



Austin Crow MD

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Post-operative Rehabilitation Protocol **Knee Multiple Ligament Injury Reconstruction** **(ACL, PCL, +/- MCL, LCL, or PLC)**

The goals of this protocol are to protect the reconstructions while preventing knee stiffness. Early passive ROM exercises are very important, as is preventing excessive anterior and/or posterior tibia translation.

Goals:

- Full knee ROM—all ROM exercises must be performed in the prone or side lying position for the first six weeks
- 50% WB in brace, must use crutches for the first six weeks
 - **Posterior/Proximal tibial pad to prevent tibial drop back for PCL repair.
 - Size of pad depends on the patient
- Pain/edema reduction
- Begin and enhance normalization of quad recruitment
- Prevent anterior/posterior translation and tibia rotation

1day – 6 weeks post op

- Modalities as needed
- Brace locked at 0° for the first two weeks. Can be unlocked only for prone ROM exercises by ATC or PT.
- Brace 0° to 90° if able to tolerate from weeks 2-6
- Teach partner to perform home stretching exercises 2-3 times daily
- ROM exercises: In prone position or side lying only, grip the heads of the gastroc/soleus group and maintain neutral pressure proximally to the tibia while flexing the knee

- Advance ROM as tolerated
- Begin patella mobilizations
- Scar management
- Quad sets/SLR in brace at 0° (assist patient with this exercise until solid quad contraction developed, prevent posterior sag) 10x10 3 times daily. May use ankle weights as they will increase anterior translation
- NO hamstring isometrics for seven weeks
- Seated calf exercises
- Time modulated AC (also known as Russian stim) in full extension
- Teach quad exercises for home program
- PT visits twice weekly for the first month

2 weeks post op

- Continue as above
- Stationary bike to increase ROM. Start with high seat, and progress to normal seat height when able, resistance as tolerated

3 weeks post op

- Continue as above
- Leg press with both legs
- Leg extensions with anti shear device or cuff weights. Progress weight as tolerated, keep resistance proximal

6-8 weeks post op

- Continue as above
- May begin aquatic therapy emphasizing normal gait, marching forward/backward
- Begin weaning off crutches, discontinue brace and normalize gait mechanics
- Full WB as tolerated
- ROM—prone flexion 120° or more, and advance to full ASAP
- Treadmill walking—forward and retro
- Closed and open chain tubing exercises
- Single leg stands for balance/proprioception on Airex pad or trampoline
- Chair/wall squats—keep tibia perpendicular to floor
- Unilateral step-ups—start with 2” height and progress to normal step height as able

10 weeks post op

- Continue as above
- All exercises should be on affected leg only at this time
- ROM should be progressing; if not, contact doctor
- Stairmaster
- Slide board—start with short distance and progress as tolerated
- Fitter
- Versa climber
- Nordic track and elliptical trainers

- Cable column exercises—retro walking, lateral stepping, NO cross over stepping or shuffling
- Standing leg curls with cuff weights or seated leg curls with NK table at 5 pounds max
- Advance strengthening for quads as tolerated

12 weeks post op

- Continue as above
- Advance hamstring strengthening into prone position
- Assessment of jogging on treadmill
- Lateral movement supervised by ATC or PT
 - Stepping, shuffling, hopping, cariocas
- Isokinetic exercises 180, 150, 120, 90, 60°/sec 8-10 reps each speed up and down spectrum

16-24 weeks post op

- Continue as above
- Plyometrics—low intensity vertical and lateral hopping to begin, use both feet and move to one foot ASAP
 - Volume for plyometrics (this is not a conditioning exercise, but a strengthening one) for rehabilitation
 - 40-60 foot contacts/session for beginners
 - 60-80 foot contacts/session for intermediate
 - 80-100+ foot contacts/session for advanced
- If plyometric exercise intensity is high, the volume must be decreased. Give ample recovery time between sets.
- 2-3 sessions per week, preferably on weight lifting days
- Initiate sport specific activities under supervision by ATC or PT

24 weeks post op (6 months +)

- Continue as above
- Emphasize strength and power development
- Running and sport specific drills under ATC or PT supervision
- Isokinetic test for quad strength difference $\leq 15\%$ and unilateral hamstring/quad strength ratio of 65% or better
- Continue strength testing monthly until patient passes, then perform functional testing
- Functional testing is appropriate for people returning to advanced recreational activities or sports