

Noyes Knee Institute Rehabilitation Protocol After PCL Reconstruction

	Postoperative Weeks					Postoperative Months			
	1-2	3-4	5-6	7-8	9-12	4	5	6	7-12
Hinged long-leg postoperative brace Patellar knee sleeve Functional brace	X	X	X						
				X	X	X	X	X	X
Range of motion minimum goals 0°-90° 0°-110° 0°-120° 0°-135°	X								
		X							
			X	X					
					X				
Weight bearing: 25% body weight 50% body weight Full	X								
		X							
			X						
Patella mobilization	X	X	X	X					
Modalities EMS Pain/edema management (cryotherapy)	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X
Stretching Hamstring, gastrocnemius-soleus, iliotibial band, quadriceps	X	X	X	X	X	X	X	X	X
Strengthening Quadriceps isometrics, straight leg raises, active knee extension Closed-chain: gait retraining, toe-raises, wall-sits, mini-squats Knee flexion hamstring curls* Knee extension quadriceps* Hip abduction-adduction, multi-hip Leg press (70°-10°)	X	X	X	X	X				
			X	X	X	X	X	X	
		X	X	X	X	X	X	X	X
				X	X	X	X	X	X
				X	X	X	X	X	X
Balance/proprioceptive training Weight-shifting, cup-walking, BBS BBS, BAPS, perturbation training, balance board, minitrampoline			X	X					
				X	X	X	X	X	X
Conditioning UBC Bike (stationary) Aquatic program Swimming (kicking) Walking Stair-climbing machine Ski machine Elliptical machine	X	X	X	X	X				
		X	X	X	X	X	X	X	X
						X	X	X	X
					X	X	X	X	X
						X	X	X	X
						X	X	X	X
Running: straight								X	X
Cutting: lateral carioca, figure-eights									X
Plyometric training									X
Full sports							X	X	X

Return to Sports Criteria

Return to sports activities is based on successful completion of the running and agility program and functional training that is required for the sport the patient desires to return to and is approved by the physician and therapist. Many patients will not return to strenuous, high-risk sports after PCL reconstruction.

1. Knee examination

- Range of motion: International Knee Documentation Committee (IKDC) rating of normal or nearly normal.
- Posterior drawer test: IKDC rating of normal or nearly normal.
- Patella pain: none.
- Effusion: none.

2. KT-2000 joint arthrometer (134 N total AP displacement)

- ≤ 5 mm reconstructed - contralateral knee (if normal)

3. Stress radiography (70 degrees, 89 N total posterior displacement)

- < 5 mm reconstructed - contralateral knee (if normal)

3. Quadriceps and hamstrings muscle strength and endurance tests: $\leq 15\%$ deficit compared with contralateral side for jumping/pivoting/cutting sports and $\leq 20\%$ for running/turning/twisting sports, based on equipment available:

- Isokinetic $180^\circ/\text{sec}$ and $300^\circ/\text{sec}$.
- Isometric portable fixed or hand-held dynamometer: quadriceps 60° flexion, hamstrings 60° or 90° flexion, 3 reps each, use average.
- If equipment is not available, a 1-repetition maximum bench press and leg press are recommended with weight room equipment, along with an experienced test administrator and a sufficient amount of time to safely conduct these tests.

4. Single-leg hop tests: $\leq 15\%$ deficit lower limb symmetry on any two tests for all sports (single hop, triple hop, triple crossover hop, 6 m timed hop).

Other tests to consider include the multi-stage fitness test to determine VO_2max and the 60-second sit-up test or other core strength measures. A single-leg vertical jump test may be conducted to determine if a deficit exists between the reconstructed and contralateral leg.