Chicago Orthopaedics & SPORTS MEDICINE, S.C.

POSTERIOR CRUCIATE LIGAMENT RECONSTRUCTION REHABILITATION PROTOCOL

Dr. David R. Guelich

This rehabilitation protocol has been developed for the patient who has posterior cruciate ligament (PCL) reconstruction using a secure graft with internal fixation. The PCL reconstruction rehabilitation is unique in that extreme knee flexion places a higher amount of stress on the newly reconstructed PCL. Therefore, there are several activities that should be avoided early post-operatively with a PCL reconstruction, for best results, avoid:

- Isolated hamstring activity including curls, isometric, and intense stretching
- Open chain active knee extension from 90-70°, knee extension from 70-0° with adequate strength and full range knee extension **is allowed** 6 weeks post-op
- Flexion should be gained with passive wall slides to avoid active hamstring contraction

This protocol is divided into several phases according to postoperative weeks and each phase has anticipated goals for the individual patient to reach. When the goals of the phase have been accomplished, the next phase may begin. Each individual patient may meet these goals at different times based on individual issues and special circumstances. The **overall goals** of the reconstruction and the rehabilitation are to:

- Control joint pain, swelling, hemarthrosis
- Regain normal knee range of motion
- Regain normal gait pattern and neuromuscular stability for ambulation
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination for daily activities
- Achieve the level of function based on the orthopedic and patient goals

The physical therapy is to begin 2nd day post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. **Important post-op signs** to monitor:

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitive
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)
- Insufficient lower extremity flexibility

Return to activity requires both time and clinical evaluation. To safely and most efficiently return to normal or high level functional activity the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's readiness to return to activity.

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Phase 1: Week 1-2

PCL Reconstruction

WEEK	EXERCISE	GOAL
1-2	ROM	0-30°
	Passive, 0-30°	
	Patella mobs	
	Ankle pumps	
	Gastroc/soleus stretching	
	STRENGTH	
	Quad sets with e-stim/biofeedback	
	Active knee extension (30-0°)	
	SLR (flex, abd, add)	
	WEIGHT BEARING	
	WBAT with 2 crutch and brace	WBAT
	BRACE	
	Limited from 0-30°	
	MODALITIES	
	E-stim/biofeedback as needed	
	Ice 15-20 minutes	

GOALS OF PHASE:

- ROM 0-30°
- Control pain, inflammation, and effusion
- Independent in HEP
- Adequate quad/VMO control
- WBAT with crutches and brace as noted by Dr. Guelich

Phase 2: Week 2-6
PCL Reconstruction

WEEK	EXERCISE	GOAL
2-6	ROM	0-90° (wk 4)
	Passive, 0-90° (wk 4)	0-110° (wk 6)
	0-110° (wk 6)	
	Patella mobs	
	Ankle pumps	
	Initiate light hamsting stretch	
	Gastroc/soleus/ITB stretch	
	Wall slides to reach goal	
	STRENGTH	
	Quad sets with biofeedback	
	SLR (flex, abd, add) with weight/tubing	
	Multi-angle isometrics (70-0°)	
	Knee extension (70-0°)	
	Initiate mini-squats (0-30°)	
	Initiate leg press/total gym (0-60°)	
	Multi-hip in 4 directions	
	Heel raise/Toe raise	
	Wall squats (0-30°)	
	BALANCE TRAINING	
	Weight shift (side-to-side, fwd/bkwd)	
	Single leg balance work	
	Hesitation/Cup walking	
	Steam boats balance work	
	BICYCLE	
	May begin when 110° flexion is reached	
	WEIGHT BEARING	
	FWB with/without crutches as strength allows	FWB
	BRACE	
	Continue with brace, unlocked to 90°	0-90° (wk 4)
	MODALITIES	
	E-stim/biofeedback as needed	
	Ice 15-20 minutes	

GOALS OF PHASE:

- ROM 0-110°
- WBAT to FWB
- Control pain, inflammation, and effusion
- Increase lower extremity strength
- Enhance proprioception, balance, and coordination

Phase 3: Week 6-12
PCL Reconstruction

WEEK	EXERCISE	GOAL
6-12	ROM	0-135°
	Passive, 0-135°	
	Patella mobs	
	Hamstring/ITB stretch	
	Gastroc/Soleus stretch	
	Wall slides to reach goal	
	STRENGTH	
	Continue with all strengthening activities from above phases	
	Initiate lateral/fwd step-ups/downs	
	Initiate knee extension 90-0°	
	Bike/EFX for endurance	
	Reverse lunges-knee not to migrate over toe	
	Smith press squats at wk 8	
	BALANCE TRAINING	
	Single leg balance with plyotoss	
	Wobble board balance activities	
	½ Foam roller balance activities	
	Sportscord balance/agility work	
	BRACE	D/C (wk 6)
	Discharge post-op brace at week 6	
	Functional brace to be fitted	
	MODALITIES	
	Ice 15-20 minutes	

GOALS OF PHASE:

- ROM 0-135°
- Increase lower extremity strength and endurance
- Control pain, inflammation, and effusion
- Maximize proprioception, balance, and coordination

Phase 4: Week 12-36
PCL Reconstruction

WEEK	EXERCISE
12-36	ROM
	Continue with all stretching activities
	STRENGTH
	Continue with all strengthening activities increasing all weight and repetitions
	Progress with all single leg activity
	BALANCE TRAINING
	Continue with advanced balance/agility training
	Single leg work on advanced surfaces
	RUNNING PROGRAM
	Initiate running on minitramp and progress to treadmill as tolerated
	Backward walking on treadmill
	AEROBIC CONDITIONING
	Walking program
	Swimming program (kicking)
	Bike for strength and endurance
	EFX for strength and endurance
	FUNCTIONAL TRAINING
	Lateral movements (slide board, shuffles)
	Initiate light plyometrics/agility drills
	High speed training
	Initiate sport specific training
	Carioca, figure 8's
	MODALITIES
	Ice 15-20 minutes

GOALS OF PHASE:

- Maximize lower extremity strength and endurance
- Return to previous activity level
- Return to specific functional level