

## ACL Reconstruction Protocol

The primary goal of ACL rehabilitation is to minimize complications and maximize the functional outcomes for the patient so that they complete the process with a stable and asymptomatic knee. Therapy seeks to restore the neuromuscular coordination, soft tissue mobility, and joint mobility throughout the spectrum of movement.

Ideally a therapy program would begin in the pre-operative phase, but this is not always attainable. This phase allows for restoration of full motion, elimination of the inflammatory response, and reversal of the muscular inhibition experienced post injury. This phase also allows for patient and family education regarding the post-operative continuum of care and expectations.

This six phase protocol is strictly a guideline. Each individual patient should be guided along the protocol while being mindful of their individual abilities and limitations. Goals and criteria for progression are outlined in each phase and typically, all criteria should be met before progressing the patient to the next phase. Progression along the rehabilitation protocol can be affected by many factors, including but not limited to: surgical findings, complications, compliance with HEP, psychological factors, and success in attaining goals established by the medical team.

### I. Pre-Operative Phase:

Shortly after injury-Surgery

#### Goals:

- Restore normal knee ROM (especially extension) at least 0-125°
- Management of pain and swelling (compression, elevation, ice, etc.)
- Restore voluntary muscle activation
- Provide patient and family with education to prepare for surgery
- Instruct/establish a home exercise program
  - o [www.choc.org/orthopaedics/surgery/knee-ligament-repair-reconstruction/exercises-after-acl-surgery/](http://www.choc.org/orthopaedics/surgery/knee-ligament-repair-reconstruction/exercises-after-acl-surgery/)
- Crutch and stair training

*Physician will schedule surgery, thus ending this phase of the rehab process*

### II. Immediate Post-Operative Phase:

Days 1-7

Ambulation: TTWB to PWB with bilateral crutches and knee brace locked in full extension

- o **If meniscal repair maintain NWB to TTWB for first 4 weeks post-operatively**

Sleep: with brace locked in full extension

CPM: start **at least** 0-30° and progress as tolerated or per MD protocol

#### Goals:

- Establish full passive knee extension
- Control pain and swelling as this can limit progression of ROM and function
- Restore patellar mobility
- Begin to increase knee flexion mobility (45-90°)
- Decrease quadriceps inhibition
- Schedule PT evaluation
- Perform exercises at home

- [www.choc.org/orthopaedics/surgery/knee-ligament-repair-reconstruction/exercises-after-acl-surgery/](http://www.choc.org/orthopaedics/surgery/knee-ligament-repair-reconstruction/exercises-after-acl-surgery/)

*Completion of these goals allows progression to next phase, some goals will be continued in next phase as well*

### III. **Early Functional Rehabilitative Phase:**

Weeks 2-4

Ambulation: WBAT to FWB with normal gait mechanics by the end of the phase

- **If meniscal repair maintain NWB to TTWB in brace extended throughout phase**

Sleep: continue with brace locked in extension unless advised by MD or therapist

CPM: continue 6 hours per day until reach greater than 90°

*Goals:*

- Maintain full passive knee extension and into hyperextension if available on contralateral limb
- Progress knee flexion
  - Week 2 = 60°
  - Week 3 = 90°
  - Week 4 = 110°
- Diminish remaining swelling and pain
- Improve muscle control and activation in functional positions
- Address proprioception and neuromuscular control (delayed in meniscal repair)
- Continued normalization of patellar mobility

*Criteria for progression:*

- AROM at least 0-110°
- Minimal knee joint effusion
- No joint line pain or patellofemoral pain
- Closed incisions

### IV. **Progressive Strengthening/Neuromuscular Control Phase:**

Weeks 4-10

Ambulation: FWB with/without neoprene sleeve and normalized gait mechanics

- **If meniscal repair WBAT with brace open 0-30° x 2 weeks**

Activities: with MD/PT clearance can add bicycling, swimming (closer to end of phase, no breaststroke), some gym activities

*Goals:*

- Restore full knee ROM 0-125°
- Improve lower extremity strength
- Enhance proprioception, balance and neuromuscular control
- Improve endurance, both muscular and cardiovascular
- Restore limb confidence and function

*Criteria for Progression:*

- Full active and passive ROM 0-125°
- Quadriceps strength 75% of contralateral side
- Minimal postural sway or asymmetry during functional loading activities
- No pain or effusion
- Star excursion anterior reach within 20% contralateral limb

**V. Late Functional Rehab Phase:**

Weeks 10-16

SL Hop Testing: at 12 weeks should be within 80% of the contralateral limb

- o **For meniscal repair testing occurs no sooner than 16 weeks**

Hand Held Dynamometer (if available):

- o quadriceps 80% or better
- o gluteus maximus 80% or better
- o hamstrings 80% or better for quad/BTB graft, 60% or better for HS graft

Jogging: if pt can pass functional strength and neuromuscular control tests can begin to jog at 12 weeks for ACLR and 16 weeks for ACLR + meniscal repair

*Goals:*

- normalize lower extremity strength bilaterally
- enhance power and endurance bilaterally
- begin select sport specific drills (no cutting or pivoting)
- progress confidence in limb with increasing challenge to neuromuscular control
- emphasize symmetry with closed chain loading
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*Criteria for Progression*

- Proprioception equal to contralateral limb
- Strength symmetry as listed above
- Adequate clinical evaluation
- SL hop testing within 20% of contralateral limb
- Landing mechanics demonstrate appropriate hip flexion and frontal plane knee control

**VI. Return to Activity/Sport Phase:**

Weeks 16-36

Gradual return to full activity

Functional tests relevant to activity preferences

Return to sport only when cleared by physician

- o no sooner than 9 months post-operative but possibly 12 months

Progress dynamic control in sport specific drills

- o progress speed in straight away
- o progress to cutting at decreased speed
- o progress speed in cutting
- o re-establish deceleration control

Decrease hesitation in dynamic activities

*Goals:*

- normalize movement patterns and dynamic control in sport specific positions
- equalize strength, power and endurance
- full confidence in limb, no fear or reinjury or avoidance

*Criteria for Progression*

- Strength symmetry > 90% of contralateral limb
- SL hop testing > 95% symmetry
  - o Triple hop, triple crossover, 6 m timed hop
- Displays normal running pattern
- Has practiced and displays normal movement patterns