

POSTERIOR CRUCIATE LIGAMENT RECONSTRUCTION REHAB PROTOCOL

This rehabilitation protocol has been developed for the patient who has posterior cruciate ligament (PCL) re-construction 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° **is allowed** 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.

PHASE ONE: Weeks 1-2

EXERCISE GOAL

RANGE OF MOTION

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

Weight Bearing As Tolerated (WBAT) with 2 crutches and brace WBAT

BRACE

Limited from 0-30°



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PHASE ONE: Weeks 1-2 (cont'd)

EXERCISE GOAL

MODALITIES

E-stim/biofeedback as needed

Ice 15-20 minutes

GOALS OF PHASE ONE:

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

PHASE TWO: Weeks 2-6

EXERCISE GOAL

RANGE OF MOTION:

ROM 0-90° (wk 4)

Passive, 0-90° (wk 4) 0-110° (wk 6)

0-110° (wk 6)

Patella mobs

Ankle pumps

Initiate light hamstring 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



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PHASE TWO: Weeks 2-6 (cont'd)

EXERCISE GOAL

GOALS OF PHASE TWO:

- ROM 0-110°
- Weight Bearing as Tolerated to Full Weight Bearing
- Control pain, inflammation and effusion
- Increase lower extremity strength
- Enhance proprioception, balance, and coordination

PHASE THREE: Weeks 6-12

EXERCISE GOAL

RANGE OF MOTION

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

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



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PHASE FOUR: Weeks 12-36 (cont'd)

EXERCISE GOAL

RANGE OF MOTION

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 mini-tramp 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 FOUR:

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