

DR. JONATHON HENRY HIP ARTHROSCOPY REHABILITATION THERAPY PROTOCOL

The following document is an evidence-based protocol for hip arthroscopy rehabilitation. The protocol is both chronologically and criterion based for advancement through four post-operative phases:

- Phase 1 – Initial Exercises
- Phase 2 – Intermediate Exercises
- Phase 3 – Advanced Exercises
- Phase 4 – Return-to-Sport and Activity

There are multiple factors which affect hip arthroscopy rehabilitation including:

- Size, location, and complexity of lesions
- Tissue quality
- Procedures performed
- Concomitant repairs
- Anticipated functional demands
- Individual patient characteristics

The physician will determine the appropriate rate of progression in rehabilitation for each patient based on the complexity of the procedures performed:

- **Simple** – faster rate of progression
 - Younger patients, better tissue quality, higher anticipated functional demands
 - Less complex lesions
 - Less significant rim trimming and/or femoral osteoplasty
 - Isolated labral debridement or labral repair
- **Complex** – slower rate of progression
 - Older patients, poorer tissue quality, lower anticipated functional demands
 - More complex lesions
 - More significant rim trimming and/or femoral osteoplasty
 - More extensive labral repair or labral reconstruction
 - Microfracture procedure
 - Concomitant repairs
 - Hip abductor tendon repair

There are numerous post-operative precautions following hip arthroscopy:

- Do not push through pain and inflammation
- Maintain weight bearing restrictions and range of motion limitations
- Avoid excessive range of motion during maximum protection
- Avoid hip impingement
- Avoid hip joint inflammation
- **Avoid hip flexor inflammation**
- Avoid twisting, turning, or pivoting on the involved side
- Avoid prolonged sitting on low or soft surfaces

See the chart on the following page for post-operative precautions for specific hip arthroscopy procedures performed.

	Weight Bearing	Crutches or Assistive Device	Post-Op Brace	ROM Limitations	CPM Machine
Labral Debridement and Chondroplasty	Flat foot WBAT	Wean over 1-2 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	None	4-6 hours per day, 3-6 weeks
Simple Labral Repair and Osteoplasty	Flat foot WBAT	Wean over 1-2 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	No EXT > 0° No ER > 0° 3 weeks	4-6 hours per day, 3-6 weeks
Complex Labral Repair and Osteoplasty	20# TTWB, 2-4 weeks, then WBAT	2-4 weeks, then wean over 1-2 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	No EXT > 0° No ER > 0° 3 weeks	4-6 hours per day, 3-6 weeks
Labral Reconstruction and Osteoplasty	20# TTWB, 4 weeks, then WBAT	4 weeks, then wean over 1-2 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	No EXT > 0° No ER > 0° 4 weeks	4-6 hours per day, 4-6 weeks
Microfracture Procedure	20# TTWB, 6 weeks, then WBAT	6 weeks, then wean over 1-2 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	None	4-6 hours per day, 6-8 weeks
Iliopsoas Release	Flat foot WBAT	Wean over 1-2 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	No active FLEX 4- 6 weeks	Not typically indicated
Abductor Tendon Repair	20# TTWB, 6 weeks, then WBAT	6 weeks, then wean over 2-4 weeks with FWB and normal gait	Outside of a safe environment until no longer limping	No active ABD No active EXT No passive ADD 6-8 weeks	Not typically indicated

Brace: set 0-90°, worn outside of a safe environment (i.e. home) until no longer limping

CPM: Beginning post-op day #1, initially set at 10-40° until first post-op visit. Starting at first post-op visit (~1.5 weeks post-operative), will be given instruction to increase ROM by 5° each day with a goal of reaching 90°. Work up to using two hours of every six while awake (goal 4-6 hours per day) from 10-40 degrees as pre-set.

- Labral reconstruction: use CPM until 4 weeks post op
- Microfracture: use CPM until 6 weeks post op

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PRE-OPERATIVE PHYSICAL THERAPY VISIT
(continued on the next page)

Post-Operative Precautions	Initial Post-Operative Exercises
<ul style="list-style-type: none"> • Do not push through pain and inflammation • Maintain weight bearing restrictions and range of motion limitations • Avoid excessive range of motion during maximum protection • Avoid hip impingement • Avoid hip joint inflammation • Avoid hip flexor inflammation • Avoid twisting, turning, or pivoting on the involved side • Avoid prolonged sitting on low or soft surfaces 	<ul style="list-style-type: none"> • Lay prone 2 hours per day (continuous or intermittent) • Ankle pumps • Quad sets • Glut sets • Prone knee flexion AROM • Prone terminal knee extension • Hook lying pelvic tilts

Pre-Operative Physical Therapy Visit

- One-time visit to prepare patient for initial post-operative phase
 - Appointment with physical therapist if patient is from the local area

Post-Operative Precautions

- Educate on post-operative precautions following hip arthroscopy
 - Dependent on procedures performed (see page 2)

Weight Bearing Restrictions

- Instruct post-operative WB restriction
 - Dependent on procedures performed (see page 2)
 - **20# PWB status** is intended to limit joint compression forces from both weight bearing through and muscular co-contraction around the hip by counterbalancing the weight of the lower extremity
 - **Foot-flat gait pattern** resembles a step-to gait pattern and is intended to limit hip extension during terminal stance phase of gait

Crutches or Assistive Device

- Instruct ambulation with crutches or assistive device
 - Dependent on procedures performed (see page 2)
 - **Weaning from crutches or assistive device** is performed beginning with 25% WB and increasing 25% WB every 3-4 days until FWB AND normalized gait pattern are achieved
 - May take longer in abductor repair (progress weight bearing every 5-7 days)

Post-Operative Hip Brace

- Instruct use of post-operative hip brace
 - Brace is pre-set to 0°-90° hip flexion
 - Brace is worn for ambulation outside of a safe environment
 - Brace is removed for sleep or basic ADL's in the home

PRE-OPERATIVE PHYSICAL THERAPY VISIT

ROM Limitations

- Instruct post-operative ROM limitations
 - Dependent on procedures performed (see page 2)

Sleep Precautions

- Instruct sleep precautions
 - If labral repair or labral reconstruction, position pillows under thigh to prevent EXT and ER x 3 weeks

Continuous Passive Motion Machine

- Instruct use of continuous passive motion machine
 - 4-6 hours per day (continuous or intermittent)
 - Initiate 10°-40° hip flexion until first post-operative MD appointment
 - Then progress in 5° increments per day as tolerated until 10°-90° hip flexion
 - Labral reconstruction: 4 weeks
 - Microfracture: 6 weeks

Initial Post-Operative Exercises

- Instruct initial post-operative exercises
 - 3 times per day (ankle pumps, quad sets, glute sets)

Modalities

- Instruct use of cryotherapy to minimize pain and inflammation

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**Phase 1 – Initial Exercises (0-6 weeks Post-Op: Simple; 0-8 weeks Post-Op: Complex)
(continued on next page)**

Goals for Phase 1	Criteria for Progression to Phase 2
<ul style="list-style-type: none"> • Minimize pain and inflammation • Protect integrity of the repair • Prevent muscular inhibition • Initiate hip PROM and AROM within limitations • Restore normalized gait pattern 	<ul style="list-style-type: none"> • Minimal pain with Phase 1 exercises • Hip PROM and AROM \geq 75% of the uninvolved side • Normal neuromuscular firing patterns of hip and pelvic musculature • Normalized gait pattern with proper lower extremity biomechanics

Post-Operative Physical Therapy

- First visit to occur 2 weeks post-op
 - Review initial post-operative exercises

Stretching

- Q-ped rocking
- Quadriceps and hamstring stretching
- Thomas stretch
- Gentle stretching of all hip musculature

Manual Therapy

- Pain dominant hip joint mobilization (grade 1-2) as needed
 - Circumduction, log roll
 - NO stiffness dominant hip joint mobilization (grade 3-4) x 6 weeks
 - If labral repair or reconstruction, NO long-axis distraction x 12 weeks
- Scar mobilization, soft tissue mobilization, lymph edema massage as needed
- Address lumbosacral dysfunction within post-op precautions as needed

PROM

- Hip PROM to tolerance within limitations
 - If labral repair, NO EXT and ER $> 0^\circ$ x 3 weeks
 - If labral reconstruction, NO EXT and ER $> 0^\circ$ x 4 weeks
 - If hip abductor tendon repair, NO passive ADD x 6-8 weeks

AAROM

- Stationary bike
 - Relatively high seat height
 - Low resistance level

AROM (continued on next page)

- Hip AROM to tolerance within limitations
 - If labral repair or reconstruction, NO EXT and ER $> 0^\circ$ x 3 weeks
 - If iliopsoas release, NO active FLEX x 4-6 weeks
 - If hip abductor tendon repair, NO active ABD and EXT x 6-8 weeks
- Standing hip pendulum

Phase 1 – Initial Exercises (0-6 weeks Post-Op: Simple; 0-8 weeks Post-Op: Complex)

- Standing hip EXT, ABD, ADD AROM
 - Progress to 4-way hip AROM in supine, prone, and side lying positions
- Prone hip IR/ER AROM
 - Progress to standing hip IR/ER AROM with stool
- Hook lying butterflies and reverse butterflies

Strengthening

- Hip strengthening as tolerated within limitations
 - If labral repair or reconstruction, NO EXT and ER > 0° x 3 weeks
 - If iliopsoas release, NO active FLEX x 4-6 weeks
 - If hip abductor tendon repair, NO active ABD and EXT x 6-8 weeks
 - Initiate CKC strengthening following attainment of FWB status
- Sub-maximal hip isometrics
- Side lying clamshell
 - AVOID in abductor repairs
- DL bridges
- DL partial squats
- Double and single leg press

Proprioception

- DL balance
 - Progress stable to unstable surfaces

Core Stabilization

- Hook lying deep abdominal activation and strengthening progression

Gait Re-Training

- Normalize gait pattern
 - Utilize Alter-G treadmill or underwater treadmill if available

Cardiovascular

- Stationary bike
 - Gradually progress resistance levels

Aquatics

- Consider alternating land- and aquatic-based physical therapy visits if available
 - Initiate aquatics when surgical incisions have healed
 - Consider a home program if availability to pool
- Deep water hip mobility exercises
- Standing hip pendulum
- Standing hip FLEX, EXT, ABD, ADD
 - Buoyancy assisted and resisted exercises
- Initiate sub-body weight CKC strengthening
 - DL partial squats, lunges, step-ups
- Gait re-training
 - Forward, backward, lateral directions
- Flutter kicking

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

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**Phase 2 – Intermediate Exercises (6-12 weeks Post-Op: Simple; 8-16 weeks Post-Op: Complex)
(continued on the next page)**

<p>Goals for Phase 2</p> <ul style="list-style-type: none"> • Minimize pain and inflammation • Restore full hip PROM and AROM • Progress muscle strength and endurance • Initiate neuromuscular control exercises • Perform ADL's with minimal pain or compensation 	<p>Criteria for Progression to Phase 3</p> <ul style="list-style-type: none"> • Minimal pain with Phase 2 exercises • Full hip PROM and AROM with minimal pain • Ability to perform AROM hip flexion as 90° • Hip EXT, ABD, ADD, IR,ER strength ≥ 70% of the uninvolved side • Ambulate extended distances, negotiate stairs, and squat down to lift moderate size objects with minimal pain or compensation
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Stretching

- Continue stretching of all hip musculature

Manual Therapy

- Stiffness dominant hip joint mobilization (grade 3-4) as needed
 - Utilize hip joint mobilization to facilitate specific AROM and PROM deficits
 - If labral repair, NO long-axis distraction x 8 weeks
 - If labral reconstruction, NO long-axis distraction x 12 weeks
- Scar mobilization, soft tissue mobilization, lymph edema massage as needed
- Continue manual lumbosacral techniques as needed

PROM

- Hip PROM to tolerance
 - Progress to end range stretching

AROM

- Continue Phase 1 AROM exercises

Strengthening

- Continue Phase 1 strengthening exercises
- Resisted standing hip FLEX, EXT, ABD, ADD
 - Progress to resisted 4-way hip in supine, prone, and sideling positions
- Resisted prone hip IR/ER
 - Progress to resisted standing hip IR/ER with stool
- Advanced bridges
 - Progress DL to SL bridges
 - Progress stable to unstable surfaces
 - Add perturbations
- DL squats
 - Progress stable to unstable surfaces
 - Add perturbations
- Step-ups/downs
- Lunges
- SL squats
- SL RDL's
- Lateral band walking

Phase 2 – Intermediate Exercises (6-12 weeks Post-Op: Simple; 8-16 weeks Post-Op: Complex)

Proprioception

- SL balance
 - Progress stable to unstable surfaces

Core Stabilization

- Q-ped deep abdominal activation and strengthening progression

Cardiovascular

- Stationary bike, elliptical trainer, stair climber

Aquatics

- Continue Phase 1 aquatics

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

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**Phase 3 – Advanced Exercise (12-18 weeks Post-Op: Simple; 16-24 weeks Post-Op: Complex)
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Goals for Phase 3	Criteria for Progression to Phase 4
<ul style="list-style-type: none"> • Minimize pain and inflammation • Maintain full hip PROM and AROM • Improve muscle strength and endurance • Improve neuromuscular control • Initiate return-to- running progression 	<ul style="list-style-type: none"> • Minimal pain with Phase 3 exercises • Full, pain free hip PROM and AROM • Hip FLEX strength \geq 70% of the uninvolved side • Hip EXT, ABD, ADD, IR, ER strength \geq 80% of the uninvolved side • Single leg stance without compensation (no Trendelenburg’s sign) • Initiate return-to- running progression with proper lower extremity biomechanics

Stretching

- Continue stretching of all hip musculature

Manual Therapy

- Continue stiffness dominant hip joint mobilization (grade 3-4) as needed
- Continue other hip and lumbosacral manual therapy techniques as needed

PROM

- Continue hip PROM as needed

Strengthening

- Continue Phase 2 strengthening exercises
- Step-ups/downs, lunges, SL squats, SL RDLs
 - Progress to multi-directional stepping patterns
 - Progress stable to unstable surfaces
 - Add perturbations
- Lateral band walking
 - Progress to multi-directional band walking patterns

Neuromuscular Control

- Incorporate unstable surfaces and dynamic movement patterns with functional strengthening progression

Core Stabilization

- Incorporate core integrated exercises with functional strengthening progression
- Initiate rotary patterns

Advanced Gait Re-Training

- Initiate return-to-running progression
 - Utilize Alter-G treadmill or underwater treadmill if available

Agility

- Initiate agility drills

Phase 3 – Advanced Exercise (12-18 weeks Post-Op: Simple; 16-24 weeks Post-Op: Complex)

Plyometrics

- Initiate plyometric drills
 - Sagittal → Frontal → Rotational
 - Double leg → Single leg
 - Ascending → Descending → Repetitive box jumps/hops

Aquatics

- Advanced gait re-training
- Plyometric drills

Dry Needling

- Ok to initiate at 12 weeks post-operative

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

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Phase 4 – Return-to-Sport and Activity (18+ weeks Post-Op: Simple; 24+ weeks Post-Op: Complex)
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Goals for Phase 4	Criteria for Return-to-Sport and Activity
<ul style="list-style-type: none"> • Minimize pain and inflammation • Maintain full hip ROM • Restore muscle strength and endurance • Restore neuromuscular control • Safe and effective return to previous level of function for sport or activity 	<ul style="list-style-type: none"> • Full, pain free hip PROM and AROM • Hip strength \geq 90% of the uninvolved side • Lower extremity strength, power, and endurance \geq 90% of the uninvolved side • Full speed sport-specific drills without pain or compensation • Successful completion of return- to-sport testing • Lower Extremity Functional Scale score \geq 80/80

Stretching

- Continue stretching of all hip musculature

Manual Therapy

- Continue stiffness dominant hip joint mobilization (grade 3-4) as needed
- Continue other hip and lumbosacral manual therapy techniques as needed

PROM

- Continue hip PROM as needed

Strengthening

- Continue Phase 3 strengthening exercises

Neuromuscular Control

- Continue to incorporate unstable surfaces and dynamic movement patterns with functional strengthening progression

Core Stabilization

- Continue to incorporate core integrated exercises with functional strengthening progression

Advanced Gait Re-Training

- Progress return-to-running program

Agility

- Advanced agility drills

Plyometrics

- Advanced plyometric drills

Sport-Specific Training

- Initiate sport-specific training programs
 - Interval sport programs for running, cycling, swimming, skating, throwing, golfing, etc.
 - Traditional weight lifting exercises
- Transition to Athletic Republic program if competitive or recreational athlete with specific goals for return-to-sport

Phase 4 – Return-to-Sport and Activity (18+ weeks Post-Op: Simple; 24+ weeks Post-Op: Complex)

Activity-Specific Training

- Transition to work re-conditioning program if physical laborer or if specific occupational demands

Modalities

- Utilize cryotherapy, thermotherapy, and electrical modalities as needed

HEP

- Establish HEP for long-term self-management

Return-to-Sport Testing

- Balance: Y-balance testing within 4 cm of uninvolved side
- Hop testing: $\geq 90-95\%$ limb symmetry
- Agility: full speed sport-specific drills without pain or compensation