



WAYPOINT

ORTHOPAEDIC ASSOCIATES

Non-operative PCL Rehabilitation program

Phase I

0–6 weeks after injury

Precautions

PRICE (Protect, Rest, Ice, Compress, Elevate) protocol

Avoid hyperextension (12 weeks)

Prevent posterior tibial translation (12 weeks)

Isolated hamstring exercises should be avoided until week 12

Weight bearing

Partial weight bearing with crutches (2 weeks)

Range of motion (ROM)

Prone passive ROM from 0° to 90° (Fig. 1) for the first 2 weeks, and then progress to full ROM

Brace

PCL Jack brace to be worn at all times, including rehabilitation and sleep (minimum of 12 weeks)

Goals

PCL ligament protection

Oedema reduction to improve passive ROM and quadriceps activation

Address gait mechanics

Patient education

Therapeutic exercise

Patellar mobilizations

Prone passive ROM (Fig. 1)

Quadriceps activation

Quadriceps sets

Straight leg raises (SLR) once the quadriceps are able to lock joint in terminal extension and no lag is present

Gastrocnemius stretching

Hip abduction/adduction

Stationary bike with zero resistance when ROM > 115°

Weight shifts to prepare for crutch weaning

Pool walking to assist with crutch weaning

Calf raises and single leg balance when weaned from crutches

Upper body and core strength as appropriate

Phase II 6–12 weeks after injury

Precautions

- Continued avoidance of hyperextension
- Prevent posterior tibial translation
- Limit double leg strengthening exercises to no more than 70° of knee flexion

Weight bearing

- Weight bearing as tolerated (WBAT)

Range of motion

- Full ROM, supine and prone ROM after 6 weeks

Brace

- PCL Jack brace to be worn at all times

Goals

- PCL ligament protection

Full ROM

- Address gait mechanics during crutch weaning

- Double leg strength through ROM (no greater than 70° knee flexion) and single leg static strength exercises

- Reps and set structure to emphasize muscular endurance development (3 sets of 20 reps)

Therapeutic exercise

- Continue PRICE protocol

- Continue exercises as weeks 1–4

- Gastrocnemius and light hamstring stretching

- Leg press limited to 0–70° of knee flexion (Fig. 2)

- Squat progression (squat → squat with calf raise → squat with weight shift)

- Static lunge (Fig. 3)

- Hamstring bridges on ball with the knees extended (Fig. 4)

- Progressive resistance stationary bike

- Light kicking in pool

- Incline treadmill walking (7–12% incline)

- Single leg dead lift with the knee extended (Fig. 5)

- Proprioceptive and balance exercises

Phase III

13–18 weeks after injury

Brace

- Discontinue PCL Jack brace

Goals

- Reps and set structure to emphasize muscular strength development

- Progress ROM strength to beyond 70° knee flexion

Isolated hamstring exercises may begin after week 12

- Prepare athlete for sport-specific activity

Therapeutic exercise

- Double leg press with progression to single leg (Fig. 2)

- Single leg knee bends

- Balance squats (Fig. 6)

- Single leg dead lift (Fig. 5)

- Single leg bridges starting during week 16 (Fig. 7)

- Continue bike and treadmill walking

Running

- Running is allowed once the patient has demonstrated sufficient strength and stability with functional exercise

and quadriceps girth is greater than or equal to 90% compared to the contralateral normal side.

Outline:

Week 1: 4 min walk; 1 min jog for 15–20 min

Week 2: 3 min walk; 2 min jog for 20 min

Week 3: 2 min walk; 3 min jog for 20 min

Week 4: 1 min walk; 4 min jog for 20 min

- Once running progression is completed, continue single plane agility with progression to multi-planar agility

Clinical examination and/or PCL stress radiographs to objectively verify healing of PCL after week 15

Phase IV
19 + weeks after injury

Continue exercises and protocol from weeks 13–18
Set and reps structure to emphasize muscular power development (3 sets of 4–8 reps)
Sport-specific agility exercises
Non-contact return to play following clearance by the operating physician
Full contact return to play when specific return to sports criterion met:
Full active ROM
Greater than 85–90 % normal quadriceps strength
No evidence of instability or giving way
Greater than 90 % function on return to sports testing
Athlete is mentally ready to return to sport and not timid or fearful of re-injury



Fig. 1 Prone passive knee range of motion with the PCL Jack brace in place

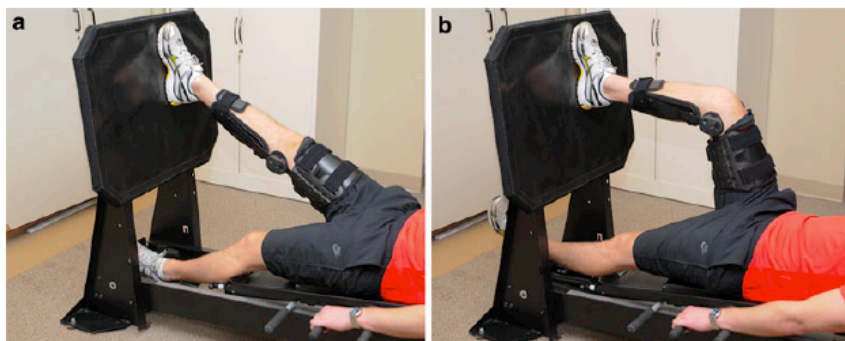


Fig. 2 Single leg presses at 70° demonstrating the starting position (a) and finishing position (b); align the feet, knees and hips and push through the foot to straighten the leg while avoiding hyperextension of the knee



Fig. 3 Static lunge demonstrating the finishing position; step into lunge position with the involved leg forward and bend the involved knee to approximately 45° and hold that position while allowing the toe of the uninvolved leg to touch the ground for assisted balance

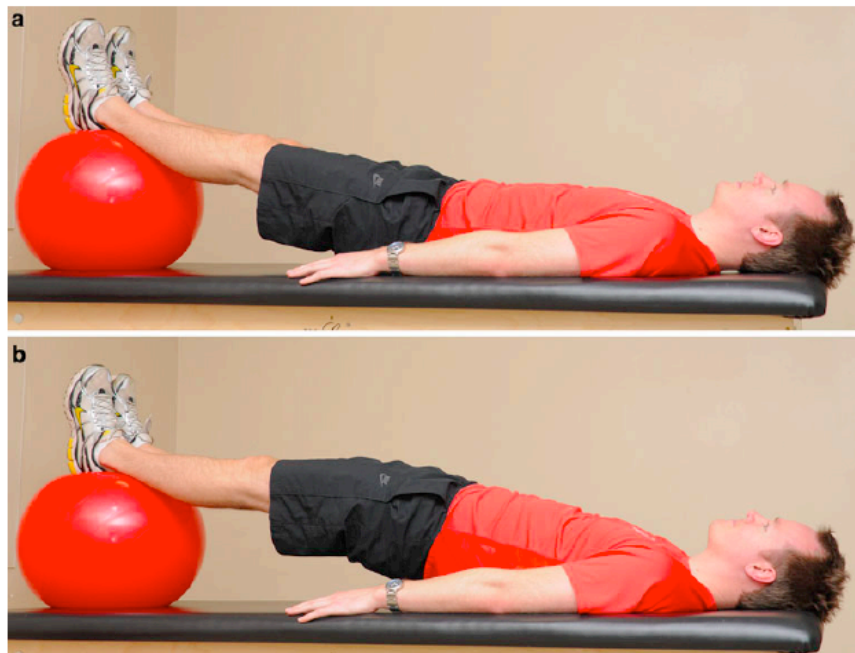


Fig. 4 Ball bridge demonstrating the starting position (a) and finishing position (b); lie supine with legs straight on the ball, press heels into ball while lifting the hips off table and hold for a count of 5 s

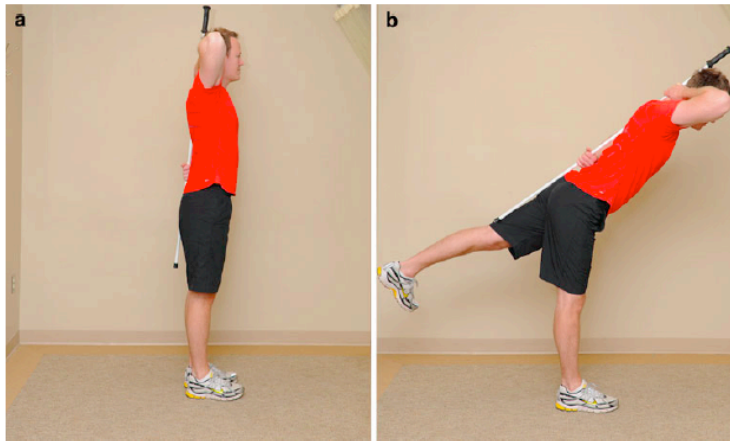


Fig. 5 Single leg deadlift demonstrating the starting position (a) and finishing position (b); stand on the involved leg keeping the back and uninvolvement leg straight, hinge forward at the hip, pull through the gluteals and hamstrings to return to the start position



Fig. 6 Single leg balance squat demonstrating the starting position (a) and finishing position (b); allow the toe of the uninvolvement leg to touch the chair and squat with involved leg to 70° keeping the hips

level and the knees behind the toes while avoiding full extension of the leg upon returning to start position

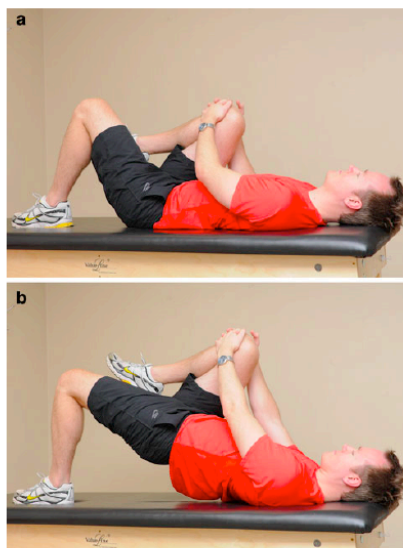


Fig. 7 Single leg bridge demonstrating the starting position (a) and finishing position (b); lie supine with the knees bent and feet shoulder width apart, grasp the uninvolvement knee to chest and contract the gluteal muscles of the involved side to raise the hips off the mat to form a straight line with the shoulders, hips, and knee

Reference: Pierce CM, O'Brien L, Griffin LW, Laprade RF. Posterior cruciate ligament tears: functional and postoperative rehabilitation. *Knee Surg Sports Traumatol Arthrosc.* 2012 Apr 8.