Rehabilitation Guidelines for Arthroscopic Hip Surgery

About Hip Labrum Tears

The hip joint is surrounded by a soft tissue "O" ring that encircles the skeletal bone of the acetabulum (hip socket). This fibro-cartilaginous tissue has an important role in the joint's stability, by virtue of increasing the surface area of the articulation and creating a relative vacuum seal within the joint. The labrum also helps keeps the joint fluid within the articulation, which lubricates and provides, and the labrum supplies positional feedback to the neuromuscular system. Studies have shown that the labrum stabilizes the joint and adapts to inherent stresses by increasing the acetabular volume by 21%, its surface area by 28%, and limiting joint distraction forces of > 6mm.

Image 1: Anatomy of the Hip

Mechanism of Injury

There are a variety of factors that may influence the disruption of the hip labrum. The most common occurrence for labral tears is the result of chronic breakdown from our own anatomical structures, known as femoroacetabular impingement (FAI) syndrome. In this condition, the labrum can be affected by a CAM morphology (boney formation on the head-neck junction of the femur), Pincer morphology (boney over-coverage of the pelvic bone on the femoral head), or a combination of both. This impingement causes a sheering stress that can pull the labrum off the acetabulum as the cartilage moves in the opposite direction. If untreated, this can place the individual at an increased risk for arthritis.

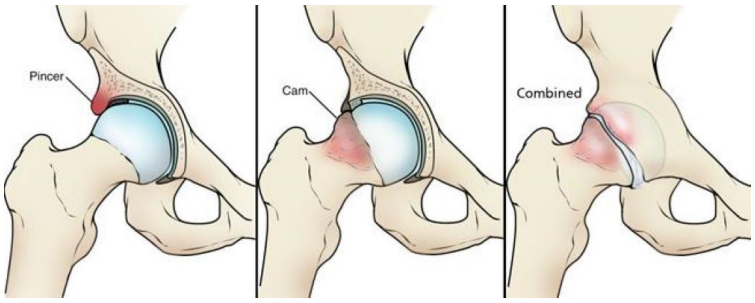

Image 2: FAI Morphology

An individual may also be predisposed to hip labral pathology due to developmental factors known as hip dysplasia. The development of this condition begins in early childhood and ranges from minor hip instability to dislocations. This anatomic and chronic hip malalignment can lead to tissue changes within the capsule (micro-instability). As the individual ages, this inhibits proper biomechanics which causes a cascade of muscle fatigue, additional forms of impingement (iliofemoral), as well as subluxations of the femoral head, that may lead to labral tears.

Diagnosing Hip Pathology

The evaluation of hip pain begins with the patient's common reports of hip and/or groin pain during activity, sitting, and rest. Mechanical symptoms such as "clicking, popping, catching, 'giving way' sensations" are noted. Trained health care providers may then use the patient's history to provide further assessment by performing a physical exam. Advanced imaging through non-invasive radiographs, ultrasonography, CT, and MRI scans are often used in conjunction with a health care provider's assessment. Imaging has shown its value in viewing boney and tissue abnormalities.

Injections may also be used for the purpose of diagnosis or treatment. Diagnosis of joint/tissue involvement and quality is ultimately confirmed through a hip arthroscopy by an orthopedic specialist.

Treatment Options for a Labrum Tear

***Conservative Treatment**:* Patients who are experiencing painful hip and/or groin pain may go through an initial trial of conservative management to reduce their symptoms. This can occur through a variety of treatments such as rest/activity modification, prescription of anti-inflammatory medications, physical therapy, and intra-articular injections. With a reduction in pain, physical therapy can assist in strategies to address general lower extremity biomechanical stress or abnormalities, while strengthening the musculature both above and below the hip joint. This is done in an attempt to return the patient to their previous level of function. Symptoms may persist however following conservative treatment due to structural changes within the joint.

Surgical Treatment: Surgical treatment is predicated on correcting underlying structural problems of the hip. This may include reshaping the femur or acetabular bones, repair or reconstruction of the labrum, repair or tightening of the hip capsule, and cartilage repair or debridement. Indications for surgery, along with explanations of clinical findings and imaging will be discussed with you during your post-operative follow up visit.

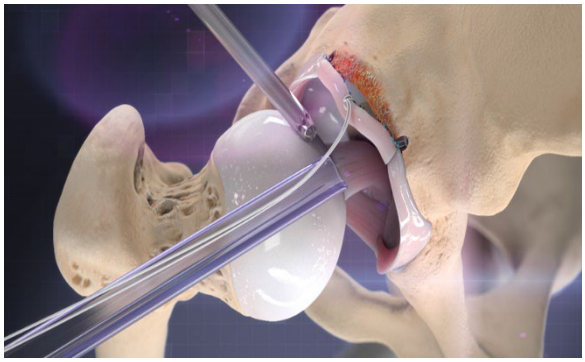

Image 3: Surgical Repair

Rehabilitation Following Surgical Intervention

All patients will undergo a minimum of 4-6 months of rehabilitation, divided into phases, focusing on progressing you back to your daily activities, hobbies, and sports.

Phase I of rehabilitation should begin immediately post-operatively without delay. Phase I consists of protection of the surgically repaired/reconstructed tissues with specific/strict range of motion and weight bearing restrictions to follow. Rehabilitation Phases II and III focus on developing full range of motion and strength of your core and lower extremity musculature. To safely advance into sport-specific activities of Phase IV rehab, a patient must first achieve certain functional goals: 1) full range of motion; 2) greater than 90% of strength as compared to their uninvolved side; 3) functional hip complex motor control; 4) progress through return to running program; and 5) physician and sports medicine team approval. Once these goals have been achieved, your sports medicine team will put you through criterion-based functional tests to determine the ability to safely return to sport.

After satisfactory performance on these tests, you will progress through a return-to-sport program specific to your sport & position of play to return to pre-injury levels of performance. A referral to a strength and conditioning specialist may also be made to assist in returning you to pre-injury performance levels. Progression to pre-injury activity is time and criterion-based, and is dependent on soft tissue healing, patient demographics, and clinician evaluation.

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Rehabilitation Guideline

These rehabilitation guidelines were developed by Samaritan Athletic Medicine Physical Rehabilitation. Please be aware the information provided is not intended to replace the care or advice given by your physician or health care provider. It is neither intended or implied to be a substitute for professional advice. Call your health care provider immediately if you think you have a medical emergency. Always seek advice from your health care provider before starting any new treatment or with any questions you may have regarding a medical condition.

Please contact Dr. McCrum's office (541-768-7700) with any questions regarding the post operative protocol.

Protective Phase (I): Weeks 0-6 post-surgery

Appointments	Start Formal Rehab at: 1-5 days post-injury, visits 2-3 visits per week, rehab daily
Rehabilitation Goals	• Educate patient on post-op precautions including joint protection and WB status • Protection of the repaired tissue • Prevent muscular inhibition and gait abnormalities • Decrease pain and inflammation • Begin passive range of motion and partner assisted PROM • Muscle activation and appropriate motor control/proprioception around the hip & pelvis to prevent atrophy • Emphasize gluteus medius strengthening (non-weight bearing)
Precautions	NO: stretching of anterior capsule (prone lying only), passive stretching & unilateral extension x6 weeks DO NOT: push through pain or pinching sensations during, sit in a chair or with hip bent to 90° for greater than 30 minutes x2 weeks post-op, use CPM/bike for 2-4 hours consecutively Avoid: Iliopsoas isolated contraction, capsular mobilizations, post-activity swelling or muscle soreness & soreness should resolve within 24 hours Weight Bearing: 20 lb. foot flat weight bearing (FFWB) w/ axillary crutches for two weeks postoperatively, unless instructed otherwise - See Appendix for weight bearing/crutches instructions
Range of Motion	<u>PROM: (0-6 weeks)</u> • Flexion ≤ 90º x2 weeks • Abduction ≤ 30º x2 weeks • Internal rotation at 90º flexion ≤ 20º x3 weeks • External rotation at 90º of flexion ≤ 30º x3 weeks • Prone internal rotation and log roll IR- no limits • Prone external rotation ≤ 20º x3 weeks • Prone hip extension 0º x3 weeks <u>Partner PROM: (0-6 weeks)</u> • Emphasize partner assisted PROM in early phase of rehabilitation • 2x30/day • Flexion, Abduction, Circumduction, Internal Rotation
Therapeutic Interventions	<u>Continuous Passive Motion (CPM) & Stationary Bike:</u> CPM • To be used 4 hours/day, 7 days/week, for 8 weeks following surgery • Begin w/ machine motion set between 30º and 70º degrees and slowly increase to 0-120º, progressively increasing 6º-8º /day • May break up usage of CPM in increments throughout the day • Set to 120º of knee flexion, which is equivalent to 90º of hip flexion Stationary Bike may be used in lieu of CPM - Zero resistance only • 2 hours a day, 7 days a week, for 8 weeks following surgery • Bike seat should be placed so that the hip does not exceed 90º flexion - Upright bike – place seat high and sit upright - Recumbent bike – recline seat (if able) <u>Pain & Swelling Management:</u> • RICE: 5x/day for 20 min sessions (preference w/ patient in prone) • Modalities as indicated; Compression cold/ice devices and E-stim • Ankle pumps- for swelling and DVT prevention: 25 reps/hour •Soft Tissue Massage (STM): light massage

	• Scar massage x 5 minutes: (patient directed) <u>Blood Flow Restriction Training (BFR):</u> • Visit 1: Begin on non-operative limb • May begin on operative limb when incisions are fully healed <u>Suggested Therapeutic Exercises:</u> Weeks 0-2: • Isometrics: quad sets (supine & prone), glute sets, TA -Hip: Submaximal at 2-3 weeks • Prone lying • Heel slides, supine hip ER/IR with hip neutral and knee extension, prone quad stretch Weeks 3-6: • Aquatic Therapy: - See Appendix for details - *Once incisions are fully healed: Typically around Week 4* • Hip flexion, extension, abduction, and IR/ER strengthening • Hip abd/add isometrics • Submaximal quad and hamstring strengthening • 1/2 kneel: gentle pelvic tilt for gentle stretch of iliopsoas • Quadruped rocking (gentle prayer stretch) • Abdominal strengthening: posterior pelvic tilts • Glutes strengthening: bridges •Flexibility: -Week 4: Hamstring stretch
Brace	Brace: (0-6 weeks) -Worn at all times (except during rehabilitation/exercise) -Walking: 0° extension & 90° of flexion -Sleeping: Locked in 0° extension & 0° of flexion
Special Considerations	Modifications for Specific Procedures Please see operative report for specifics and consider the following therapeutic techniques. Please utilize the most conservative protocol when multiple surgical procedures were performed. <u>Labral Reconstruction:</u> • 20 lbs FFWB with crutches x 6 weeks post operation • Brace for post operation stability x 6 weeks • Phase I Range of Motion limitations-maintained x 6 weeks • Can progress from Phase 1 to non-weight bearing strengthening portions in Phase 2 <u>Microfracture, Abrasion Arthroplasty, or cartilage repair:</u> • 20 lbs FFWB with crutches x 6 weeks post op • Can progress from Phase 1 to non-weight bearing strengthening portions in Phase 2 <u>Capsular Plication for Hip Laxity:</u> • Avoid combined extension and external rotation x 6 weeks • No prone ROM x 6 weeks or over stretching ROM • Gradually progress AAROM and strength under patient's control within comfort <u>Gluteus Medius Repair:</u> • Please refer to gluteus medius repair protocol for WB precautions and additional restrictions

	Iliopsoas Release (rarely performed): • Begin gentle stretch beginning with prone lying (Phase 1) • Gentle active release of iliopsoas (Phase 2) Piriformis Release: • POD #1 begin stretching piriformis (flexion, add, ER) without causing anterior hip pain and sciatic nerve flossing (Phase 1) • Gentle active release of piriformis (Phase 2)

Initial Strengthening & Proprioceptive Phase (II): Weeks 7-9	
Appointments	Rehab 1-2 visits week, rehab daily Surgeon follow-up at about 6 weeks after surgery
Rehabilitation Goals	• Increase pelvic rotation & lumbar extension • Gluteus medius strengthening in weight bearing • Normalize gait pattern for community ambulation and stair navigation • Manual techniques to prevent soft tissue irritation
Precautions	• Do not push through pain • Continue to avoid soft tissue irritation • Prevent compensation due to fatigue • No contact activities
Range of Motion	• Full, pain free AROM and PROM
Therapeutic Exercises	Suggested Therapeutic Exercise: Weeks 7-9: • Quads: Wall sits -> Squat progression: (Split squats: 50% depth) -> Leg press: DL & SL->TRX or supported DL squatting ->Forward & lateral step ups • Glutes: Bridging progressions -> Side steps & Monster walks -> SL supported RDL/diver -> Kickstand RDL • Hamstrings -Hamstring curl progressions • Quadruped lumbar / core stabilization -Week 6: Begin kneeling front planks - Full front plank after 1 session if no anterior hip/hip flexor compensation - Week 7: Kneeling side plank and progress per patient tolerance - Week 8: Adductor walkouts - Rhythmic stabilization training - Continue dead bugs with increasing range - Standing marching • Balance: SLS progressions • Flexibility - Foam rolling lower extremities - Prone IR/ER & BKFO • Elliptical / stair stepper • Slide board: hip abduction / adduction, extension, IR/ER -No forced abduction

Advanced Strengthening Phase (III): Weeks 10-12

Appointments	**Formal Rehab:** 1-2 visit per week • Home Exercise Program (HEP) dependent on PT guidance/recommendations
Rehabilitation Goals	• Progress strengthening exercises from double to single leg • Promote advanced strengthening and neuromuscular re-education focusing on distal control for complex movement patterns • Progress appropriate control and strength for sport specific activities • Emphasis on cardiovascular endurance
Precautions	• No contact activities or aggressive stretching
Therapeutic Exercises	Suggested Therapeutic Exercise: • Quads: Step up progression in tri-planar movements -> Lunge progressions -> Pistol squats -> Rear foot elevated/Bulgarian split squats • Glutes: Standing fire hydrants -> Prone FABER liftoffs • Motor Control/Core/Proprioception - Single plane divers/SL airplanes - Rotational RDL - Standing marching height per tolerance - Initiate rotational core demands with chops/kicks etc. - When patient passes sports tests they may initiate rotational power • Flexibility: Continued stretching and self-mobilization • Plyometric training: Week 10: DL shuttle jumping: low level

Return to Practice/Sport Phase (IV): Weeks 13+

Appointments	**Formal Rehab:** 1 visit every 1-2 weeks • HEP dependent on PT guidance/recommendations
Rehabilitation Goals	• Normalize gait on all surfaces • Dynamic neuromuscular control with sport specific and multi-plane movements, including impact activities, without pain or swelling • Pass functional sports testing: agility, hop, jump, squat tests
Range of Motion	Active- ROM into stretch multiple times a day • All planes to full available ROM • Hip Flexion to full available ROM • Knee extension at 90 deg hip flexion to full available ROM
Therapeutic Exercises	Suggested Therapeutic Exercise: • Dynamic control exercise progressions • Speed & agility ladder • Progress to running program once patient can demonstrate good single leg landing control in a repetitive fashion without pain • Delaware return to run protocol (see Appendix) • Return to sprint program (see Appendix) • Begin sport specific drills once patient demonstrates good control with the impact control and multi-plane exercises and can tolerate running program without pain • Sport/work specific balance and proprioceptive drills • Continued hip and core strengthening • Stretching for patient specific muscle imbalances

These rehabilitation guidelines were developed collaboratively between Samaritan Health Services Sports Rehabilitation and the Samaritan Health Services Sports Medicine physician group.

Updated March, 2023

APPENDIX

Crutch Walking Guidelines for Hip Arthroscopies

Following your hip arthroscopy surgery, you will be placed on crutches with a 20 pounds flat foot weight bearing limit on the involved leg to assist with your gait (walking) and the healing process. You will be on crutches for a minimum of 2 weeks or up to a maximum of 6 weeks depending on the procedures during your arthroscopy.

Correct Positioning of your crutches:

You will be fitted and receive your crutches from Physical Therapy or the hospital. Have your physical therapist recheck correct crutch positioning at your first visit.

1. Standing straight up place crutches under each arm with the tips about 3 inches diagonally from your fifth (little) toe.

2. The arm piece should be resting underneath your armpit measuring 1 ½ inches (or 3 finger widths) under your armpit. The arm piece should be resting comfortably in your side. The axillary nerve is superficial and permanent nerve damage can occur. Therefore, your weight should be mostly through your hands not your armpits to prevent nerve damage while using or resting on crutches.

3. Your elbows should be bent at an approximate 15-20° angle.

Walking using the 3-point gait with 20-pound weight bearing restriction:

1. Begin with placing your surgical leg and the crutch tips at the same time about 6 inches ahead of you. The crutch tips should remain about 3 inches from the outside of your foot even with your ankle. It is easiest to think of your crutch tips and your surgical leg as one unit moving together.

2. As you begin to shift your weight forward, your hands will absorb the majority of your body weight while placing 20 pounds on your surgical leg as you bring your non-surgical leg through about 6 inches ahead of the crutches.

3. You will then transition by bringing your crutches and surgical leg forward, resuming a traditional gait pattern.

4. Your gait will be slower with shorter strides than you are used to. Crutches are tiring causing you to fatigue quickly. Be cautious when walking on wet surfaces.

Going up and down stairs:

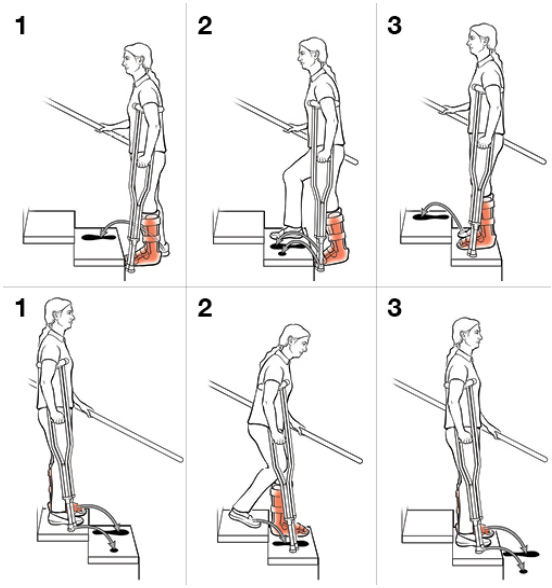
Remember the following saying:

"Up with the good" and "Down with the bad" (bad = surgical leg)

1. Going upstairs you will always begin with the good leg first. Then bring your crutches and surgical leg to the same step.

2. Going downstairs you will always begin with your involved leg and crutches first, then bring your good leg to the same step.

3. Reminder that 20-pound flat foot weight bearing still applies with stairs.



Adapted from Panorama Orthopedics & Spine Center's rehabilitation protocol

Aquatic Therapy Program – Begin once cleared by Dr. McCrum's team

You should have no pain during this program, and it can begin once your incisions are closed. Begin this program in chest height water.

Week 4:

1. Forward and backward walking: 5 minutes
2. Side steps: 5 minutes, begin during your second session provided you have no pain
3. Double leg squats; ¼ depth 3x10
4. Hip abduction and extension: 3x10 bilaterally (only moving from the hip, not the back!)
5. Forward and backward walking: 5 minutes

Week 5:

1. Forward and backward walking: 5 minutes
2. Side steps: 5 minutes
3. Double leg squats; 1/2 depth 3x10
4. Forward lunges 2x10 bilaterally
5. Forward and backward walking: 5 minutes

Week 6:

1. Forward and backward walking: 5 minutes
2. Side steps: 5 minutes
3. Double leg squats: normal depth 3x10
4. Forward lunges 2x10 bilaterally
5. Standing hip external and internal rotation (as cleared by your PT)
6. Forward and backward walking: 5 minutes

Adapted from Panorama Orthopedics & Spine Center's rehabilitation protocol

Delaware Return to Run Protocol:

Instructions:

- Mandatory 2 day rest between workouts for first two weeks
- Do not advance more than 2 levels per week
- Two days rest mandatory between levels 1, 2, and 3 workouts
- One day rest mandatory between levels 4-8 workouts

Soreness Rules

Criterion	Action
Soreness during warm-up that continues	2 days off, drop down 1 level
Soreness during warm-up that goes away	Stay at level that led to soreness
Soreness during warm-up that goes away but redevelops during session	2 days off, drop down 1 level
Soreness the day after lifting (not muscle soreness)	1 day off, do not advance program to the next level
No Soreness	Advance 1 level per week or as instructed by healthcare professional

Running Progression

Level	Treadmill	Track
Level 1	0.1-mi walk/0.1-mi jog, repeat 10 times	Jog straights/walk curves (2 mi)
Level 2	Alternate 0.1-mi walk/0.2-mi jog (2 mi)	Jog straights/jog 1 curve every other lap (2 mi)
Level 3	Alternate 0.1-mi walk/0.3-mi jog (2 mi)	Jog straights/jog 1 curve every lap (2 mi)
Level 4	Alternate 0.1-mi walk/0.4-mi jog (2 mi)	Jog 1.75 laps/walk curve (2 mi)
Level 5	Jog full 2 mi	Jog all laps (2 mi)
Level 6	Increase workout to 2.5 mi	Increase workout to 2.5 mi
Level 7	Increase workout to 3 mi	Increase workout to 3 mi
Level 8	Alternate between running/jogging every 0.25 mi	Increase speed on straights/jog curves

Adapted from Delaware Physical Therapy Clinic

Return to Sprint Program

Return to Sprint Progression: Stage 1

Criteria to begin: Completion of a four week walk/jog program for 30 minutes, strength testing of quadriceps and hamstrings at least 70% of the uninvolved side, hop testing at least 70% of the uninvolved, no pain, no effusion.

Objectives: Build work capacity for higher intensity runs, build overall fitness

Athlete cue: "Run about 50% of your maximum effort"

Stage 1. *50% INTENSITY (1:3 work to rest ratio).*

Objective: Build work capacity for anaerobic conditioning/endurance

Step 1	Step 2	Step 3	Step 4
20 yd x 3 untimed	20 yd x 4 untimed	20 yd x 3	20 yd x 3
40 yd x 2 untimed	40 yd x 3 untimed	40 yd x 4	40 yd x 4
60 yd x 2 untimed	60 yd x 2 untimed	60 yd x 2	60 yd x 2
80 yd x 2 untimed	80 yd x 2 untimed	80 yd x 2	80 yd x 2
100 yd x 1 untimed	100 yd x 1 untimed	100 yd x 1	100 yd x 2
80 yd x 2 untimed	80 yd x 2 untimed	80 yd x 2	80 yd x 1
60 yd x 2 untimed	60 yd x 2 untimed	60 yd x 2	60 yd x 2
40 yd x 2 untimed	40 yd x 3 untimed	40 yd x 4	40 yd x 4
20 yd x 3 untimed	20 yd x 4 untimed	20 yd x 3	20 yd x 3
19 runs @ 940 yds	23 runs @ 1060 yds	23 runs @ 1100 yds	23 runs @ 1120 yds

Return to Sprinting Progression: Stage 2

Criteria to begin: Completion of Stage 1, all strength and functional testing 80-85% or better, full passive flexion restored.

Objectives: Continue building sport-specific work: rest ratios, build repeated sprint ability.

Athlete cues: "Don't reach top gear, but go harder than you did in Stage 1," or "Run about 75% of your maximum effort"

Stage 2. *75% INTENSITY (1:5 work to rest ratio).*

Objective: Speed development, improve technique, and build repeated sprint ability

Step 1	Step 2	Step 3	Step 4
20 yd x 3	20 yd x 3	20 yd x 2	20 yd x 2
40 yd x 2	40 yd x 2	40 yd x 2	40 yd x2
60 yd x 2	60 yd x1	60 yd x1	60 yd x2
80 yd x 1	80 yd x 1	80 yd x 1	80 yd x1
100 yd x1	100 yd x1	100 yd x 1	60 yd x2
80 yd x 1	80 yd x 1	80 yd x 1	40 yd x 2
60 yd x2	60 yd x1	60 yd x 1	20 yd x2
40 yd x 2	40 yd x2	40 yd x 2	
20 yd x3	20 yd x 3	20 yd x 2	
17 runs @ 780 yds	15 runs @ 660 yds	13 runs @ 620 yds	13 runs @ 560 yds

Return to Sprinting Progression: Stage 3

Criteria to Begin: Completion of Stage 2, all strength and functional testing 90% or better. No effusion or pain.

Objective: Achieve maximum effort, normal mechanics, improve limb confidence, prepare for sport-specific work: rest ratio

Athlete cue: "You should be very close to or at maximum effort" or "Run at 90-100% of your maximum effort"

Stage 3. *90 - 100% INTENSITY (1:7 work to rest ratio).*

Objective: Achieve maximum effort. Work:rest ratio should replicate sport demands in step 3 and 4

Step 1	Step 2	Step 3	Step 4
20 yd x 6	10 yd x 3	10 yd x 3	10 yd x 2
40 yd x 2	20 yd x 4	20 yd x 3	20 yd x 3
60 yd x 1	40 yd x 2	30 yd x 2	30 yd x 2
40 yd x2	60 yd x 1	40 yd x2	40 yd x 1
20 yd x6	40 yd x 2	60 yd x 1	60 yd x 1
10 yd x 3	30 yd x 1	30 yd x 2	40 yd x 1
	20 yd x 4	20 yd x 3	30 yd x 2
	10 yd x 2	10 yd x 3	20 yd x 3
**Full subjective recovery	**Full subjective recovery		10 yd x 2
20 runs @ 490 yards	19 runs @ 460 yards	19 runs @ 440 yds	17 runs @ 420 yds

Adapted from Lorenz et al. (2020) "Criteria-Based Return to Sprinting Progression Following Lower Extremity Injury"