

# Anterior and Posterior Cruciate Ligament Combined Reconstruction Surgery Rehabilitation Program

# Phase I (Day 1-13)

- Goals:
  - o Restore full passive knee extension
  - O Diminish joint swelling and pain
  - o Restore patellar mobility
  - o Gradually improve knee flexion
  - Re-establish quadriceps control
  - Restore independent ambulation

# Postoperative Day 1-4

- o Brace
  - Drop lock brace locked at 0 degrees extension with compression wrap Sleep in brace
- Weight bearing
  - Two crutches as tolerated (less than 50%)
- o Range of motion
  - 0-45/50°
- Exercises
  - Ankle pumps
  - Quad sets
  - Straight leg raising –flexion, abduction, adduction in brace
  - Muscle stimulation to quadriceps (4 hours per day) during quad sets & straight leg raises
  - Patellar mobilizations 5-6 times daily
  - Ice and elevation every 20 minutes of each hour with knee in extension

# • Postoperative Day 5-13

- o Brace
  - Continue use of drop lock brace locked at 0° extension during ambulation & sleep
- Weight bearing
  - Two crutches gradually increase WB to 50% by day 7; 75% by day 12
- Exercises
  - Continue previous exercises
  - Continue use of muscle stimulation
  - Patellar mobilizations 5-6 times daily
  - Continue use of ice, elevation, and compression

# Phase II – Maximum Protection (Week 2-6)

- Criteria to Enter Phase II:
  - o Good quad control (ability to perform good quad set and SLR)
  - o Full passive knee extension
  - o PROM 90°
  - Good patellar mobility
  - o Minimal joint effusion

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### • Goals:

- o Control deleterious forces to protect grafts
- Nourish articular cartilage
- Decrease swelling
- o Decrease fibrosis
- o Prevent quad atrophy
- Initiate proprioceptive exercises

#### • Week 2

- o Brace
  - Continue use of brace locked at 0° of extension
- Weight Bearing
  - As tolerated; approximately 75% body weight
- o Range of motion
  - Continue to perform passive ROM 5-6 times daily
  - Day 14: 0-90°
- Exercises
  - Continue quad sets & straight leg raises
  - Multi-angle isometrics at 60° and 40°
  - Patellar mobilizations 5-6 times daily
  - Well leg bicycle
  - Mini-squats (0-45°)
  - Continue use of muscle stimulation
  - Continue ice, elevation, and compression
  - Quadriceps isotonic 90-40°

### • Week 3

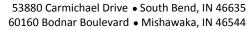
- Continue above mentioned exercises
- o ROM 0-90°
- o Continue use of 2 crutches 75-80% body weight

### Week 4

- o Brace
  - Continue use of brace locked at 0° extension
  - Discontinue sleeping brace
- Weight Bearing
  - Progress weight bearing as tolerated with 1 crutch
- Range of motion
  - AROM, AAROM, PROM: 0-90/100°
- Exercises
  - Weight shifts
  - Mini-squats (0-45°)
  - Quadriceps isotonic 90-40°
  - Light pool exercises and walking
  - Initiate bicycle for ROM & endurance
  - Begin leg press 60-0° (light weight)
  - Proprioception/balance drills

### Week 5-6

o Discontinue use of crutches week 5-6



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- Unlock brace for ambulation week 6
- Fit for functional ACL/PCL brace
- o Range of motion
  - Week 5: 0-105°
  - Week 6: 0-115°
- o Continue pool exercises
- o Initiate lateral lunges

# Phase III Moderate Protection (week 7-12)

### • Criteria to Enter Phase III

- o PROM 0-115°
- o Full weight bearing
- o Quadriceps strength 60% contralateral side (isometric test at 60 degrees)
- o Minimal to no full joint effusion
- No joint line or patellofemoral pain

#### Goals

- o Control forces during ambulation
- o Progress knee range of motion
- o Improve lower extremity strength
- o Enhance proprioception, balance, and neuromuscular control
- o Improve muscular endurance
- Restore limb confidence and function

# Brace

- o Continue use of unlocked brace for ambulation discharge week 7-8
- Range of motion
  - o AROM/PROM: 0-125°

#### Exercises

- o Continue previous exercises
- Initiate swimming
- o Initiate lateral and front step-ups (2" step, gradually increase)
- o Progress closed kinetic chain exercises (squats 0-60°, leg press 90-0°)
- o Progress proprioceptive training

# Phase IV – Controlled Activity (Week 13-16)

# • Criteria to Enter Phase IV:

- AROM 0-125°
- o Quadriceps strength > 60-70 contralateral side (isokinetic test)
- o No change in KT scores (+2 or less)
- No patellofemoral complaints
- Satisfactory clinical exam

#### Goals

- o Protect healing grafts
- o Protect patellofemoral joint articular cartilage
- o Normalize lower extremity strength
- o Enhance muscular power and endurance
- o Improve neuromuscular control

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### Exercises

- o Continue previous exercises
- Emphasis on eccentric quadriceps strengthening
- o Continue closed kinetic chain mini-squats, step-ups, step-downs, lateral lunges and leg presses
- o Hip abduction/ adduction
- Initiate front lunges
- o Calf raises (gastroc and soleus strengthening)
- o Bicycle and Stairmaster for endurance
- o Initiate pool running (side shuffle, backward, forward)
- o Initiate walking program
- o Initiate isokinetic exercise 100-40° (120-240°/ spectrum)

## Phase V – Light Activity (Month 4-6)

# • Criteria to Enter Phase V

- o AROM > 125
- o Quadriceps strength 70% of contralateral side; flexion/extension ratio 70-79%
- o Minimal joint effusion
- o Satisfactory clinical exam

### Goals

- o Enhancement of strength, power, endurance
- o Initiate functional and/or sport-specific activity
- o Prepare for return to functional activities

#### Exercises

- o Continue strengthening exercises emphasize quadriceps & co-contraction
- o Initiate plyometric program
- o Initiate running program\*
- o Initiate agility drills
- o Initiate sport-specific training and drills

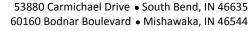
# • \*Criteria to initiate running program

- o Acute reconstruction may begin at 4-5 months
- o Chronic reconstruction may begin at 5-6 months
  - Satisfactory clinical exam
  - Unchanged KT test
  - Satisfactory isokinetic test
  - Quadriceps bilateral comparison (80% or greater)
  - Hamstring bilateral comparison (110% or greater)
  - Quadriceps torque/body weight ratio (55% or greater)
  - Hamstring/quadriceps ratio (70% or greater)
  - Proprioception testing 100% of contralateral side
  - Function hop test >75% of contralateral leg

# **Phase VI – Return to Activity Phase (Month 6-9)**

## • Criteria to return to activities:

- o Satisfactory clinical exam
- Unchanged KT test
- Satisfactory isokinetic test



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- Proprioception testing 100% of contralateral leg
- Functional hop test >80% of contralateral leg
- Goals
  - o Gradual return to full-unrestricted sports
  - o Achieve maximal strength and endurance
  - o Normalize neuromuscular control
  - o Progress skill training
- Exercises
  - Continue strengthening programs
  - o Continue proprioception & neuromuscular control drills
  - o Continue plyometric program
  - o Continue running and agility program
  - o Progress sport-specific training and drills

# CLINICAL FOLLOW-UPS AT 6, 12, AND 24 MONTHS POSTOPERATIVE

- o Functional testing
- Clinical exam