

All-Epiphyseal ACL Reconstruction Guidelines

Credit to Children's Hospital of Philadelphia, Ganley/Wells
(Revised 6/28/2010)

The following protocol utilizes a blend of both criteria and timeframes as the determinants of advancement. It is recognized that many athletes will feel good relatively early in their rehabilitation and want to advance to higher level activities as a result. In spite of rapid functional progress, it is important to respect the biological component of recovery and limit advancement if the timeframe for a given healing stage has not been completed. Overall, this protocol targets return to full unrestricted activity at 9 months if all other criteria are also met. If the criteria are met sooner, the patient must restrict his/her activity level until the end of the 9th postop month.

Week 1: (Visit #1 scheduled to begin one week post op)

Goals:

- 1) Ambulation/Brace Use: **ToeTouch Weight Bearing**
 - Postop brace locked in full extension for ambulation
 - Sleep with brace locked in full extension
- 2) Maintain Full Knee Extension
- 3) Minimize Pain and Effusion Compression wrap, elevation, ice
- 4) Good quad activation
- 5) Patient Education:
 - What to expect, how to maintain extension
 - CPM review (if applicable)
 - Crutches, wt bearing status
 - Hinged postop brace education

If Meniscal repair, the following modifications are necessary:

- a. PWB first 4 weeks then WBAT after 4 weeks
- b. Brace ROM restricted 0°90° first 4 weeks ; then progress to open as appropriate
- c. D/C brace after 6 weeks if criteria met (see Weeks 4-16 section for criteria)
- d. No isolated hamstrings until after week 6
- e. No squats below 60° until after week 6

Exercises:

- CPM Machine start at 0 30 degrees. Increase no less than 10 degrees per day.
- PROM
 - a. Wall Slides Seated Active Assistive Knee Flexion
 - b. Prone Dangle
 - c. Passive resting extension with heel prop
- Patellar Mobilizations
- Quad muscle Activation (Functional EStim w/ Quad setting and/or Biofeedback)
- SLR x3 (Flexion, Adduction, Abduction)
- Hamstring/Calf Stretches
- Ankle Pumps
- Gait Training
- Home Exercise Program (2-3 times per day)

Week 2 to 4:

Goals:

1) Ambulation/Brace Use: Continue crutch use, **WBAT, brace locked in full extension** until end of week 4 (*unless meniscal repair*):

****In Physical Therapy only, WBAT without brace for ROM, strength, & gait training****

****Continue to sleep with brace locked in full extension until end of week 4****

- 2) Maintain Full Knee Extension
- 3) Minimize Effusion and pain
- 4) Promote Knee Flexion: • 90° by end of week 2
• 120° by end of week 4
- 5) Good patellar mobility
- 6) Fair proprioception, involved leg
- 7) Independent with home exercises

Exercises:

- As previous (*If meniscal repair, see precautions in Week 1*)
- Scar Mobilization/Massage
- Proprioceptive Neuromuscular Facilitation, Progressive Resistive Exercises
- Manual/Machine resisted leg press
- Balance/Proprioception
- Isometric Knee extension 90/60
- Stationary Bike for ROM
- MiniSquats progress up to 90°
- Step ups
- Retro Treadmill/Stairmaster
- Core
- Hip abduction/external rotation
- Review HEP

Weeks 4 to 16:

Goals:

1) Discontinue crutch use **at 4 weeks**

2) Ambulation/Brace Use:

After 4 weeks, unlock postop brace for ambulation (90° progress to open) if following criteria are met:

- a. SLR without quadriceps lag (10 repetitions)
- b. Active knee flexion range to greater than angle of brace

After 6 weeks, wean and discontinue postop brace if criteria met (*8 weeks for meniscal repair*):

- a. ROM \geq 100°
- b. Single Leg Squat 30° with good knee control
- 4) Normalize Gait Pattern
- 5) Full ROM
- 6) Enhance Strength
- 7) Enhance Proprioception/Balance
- 8) Improve Local Muscular Endurance
- 9) Initiate Cardiovascular training

Exercises:

- As above
- Functional Strengthening
- Proprioceptive Neuromuscular Facilitation, Progressive Resistive Exercises
- Manual/Machine resisted leg press
- Balance/Proprioception
- Squats to 90 degrees
- Single leg squats
- Step ups
- Retro Treadmill/Stairmaster

- Review Home Exercise Program (2 times per day)

12 weeks:

- May add open chain knee extension through full range

Weeks 16 to 24:

Goals:

1) Criteria to begin straight ahead running, doubleleg hopping:

Isokinetic Test Quad

Peak Torque Deficit $\leq 25\%$ at $180^\circ/\text{sec}$ and $300^\circ/\text{sec}$ 2) KT 1000 test: 15#, 20#, Quad Active, Manual Maximum (if available)

Exercises:

- Continue strength, endurance, proprioception progression
- Begin doubleleg hopping, jogging, agility drills as able and if passed Isokinetic Test
- Initiate sport specific activities and doubleleg plyometrics as able and if passed Isokinetic Test

Weeks 24 to 36:

Goals:

- 1) Gradual Return to unrestricted sports if Criteria met
 - a. Painfree running
 - b. Functional Tests ($>90\%$) and Pain free
 - c. Isokinetic test
 - Quadriceps Peak Torque Deficit $\leq 10\%$
 - Total Work $\leq 10\%$
 - d. KT 1000 test: 15#, 20#, Quad Active, Manual Maximum (if available)
 - e. Cardiovascular endurance to subjective pre-morbid level

Exercises:

- Singleleg plyometrics
- Cutting/pivoting drills with stutter step pattern
- High intensity aerobic/anaerobic sport specific training
- Advanced lower extremity strengthening

RETURN TO SPORTS CRITERIA

- 1) 90% Functional tests
- 2) $\geq 90\%$ Isokinetic Test at $180^\circ/\text{sec}$, and $300^\circ/\text{sec}$
- 3) Full knee ROM
- 4) 9 months postop

Recommended Functional Hop Test:

- Triple Hop for distance
- Single Hop for distance
- Lateral Hop (12"x12" squares separated by 12"# of hops IN BOX
- Unilateral Vertical Jump