



*An Affiliate of Baptist Health Care*

## REHABILITATION FOLLOWING PCL RECONSTRUCTION

### GENERAL PRINCIPLES / PRECAUTIONS

- Wear brace / immobilizer at all times except during bathing and physical therapy until PCL jack brace is properly fitted and acquired. The PCL jack brace should then be worn at all times except bathing for the next 6 months unless otherwise stated by treating physician.
- Keep incisions clean & dry- No ointments or creams on or around incision until incisions closed completely (usually 2 weeks).
- Minimize and control edema/effusion.
- Extra care must be taken when doing PROM into knee extension as this can place undue stress to the posterior elements of the knee.
- Bilateral crutches should be used for ambulation for 6 weeks before weaning to one crutch
  - Criteria to progress:
    - No post-surgical restrictions
    - Quad strength without lag.
    - Progressively decreasing use of AD while maintaining proper gait mechanics without deviations.
- Track or treadmill running should not be started before 6 months post-op.
- This protocol, as well as most others, is a general guideline. Patients should not be progressed to the next phase until they demonstrate proper form with all activities and all criteria are met in the current phase.
- Properly assess the whole body and incorporate treatment for loss of mobility and stability throughout. Not doing so can prevent optimal outcomes and increase risks of future injuries.

### MAXIMUM PROTECTIVE PHASE (0-6 weeks)

- **Goals**
  - Restore full passive knee extension but not hyper extension
  - Diminish joint swelling and pain
  - Restore patellar mobility
  - Gradually improve knee flexion
  - Re-establish quadriceps control
  - Patient understands HEP and is compliant with brace use and expectations
- **Precautions**
  - PCL protective brace should be issued in week 1-2 and should be worn at all time except for showering. Until the brace is issued, **place a pillow behind the knee / tibia to prevent posterior translation during passive extension, gastroc stretches, and quad sets.**
  - NON-WEIGHTBEARING X6 WEEKS
- **Treatment**
  - Ankle pumps.
  - Overpressure into full extension w/ pillow behind knee / tibia or in jack brace
  - Quadriceps isometric setting/NMES (pillow behind knee/tibia)
  - Gastroc Towel Stretches w/ pillow behind knee / tibia
  - Patella mobilizations
  - Gait training with AD
  - **PROM:** 0-90° in brace, in prone x2 weeks.

- Heel slides once in PCL brace.
- **AROM:** SLR flexion with (-) quad lag
  - Initiate at Week 2: SLR abd/adduction
- Ice / Elevation for 20 minutes 3-4 times/day prn

### **MOBILITY PHASE (Weeks 6-12)**

- **Goals**
  - Emphasize optimal functional movement patterns
  - Restore quad neuromuscular control throughout available ROM
  - Restore normal gait mechanics without crutches
  - Initiate gradual Weight Bearing progressing to FWB by week 8 without AD
- **Precautions**
  - PROM flexion to 110° expected at week 4-6. To 125° by week 6-8.
    - **Caution:** Do not be over-aggressive with flexion creating stress on the repair
  - CKC LE exercise (**limit knee flexion to 70°**)
  - Continue to wear PCL brace at all times
  - Progress to WB activities
- **Treatment**
  - Continue relevant exercises / treatment from first phase
  - Light hamstring stretches
  - Weight shifting
  - Mini squats (progress to 0-70°)
  - Double leg press (0-70°)
  - Bridges LE extended- support behind knees
  - Proprioceptive exercises
  - Mobility / stability exercises for the rest of the body (ex: side plank)
  - Stationary bike zero resistance when flexion > 115 degrees/ **Not before week 8**
  - Knee extension:
    - Week 8: 90-45°
    - Week 10: 90-20°
  - Aquatic therapy. **No swimming or kicking in pool**
  - Week 8: Start assessing other areas of the body for lack of stability / mobility that will impede progress to safe return to sport / activity

### **EARLY STRENGTHENING PHASE (Weeks 13-18)**

- **Goals**
  - Continue joint protection / bracing at all times
  - Full PROM
  - Can progress CKC exercises beyond 70° after week 16
  - Progress hip / core strength
  - Continue to address whole body
  - Achieve functional movement pattern competency
- **Treatment**
  - Initiate light/gradual hamstring strengthening
  - Continue all relevant previous treatment
  - Progress CKC from double leg to single leg
  - Bridge progressions
  - Progress proprioceptive exercises
    - Bosu ball squats
  - Progress resistance on stationary bike

- Progress aquatic therapy to deep water cycling/shoulder depth jog if available

### **ADVANCED STRENGTHENING PHASE (Week 19-24)**

- **Goals**
  - Achieve multiplane upper and lower body combined movement control with lumbopelvic dissociation.
  - Enhance muscular power and endurance
  - Improve dynamic neuromuscular control / proprioception
- **Treatment**
  - Initiate kneeling activities-
    - Kneeling balance
    - Chops/lifts
  - Progress all relevant, previous treatment
  - Progress eccentric quad strengthening activities- maintaining good joint alignment
- **Criteria for Plyometrics/Sport Specific drills:**
  - Full knee ROM
  - 5/5 MMT strength
  - Proper joint alignment with squat pattern
  - No pain with functional movements
- **Weeks 24**
  - Initiate plyometrics- DL to SL, in base of support -> out of Base, Stable -> unstable
  - Initiate light sport specific drills
- **Clinical Exam**
  - Clinical examination and / or PCL stress radiographs to objectively verify healing of PCL after week 24.

### **RETURN TO ACTIVITY PHASE (Week 25-36)**

- **Criteria to Enter Phase / Interval running**
  - Quadriceps torque / body weight ratio (55% or greater)
  - Hamstrings / Quadriceps ratio (70% or greater)
  - Able to perform quality single leg squat to 45°
  - Able to perform 70% maximum contralateral leg press
  - Able to perform brisk walk for 20 minutes
  - Able to perform reciprocal bounding for 50 feet with good form
- **Goals**
  - Patient education and return to activity progressions
  - Wean out of the PCL brace starting at week 24 if the patient is ready.
- **Treatment**
  - Continue strength and endurance exercises
  - Straight line jogging progression
  - Agility exercises
  - Sport-specific drill progression

### **DISCHARGE TESTING / PLANNING. RETURN TO SPORT (typically done after 9 months )**

- Based on a patient's age, gender, and level that they are returning to (i.e. recreational, amateur, professional) a decision is made to endorse their return to sport/ higher level activity or to ask the patient to refrain from doing so. Currently our criterion includes, but is not always limited to the following.
  - Demonstrate quality and symmetrical movement throughout the body evaluated with comprehensive movement screen or assessment process.
  - Symmetrical and acceptable comprehensive scores on CKC LE testing
  - At least 90% symmetry when comparing right to left side per isokinetic test for the hamstrings and quadriceps
- Biomechanical assessment of their performance helps safe return to sport / higher level activity. Patient's may be videoed and analyzed doing activities such as running, jumping, hitting or throwing to see if sound body mechanics are being utilized.
- Not all patients who have undergone PCL surgery are candidates for functional testing. Those undergoing these tests should be chosen with proper consideration given to what they plan to return to and there general fitness level.
- No matter how well a patient is doing with return to sport testing it is prudent to remember how important time is to full healing and safe return to sport / activity.
- Often times, patients are scheduled periodically during the phase in which they are trying to return to sport / higher level activities to assess their progress and properly change their program until they are deemed safe to return to all activities
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