

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

Background

Gluteus medius and/or minimus partial- or full-thickness tears can be the source of significant functional impairments and chronic peritrochanteric hip pain. These tears are similar in morphology to the soft tissue anatomy of rotator cuff tears in the shoulder (Domb 2013). Often, gluteus medius and/or minimus tears do not have a clear mechanism of injury; however, it is thought that the progression of these tears is gradual with degradation that occurs within the musculotendinous junction and at its attachment to the bone. These changes eventually cause insertional failure and tendinopathy that leads to partial undersurface tearing. Occasionally, these tears progress to complete avulsion of the abductor attachment on the greater trochanter (Domb 2013). Gluteus medius tears are more common than gluteus minimus tears and partial thickness tears are more common than full thickness tears (Connell 2003). Lastly, women more commonly demonstrate symptomatic tears compared to men (Tibor 2008). Many of these tears often go undiagnosed or misdiagnosed for a prolonged time. Hip abductor repair is most commonly an open procedure in order to best expose the tissues and fully perform the repair. Due to the nature of the repair, certain precautions must be taken early on during post-operative rehabilitation in order to protect the repaired and healing tissues.

The surgical procedure involves an incision over the lateral aspect of the hip carried down to the iliotibial (IT) fascia. The IT fascia is opened longitudinally and the trochanteric bursa is removed or debrided. The gluteal tendons are then identified and cleaned. Anchors are placed into the greater trochanter and the stitches are used to secure the gluteal tendons back to the bone. The IT fascia is partially closed with the extent of closure dependent on presentation. The wound is closed through the deep soft tissues and the skin.

Disclaimer

Progression is time and criterion-based, dependent on soft tissue healing, patient factors and preferences, and clinician evaluation. If you are working with an Ohio State Sports Medicine patient and questions arise, please contact the author by calling our office at 614-293-2385.

Summary of Recommendations

Precautions (6 weeks)	<ul style="list-style-type: none"> • WB restrictions: 50% WB w/ walker or crutches • Hip abduction brace when OOB • No flexion > 90° and no adduction past neutral/0° • No active abduction AROM 		
Corrective Interventions	<ul style="list-style-type: none"> • Proper activation and recruitment of all hip and core musculature without compensation required prior to initiating strengthening • Neuromuscular re-education for balance and correction of functional movement patterns 		
ROM/Manual Therapy	<ul style="list-style-type: none"> • PROM as tolerated <ul style="list-style-type: none"> ◦ No hip flexion > 90° and no adduction past neutral/0° (6 wks) • No AROM hip abduction, ER, or IR (6 wks) 		
Criteria for Progression	<p><i>To Initiate Plyometric Program</i></p> <ul style="list-style-type: none"> • Full, functional, pain-free ROM • > 80% quadriceps, hamstring (isokinetic testing if available), and hip (using hand-held dynamometer) strength compared to uninvolved leg • Squat > 150% BW (barbell squat or DL leg press) 10 forward and lateral step downs from 8" step with proper mechanics 		
Criteria for Return to Sport/Discharge	<table border="0"> <tr> <td data-bbox="365 871 917 1289"> <ul style="list-style-type: none"> • Physician clearance at last check-up • Strength: > 90% compared to uninvolved hip (using hand-held dynamometer) • > 90% BW with SL leg press • Functional Performance: <ul style="list-style-type: none"> ◦ > 90% limb symmetry with SL hop for distance, SL triple crossover hop, and SL 6-meter timed hop (with demonstration of proper LE landing mechanics) • Ability to complete sport-specific drills with correct mechanics - at maximum speed w/o pain </td> <td data-bbox="917 871 1479 1289"> <p><i>To Initiate Running Program</i></p> <ul style="list-style-type: none"> • Pass all plyometric program criteria • Hop and hold with proper mechanics (uninvolved → involved) • 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 </td> </tr> </table>	<ul style="list-style-type: none"> • Physician clearance at last check-up • Strength: > 90% compared to uninvolved hip (using hand-held dynamometer) • > 90% BW with SL leg press • Functional Performance: <ul style="list-style-type: none"> ◦ > 90% limb symmetry with SL hop for distance, SL triple crossover hop, and SL 6-meter timed hop (with demonstration of proper LE landing mechanics) • Ability to complete sport-specific drills with correct mechanics - at maximum speed w/o pain 	<p><i>To Initiate Running Program</i></p> <ul style="list-style-type: none"> • Pass all plyometric program criteria • Hop and hold with proper mechanics (uninvolved → involved) • 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
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Abbreviations: AD, assistive device; ADLs, activities of daily living; AROM, active range of motion; BW, body weight; DL, double leg; LE, lower extremity; PROM, OOB, out of bed; passive range of motion; pre-op, pre-operative; ROM, range of motion; SL, single leg; WB, weight bearing; wks, weeks



Phase I: Protection - Post-Op until D/C Assistive Device (0-6 weeks)

Goals	<ul style="list-style-type: none"> • Protect healing tissues • Pain and edema control • Improve pain-free ROM • Normalize muscle activation
Precautions	<ul style="list-style-type: none"> • 50% weight bearing with crutches or walker for 6 wks • Use hip abduction brace when OOB for 6 wks • No hip flexion > 90° and no hip adduction past neutral/0° • No active hip abduction, ER, or IR ROM for 6 wks • Avoid sidelying position on involved side when sleeping <ul style="list-style-type: none"> • Supine with pillows under legs or sidelying with pillow between knees decreases compression on surgical side • Avoid sitting > 30 minutes at a time to avoid hip irritation <ul style="list-style-type: none"> ○ Instruct to keep hips above knees (i.e. > 90° hip flexion) • See Appendix A: Lateral Hip Pain Modifications
ROM/Stretching	<ul style="list-style-type: none"> • PROM (painfree): Hip flexion, extension, abduction, prone hip IR and ER <ul style="list-style-type: none"> ○ 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 closed • Upright bike for ROM (raise saddle height so that hip flexion is 90° or less)
Neuromuscular Control	<p><i>This section is 1st priority</i> → do not progress to strengthening until pt is able to perform isolated muscle activation</p> <ul style="list-style-type: none"> • Isometrics: glute sets (prone, supine, seated) bilateral and unilateral, transverse abdominis (TA), quadriceps, hamstrings, supine hip adduction, prone TKE
Suggested Interventions	<p><u>Early Exercises (wks 0-3):</u></p> <ul style="list-style-type: none"> • LAQs, hamstring curls, TA progression in hooklying (respecting ROM precautions) • Gait training with AD • Isometrics (see above) <p><u>Advanced Exercises (wks 4-6):</u></p> <ul style="list-style-type: none"> • Criteria to begin this section: minimal reactive pain and edema <ul style="list-style-type: none"> ○ Prone/standing hip extensions, quadruped cat/camel, quadruped weight shifts, DL bridges, standing TKE ○ Gradually increase resistance on stationary bike as tolerated ○ Initiate supine hip abduction and prone ER isometrics (both in neutral) at 4 weeks <ul style="list-style-type: none"> ▪ Begin with 50% MVC and progress as tolerated ○ Aquatic therapy can be initiated once incision is healed, and patient is cleared by MD
Criteria to Progress to Phase II	<ul style="list-style-type: none"> • Normalized gait pattern with AD • Minimal to no reactive pain and swelling with ADLs and PT exercises • Muscle activation/isometrics normalized



Phase II: D/C Crutches to Painfree with ADLs (6-12 Weeks)

Goals	<ul style="list-style-type: none"> • Progress to full PROM and AROM in all directions • Progressively improve strength of the proximal hip musculature <ul style="list-style-type: none"> ○ Gluteals, iliopsoas, hip rotators • Normalize postural/lumbopelvic control with DL and SL activities • Normalize gait distances without AD • Tolerate ADLs without pain or limitation
Precautions	<ul style="list-style-type: none"> • Avoid soft tissue aggravation due to early/excessive progression of activity <ul style="list-style-type: none"> ○ Soft tissue irritation suggests need for regression of activities and/or exercises • Avoid aggressive stretching including ITB stretches • Continually assess patient's current activity level outside of PT
AD Progression	<ul style="list-style-type: none"> • 2 crutches or walker for 6 weeks • Progressive weaning from 2 crutches/walker → cane → no AD <ul style="list-style-type: none"> • Slow progression in the case of increased reactive pain and/or edema • DC AD once gait pattern is normalized
ROM/Stretching	<ul style="list-style-type: none"> • Soft tissue and joint mobilization to achieve symmetrical PROM • Upright bike, butterfly/reverse butterfly stretches
Suggested Interventions	<ul style="list-style-type: none"> • 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
Criteria to Progress to Phase III	<ul style="list-style-type: none"> • Symmetrical and pain-free hip ROM to meet the demands of patient's activities • Symmetrical DL squat to 70° of knee flex • Score of 0-1 performing 10 repetitions of Active Hip Abduction Test (Appendix B) • 10 repetitions of 8" step downs with good neuromuscular control • Normalized gait pattern for community distances of ambulation



Phase III: Painfree ADLs to Return to PLOF (12+ Weeks)

Goals	<ul style="list-style-type: none"> • Gradually progress gluteus medius/minimus strength and core/proximal hip stability • Normalize movement patterns with functional tasks • Optimize neuromuscular control, balance, and proprioception • Increase volume and intensity of non-impact aerobic activities • Return to physically demanding job
Precautions	<ul style="list-style-type: none"> • Avoid secondary muscle irritation (hip flexor and lateral hip) • In the case of persistent reactive pain/irritation, modify ADL participation
Suggested Interventions	<ul style="list-style-type: none"> • Gradually progress gluteus medius/minimus strength <ul style="list-style-type: none"> ○ Progressive resisted hip abduction and IR/ER strength in OKC and CKC positions • Continue progressive LE/core strength and stability <ul style="list-style-type: none"> ○ Begin to address multiplanar movements • Balance/Proprioception <ul style="list-style-type: none"> ○ Rocker board, BOSU ball, SLS on foam pad
Cardiovascular Exercise	<ul style="list-style-type: none"> • Upright Bike/Elliptical/Stairmaster/Swimming Progression <ul style="list-style-type: none"> ○ Gradually progress resistance and/or speed (cross ramp on elliptical) as tolerated
Plyometrics	<ul style="list-style-type: none"> • Criteria to initiate plyometric program <ul style="list-style-type: none"> ○ Full, functional, pain-free ROM ○ > 80% quadriceps, hamstring (isokinetic testing if available), and hip (using hand-held dynamometer) strength compared to uninvolved leg ○ Squat 150% BW (barbell squat or DL leg press) ○ 10 forward and lateral step downs from 8" step with proper alignment (Appendix C) • Progressive weight bearing, DL → SL demands <ul style="list-style-type: none"> ○ Shuttle plyometrics (DL → SL) ○ Forward hop and hold (uninvolved → involved) ○ DL mini hops/place jumps • Proper take off/landing mechanics emphasized → NO knee valgus, good pelvic stability, soft/quiet landing with equal distribution of force • Agility ladder can be initiated if appropriate form and tolerance to plyometrics



Phase IV: Return to Sport/Full Activity or until goals are achieved (16+ weeks)

Goals	<ul style="list-style-type: none"> • Initiate return to run program if patient desires to return to impact activities (Appendix D) • Progressively return to sport or prior/desired level of function (6-8+ months for full return)
Precautions	<ul style="list-style-type: none"> • Continue to emphasize proper landing mechanics (DL and SL) • Avoid progression of plyometric exercises if increased pain <ul style="list-style-type: none"> ○ If yes, re-assess and address any underlying strength or neuromuscular impairments
ROM/Stretching	<ul style="list-style-type: none"> • Continue ROM interventions and stretches from previous phases <ul style="list-style-type: none"> ○ Include multiplanar lumbar and hip ROM/flexibility • Emphasis on dynamic warm-up and stretching (i.e. walking lunges, hurdle steps, etc.) • Monitor sport-specific stretching with gradual return to end range stretching
Suggested Interventions	<ul style="list-style-type: none"> • Hip and core strengthening with focus on dynamic pelvic stability <ul style="list-style-type: none"> ○ Maintain DL strength but emphasize SL strengthening (involved and uninvolved) • Progress multiplanar movements (static to dynamic activities)
Neuromuscular Control and Functional Performance	<ul style="list-style-type: none"> • Progress agility and plyometrics by adding in higher level activities (i.e. forward/backwards hopping, side shuffles, carioca, cutting, box drills, T drills, tuck jumps, DL/ SL jump turns) <ul style="list-style-type: none"> ○ Incorporate unstable surfaces with plyometrics • Continue to advance dynamic stability tasks (both endurance and multidirectional stability) • Sport specific drills in clinic (moderate speed → maximum speed) • Prior to initiating speed training, patient must first complete entire return to run program • Ensure tolerance with DL and SL plyometrics prior to initiating power-focused or resisted, explosive training
Return to Sport/Discharge	<ul style="list-style-type: none"> • Physician clearance at last check-up • Strength: <ul style="list-style-type: none"> ○ > 90% compared to uninvolved hip (using hand-held dynamometer) ○ > 90% BW with SL leg press • Functional Performance: <ul style="list-style-type: none"> ○ > 90% limb symmetry with SL hop for distance, SL triple crossover hop, and SL 6-meter timed hop (with demonstration of proper LE landing mechanics) • Ability to complete sport-specific drills with correct mechanics (at maximum speed)



Appendix A: Lateral Hip Pain Modifications (Posture and Movement)





Lateral Hip Pain: Activity Modifications (Posture)

The structures at the side of your hip experience increased pressure when your hips are flexed more than 90° and when you cross your leg past the midline of your body. This pressure can cause pain and irritation to occur.

Irritation or pain at the side of your hip can delay tissue healing, and the pain cycle will continue. Modifying your activities is necessary to allow for healing to occur. It is important you follow these changes throughout your daily routine to reduce pressure and alleviate pain.








Activities to Avoid	
Avoid crossing legs while sitting	
Avoid sitting in "figure 4" position	
Avoid "hanging" on either hip while standing	
Avoid flexibility and stretching exercises targeting IT Band/piriformis	
Avoid sleeping on painful hip	If you must sleep on painful hip, use an egg crate to soften surface

Activities to Change	
While sitting, keep knees in line with hips. If needed, use towel roll between knees to prevent knees from coming together	
Raise seat height so that hips are at an angle greater than 90°	
When sleeping on your non-painful side, put two pillows between your knees.	
When sleeping on your back, put 1-2 pillows under your knees.	

Lateral Hip Pain: Activity Modifications (Movement)

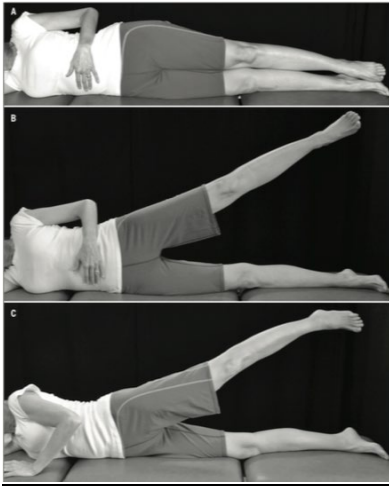
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Activities to Change	
<p>Sitting to/from Standing</p> <p>When standing up from a chair or sitting down, keep your knees in line with your toes; do not let your knees bend inward towards each other.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Incorrect: knees fall in</p> </div> <div style="text-align: center;">  <p>Correct: knees in line with toes</p> </div> </div>
<p>Walking</p> <p>When walking keep your trunk upright and hips level. Pain or weakness may make this difficult. If that is the case use an assistive device to help you.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Incorrect: hip drop</p> </div> <div style="text-align: center;">  <p>Incorrect: trunk lean</p> </div> <div style="text-align: center;">  <p>Correct: hips level, trunk upright</p> </div> </div>
<p>Going Up/Down Stairs</p> <p>When going up/down the stairs keep your knee in line with your toe. Use the railing on the opposite side of your painful hip. (i.e. if your right hip is painful, try to use the left railing)</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Incorrect: knee falls in</p> </div> <div style="text-align: center;">  <p>Correct: knee in line with toe</p> </div> </div>

Appendix B: Active Hip Abduction Test

Score	Cues for Examiner
0	Able to maintain position of pelvis in the frontal plane
1	Minimal loss of pelvis position in the frontal plane
2	Moderate loss of pelvis position in the frontal plane
3	Severe loss of pelvis position in the frontal plane



(A) Demonstration of the active hip abduction test from the starting position

(B) Demonstration of good control of the pelvis in the frontal plane; this would receive a score of 0. The alignment of lower extremities, pelvis and trunk has not changed from the start position, and upper extremity remains relaxed on the abdomen.

(C) Demonstration of poor control of the pelvis in the frontal plane; this would receive a score of 3. The upper extremity is placed on the table to prevent loss of balance, the pelvis has rotated forward and the top hip has flexed and internally rotated.

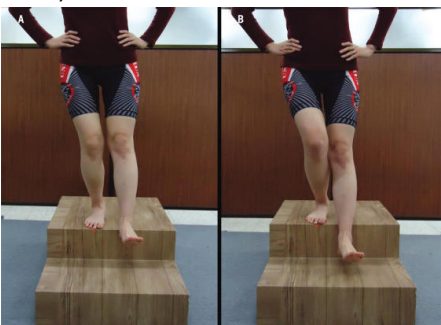
Davis, AM, Bridge P, Miller J, Nelson-Wong, E. Interrater and intrarater reliability of the active hip abduction test. *J Orthop Sports Phys Ther.* 2011;41(12):953-960.



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Appendix C: Forward Step Down Test

Definition of errors	Interpretation of errors	
<p>Arm strategy: subject uses an arm strategy in an attempt to recover balance (1 point)</p> <p>Trunk movement: trunk leans right or left (1 point)</p> <p>Pelvic plane: pelvis rotates or elevates on one side compared to the other (1 point)</p> <p>Knee position: knee deviates medially and the tibial tuberosity crosses an imaginary vertical line over 2nd toe (1 point); knee deviates medially and the tibial tuberosity crosses an imaginary vertical line over medial boarder of the foot (2 points)</p> <p>Balance: subject steps down on the uninvolved side or the subject's tested leg becomes unsteady (1 point)</p>	0-1 errors	Good quality mechanics
	2-3 errors	Medium quality mechanics
	4+ errors	Poor quality mechanics

Park K, Cynn H, Choung S. Musculoskeletal predictors of movement quality for the forward step-down test in asymptomatic women. *J Orthop Sports Phys Ther.* 2013;43(7):504-510.

Appendix D: Return to Running

Walk/jog progression can be initiated towards end of phase if patient demonstrates:

- Full, functional, pain-free ROM
- > 80% quadriceps, hamstring (isokinetic testing if available), and hip (using hand-held dynamometer) strength compared to uninvolved leg
- Squat 150% BW (barbell squat or DL leg press)
- 10 forward and lateral step downs from 8" step with proper alignment
- Hop and hold with proper mechanics (uninvolved → 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

Basic Walk to Run Program	Warm-up	Run:Walk	Repetitions	Cool down	Total	Days
Phase 1	5-10 min	1 min:1-3 min	2-4	5-10 min	20-30 min	2
Phase 2	5-10 min	2 min:1-3 min	2-4	5-10 min	20-30 min	2
Phase 3	5-10 min	3 min:1-2 min	2-4	5-10 min	20-30 min	2
Phase 4	5-8 min	4 min:1 min	2-4	5-8 min	25-30 min	2
Phase 5	5-8 min	5 min:1 min	2-4	5-8 min	25-35 min	2

General Guidelines

- Allow at least one day of rest between runs
- Gradual increase in distance is priority before increased pace
- It is common for runners to experience increased pain and/or reactive edema at least x1 during this return to run progression. When pain occurs, runner must stop running immediately and rest at least 1 day before restarting program. With restart, perform last walk/jog ratio cycle completed pain-free x2 before attempting the previously painful ratio cycle.



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