

PCL Reconstruction Protocol

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The intent of this protocol is to provide the clinician with a guideline for the postoperative rehabilitation course of a patient that has undergone a PCL or PCL/ACL reconstruction. It is by no means intended to be a substitute for one's clinical decision making regarding the progression of a patient's postoperative course based on their exam findings, individual progress, and/or presence of postoperative complications. If a clinical requires assistance in the progression of a postoperative patient, they should consult with the referring surgeon.

GENERAL GUIDELINES

- No open chain hamstring work.
- Typically it takes 12 weeks for graft to bone healing time.
- Caution against posterior tibial translation (gravity, muscle action).
- Typically no CPM.
- PCL with posterior corner or LCL repair follows different postop care (i.e. crutches x 3 months).
- Resistance for hip PREs should be placed above the knee for hip abduction and adduction; resistance may be placed distally for hip flexion.
- Supervised physical therapy generally takes place for 3-5 months post-operatively.

GENERAL PROGRESSION OF ACTIVITIES OF DAILY LIVING

Patients may begin the following activities at the dates indicated, unless otherwise specified by the surgeon:

- Bathing/showering without brace (sponge bath only until suture removal) – 1 weeks postop.
- Typically patients can return to driving: 6-8 weeks post-op.
- Typically begin sleeping without brace: 8 weeks post-op.
- Full weight bearing without assistive devices: 8 weeks post-op (with surgeon's clearance based on structural integrity of repair). The exception is PCL with posterior lateral corner (PLC) or LCL repair as above.

REHABILITATION PROGRESSION

PHASE I: Immediately postoperatively to week 4

Goals:

- Protect healing bony and soft tissue structures.
- Minimize the effects of immobilization.
 - Early protected range of motion (protect against posterior tibial sagging).
 - PRE's for quadriceps, hip and calf with an emphasis on limiting patellofemoral joint compression and posterior tibial translation.
- Patient education for a clear understanding of limitations and expectations of the rehabilitation process, and need for supporting proximal tibia/preventing sag.

Brace:

- 0-1 week: post-op brace locked in full extension at all times
- At 1 week post-op, brace is unlocked for passive ROM performed by a physical therapist or PT assistant.
- Technique for passive ROM is as follows:
 - Patient supine; therapist maintains anterior pressure on proximal tibia as knee is flexed (force on tibia is from posterior to anterior).
 - For patients with combined PCL/ACL reconstructions, the above technique is modified such that a neutral position of the proximal tibia is maintained as the knee is flexed.
 - It is important to prevent posterior sagging at all times.

Weight-bearing status:

- Weight-bearing as tolerated (WBAT) with crutches, brace locked in extension.

Special considerations:

- Position pillow under proximal posterior tibia at rest to prevent posterior tibial sag.

Therapeutic exercises:

- Patellar mobilization.
- Quadriceps sets.
- Straight leg raise (SLR).
- Hip abduction and adduction.
- Ankle pumps.
- Hamstring and calf stretching.
- Calf press with exercise bands, progressing to standing calf raise with full knee extension.
- Standing hip extension from neutral.

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- Functional electrical stimulation (as needed for trace to poor quadriceps contraction).

PHASE II: Post-operative weeks 4 to 12**Criteria for progression to Phase II:**

- Good quadriceps control (good quad set, no lag with SLF).
- Approximately 60 degrees knee flexion.
- Full knee extension.
- No signs of active inflammation.

Goals:

- Increase ROM (particularly flexion).
- Normalize gait.
- Continue to improve quadriceps strength and hamstring flexibility.

Brace:

- 4-6 weeks: Brace unlocked for gait in controlled environment only (i.e. patient may walk with brace unlocked while attending PT or when at home).
- 6-8 weeks: Brace unlocked for all activities.
- 8 weeks: Brace discontinued, as allowed by surgeon.
 - Note, if PCL or LCL repair, continue brace until cleared by surgeon.

Weight-bearing status:

- 4-8 weeks: WBAT with crutches.
- 8 weeks: May discontinue crutches if patient demonstrates:
 - No quadriceps lag with SLR.
 - Full knee extension.
 - Knee flexion 90-100 degrees.
 - Normal gait pattern (May use 1 crutch/cane until gait normalized).
- If PLC or LCL repair, continue crutches for 12 weeks.

Therapeutic Exercise:

- 4-8 weeks:
 - Wall slides/mini squats (0-45 degrees).
 - Leg press (0-60 degrees).
 - Standing 4-way hip exercise for flexion, extension, abduction, adduction (from neutral, knee fully extended).
 - Ambulation in pool (work on restoration of normal heel-to-toe gait pattern in chest deep water).
- 8-12 weeks:
 - Stationary bike (foot placed forward on pedal without use of toe clips to minimize hamstring activity; seat set slightly higher than normal).
 - Closed kinetic chain terminal knee extension using resisted band or weight machine. Note: important to place point of resistance to minimize tibial displacement.
 - Stairmaster.
 - Elliptical trainer.
 - Balance and proprioception exercises.
 - Seated calf raises.
 - Leg press (0-90 degrees).

PHASE III: Post-operative months 3 to 9

Criteria for progression to Phase III:

- Full, painfree ROM. (Note: it is not unusual for flexion to be lacking 10-15 degrees for up to 5 months post-op).
- Normal gait.
- Good to normal quadriceps control.
- No patellofemoral complaints.
- Clearance by a surgeon to begin more concentrated closed kinetic chain progression.

Goals:

- Restore any residual loss of motion that may prevent functional progression.
- Progress functionally and prevent patellofemoral irritation.
- Improve functional strength and proprioception using close kinetic chain progression.
- Continue to maintain quadriceps strength and hamstring flexibility.

Therapeutic exercises:

- Continue closed kinetic chain exercise progression.
- Treadmill walking.
- Jogging in pool with wet vest or belt.
- Swimming (no breast stroke or “frog kick”).

PHASE IV: Post-operative Month 9 until return to full activity**Criteria for progression to Phase IV:**

- Clearance by surgeon to resume full or modified/partial activity (i.e. return to work, recreational, or athletic activity).
- No significant patellofemoral or soft tissue irritation.
- Presence of necessary joint ROM, muscle strength and endurance, and proprioception to safely return to athletic participation.
 - Full, painfree ROM.
 - Satisfactory clinical examination.
 - Quadriceps strength 85% of uninvolved leg.
 - Functional testing 85% of uninvolved.
 - No change in laxity testing.

Goals:

- Safe and gradual return to work or athletic participation.
 - This may involve sport-specific training, work hardening, or job restructuring as needed.
 - Patient demonstrates a clear understanding of their possible limitations.
- Maintenance of strength, endurance, and function.

Therapeutic exercises:

- Continue closed kinetic chain exercise progression.
- Cross-country ski machine.
- Sport-specific functional progression, which may include but is not limited to:
 - Slide board.
 - Jog/Run progression.
 - Figure 8, carioca, backward running, cutting.
 - Jumping (plyometrics).
- Work hardening program as indicated by physical therapist and/or surgeon recommendation. Patient will need a referral from surgeon to begin work hardening.