noticeable wobble **2.** Tipping of pelvis **3.** Trunk or shoulder rotation **4.** Hip flexion/rotation **5.** Uncontrolled movement.
3	Severe loss of pelvis position in the frontal plane	More than 3 of the above characteristics and/or unable to regain control once lost May lose balance (hand on table).

Appendix C: Psoas Progression

Purpose: Strengthening the iliopsoas muscle while maintaining abdominal drawing-in maneuver and neutral lumbar spine alignment. Clinicians can choose from two different progressions based on preference.

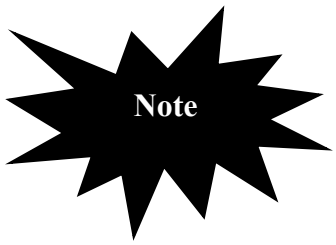
Psoas Progression A:

Exercise	Description
A) Supine Short-Lever Hip Flexion	Performed lying on the back, lifting the knee towards the chest while keeping the knee bent.
B) Seated Hip Flexion	Performed sitting on a chair, lifting the knee towards the chest while keeping the knee bent.
C) Seated Hip Flexion on Swiss Ball	Performed sitting on a Swiss ball, lifting the knee towards the chest while keeping the knee bent.
D) Standing Hip Flexion with Theraband Resistance	Performed standing, lifting the knee towards the chest against theraband resistance.

Psoas Progression B:

Exercise	Description
A) Marching	Performed lying on the back, alternating lifting knees towards the chest in a marching motion.
B) Walk Out	Performed lying on the back, lifting the knee towards the chest and then extending the leg out straight, alternating legs.
C) Heel Slide	Performed lying on the back, sliding one heel along the floor towards the buttock and then back out.
D) Heel Slide with SLR	Performed lying on the back, sliding one heel along the

Exercise	Description
(Straight Leg Raise)	floor towards the buttock, then extending the leg straight and lifting it up.



All exercises should be performed with simultaneous abdominal drawing-in maneuver.

Maintain lumbar spine in neutral alignment throughout each exercise.

Appendix D: Forward Step Down Test

Definition of Errors and Their Interpretation

Error Type	Description	Interpretation
Arm Strategy	Subject uses arms to regain balance	**1 point**
Trunk Movement	Trunk leans to the right or left	**1 point**
Pelvic Plane	Pelvis rotates or elevates on one side	**1 point**
Knee Position	**Knee deviates medially:** Tibial tuberosity crosses an imaginary vertical line over the 2nd toe	**1 point**
- Tibial tuberosity crosses an imaginary vertical line over the medial border of the foot	2 points	
Balance	Subject steps down on the uninvolved side or tested leg becomes unsteady	**1 point**

Quality of Mechanics Based on Errors

Number of Errors	Quality of Mechanics
0-1 errors	Good quality
2-3 errors	Medium quality
4+ errors	Poor quality