Hinged long-leg postoperative brace Patellar knee sleeve Functional braceXX <th< th=""><th></th><th>1-2</th><th>3-4</th><th>5-6</th><th>7-8</th><th>9-12</th><th>4</th><th>5</th><th>6</th><th>7- 12</th></th<>		1-2	3-4	5-6	7-8	9-12	4	5	6	7- 12
Functional braceImage of motion minimum goals 0°-90°XXXXXXXXXRange of motion minimum goals 0°-10°XXXXXXXXXX0°-10°XXXXXXXXXXXX0°-12°XX		Х	Х	Х						
Range of motion minimum goals 0° -90° 0° -110° 0° -120° 0° -135°XXXXXXXWeight bearing: 25% body weight 50% body weight FullXXXXXXXXPatella mobilizationXXXXXXXXXXPatella mobilizationXXXXXXXXXXXPatella mobilizationXXXXXXXXXXXXPain/edema management (cryotherapy)XX					37	37	37	37		
Range of motion minimum goals $0^{\circ}-90^{\circ}$ $0^{\circ}-120^{\circ}$ $0^{\circ}-135^{\circ}$ XXXXXXXWeight bearing: 25% body weight FullXXXXXXXXPatella mobilizationXXXXXXXXPatella mobilizationXXXXXXXXPatella mobilizationXXXXXXXXPatella mobilizationXXXXXXXXXPatella mobilizationXXXXXXXXXXXPain/edema management (cryotherapy)XXXXXXXXXXXXXXQuadricepsXXX<	Functional brace				Х	X	Х	X	х	х
$\begin{array}{c c c c c c c c c c c c c c c c c c c $										
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		Х								
$0^{\circ}-135^{\circ}$ Image: Constraint of the sector			Х							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				Х	Х					
25% body weight 50% body weight FullXXXXXPatella mobilizationXXXXXModalities EMSXXXXXXPain/edema management (cryotherapy)XXXXXXStretching Hamstring, gastrocnemius-soleus, iliotibial band, quadricepsXXXXXXXStrengthening Closed-chain: gait retraining, toe-raises, wall-sits, mini-squats Knee extension quadriceps*XXXXXXXXKnee extension quadriceps*XXXXXXXXXXKnee flexion hamstring curls* thip abduction-adduction, multi-hip UBCXXXXXXXXXXBalance/proprioceptive training, balance board, minitrampolineXXXXXXXXXXXXBik (stationary) Aquatic program SkimachineXX <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td>						X				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		37								
FullImage: second s		Х	37							
Patella mobilizationXXX			X	v						
Modalities EMS Pain/cdema management (cryotherapy)XXX </td <td></td> <td>v</td> <td>v</td> <td></td> <td>v</td> <td></td> <td></td> <td></td> <td></td> <td></td>		v	v		v					
EMSXX<		Λ	Λ	Λ	Λ					
Pain/edema management (cryotherapy)XXX		v	v	v	v	v				
Stretching Hamstring, gastrocnemius-soleus, iliotibial band, quadricepsXXX<							v	v	v	v
Hamstring, gastrocnemius-soleus, iliotibial band, quadricepsXX<		Λ	Λ	Λ	Λ	Λ	Λ	Λ	Λ	Λ
iliotibial band, quadricepsImage: Constraint of the sector of	8	x	x	x	x	x	x	x	x	x
Strengthening Quadriceps isometrics, straight leg raises, active knee extensionXXXXXXXXXClosed-chain: gait retraining, toe-raises, wall-sits, mini-squatsXX<			1							
Quadriceps isometrics, straight leg raises, active knee extensionXXXXXXXXXClosed-chain: gait retraining, toe-raises, wall-sits, mini-squatsXX <td></td>										
raises, active knee extensionXX<		Х	Х	Х	Х	Х				
Closed-chain: gait retraining, toe-raises, wall-sits, mini-squatsXX<										
Knee flexion hamstring curls*XX				Х	Х	Х	Х	Х	Х	
Knee extension quadriceps*XX <td>wall-sits, mini-squats</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	wall-sits, mini-squats									
Hip abduction-adduction, multi-hip Leg press (70°-10°)Image: Constant of the second s	Knee flexion hamstring curls*						Х	Х	Х	Х
Leg press (70°-10°)Image: Solution of the second system of the secon	Knee extension quadriceps*		Х	Х	Х	Х	Х	Х	Х	Х
Balance/proprioceptive training Weight-shifting, cup-walking, BBS BBS, BAPS, perturbation training, balance board, minitrampolineXX	Hip abduction-adduction, multi-hip					Х			Х	
Weight-shifting, cup-walking, BBS BBS, BAPS, perturbation training, balance board, minitrampolineXX					Х	Х	Х	Х	X	Х
BBS, BAPS, perturbation training, balance board, minitrampolineXXXXXXXXXXConditioning UBCXX										
balance board, minitrampolineImage: selection of the selection of				X			 -			
Conditioning UBCXXXXXXXBike (stationary)XXXXXXXXAquatic programXXXXXXXXXSwimming (kicking)IIIIIXXXXXWalkingIIIIIXXXXXXStair-climbing machineIIIIIXXXXXElliptical machineIIIIIXXXXX					Х	Х	Х	Х	Х	Х
UBCXXXXXXXBike (stationary)XXXXXXXXXAquatic programXXXXXXXXXXSwimming (kicking)XXXXXXXXXXWalkingXXXXXXXXXXStair-climbing machineXXXXXXXXElliptical machineIIIIXXXX	* · · · · · · · · · · · · · · · · · · ·									
Bike (stationary)XXXXXXXXAquatic programXXXXXXXXXSwimming (kicking)XXXXXXXXXXWalkingXXXXXXXXXXXStair-climbing machineXXXXXXXXXXElliptical machineXXXXXXXXX		\mathbf{v}	v	v	v	v				
Aquatic programXXXXXSwimming (kicking)XXXXXWalkingXXXXXXStair-climbing machineXXXXXSki machineXXXXXElliptical machineXXXXX		А	A				v	v	v	v
Swimming (kicking)XXXXXWalkingXXXXXXStair-climbing machineXXXXXXSki machineXXXXXXElliptical machineXXXXXX				А	А	А				
WalkingXXXXXStair-climbing machineXXXXXSki machineXXXXXElliptical machineXXXXX										
Stair-climbing machineXXXXSki machineXXXXElliptical machineXXXX						v				
Ski machineXXXXElliptical machineXXXX						Λ				
Elliptical machine X X X X	Ski machine									
Running: straight X X	Running: straight						- 11	1		
Cutting: lateral carioca, figure-eights X	8 6									
Plyometric training X										
Full sports X X X	• •							X	X	

Noyes Knee Institute Rehabilitation Protocol After PCL Reconstruction

Postoperative Weeks

Postoperative Months

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)
- $\leq 5 \text{ mm}$ 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°/sec and 300°/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 60second 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.