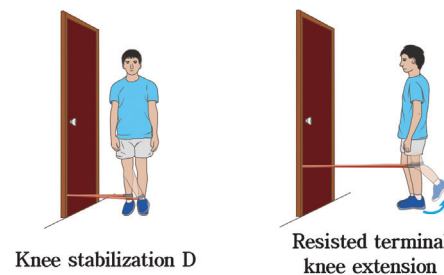
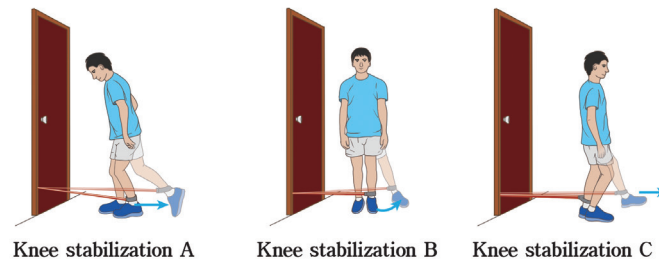
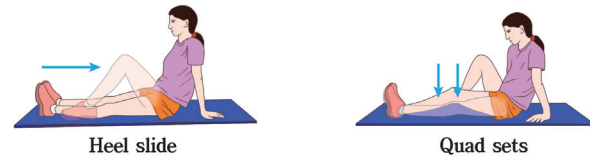
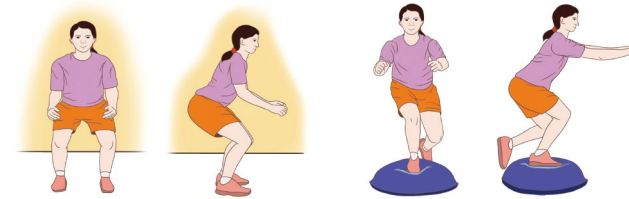


## Anterior Cruciate Ligament (ACL) Injury Rehabilitation Exercises

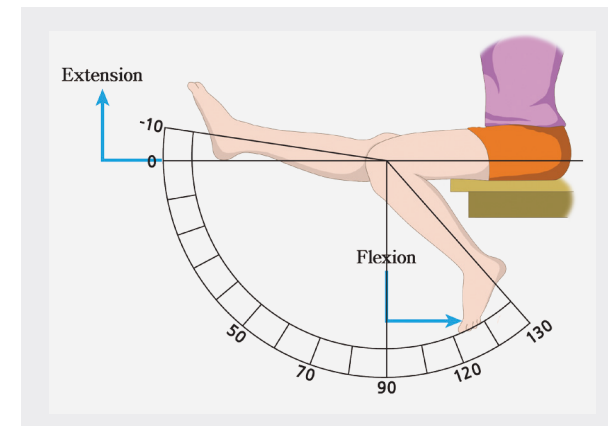


## Proprioception (Balance and postural maintenance activities)

- Eyes open → Eyes closed
- Stable surfaces → Unstable surfaces
- Bilateral stance → Unilateral stance



## Knee Range of Motion (ROM)



### Exercises

- Full ROM
- Gradual return to sports participation
- Maintenance program for strength, endurance – continue regular strengthening
- Cardiovascular conditioning
- Running and cycling

### Return to sports criteria

- Medical clearance
- Full range of motion
- No swelling
- Good stability on ligament testing
- Full strength compared with the other leg
- Completed sport-specific functional progression
- Running and jumping without pain or limp

## EXERCISE FIGURES

**Passive extension** – Sit in a chair and place your heel on the edge of a stool or chair; relax thigh muscles and let the knee sag under its own weight until maximum extension is achieved.

**Heel props** – Place rolled up towel under the heel and allow leg to relax

**Prone hangs** – Lie face down on a table/bed with the legs hanging off the edge of the table; allow the legs to sag into full extension.  
**Passive flexion** – Sit on chair/edge of bed and let knee bend under gravity; may use the other leg to support and control flexion

**Wall slides** – Lie on your back with the involved foot on the wall and allow the foot to slide down the wall by bending the knee; use other leg to apply pressure downward.

**Heel slides** – Use your good leg to pull the involved heel toward the buttocks, flexing the knee.  
 Hold for 5 seconds; straighten the leg by sliding the heel downward and hold for 5 seconds.

# ACL Reconstruction Post-Operative Rehabilitation Protocol

International Health Services



This handout serves as a general outline for you as a patient to better understand guidelines and time frames associated with ACL reconstruction rehabilitation. Please keep in mind that these may not be met by all patients at the specific timeline.

## PHASE I (Week 0 – 2)

### Goals

- Control pain and swelling
- Start early range of motion (ROM) with emphasis on full extension, patella (knee cap) mobilization and flexion
  - \*caution: avoid hyperextension greater than 10 degrees
- Restore normal gait on level surfaces
- Maintain muscle strength

### Brace

- Wear brace locked in extension for ambulation and sleeping
- May unlock for ROM exercises

### Weight bearing status

- Weight bearing as tolerated with crutches and with brace locked in extension
- No weight bearing for 4 weeks if repair of meniscus was done or in case of microfracture.

### Exercises

- Continuous Passive Motion (CPM) machine**
  - 2 hour session x 3 times a day
  - At slow, comfortable speed
  - Start at 50 degrees flexion, and increase up to 90 degrees x10 times a day
- ROM exercises**
  - Partial ROM up to 90 degrees
  - Extension – no active terminal extension from 40 to 0 degrees

- Passive extension
- Heel props
- Prone hangs
- Flexion – limit to 90 degrees
  - Passive flexion
  - Wall slides
  - Heel slides
- Quadriceps sets in full extension
- Straight leg raises in brace locked in extension
- Hamstring sets (full extension)
- Patella mobilization (all directions)
- Isometric strength exercise (hip abduction, adduction)
- Ankle ROM

## PHASE II (Week 3 – 6)

### Goals

- Control pain and swelling
- Restore normal gait with stair climbing
- Maintain full extension, progress toward full flexion range of motion
- Increase hip, quadriceps, hamstring and calf strengths
- Improve proprioception
- Gain full weight bearing (with crutches)

### Brace

- May wean out of brace when good quad control is demonstrated

### Weight bearing status

- Weight bearing as tolerated, wean off crutches

### Exercises

- Continue as above, maintaining full extension. Progress to 120 degrees

- Stationary bicycling, stair master. Start slow. Progress to low resistance
- Hamstring curls
- Hip abduction, adduction and extension
- Neuromuscular exercises (proprioceptive)
- Strengthening exercises : SLR, squats (0~60°), leg press (0~60°)
- Isotonic exercises : knee extension (safe range: 90~40°)

## PHASE III (Week 6– 12)

### Goals

- Gain full active range of motion
- Increase strength
- Become sufficient for normal gait and activities of daily living

### Exercises

- Hamstring stretching
- Full ROM or bike with low seat
- Strengthening exercises : unilateral leg press, step ups, advance muscle strength
- Stationary bicycling, stair master or elliptical to increase resistance
- Treadmill walking
- Swimming, water conditioning (litter kick only)
- Balance and proprioceptive training
- Closed chain quad strengthening. No knee flexion greater than 90 degrees with leg press

## PHASE IV (Month 3 – 6)

### Goals

- Improve strength, endurance and proprioception
- Begin agility training

### Brace

- Functional ACL brace

### Exercises

- Full ROM
- Continue and progress strengthening
- Cardiovascular conditioning - may start jogging program, forward/straight running only
- Progress to running program at 5 months
- Begin agility training at 5 months
  - Side steps
  - Crossovers
  - Shuttle running
  - One leg and two leg jumping
  - Cutting
  - Acceleration/deceleration/sprints
  - Agility ladder drills
- Neuromuscular exercises (proprioceptive)
- Initiate sport-specific drills as appropriate. Progress as tolerated on gradually unstable surfaces

## PHASE V (Post-op 6 months)

### Goals

- Maintain strength, endurance and proprioception
- Regain functional activity
- Return to sport safely

### Brace

- Functional ACL brace for contact sports, jumping and landing or cutting and twisting until 1 year after surgery, then per patient preference