



# Osteochondral Allograft Femoral Condyle

## Post-Operative Rehabilitation Protocol

### 0-6 weeks

- Strict NWB with crutches for 6 weeks
- Knee immobilizer until 6 weeks
- Patellar mobilization
- SLR supine while in immobilizer
- Quad Sets while in immobilizer
- Ankle Pumps

### 6-8 weeks

- Begin WBAT progression with full WB by 6 weeks: advance to PWB (25% then 50%) then continue to progress until full WBAT
- Discontinue crutches once gait is normalized and non-antalgic
- Discontinue immobilizer once good quad control
- Begin Active ROM as tolerated, advance to full ROM
- SLR, closed chain quad strengthening, hip strengthening
- May initiate stationary bike for ROM

### 8-12 weeks

- Full pain free ROM
- Progress active strengthening
- Begin sports specific exercises

### >12 weeks

- Normal pain free gait
- Progressive active strengthening
- Begin sports specific exercises

### Weight Bearing Status

NWB x 6 weeks

### Brace Settings

Knee Immobilizer until good quad control around 6 weeks

### ROM Restrictions

PROM beginning POD 1



Exercise	Week														
	1	2	3	4	5	6	7	8	9	10	16	20	26	32	
<b>Initial Exercises:</b>															
ROM Goals	0-90°				0-125°				Progress to full						
Flexion/extension, wall slides	[Green bar]														
Flexion/extension- seated	[Green bar]														
Patella/Tendon mobilization	[Green bar]														
Extension mobilization	[Green bar]														
Quad Series	[Green bar]														
Hamstring strength progression	[Green bar]														
Sit and reach for hamstrings (towel)	[Green bar]														
Ankle Pumps	[Green bar]														
Crutch weaning	NWB					[Green bar]									
SLR (w/ brace until quad control restored)	[Green bar]		[Green bar]												
Toe and Heel Raises	[Green bar]														
Balance Series	[Green bar]														
<b>Weight-bearing Strength Exercises:</b>															
Leg Bridges (2 → 1 leg)	NWB					[Green bar]									
SLS Balance progressions	NWB					[Green bar]									
Beginning cord exercises	NWB					[Green bar]									
Squat/Leg press (ISO → reps, 2 → 1 leg)	NWB					[Green bar]									
Step-up/Lunge Progressions	NWB					[Green bar]									
Dead Lift (2 → 1 leg)	NWB					[Green bar]									
<b>Cardiovascular Exercises:</b>															
Bike with both legs-no resistance	[Green bar]														
Bike with both legs- resistance	NWB					[Green bar]									
Aqua jogging	NWB					[Green bar]									
Treadmill-walking (no limp)	NWB					[Green bar]									
Swimming with fins	NWB					[Green bar]									
Elliptical Trainer	NWB					[Green bar]									
Stair stepper	NWB					[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)														
<b>Agility Exercises:</b>															
Running Progression	NWB					[Green bar]									
Initial-Single Plane	NWB					[Green bar]									
Advance-Multi Directional	NWB					[Green bar]									
Functional Sports Test	NWB					[Green bar]									
<b>High Level Activities:</b>															
Golf Progression	NWB					[Green bar]									
Outdoor biking, hiking, running	NWB					[Green bar]									
Return to Full Sport at 9 months post-op	NWB					[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
- Cord exercises (resistance band/cord): resisted double knee bends, resisted hamstring curls
- Functional Sports Test: Baseline completed at 7 months post-op with subsequent test between 9 months



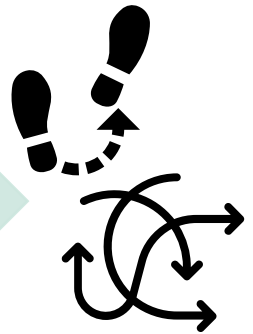
## Return to Running Criteria

- 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

