



# 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	
<b>Initial Exercises:</b>															
ROM Goals	<b>0-90°</b>				<b>0-125°</b>				<b>Progress to full</b>						
Flexion/extension, heel slides	█														
Flexion/extension- seated	█														
Patella/Tendon mobilization	█														
Quad Series	█														
Hamstring Sets	█														
Sit and Reach for Hamstrings	█								█						
Ankle Pumps	█														
Crutch weaning	<b>WBAT</b>														
Heel prop knee extension stretch	█														
SLR (w/ brace until quad control restored)	█														
Toe and Heel Raises		█													
Balance Series		█													
<b>Weight-bearing Strength Exercises:</b>															
	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		█				█									
<b>Cardiovascular Exercises:</b>															
	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		█			█										
<b>Agility Exercises:</b>															
	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		█							█						
<b>High Level Activities:</b>															
	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



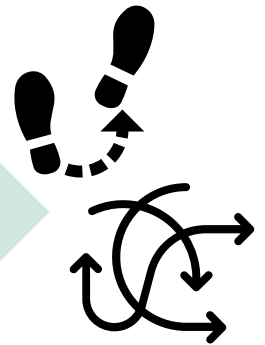
## Return to Running Criteria

- 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 ( $< 2$ 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

