



Quad Tendon Repair

Post-Operative Rehabilitation Protocol

0-6 weeks

- WBAT with knee locked according to restrictions outlined below when sleeping and ambulating:
 - Weeks 0-2: Locked at 0°
 - Weeks 2-4: 0-30°
 - Weeks 4-6: 0-60°
- ROM:
 - Weeks 0-2: 0-30°
 - Weeks 2-4: 0-60°
 - Weeks 4-6: 0-90°
- Patella mobilization
- SLR supine with brace locked at 0°
- Quad Sets with brace locked at 0°
- Ankle Pumps

6-12 weeks

- Progressively discontinue brace once good quad control and off of crutches.
- May discontinue crutches once gait normalized
- Progress to full ROM, No limits
- Begin short crank ergometry and progress to Standard (170mm) ergometry (if knee ROM > 115°)
- Advance quad strengthening
- Mini Squats / Weight Shift

3-6 months



- Work on normalizing gait, WBAT with no assist
- Full, Normal ROM
- Leg Press, Squats
- Initiate running/jogging progression
- Isotonic Knee Extensions (90-40°, closed chain preferred)
- Agility exercises (sport cord)
- Versaclimber/Nordic Track
- Normalize quad strength
- Plyo Prep Screen prior to initiating running and/or jumping. Lower Body Assessment when initiating return to sport progression. Schedule via QR code email or spc@rushortho.com

Weight Bearing Status

WBAT

Brace Settings

(while sleeping and ambulating)

Week 0-2

Locked at 0°

Week 2-4

Locked at 0-30°

Week 4-6

Locked at 0-60°

ROM Restrictions

Week 0-2

0-30°

Week 2-4

0-60°

Week 4-6

0-90°



Exercise	Week															
	1	2	3	4	5	6	7	8	9	10	12	16	20	24		
Initial Exercises:																
ROM Restrictions	0-30°				0-60°		0-90°		Gradually progress to full							
Flexion/extension, wall slides																
Flexion/extension- seated																
Patella/Tendon mobilization																
Quad Series																
Hamstring Sets																
Sit and Reach for Hamstrings (towel)																
Ankle Pumps																
Crutch weaning																
SLR (w/ brace until quad control restored)																
Toe and heel raises																
Balance Series																
Weight-bearing Strength Exercises:																
Double Knee Bends																
Double Leg Bridges																
Reverse Lunge, static holds																
Beginning cord exercises																
Balance Squats																
Single Leg Dead Lift																
Leg Press (80-0° arc)																
Sports Test Exercises																
Cardiovascular Exercises:																
Bike/Rowing with non-operative leg																
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:																
Running Progression																
Initial-Single Plane																
Advance-Multi Directional																
Functional Sports Test																
High Level Activities:																
Golf Progression																
Outdoor biking, hiking, running																
Return to Full Sport starting at 6 months post-op																

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 (2-6 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 between 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:

- 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



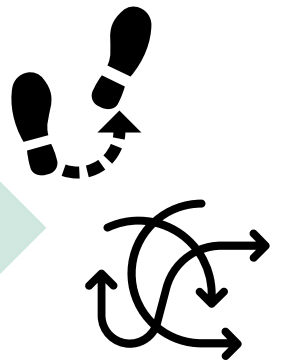
Return to Running Criteria

- 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

