



Manipulation Under Anesthesia-Lysis of Adhesions **Post-Operative Rehabilitation Protocol**

0-2 weeks

- Full WBAT immediately
- Crutches for 24-48 hours. Can discontinue once gait normalizes
- Full Active/Passive ROM
- Patella mobilization
- SLR supine
- Quad Sets
- Heel Slides
- Ankle Pumps

2-6 weeks

- Full weight bearing
- Progress with ROM until full
- Wall sits, lunges, balance exercises
- Closed chain quad strengthening
- Modalities PRN

**Weight
Bearing Status**

WBAT

**ROM
Restrictions**

Full
AROM/PROM
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																
Flexion/extension- seated																
Patella/Tendon mobilization																
Quad Series																
Hamstring Sets																
Sit and Reach for Hamstrings																
Ankle Pumps																
Crutch weaning	WBAT															
Heel prop knee extension stretch																
SLR (w/ brace until quad control restored)																
Toe and Heel Raises																
Balance Series																
Weight-bearing Strength Exercises:	1	2	3	4	5	6	7	8	9	10	12	16	20	24		
Double Knee Bends																
Double Leg Bridges																
Reverse Lunge, static holds																
Beginning cord exercises																
Dead Lift (2 →1 leg)																
Squat/Leg press (ISO →reps, 2 → 1 leg) (80-0° arc)																
Sports Test Exercises																
Cardiovascular Exercises:	1	2	3	4	5	6	7	8	9	10	12	16	20	24		
Bike with both legs-no resistance																
Bike with both legs- resistance																
Aqua jogging																
Treadmill-walking 7% incline																
Swimming with fins-light flutter kick																
Elliptical Trainer																
Rowing																
Stair stepper																
Agility Exercises:	1	2	3	4	5	6	7	8	9	10	12	16	20	24		
Running Progression																
Initial-Single Plane																
Advance-Multi Directional																
Functional Sports Test																
High Level Activities:	1	2	3	4	5	6	7	8	9	10	12	16	20	24		
Golf Progression																
Outdoor biking, hiking, running																
Return to Sport																



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
 - 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:

- Double Knee Bends: feet shoulder width apart, bend knees to 30°, keeping knees behind the toes.
- Cord exercises (resistance band/cord): resisted double knee bends, resisted hamstring curls
- May begin to implement BFR as early as 1 week into post-op period



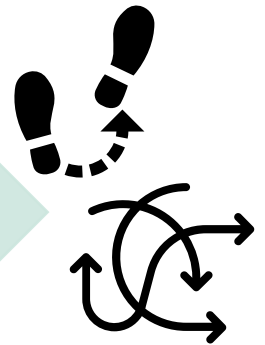
Return to Running Criteria

- 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

