

KNEE PCL RECONSTRUCTION

Phase I: 0-1 weeks	(Immediate post-op phase)
Goals	<ul style="list-style-type: none"> • Protect surgical graft • Prevent negative effects of immobilization • Diminish pain and effusion • Initiate range of motion within guidelines • Facilitate quadriceps activation
Brace and Weightbearing	<ul style="list-style-type: none"> • Brace ROM set from 0-90 deg • Brace used 24 hours/day, can be removed 3-4 times daily for self-ROM + showering • PWB up to 50% with brace locked in extension
Precautions	<ul style="list-style-type: none"> • No isolated hamstring contractions until 12 weeks to prevent excessive posterior shear forces • No stretching into hyperextension until 6 weeks to prevent excessive stress to graft
ROM Goals	<ul style="list-style-type: none"> • Achieve extension ROM to 0 • Gradually improve AAROM knee flexion to 90 deg. • Gradually improve AROM in the range of 0-60 only
Immediate post-op exercises	Ankle pumps, NWB stretch of gastrocnemius/soleus, heel prop for extension without overpressure, quadriceps sets, gentle AAROM knee flexion to 90 deg , AROM 0-60 deg only
Recommendations	<ul style="list-style-type: none"> • Ice 15 minutes 3-5x/day
Phase II: 1+- 6 weeks	(Intermediate protection phase)
Goals	<ul style="list-style-type: none"> • Protect surgical graft • Diminish pain and effusion • Progress range of motion within guidelines • Initiate total leg strength within guidelines • Gradual normalization of gait • Improve dynamic stabilization
Brace and Weightbearing	<ul style="list-style-type: none"> • WK 2: Open brace for full ROM • WBAT using crutches initially with brace locked into extension. D/C crutches at 2-3 wks when knee ROM 0-90, decreased joint effusion, good quadriceps activation and control, able to seat the patella and QS SLR without a quad lag • Brace unlocked for ambulation at wk4 depending on quadriceps control and gait mechanics. Progress to normal gait mechanics
Precautions	<ul style="list-style-type: none"> • No isolated hamstring contractions until 12 wks • No manual stretching into hyperextension until 6 wks
AROM Goals	<ul style="list-style-type: none"> • Wk 1-2: 0-90. Wk 2-3: 0-110 Wk 3-4: 0-120 • Wk 4+: 0-functional flexion ROM
Interventions for wk 1-4:	<ul style="list-style-type: none"> • Active warm-up: Bike ROM • Mobilization / ROM: scar tissue massage, patellar mobs, knee extension stretch to 0, knee flexion stretches to ROM limitations as outlined above • Flexibility exercises: hamstring and gastroc-soleus • Strengthening exercises: <ul style="list-style-type: none"> Quadriceps: Biofeedback QS SLR, multi-angle quadriceps sets 0, 30, 60; OKC knee ext 0-60 deg, CKC knee extension Total leg: Hip 4 way SLR, ankle DF/PF, leg press 0-60, mini-squats 0-60 • Proprioceptive /neuromuscular control activities: Balance boards, mini-

	<ul style="list-style-type: none"> squats on unstable surface, double-leg progressing to single-leg Ice 15 minutes 3-5x/day, electric stimulation (IFC or NMES) as needed
Additional interventions to be implemented starting at wk 4+:	<ul style="list-style-type: none"> Continue with above Warm-Up: Bike, Elliptical Runner, Treadmill Strengthening: lateral step-overs, partial lunges front and lateral, step-ups front and lateral, front stepdowns Proprioceptive/neuromuscular control activities: add perturbation training, advance drills Cardiovascular conditioning, core stability
Phase III: 6+-12 weeks	(Minimal protection phase)
Goals	<ul style="list-style-type: none"> Gradually increase the stress applied to the graft Restore full ROM including hyperextension Improve muscle strength and endurance Improve proprioception and dynamic stabilization
Precautions	<ul style="list-style-type: none"> D/C brace depending on MD approval Gradual return to activity depending on function requirements and MD approval
ROM Goals:	<ul style="list-style-type: none"> Attain full hyperextension (if necessary) between wk 6-8. Maintain full flexion
Interventions: (Examples of exercises but not an all-inclusive list)	<ul style="list-style-type: none"> Active warm-up: Bike, Elliptical Runner, Treadmill Mobilization / ROM: Prolonged end-range stretch and accessory mobilizations if necessary, knee extension and flexion stretching, Flexibility: Hamstrings, gastroc-soleus, quadriceps Strengthening exercises: <ul style="list-style-type: none"> Quadriceps: isotonic knee extension 0-60, CKC knee extension, wk 8: isotonic knee extension 0-90 Total leg: Hip and ankle strengthening, CKC exercises 0-90 including leg press, step-up/downs, squats, multi-directional lunges; wk 8: Stairmaster, Euroglide Proprioceptive/neuromuscular control activities: advance drills as strength and muscle control allow Cardiovascular conditioning, core stability Modalities as needed
Recommendations	<ul style="list-style-type: none"> Wk 10-12: Progress to independent strengthening program with monthly rechecks if good ROM, good muscle control, and minimal effusion
Phase IV: 12 + weeks	(Advanced strengthening phase)
Goals	<ul style="list-style-type: none"> Maintain full ROM, mobility, and stability Implement isolated hamstring strengthening Progress muscular strength, power, and endurance Initiate higher level activities depending on functional demands and MD approval
Interventions	<ul style="list-style-type: none"> Continue and progress program initiated in Phase III. Add: <ul style="list-style-type: none"> Hamstrings Strengthening: wk 12: OKC isotonic knee flexion 0-90 Quadriceps/Hamstring Strengthening: wk 14: OKC isokinetic knee flexion/ext 0-90 Impact activities if 75% strength on CKC testing: running program, agility drills, plyometrics. Wk 16: Sport-specific exercises
Testing	<ul style="list-style-type: none"> Wk 12: Linea CKC testing Wk 16: Linea CKC testing, Biodex knee flex/ext 0-90, KT 1000 Wk 20-24: Linea, Biodex, KT 1000, Functional testing
Return to work/sport	<ul style="list-style-type: none"> Based on MD approval, full pain-free ROM, minimal pain at rest or with activity, isokinetic strength and functional testing at 90 % compared to uninvolved side 6 months: Return to full sporting activities per MD approval
Recommendations	<ul style="list-style-type: none"> Functional bracing at the discretion of MD, PT, and patient. Consider KT 1000 values