



ACL Renconstruction with Meniscal Repair (Inside Out)

Post-Operative Rehabilitation Protocol

0-2 weeks

- NWB for 6 weeks
- ROM: 0-90° with emphasis on full extension
- Patella mobilization
- SLR supine with brace locked at 0 degrees
- Quad Sets with brace locked at 0 degrees
- Ankle Pumps
- Short crank (90mm) ergometry

2-6 weeks

- Continue NWB status
- Brace locked in full extension until postop week 6
- ROM: 0-125 degrees (maintain full extension)
- Active knee extension to 40 degrees
- Standard (170 mm) ergometry (ROM >115°)
- Avoid tibial rotation until 6 weeks

6-14 weeks

- Begin WBAT progression advance to PWB (25% then 50%) starting at 6 weeks
- Can begin to wean off crutches once gait is normalized and non-antalgic
- Discontinue brace once adequate quad control
- Progressive squat program
- Proprioception training
- Initiate step up program, progress to step down
- Leg press, lunges
- Isotonic knee extensions (90-40 degrees, close chain preferred)
- Agility exercises (sport cord)
- Retrograde treadmill ambulation

14-22 weeks

- Begin forward running (treadmill) program when 8" step down satisfactory
- Continue strengthening and flexibility program
- Advance sports-specific agility drills
- Start plyometric program

Weight Bearing Status

NWB x 6 weeks

Brace Settings

Locked straight x 6 weeks when ambulating or sleeping. Otherwise open brace once good quad control

ROM Restrictions

PROM 0-90° beginning POD 1



>22 weeks

- Advance planning to program, return to sport (MD directed)
- **May require functional sports assessment (FSA) follow-up—6 months postop for clearance to return to sport



Exercise	Week															
	1	2	3	4	5	6	7	8	9	10	12	16	20	24		
Initial Exercises:																
ROM Goals	0-90°				0-125°				Progress to full							
Flexion/extension, heel slides	[Green bar from Day 1 to Day 12]															
Patella/Tendon mobilization	[Green bar from Day 1 to Day 8]															
Quad Series	0° ISOs, SLR				60° ISO				70-30° arc-resisted				Full arc resisted			
Hamstring strength progression	No isolated, resisted HS								ISOs, hip based				Knee-based resisted arc			
Calf stretch, seated HS stretch	[Green bar from Day 1 to Day 8]															
Ankle Pumps	[Green bar from Day 1 to Day 7]															
Crutch weaning	NWB					[Green bar from Day 6 to Day 10]										
Heel prop knee extension stretch	[Green bar from Day 1 to Day 8]															
SLR (w/ brace until quad control restored)	[Green bar from Day 1 to Day 7]															
SLR hip ABD, ADD, Ext (w/ brace on)	[Green bar]				[Green bar from Day 5 to Day 10]											
Bridge in knee extension-calves over balls	[Green bar]			[Green bar from Day 4 to Day 12]												
Weight-bearing Strength Exercises:																
Marching into brief SLS	[Green bar]					[Green bar from Day 6 to Day 12]										
Leg Bridges (2 → 1 leg)	[Green bar]					[Green bar from Day 6 to Day 12]										
SLS Balance progressions	[Green bar]					[Green bar from Day 6 to Day 12]										
Squat/Leg press (ISO → reps, 2 → 1 leg)	[Green bar]					0-45°				0-70°			>70° gradual			
Step-up/Lunge Progressions	[Green bar]					ISOs				0-70°			>70°			
Dead Lift (2 → 1 leg)	[Green bar]					[Green bar from Day 6 to Day 12]										
Banded resisted directional stepping	[Green bar]					[Green bar from Day 6 to Day 12]										
Cardiovascular Exercises:																
Bike with both legs-no resistance	[Green bar]					[Green bar from Day 6 to Day 12]										
Bike with both legs- resistance	[Green bar]					[Green bar from Day 6 to Day 12]										
Aqua jogging	[Green bar]					[Green bar from Day 6 to Day 12]										
Treadmill-walking (no limp)	[Green bar]					[Green bar from Day 6 to Day 12]										
Swimming with fins-light flutter kick	[Green bar]					[Green bar from Day 6 to Day 12]										
Elliptical Trainer	[Green bar]					[Green bar from Day 6 to Day 12]										
Stair stepper	[Green bar]					[Green bar from Day 6 to Day 12]										
*Note for Cardio Exercises	Must tolerate daily walking with no limp & no significant increase in pain/swelling prior to initiating WB cardio (walk, elliptical, stepper)															
Agility Exercises:																
Running Progression	[Green bar]					[Green bar from Day 6 to Day 12]										
Initial-Single Plane	[Green bar]					[Green bar from Day 6 to Day 12]										
Advance-Multi Directional	[Green bar]					[Green bar from Day 6 to Day 12]										
Functional Sports Test	[Green bar]					[Green bar from Day 6 to Day 12]										
High Level Activities:																
Golf Progression	[Green bar]					[Green bar from Day 6 to Day 12]										
Outdoor biking, hiking, running	[Green bar]					[Green bar from Day 6 to Day 12]										
Return to Full Sport at 9 months post-op	[Green bar from Day 1 to Day 24]															

Adapted from post-operative protocol created by Howard Head Physical Therapy, Jill Monson, PT, OCS and Jon Schoenecker, PT, OCS, CSCS



Quad Series:

- Quad sets (5 sec hold) also quick contractions (NMES to supplement)
- Prone quad sets
- SLR with no extension leg
- Progression of Quad Strengthening (WB exercises at 6 weeks)
 - LAQ in safe range -no added resistance to begin
 - Once weight bearing tandem stance TKE with 5 sec hold
 - Isometric wall sit
 - SLR with resistance
 - Step up progression
 - Squat progression
 - Leg press progression
 - Lunge progression

Hamstring Series:

- Hamstring stretching (supine/prone)
- Hamstring set (heel dig)- contract hamstring with knee flexed pressing heel into the floor (5 sec hold)
- Hamstring curls
- Progress to resisted hamstring curl

Sport Test Exercises:

- Goals: impact training and introduction of directional drills (initiate at 20-24 weeks)
- Double leg squat jumps
- Box jumps
- Speed skaters
- Double leg jumps for height and distance progress to single leg as tolerated
- Blaze pod change of direction drills

Further Clarifications and Considerations

- May begin to implement BFR as early as 1 week into post-op period
- Functional Sports Test: Baseline completed around 7 months post-op with subsequent test at 9 months



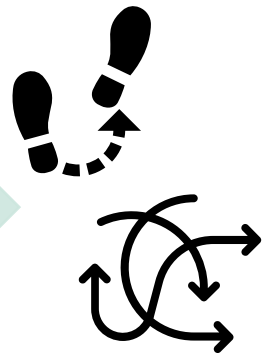
Return to Running Criteria

- Trace effusion, flexion within 5 degrees of contralateral side
- LSI on anterior reach Y balance test $\geq 90\%$
- LSI on quadriceps torque output on isometric measurement $\geq 75\%$
- 12" SL squat tolerance
- Able to walk > 1 mile with no limping or pain
- Able to "hop" with UE assist on operative leg 5 times without pain or compensation
- SL balance with eyes closed 30 seconds without loss of balance



Return to Agility/Change of Direction Criteria

- Return to running criteria listed above met
- No effusion
- Full ROM
- Quad LSI on isokinetic $\geq 85\%$
- Hamstring LSI on isokinetic $\geq 85\%$
- LSI on anterior reach Y-balance $\geq 95\%$
- SL hopping pain-free and effusion free



Return to Sport Criteria

- In order to test must demonstrate full AROM, no pain, no/trace effusion, 5/5 strength, negative lachman and pivot shift, LSI $\geq 95\%$ hamstring curl and leg press
- Quadricep strength $\geq 95\%$ of contralateral side (< 2 cm of atrophy)
- Able to perform single leg squat with correct form
- LSI SL hop $\geq 95\%$
- Y-Balance $\geq 95\%$ (mean of 3 trials in anterior, posterolateral, posteromedial /100)
- Vertical jump test, single leg hop distance, and timed single leg hop over 20 -feet $\geq 90\%$ of contralateral side

