



ACL Reconstruction with Meniscal Root Repair

Post-Operative Rehabilitation Protocol

- | | |
|---------------------|---|
| 0-4 weeks | <ul style="list-style-type: none">▪ 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 |
| 4-6 weeks | <ul style="list-style-type: none">▪ Continue NWB status▪ 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 | <ul style="list-style-type: none">▪ Transition to an unloader brace at 6 weeks▪ Begin WBAT progression▪ Discontinue crutches when gait is non-antalgic▪ Progressive squat program▪ Initiate Step-up program & progress to Step-Down▪ Leg press, lunges▪ Isotonic knee extensions (90-40 degrees, close chain preferred)▪ Agility exercises (sport cord)▪ Versaclimber /Nordic track▪ Retrograde treadmill ambulation |
| 14-22 weeks | <ul style="list-style-type: none">▪ Begin forward running (treadmill program when 8" stepdown status satisfactory)▪ Continue strengthening and flexibility program▪ Advance sports-specific agility drills▪ Start plyometric program |
| >22 weeks | <ul style="list-style-type: none">▪ Advance plyometric program, return to sport (MD directed) |

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



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 week 1 to 12]														
Patella/Tendon mobilization	[Green bar from week 1 to 10]														
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 week 1 to 10]														
Ankle Pumps	[Green bar from week 1 to 7]														
Crutch weaning	NWB					[Green bar from week 6 to 10]									
Heel prop knee extension stretch	[Green bar from week 1 to 8]														
SLR (w/ brace until quad control restored)	[Green bar from week 1 to 7]														
SLR hip ABD, ADD, Ext (w/ brace on)	[Green bar]			[Green bar]						[Green bar]					
Bridge in knee extension-calves over balls	[Green bar]			[Green bar]											
Weight-bearing Strength Exercises:															
Marching into brief SLS	[Green bar]					[Green bar]									
Leg Bridges (2 → 1 leg)	[Green bar]					[Green bar]									
SLS Balance progressions	[Green bar]					[Green bar]									
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]									
Banded resisted directional stepping	[Green bar]					[Green bar]									
Cardiovascular Exercises:															
Bike with both legs-no resistance	[Green bar]					[Green bar]									
Bike with both legs- resistance	[Green bar]					[Green bar]									
Aqua jogging	[Green bar]					[Green bar]									
Treadmill-walking (no limp)	[Green bar]					[Green bar]									
Swimming with fins-light flutter kick	[Green bar]					[Green bar]									
Elliptical Trainer	[Green bar]					[Green bar]									
Stair stepper	[Green bar]					[Green bar]									
*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]									
Initial-Single Plane	[Green bar]					[Green bar]									
Advance-Multi Directional	[Green bar]					[Green bar]									
Functional Sports Test	[Green bar]					[Green bar]									
High Level Activities:															
Golf Progression	[Green bar]					[Green bar]									
Outdoor biking, hiking, running	[Green bar]					[Green bar]									
Return to Full Sport at 9 months post-op	[Green bar]														

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
- 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 at 7 months post-op with subsequent test at 9 months



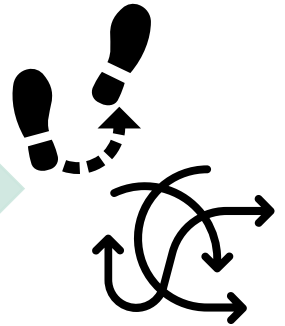
Return to Running Criteria

- 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 (< 2cm 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

