

## **ACL RECONSTRUCTION PHYSICAL THERAPY PRESCRIPTION**

**Diagnosis: s/p ( LEFT / RIGHT ) ACL Reconstruction**

**Other Procedures: Meniscus Repair (Medial / Lateral)  
Partial Meniscectomy (Medial / Lateral)  
Cartilage Procedure: \_\_\_\_\_**

**Graft Type: \_\_\_\_\_**

**Date of surgery: \_\_\_\_\_**

### **General Information:**

The following ACL rehabilitation guidelines are based on a review of the randomized controlled trials related to ACL rehabilitation. For many aspects of ACL rehabilitation there are either no studies that qualify as best evidence or the number of studies is too few for conclusions to be drawn with confidence. In these circumstances, certain aspects of this protocol are based upon the guidance of the Multi-center Orthopaedic Outcome Network panel (MOON).

The guidelines have been developed to service the spectrum of ACL injured individuals (from non-athlete to elite athlete). For this reason, example exercises are provided instead of a highly structured rehabilitation program. **Attending rehabilitation specialists should tailor the program to each patient's specific needs.**

Some treatment methods with supporting evidence (e.g. using a high intensity electric stimulation training program for strength, aqua-therapy, blood flow restriction, etc.) are not included in the program because not all therapy sites may have this available.

Progression from one phase to the next is based on the patient demonstrating readiness by achieving **functional criteria rather than the time elapsed since surgery**. The time frames identified in parentheses after each Phase are approximate times for the average patient, NOT guidelines for progression. Some patients will be ready to progress sooner than the time frame identified, where others will take longer.

### **Phase 1: Immediate Post-Operative Phase (Approx. timeframe: Surgery - 2 weeks)**

#### **GOALS:**

Full knee extension  
Good quadriceps control ( $\geq 20$  no lag SLR)  
Normal gait pattern  
Minimize pain  
Minimize swelling

**Crutch Use:**

- WBAT with crutches (beginning day of surgery)
- **If meniscal repair:**  
**TTWB with brace locked in extension for weeks 0-2, advance to full WB at 2 weeks**

**Crutch d/c criteria:**

- Normal gait pattern (crutches until 4-6 weeks if meniscal repair)
- Ability to safely ascend/descend stairs w/o pain/instability
- Reciprocal stair climbing

**Hinged Knee Brace:**

- Brace locked in extension while walking until able to perform SLR independently

**Cryotherapy:**

- Cold with compression and elevation
- 24-48 hrs after surgery: every hour for 15-20 minutes
- After acute inflammation is controlled: 3x per day for 15-20 minutes
- Crushed ice in clinic after PT sessions

**Exercise Suggestions:****ROM:**

- Extension: Low load, long duration (5 minutes) stretching  
E.g. Heel prop, prone hang
- Flexion: Wall slides, heel slides, seated assisted knee flexion  
**Flexion limited to 90° to protect meniscal repair if performed**
- Bike: Rocking for range (no resistance, motion-focused)
- Patellar mobilization: medial/lateral mobilization initially followed by superior/inferior direction while monitoring reaction to effusion & ROM

**Muscle Activation/Strength:**

- Quadriceps sets emphasizing vastus lateralis and vastus medialis activation
- SLR emphasizing no lag
- Electric stimulation: optional if unable to perform no lag SLR  
D/c use when able to perform 20 no lag SLR
- Double leg quarter squats
- Standing theraband resisted standing terminal knee extension (TKE)
- Hamstring sets & hamstring curls
- Side lying hip adduction/abduction (avoid adduction moment in this Phase with concomitant grade II-III MCL injury)
- Quad/ham co-contraction supine
- Prone hip extension
- Ankle pumps with theraband
- Heel raises (calf press)

**Cardiopulmonary:**

- UBE or similar exercises is recommended

**Scar Massage (only when incision is fully healed)**

## **CRITERIA FOR PROGRESSION TO PHASE 2:**

- No lag SLR
- Crutch/immobilizer is d/c'ed
- Normal gait
- ROM: No greater than 5° active extension lag, 110° active flexion

## **Phase 2: Approx. timeframe: 2-6 weeks**

### **GOALS:**

Full ROM

Improve muscle strength

Progress neuromuscular retraining

### **Exercises Suggestions:**

#### **ROM:**

- Low load, long duration (assisted prn)
- Heel slides/wall slides
- Heel prop/prone hang (minimize co-contraction/nociceptor response)
- Bike (rocking-for-range, riding with low seat)
- Flexibility stretching all major groups

#### **Strengthening**

- Quad sets, step ups, leg press
- Mini squats/wall squats
- Knee extension from 90° to 40°
- Shuttle Press without jumping action
- Hamstring curls
- Resistive SLR with sports cord
- Hip musculature: Hip adduction/abduction
- Multi hip machine in all directions with proximal pad placement
- Standing heel raises: progress from double to single leg
- Seated calf press against resistance

#### **Neuromuscular Training:**

- Wobble board
- Rocker board
- Slide board
- Fitter
- Single leg stance with or without equipment (e.g. instrumented balance system)

#### **Cardiopulmonary:**

- Bike
- Elliptical trainer

### **CRITERIA FOR PROGRESSION TO PHASE 3:**

- Full ROM
- Minimal effusion/pain
- Functional strength and control in daily activities

### **Phase 3: Approx. timeframe: 7-12 weeks**

#### **Goals:**

Maintain full ROM

Normal patellar mobility

Normal gait

Ascent stairs with good control

Return to normal ADLs

#### **Exercises Suggestions:**

##### **Strengthening:**

- Squats & leg press: Should not be performed deeper than 90° of knee flexion
- Hamstring curls
- Step ups/down
- Lunges
- Wall Squats
- Hip/CORE program

##### **Neuromuscular Training:**

- Wobble board, rocker board, slide board
- Single leg stance with or without equipment (e.g. instrumented balance system)
- Perturbation training
- Varied surface

##### **Cardiopulmonary:**

- Elliptical
- Biking
- Stair master

### **CRITERIA FOR PROGRESSION TO PHASE 4:**

- Ability to perform single leg step up/down with good control
- Normal gait
- No swelling

### **Phase 4: Approx. timeframe: 13-16 weeks**

#### **GOALS:**

Running without pain or swelling

Hopping without pain, swelling, or giving way

#### **Exercise Suggestions:**

**Aggressive Strengthening:**

- Squats
- Leg press
- Lunges
- Plyometrics

**Neuromuscular Training:**

- Wobble board, rocker board, slide board
- Single leg stance with or without equipment (e.g. instrumented balance system)
- Perturbation training
- Varied surface

**Cardiopulmonary:**

- Straight line running on treadmill or in a protected environment (no cutting or pivoting)
  - Ok to begin running if can do well controlled single leg squat
  - If pain or swelling develops - back off
  - Ice after jogging
  - Day off in between jogs, gradual increase in time (10-15%) per session
- Ok to begin swimming with flutter kick/frog kick at 4 months

**CRITERIA FOR PROGRESSION TO PHASE 5:**

- Running without pain or swelling
- Hopping without pain or swelling (bilateral and unilateral)
- Neuromuscular training and strength exercises without difficulty

**Phase 5: Approx. timeframe: 17-20 weeks****GOALS:**

Running patterns (Figure-8, pivot drills, etc.) at 75% speed without difficult

Jumping without difficulty

Hop tests at 75% contra-lateral values

**Exercise Suggestions:****Aggressive Strengthening:**

- Squats
- Lunges
- Plyometrics

**Agility Drills:**

- Shuffling
- Vertical jumps
- Carioca
- Running patterns at 50-75% speed (e.g. Figure 8)
- Initial sports specific drill pattern at 50-75% effort

**Neuromuscular Training:**

- Wobble board, rocker board, slide board
- Single leg stance with or without equipment (e.g. instrumented balance system)
- Perturbation training

- Varied surface

### **Cardiopulmonary:**

- Running
- Swimming
- Elliptical
- Biking

### **CRITERIA FOR PROGRESSION TO PHASE 6:**

- Maximum vertical jump without pain or instability
- 75% of contra-lateral on hop tests
- Figure 8 run at 75% speed without difficulty

### **Phase 6: Approx. timeframe: >20 weeks**

#### **Goals:**

85% contra-lateral strength

85% contra-lateral on hop tests

Sport specific training without pain, swelling, or difficulty

Return to sport after 9 months

#### **Exercise Suggestions:**

##### **Aggressive Strengthening:**

- Squats
- Lunges
- Plyometrics

##### **Sport Specific Activities:**

- Interval training programs
- Sprinting
- Change of direction drills
- Pivot and drive in basketball
- Spiking in volleyball
- Running patterns in football
- Kicking in soccer

### **RETURN TO SPORT EVALUATION RECOMMENDATIONS:**

- Hop tests: single leg hop, triple hop, crossover hop, 6 meter timed hop
- Isokinetic strength test (60°/second)
- Deceleration shuttle test

### **RETURN TO SPORT CRITERIA:**

- NO return to sport prior than 9 months
- No functional complaints
- Confidence when running, cutting, jumping at full speed
- 85% contra-lateral values on hop tests

Treatment: \_\_\_\_\_ times per week      Duration: \_\_\_\_\_ weeks      \_\_\_\_\_ Home Program

Physician's Signature: \_\_\_\_\_      Date: \_\_\_\_\_

**Daniel J. Chernoff, M.D.**  
Orthopedic Surgery, Sports Medicine  
Kansas City Orthopedic Alliance  
3651 College Blvd. Leawood, KS 66211  
Phone: (913) 319-7600  
Fax: (913) 253-1704  
KS License: 04-46252  
MO License: 2019014833  
NPI: 1326401456

