



## **Physeal Sparing Anterior Cruciate Ligament Reconstruction**

The following protocol utilizes a blend of both criteria <u>and</u> 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 <u>at 9 months</u> if all other criteria are also met. If the criteria are met sooner, the patient may restrict his/her activity level until the end of the 9<sup>th</sup> post-op month.

\*\*CPM is at physician's discretion depending on ROM progression

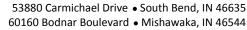
## Week 1: (Visit #1 scheduled to begin one week post-op)

#### Goals:

- 1) Ambulation/Brace Use:
  - Toe-Touch Weightbearing
  - Post-op 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 post-op brace education

#### **Exercises:**

- CPM machine Start at 0-30 degrees. Increase <u>about</u> 10 degrees per day.
- PR∩M
  - a) Wall slides seated active assistive knee flexion
  - b) Prone dangle
  - c) Passive resting extension with heel drop
- Patellar mobilizations
- Quad muscle activation (functional E-Stim w/ quad setting and/or biofeedback)
- SLR x3 (flexion, adduction, abduction)
- Hamstring/calf stretches
- Ankle pumps
- Home exercise program (2-3 times per day)



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#### Week 2 to 4:

#### Goals:

- 1) Ambulation/Brace Use: -Continue crutch use, <u>PWB brace locked in full extension</u>
  \*\*In physical therapy <u>only</u>, 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
- 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
- Mini-squats progress up to 90°
- Step ups
- Retro treadmill/Stairmaster
- Hip abduction/external rotation
- Review HEP

### Week 4-16:

## **Goals:**

- 1) Discontinue crutch use at 4 weeks
- 2) Ambulation/Brace Use:
  - After 4 weeks, unlock post-op 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 post-op brace if criteria met:
    - a. ROM  $100^{\circ}$
    - b. Single leg squat 30° with good knee control
- 3) Normalize gait pattern
- 4) Full ROM
- 5) Enhance strength
- 6) Enhance proprioception/balance
- 7) Improve local muscular endurance
- 8) Initiate cardiovascular training

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#### **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 open chain knee extension through full range

## Weeks 16 to 24:

#### Goals:

- 1) Criteria to begin straight ahead running, double-leg hopping: Isokinetic test- Quad peak torque deficit; 25% at 180°/sec and 300°/sec
- 2) KT 1000 test: 15#, 20#, Quad active, manual maximum (if available)

#### **Exercises:**

- Continue strength, endurance, proprioception progression
- Begin double-leg hopping, jogging, agility drills as able and <u>if passed isokinetic test</u>
- Initiate sport specific activities and double-leg plyometrics as able and <u>if passed isokinetic test</u>

#### Weeks 24 to 36:

#### Goals:

- 1) Gradual return to unrestricted sports if criteria met
  - a. Pain free running
  - b. Functional tests (>90%) and pain free
  - c. Isokinetic test
    - i. Quadriceps peak torque deficit, 10%
    - ii. Total work, 10%
  - d. KT 1000 test: 15#, 20#, quad active, manual maximum (if available)
  - e. Cardiovascular endurance to subjective pre-morbid level

#### **Exercises:**

- single leg 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 test
- 2) 90% isokinetic test at 180°/sec and 300°/sec
- 3) Full knee ROM
- 4) 9 months post-op



Recommended Functional Hop Test:

- Triple hop for distance
- Single hop for distance
- Lateral hop (12"x12" squares separated by 12" # of hops <u>IN BOX</u> in 20 seconds)
- Unilateral vertical jump
- \*\*CPM is at physician's discretion depending on ROM progression

# **Postoperative Bracing Instructions**

Post-op Week	Brace Status	Weight Bearing
Week 0-3	Locked at 0°	Toe-Touch
Week 4	Open 0°-50°	Partial Weight Bearing (PWB)
Week 5	No Brace (at home) Open 0°-90°	FWB FWB
Week 6	No Brace	FWB