



## KNEE PCL RECONSTRUCTION POST-OPERATIVE GUIDELINES

### Post-Operative Phase 1: Weeks 0-2

#### PRECAUTIONS

- Avoid active knee flexion
- Avoid heat application
- Avoid ambulation without brace locked at 0°
- Avoid exceeding range of motion (ROM) and weight bearing limitations

#### TREATMENT RECOMMENDATIONS

- Patient education for compliance with home exercise program (HEP) and weight bearing precautions
- Gait: toe-touch weight bearing (TTWB) with PCL Jack brace locked at 0° with crutches
- Patellar mobilizations
- Hamstring and calf stretching
- Passive extension (pillow under calf)
- Quadriceps re-education (quadriceps sets with EMS or EMG)
- Active-assisted knee extension / passive flexion exercise (ROM 0° → 70°)
- SLR (all planes) with brace locked at 0°, with progressive resistance as tolerated
- Proximal (hip) strengthening progressive resistance exercise (PRE)
- Cryotherapy
- Cardiovascular exercises (e.g., upper body ergometer (UBE), etc.), as tolerated

#### CRITERIA FOR ADVANCEMENT

- Knee ROM 0 – 70°
- Ability to SLR without quadriceps lag
- Demonstrate progressive improvement of patellar mobility and proximal strength

#### EMPHASIZE

- Compliance with HEP
- Adhere to weight bearing precautions
- Patellar mobility
- Full PROM knee extension
- Improving quadriceps contraction

#### MODIFICATIONS TO PHASE 1

- Follow surgeon specific modifications



## KNEE PCL RECONSTRUCTION POST-OPERATIVE GUIDELINES

### Post-Operative Phase 2: Weeks 3-6

#### PRECAUTIONS

- Avoid active knee flexion
- Avoid ambulation without brace locked @ 0°
- Avoid pain with therapeutic exercise and functional activities

#### TREATMENT RECOMMENDATIONS

- Patient education for compliance with home exercise program (HEP) and WB precautions
- Gait: progress from TTWB to full WB by 6 weeks with brace locked at 0° with crutches
- Patellar mobilizations
- Hamstring and calf stretching
- Passive extension (pillow under calf)
- Quadriceps re-education (i.e., quadriceps sets with EMS or EMG)
- Active-assisted knee extension / passive flexion exercise (ROM 0° → 70°) o Progress to 90° as tolerated, week 4-6
- Multiple angle quadriceps isometrics (ROM 60° → 20°)
- SLR (all planes) with brace locked at 0°, with progressive resistance as tolerated
- Proximal (hip) strengthening PRE
- Leg press (ROM 60°-0° arc) (bilaterally)
- Proprioception training (bilateral weight bearing)
- Cryotherapy
- Short crank ergometry (when 85° flexion achieved)
- Cardiovascular exercises (e.g., UBE, etc.), as tolerated

#### CRITERIA FOR ADVANCEMENT

- Knee ROM 0° → 90°
- Ability to SLR without quadriceps lag
- Continued improvement in patella mobility and proximal strength

#### EMPHASIZE

- Knee ROM
- Patella mobility
- Quadriceps contraction



## KNEE PCL RECONSTRUCTION POST-OPERATIVE GUIDELINES

### Post-Operative Phase 3: Weeks 7-12

#### PRECAUTIONS

- Avoid resistive knee flexion exercises
- No active open kinetic chain (OKC) hamstring exercises

#### ASSESSMENT

- Functional assessment (e.g., single leg stance, step ups/downs, squat, gait)
- Balance testing (e.g., Star Excursion Test, etc.)
- Quadriceps isometrics testing with dynamometer at 60° at 12 weeks

#### TREATMENT RECOMMENDATIONS

- Underwater treadmill system and/or pool for gait training
- Retrograde treadmill ambulation
- Brace changed to surgeon preference (e.g., off the shelf brace, patella sleeve, unloader brace, etc.)
- Active assisted ROM exercises
- Perturbation training
- Active knee extension – OKC PRE 60° → 0° (*monitor patellar symptoms*)
- Core and LE strengthening
- Leg press (progress to eccentrics) and mini squats (ROM 60° → 0° arc)
- Initiate forward step-up program
- Initiate step-down program
- Proprioception training
  - Multiplanar support surfaces
  - Progress to unilateral support and contralateral exercises with elastic band
- Step machine
- Consider BFR program with FDA approved device if patient cleared by surgeon
- Cryotherapy
- Progressive home exercise program
- Standard ergometry (if knee ROM > 110°)

#### CRITERIA FOR ADVANCEMENT

- Knee ROM 0° → 130°
- Normal gait pattern
- Demonstrate ability to ascend 8-inch step
- Demonstrate ability to descend a 6-inch step
- Single leg bridge holding for 30 seconds
- Symmetrical squat to 60°
- Balance testing and quadriceps isometrics (@ 60°) at 70% of contralateral lower extremity



## KNEE PCL RECONSTRUCTION POST-OPERATIVE GUIDELINES

### Post-Operative Phase 4: Weeks 13-24

#### PRECAUTIONS

- \_Initiate return to running upon meeting criteria > 16 weeks
- \_Avoid pain with exercises and functional training
- \_Monitor tolerance to load, frequency, intensity, and duration
- \_Avoid too much too soon

#### ASSESSMENT

- Functional assessment (e.g., single leg stance, step ups/downs, squat, single leg squat, gait)
- Balance testing (e.g., Star Excursion Test, etc.)
- Quadriceps and hamstring isometric or isokinetic testing
- Functional hop testing
- Return to Sport (RTS) Assessment

#### TREATMENT RECOMMENDATIONS

- Continue exercises from phase 2
- Continue foundational hip-gluteal progressive resistive exercises
- Progress squats to 0°-90° knee flexion, initiating movement with hips
- Progress leg press 0°-90° knee flexion (eccentrics, progressing to unilateral)
- Progress to single leg squats
- Forward step-up and step-down progression
- Progress lateral step-ups, crossovers
- Initiate lunges
- Progress proprioception training
- Progress cardiovascular conditioning
- Incorporate agility and controlled sports-specific movements
- Initiate running progression at week 16 upon meeting criteria
  - Full ROM/Ability to descend 8" step without pain or deviations
- Knee ligament arthrometer exam at 6 months
- Progressive home exercise program
- Consider BFR program with FDA approved device if patient cleared by surgeon

#### CRITERIA FOR ADVANCEMENT

- Full LE ROM
- Descending 8-inch steps without pain or deviation
- Improved flexibility to meet demands of running and sport specific activities
- Quantitative strength and functional assessments >85% of contralateral LE
- Note: uninvolved side may be deconditioned; use pre-injury baseline or normative data for comparison, if available



## KNEE PCL RECONSTRUCTION POST-OPERATIVE GUIDELINES

### Post-Operative Phase 5: Weeks 25+

#### PRECAUTIONS

- Note the importance of gradual return to participation with load and volume monitoring under guidance of physical therapist, exercise physiologist, surgeon, certified athletic trainer (ATC) and coach

#### ASSESSMENT

- Balance testing (e.g., Star Excursion Test, etc.)
- Functional tests (e.g., hop testing)
- Quadriceps isometrics or isokinetic testing
- Return to Sport (RTS) Assessment

#### TREATMENT RECOMMENDATIONS

- Address quadriceps and hamstring strength deficits
- Gradually increase volume and load to mimic load necessary for return to activity
- Progress movement patterns specific to patient's desired sport or activity
- Progression of agility work
- Progression of plyometric training
- Increase cardiovascular load to match that of desired activity
- Collaborate with ATC, performance coach/strength and conditioning coach, skills coach, exercise physiologist, and/or personal trainer to monitor load and volume as return to participation
- Consult with referring surgeon on timing return to sport including any recommended limitations

#### CRITERIA FOR ADVANCEMENT

- Quantitative strength & functional assessments > 90% of contralateral limb
- Movement patterns, functional strength, flexibility, motion, endurance, power, deceleration, and accuracy to meet demands of sport

#### EMPHASIZE

- Return to participation
- Collaboration with sports performance experts