

Hip Arthroscopy Rehabilitation Guideline Northside Hospital Sports Medicine

This hip arthroscopy guideline is to be utilized following hip arthroscopy for femoroacetabular impingement, including labral repair, osteoplasty and/or micro fracture procedures. This guideline is intended to be used in conjunction with the therapist and surgeon's collaborative input. Northside Hospital Sports Medicine uses a criterion-based rehabilitation guideline to ensure the optimal level of success with return to sport. Each individual will be treated uniquely based upon the observations of the sports medicine team. Timelines indicated are estimations and certain criteria must be met to advance through various stages. It is vital that a multi-factorial approach is used during rehabilitation to decrease risk of re-injury. Safety of the patient is the number one priority.

Pre-Operative Instructions

- Schedule post-op PT visit 3-5 days after surgery
- Schedule follow up visit with MD within 2 weeks after surgery

Initial Post-Operative Instructions

- No bathing or submerging the incision in water (pool, hot tub, bath tub) until the sutures are removed by the physician, the scabs have fallen off and the skin is completely closed
- Steri-strips will be applied after surgical dressing removal. Allow these to fall off in their own time.
- Following removal of the surgical dressing, showering is permitted. The incision may get wet, but soaking it in a bath is not recommended. A shower chair may be used to maintain weight bearing status and prevent falls
- Driving is permitted after cleared by physician at 4-6 weeks post-op
- Compression stockings and aspirin/lovenox may be discontinued at 3 weeks post-op

Brace/Boot Use Post-Operative

- Phillipon Brace will be used for two weeks post-op
- De-rotation boots while sleeping and resting will be used for two weeks

Crutch Use Post-Operative

- Patients will be touchdown weight bearing (20-30 lbs) with crutches for 4 weeks. Non-weight bearing is not permitted, as maintaining non-weight bearing increases the compressive forces across the hip due to activation of the hip flexors (Lewis 2007)
- **For patients with concomitant micro-fracture or osteoplasty, weight bearing restrictions may be extended up to 6 weeks**

- At 4 weeks post-op, patients may begin weaning from crutches as tolerated progressing to 50% weight bearing for half a week, 75% weight bearing for half a week and 100% weight bearing for half a week.
- Do NOT progress to next step if patient experiences any of the following:
 - Significant increase in pain level
 - Obvious deviation in gait pattern
- Criteria to wean from crutches:
 - Hip extension > 10 degrees
 - Pain less than 3/10 with weight bearing activities including gait
 - Single leg stance for 30 seconds, maintaining level pelvis with uncompensated trunk lean

PHASE I: IMMEDIATE POST-OPERATIVE PHASE (Week 1-4):

- PRECAUTIONS
 - Touch down (20-30 lbs) for 4 weeks
 - Brace use for 2 weeks (may remove brace for PT)
 - Range of Motion restrictions not to be exceeded for 2 weeks, then progress gradually within tolerance:
 - Hip flexion 90 deg
 - External rotation 30 deg
 - Hip extension: 10 deg
 - Abduction: 30 deg
 - Avoid stressing hip flexors
- GOALS
 - Control pain and inflammation
 - Manage edema to decrease arthrogenic neuromuscular inhibition
 - Neutralize muscle atrophy
 - Avoid gluteal inhibition
 - Protect healing tissues
 - Promote range of motion within restrictions
- INTERVENTIONS
 - Aerobic
 - Bike: avoid > 90 degrees hip flexion
 - No resistance initially
 - Strengthening/Neuromuscular Re-education
 - Quad sets, gluteal sets, hip abduction/adduction isometrics, heel slides, ankle pumps
 - Transverse abdominus progression
 - Standing 4 way hip (progress to add band resistance)
 - Supine bridges

- Seated marching, avoiding TFL overuse
- Prone hip extension, side lying hip abduction and adduction (avoid supine hip flexion due to excessive anterior hip joint forces)
- Aquatic Therapy (if available)
 - Early gait training
 - AROM
 - Endurance exercises
 - Adhere to all incision precautions listed above
- Manual
 - Long axis hip traction
 - Circumduction to prevent adhesions
 - Grade I, II femoral caudal glides
 - PROM within ROM restrictions
 - Soft tissue mobilization to quads, glutes, hams, hip flexors, adductors as needed
 - Scar tissue massage once incisions are closed
- CRITERIA TO PROGRESS TO PHASE II
 - No edema present
 - Ability to perform active hip flexion without TFL during Sahrman level II abdominal exercise (appendix A) – Avoid >90 degrees hip flexion
 - Prone Hip Extension Test:
 - Patient is able to perform 10 prone hip extension repetitions with gluteus maximus contraction followed by hamstring activation
 - Hip Abduction Test Score of 0-1 (Appendix B)

PHASE II: CONTROLLED STABILITY (week 4-7)

- PRECAUTIONS
 - Progress to full weight bearing (see above)
- GOALS
 - Normalize gait
 - Normalize ROM
 - Progress strength
 - Initiate standing proprioceptive exercises
- INTERVENTIONS
 - Aerobic
 - Continue bike, increase resistance
 - May begin elliptical, stair climber, seated rowing

- Strengthening/Neuromuscular Re-education
 - Continue to promote proper firing of gluteals, hip flexors, and deep rotators
 - Clamshells, single leg bridges, strengthening in half kneeling, prone and side planks, quadruped strengthening
 - Initiate double leg weight bearing strengthening
 - Squats, calf raises, resisted band walking, leg press, step ups
 - Initiate single leg proprioceptive exercises
 - Single leg stance with perturbation, eyes open/closed
 - Balance board
- Manual
 - Grade III/IV femoral inferior and lateral joint mobilizations to promote normal ROM
 - Continue soft tissue mobilization to quads, glutes, hams, hip flexors, adductors as needed
- **CRITERIA TO PROGRESS TO PHASE III:**
 - Ability to maintain uncompensated single leg stance for 1 minute
 - Avoiding Trendelenburg, lateral trunk lean, pelvic hike, or pelvic rotation
 - Normalized gait
 - Including symmetrical stride, no Trendelenburg, and non-antalgic for 10 minutes
 - Full PROM
 - Symmetrical to uninvolved side

PHASE III: ADVANCED STRENGTHENING (week 7-12)

- **GOALS**
 - Functional progression of strength and endurance
 - Optimize proprioceptive and neuromuscular control
 - Improve cardiovascular endurance
- **INTERVENTIONS**
 - Aerobic
 - Continue as above, progressing resistance
 - Strengthening/Neuromuscular Re-education
 - Advance double leg strengthening, including eccentric and multi-planar movements
 - Lunges, progression of stage II strengthening on unstable surfaces
 - Initiate single leg strengthening
 - Single leg squatting, step downs, single leg dead lifts

- Progress proprioceptive exercises
 - Single leg unstable surfaces
- Manual
 - Continue as needed to promote normalized joint mobility, soft tissue mobility and proper neuromuscular control
- CRITERIA TO PROGRESS TO PHASE IV:
 - 10 repetitions of single leg squat >70 degrees knee flexion
 - without kinetic collapse including dynamic knee valgus, femoral adduction and internal rotation, contralateral pelvic drop, trunk forward or lateral lean
 - Performance of 60 second side plank hold to assess frontal plane stability
 - No pain or signs/symptoms of inflammation with Phase III exercises

PHASE IV: EARLY RETURN TO SPORT (week 12-20):

- GOALS
 - Continues to progress strengthening, endurance, and muscle power
 - Return to running
 - Initiate sport specific and plyometric strengthening >50 % effort
- INTERVENTIONS
 - Aerobic
 - Continue to progress as above
 - Criteria to return to running
 - MD clearance
 - Able to perform 70% of single leg 1 rep max on leg press verses uninvolved leg
 - Able to perform 10 single leg squats without loss of balance or kinetic collapse as outlined above
 - Able to tolerate 15 minutes of fast walking on treadmill without antalgic gait
 - 20 single leg hop and holds with proper neuromotor control (trunk, hip, knee)
 - See Appendix C for return to running progression
 - Strengthening/Neuromuscular Control
 - Initiate light sport specific training primarily in straight plane at < 50% effort
 - Begin double leg plyometrics, progressing to single leg at < 50% effort
 - May use shuttle initially to progress WB

- Plyometrics progression
 - Double leg
 - Emphasis upon symmetrical takeoff/landing, hip hinge/glute incorporation (no knees over toes), soft landing, avoid dynamic knee valgus
 - In place, forward, 90° rotation and 180° rotation
 - Tuck jumps
 - Single Leg
 - Contralateral step and hold (L→R, R→L)
 - Contralateral hop and hold (L→R, R→L)
 - Bounding (incorporate into dynamic warmup)
 - With visual feedback, without visual feedback
 - Progress to triple hop (L→R→L→R)
 - Boxes
 - Forward onto box (height, speed, power)
 - With 90° rotation
 - Drop downs
 - Manual
 - Continue as needed to promote normalized joint mobility, soft tissue mobility and proper neuromuscular control
- CRITERIA TO PROGRESS TO PHASE V:
 - MD clearance
 - Completion of walk:jog progression with no compensatory movement patterns
 - Good neuromotor control with no increased pain/effusion with plyometrics, agility
 - Able to perform 85% of single leg 1 rep max leg press verses uninvolved leg

PHASE V: RETURN TO SPORT (week 20 +):

- GOALS
 - Progress sport specific and plyometric strengthening
 - Promote return to sport
- INTERVENTIONS
 - Aerobic
 - Running progression – Appendix C
 - Strengthening/Neuromuscular Control
 - Progress sport specific plyometric strengthening

- Neuromotor Re-education
 - BOSU
 - Step and hold, hop and hold, RDLs, split squats, SLS, ball toss
- Agility
 - Start at 50% effort and increase as able
 - Ladder Drills
 - Two feet in, One foot in, Lateral two feet in, Icky Shuffle, 1 foot in down the outside, Hopscotch, Single leg hop through (fwd/lateral)
 - Carioca, Side shuffle, Backpedaling
 - Skipping
 - Regular, speed, height, distance
- Manual
 - Continue as needed to promote normalized joint mobility, soft tissue mobility and proper neuromuscular control
- CRITERIA TO PROGRESS TO RETURN TO SPORT
 - MD clearance
 - Performance of cutting and agility without pain or deviations
 - Functional hop test > 90% LSI (Appendix D)
 - T-test in <11 seconds (Appendix E)
 - Hip Outcome Score Sport Scale > 90% (Appendix F)

Once athlete has been cleared to return to sport through criteria outlined above it is imperative that the athlete completes a sport specific build up with their team. Education must occur with the team ATC or coaching staff to ensure a safe gradual return to full activity level

If not fully confident on specifics of how to gradually return athlete to full sport activity, contact author below to discuss.

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Appendix A: Sahrman’s Lower Abdominal Exercise Progression

	Base Position Cue: Hook-lying with spine stabilized “navel to spine”
Level 0.3	Base position with 1 foot lifted
Level 0.4	Base position with 1 knee held to chest and other foot lifted
Level 0.5	Base position with 1 knee held lightly to chest and other foot lifted
Level 1A	Knee to chest (>90 deg hip flexion) held actively and other foot lifted
Level 1B	Knee to chest (at 90 deg hip flexion) held actively and other foot lifted
Level 2	Knee to chest (at 90 deg hip flexion) and other foot lifted and slid out on ground
Level 3	Knee to chest (at 90 deg hip flexion) and other foot lifted and slid out not on ground
Level 4	Bilateral heel slides
Level 5	Bilateral leg lifts to 90 deg
	Resource: Sahrman S. Diagnosis and treatment of movement impairment syndromes. St. Louis: Mosby; 2002.

Appendix B: Hip Abduction Test

Patient is positioned in sidelying and asked to perform hip abduction

Score	Cues for Examiner
0: Able to maintain position of pelvis in the frontal plane	Smoothly and easily performs movement; LE, pelvis, trunk and shoulder remain aligned in the frontal plane
1: Minimal loss of pelvis position in the frontal plane	Slight wobble at initiation or throughout movement; may show noticeable effort or 'ratcheting' of moving limb
2: Moderate loss of pelvis position in frontal plane	Has at least 2 of the following: noticeable wobble through movement; tipping of pelvis, trunk, or shoulder rotation; increased hip flexion and/or rotation of the moving limb; rapid or uncontrolled movement
3: Severe loss of pelvis position in the frontal plane	Has more than 3 of the above characteristics and/or unable to regain control of movement once lost or may lose balance by placing hand on table
	Resource: Davis AM, et al. Interrater and Intrarater Reliability of the Active Hip Abduction Test. <i>JOSPT</i>. 2011; 41 (12): 953-960.

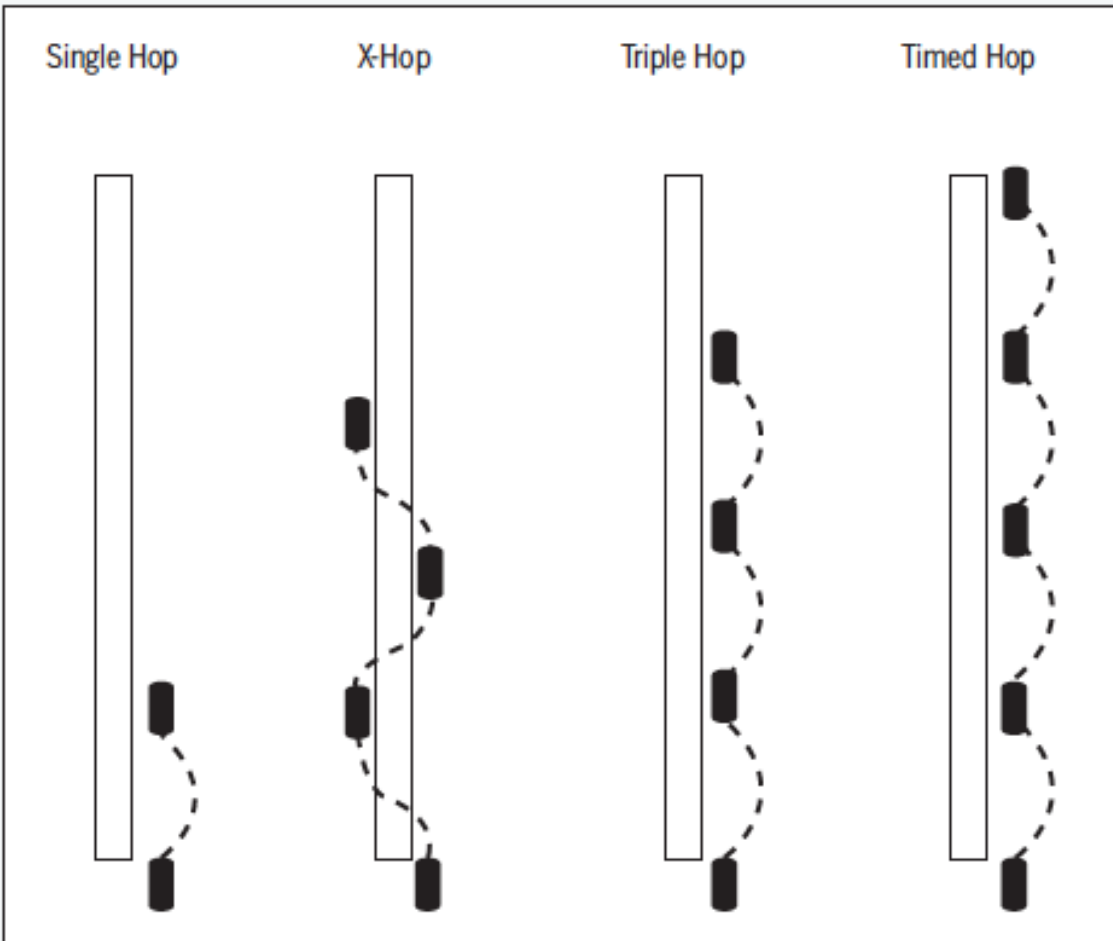
APPENDIX C: Return to Running Progression

- Minimum of 1 rest day between each step
- Patient must be pain-free and no reactive effusion in order to progress
- If patient experiences pain/effusion during progression they must rest for 2 days and complete previous step in progression. Return to typical progression if pain/effusion does not return at that time.

	Warm-up (Walk)	Jog	Walk	Repetitions	Cool Down (Walk)	Total Time
Step 1	5 mins	1 min	3 mins	5	5 mins	30 mins
Step 2	5 mins	1 min	2 mins	7	5 mins	31 mins
Step 3	5 mins	2 mins	1 min	7	5 mins	31 mins
Step 4	5 mins	3 mins	1 min	5	5 mins	30 mins
Step 5	5 mins	5 mins	1 min	4	5 mins	34 mins
Step 6	5 mins	Jog 20 minutes. Gradually increase the pace every 5 minutes			5 mins	30 mins
Step 7	Jog for 30 consecutive minutes every other day. Start and finish with a 5 minute brisk walk					

Adapted from The Ohio State University Walk:Jog Program

APPENDIX D: Functional Hop Testing (Adams 2012)



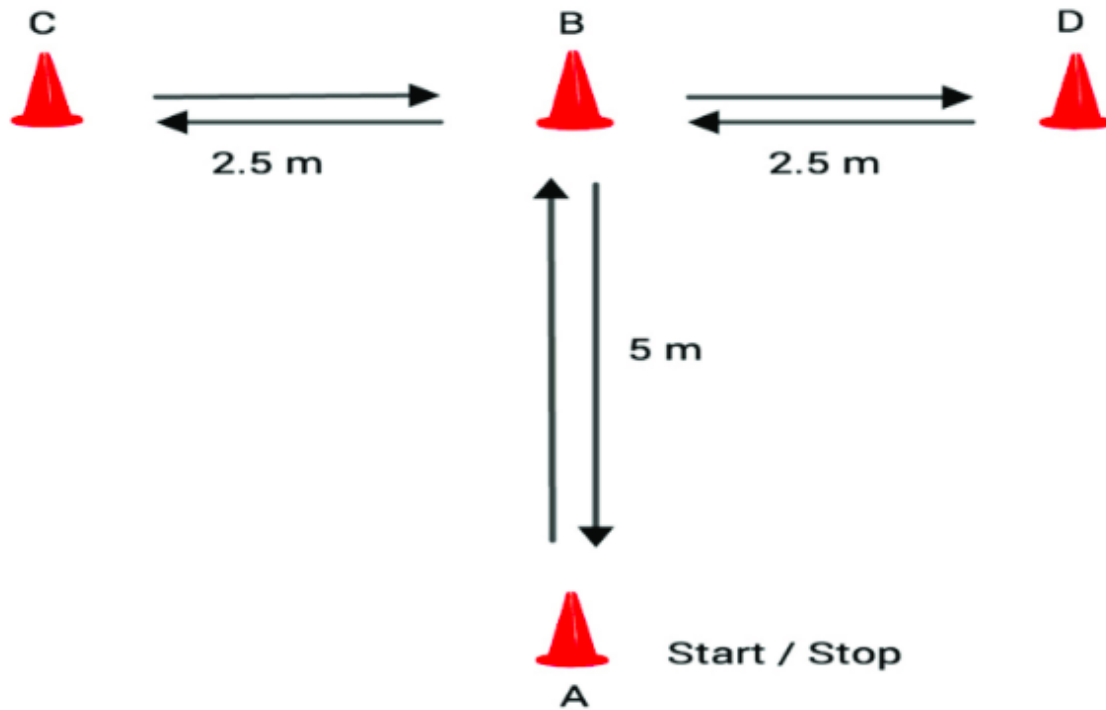
Testing

- Patient performs 2 practice trials on each leg for each hop sequence
- Patient performs 2 timed or measured trials on each leg for each hop sequence
- Measured trials are averaged and compared (involved to uninvolved) for single, triple, and crossover hop
- Measured trials are averaged and compared (uninvolved to involved) for timed hop

Passing criteria for return to sport

- Greater than or equal to 90% on quadriceps MVIC, hop testing, KOS-ADL score, and global rating of knee function score

APPENDIX E: Modified Agility T-Test (Ramirez-Campillo 2018)



1. Athlete sprints forward from A to B
2. Athlete side shuffles from B to C
3. Athlete side shuffles from C to D
4. Athlete side shuffles from D to B
5. Athlete backpedals from B to A

APPENDIX F: Hip Outcome Score – Sports Scale

**Hip Outcome Score (HOS)
Sports Scale**

Because of your hip how much difficulty do you have with :

	No Difficulty at all	Slight Difficulty	Moderate Difficulty	Extreme Difficulty	Unable to do	N/A
Running one mile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jumping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swinging objects like a golf club	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starting and stopping quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cutting/lateral movements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low impact activities like fast walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to perform activity with your normal technique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to participate in your desired sport as long as you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How would you rate your current level of function during your sports related activities from 0 to 100 with 100 being your level of function prior to your hip problem and 0 being the inability to perform any of your usual daily activities?

.0%

How would you rate your current level of function?

Normal
 Nearly normal
 Abnormal
 Severely abnormal

References

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Heerey J, et al. Impairment-based rehabilitation following hip arthroscopy: postoperative protocol for the HIP ARthroscopy international randomized controlled trial. *J Ortho Sports Phys Ther.* 2018; 48(4): 336-342.

Lewis CL, Sahrmann, SA, Moran DW. Anterior hip joint force increases with hip extension, decreased gluteal force, or decreased iliopsoas force. *J Biomech.* 2007; 40 (16): 3725-3731.

Wahoff M, Dischiavi S, Hodge J, Pharez JD. Rehabilitation after labral repair and femoroacetabular decompression: criteria-based progression through the return to sport phase. *Int J Sports Phys Ther.* 2014; 9(6): 813-826.