# Quadriceps Tendon/Patellar Tendon Clinical Practice Guideline

## Rehabilitation Precautions

Progression is time and criterion-based, dependent on soft tissue healing, patient demographics and clinician evaluation. Contact Ohio State Sports Medicine at 614-293-2385 if questions arise. All restrictions and/or precautions will be set by the referring surgeon, and will be based upon the stability of the repair and procedure performed. All precautions are subject to change per physician instructions.

## General Precautions

| Dr. Kaeding   | • Brace is locked to block flexion beyond what is tolerated by the repair, 0-6 weeks. This will be set by Dr. Kaeding in the O.R.  
|              | • 6-8 weeks post-op, push ROM to full flexion, blocking brace at just beyond what is achieved in therapy.  
|              | • D/C brace once full flexion is achieved, and once patient can perform SLR without extensor lag, after 6-8 week post-op period. |
| Dr. Flanigan | • WBAT with knee brace locked at 0 degrees for 6 weeks.  
|              | • ROM during first 6 weeks based on stability of repair as tested in OR- usually 0 to 60-90 degrees.  
|              | • At 6 weeks progress ROM without restriction.  
|              | • Brace unlocked at 6 weeks post-op, and D/C’ed once full flexion achieved, and patient can perform SLR without extensor lag. |
| Dr. Jones    | • NWB with knee brace locked at 0 degrees for 6 weeks. Pt. may slowly progress to WBAT, with brace locked, with crutches, per physician and therapist discretion.  
| Dr. Bishop  | • PROM may begin at 2 weeks post-op, progressing 20 degrees every 4-5 days, with goal of 90 degrees flexion achieved by 5-6 week post-op period.  
|            | • Brace unlocked fully by 6 weeks, and D/C’ed once full flexion achieved, and patient can perform SLR without extensor lag. |
| Dr. Miller  | • Pt. may slowly progress to WBAT, with brace locked, with crutches, per physician and therapist discretion.  
|            | • Lock brace in full extension when ambulating. May unlock brace while sitting or for ROM exercises 0-30 degrees. Further PROM may begin at 3 weeks post-op, progressing 20 degrees every 4-5 days, with goal of 90 degrees flexion achieved by 5-6 week post-op period.  
|            | • Brace unlocked fully by 6 weeks, and D/C’ed once full flexion achieved, and patient can perform SLR without extensor lag. |
| Additional | • For quadriceps tendon repair, no terminal/end-range quad stretching x 8 weeks.  
|            | • No isolated, open-chain isotonic quadriceps strengthening for either repair x 8 weeks |

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### Weeks 0-2
(Days 1-14)
- Weight-bearing as described above
- Prone knee passive ROM to 60-90 degrees (or per surgeon restrictions - see above)
- Supine passive knee ext to 0 degrees
- Gentle medial and lateral patellar mobilizations
- Ankle pumps, gluteal sets, hamstring sets
- Modalities to control pain and edema

**Goals:**
1. Protect repair
2. Control pain and edema
3. Fair to good volitional quad activation

### Weeks 2-4
(Days 14-28)
- Continue weight bearing as described above
- Continue focus on passive knee extension to 0 degrees
- Passive ROM for knee flexion per surgeon guidelines
- May progress to active-assistive knee flexion (heel slides)
- Gentle grade I- II patellar mobilizations.
  - ***Gently progress to superior and inferior mobilizations.***
  - Ipsilateral calf, hamstring and hip stretching (passive), with brace locked in extension.
  - Quadriceps sets – Begin with sub-maximal, progressing gently per patient tolerance.
  - Progress to 4-way SLR with brace locked in extension.
  - Seated ipsilateral hamstring curls, no resistance, within ROM restrictions
  - Continue modalities as indicated

**Goals:**
1. Protect Repair
2. Continue to manage pain and edema
3. Extension ROM to neutral, flexion to 45-60°
4. Normalization of gait, brace locked per physician, WBAT
5. SLR without extensor lag

### Weeks 4-6
- Continue weight bearing as described above
- PROM/AROM/AROM for knee flexion per surgeon guidelines
- Gently progress patellar mobilizations, all directions.
- SLR may be performed without brace if patient can perform without extensor lag
- Seated ipsilateral hamstring curls, progressing to light T-band within ROM restrictions.
- Begin gentle core stabilization activities – abdominal brace with use of biofeedback as needed
- Continue modalities as needed

**Goals:**
1. Continued ambulation with appropriate mechanics and without reactive effusion
2. Knee ROM to physician limits
3. Good scar quality and mobility

### Weeks 6-8
- Wean from extension brace per physician guidelines above
- Progress flexion ROM as tolerated to full flexion
- AROM knee extension and flexion
- Stationary bike
- Begin closed chain quadriceps strengthening- bilateral
- Weight shifts, progressing to single leg stance/ proprioceptive activities on firm surface
- Progress core and hip stabilization

**Goals:**
1. Restore full AROM and patellar mobility of the knee
2. Normalize gait without brace or assistive device
3. Initiation of resistive exercises without reactive effusion or pain
### Weeks 8-12
- May initiate terminal/end-range quadriceps stretching for quad tendon repairs
- Continue stationary bike for cardiac conditioning
- May initiate elliptical and/or stairmaster at 10 weeks
- Progress closed chain strengthening, bilateral to unilateral, eccentric to concentric
- Isolated isotonic quadriceps strengthening - leg extensions in protected range
- Proprioceptive activities - single leg stance on various surfaces
- Continue and progress core and hip stabilization

**Goals:**
1. Full ROM
2. Single leg stance for 30 seconds with good quad control
3. 5/5 strength of all other lower extremity musculature

### Weeks 12-16
- Continue lower extremity endurance exercises
- Continue quadriceps PRE’s per patient tolerance
- Initiate partial weight bearing plyometrics (e.g. shuttle)- bilateral to unilateral, straight plane to rotational
- May progress to bilateral FWB step downs, beginning with 2 inch block, if patient performs partial weight bearing plyometrics with good mechanics and no reactive effusion/pain
- Slideboard

**Goals:**
1. Appropriate mechanics with above activities, without pain or reactive effusion

### Weeks 16-24
- May initiate recreational swimming
- Initiate sports-specific exercise
- Progress hop downs bilateral to unilateral – progress step height per patient tolerance and upon demonstration of normal mechanics/control
  - Initiate jogging progression
- Criteria to begin jogging:
  a. 20 single leg squats with good mechanic
  b. 5/5 isometric strength
  c. Perform 10 FWB single leg hops with good control, symmetric bilaterally
  d. >7/10 on IKDC confidence scale
- Progress to dynamic functional activities: Figure-8, zig-zag, sideshuffle, grapevine. Begin at 25-50% intensity.

### Criteria to return to sport-specific drills and activities
1. Full ROM and 5/5 lower extremity strength
2. >85-90% performance of involved side versus uninvolved on functional hop testing, e.g., single leg hop for distance; single leg 3-hop crossover test; 6-meter timed hop test
3. >85-90% performance during isokinetic strength testing of involved versus uninvolved side