

# pt connection

Orthopedic & Sports P.T. Assoc. OSPTA • OSPTA@Home  
Valley Outpatient Rehabilitation VOR

## ***ACL: Anterior Cruciate Ligament Rehabilitation***

### **INTRODUCTION**

Along with advancements in ACL reconstructive surgery, the rehabilitation of the ACL patient has undergone significant change in the past 20 years. Years ago, a period of maximal protection following surgery prohibited the patient from restoring functional ROM or initiating a strengthening protocol for a 4 to 6 week period of post-operative immobilization. Today, many patients are starting a progressive outpatient physical therapy program within 2 to 3 days following surgery.

Protocols are now designed in four to five phases of rehabilitation with specific guidelines for each phase of physical therapy. Goals within each phase are achieved before the patient moves to the next phase of rehab.

### **PHASE 1: ACUTE MANAGEMENT/EARLY MOTION AND BASIC MOVEMENT RETRAINING: 0-4 WEEKS**

This phase begins immediately after surgery and continues for 2 to 4 weeks depending upon the rate of the patient's progress. When a hamstring autograft is performed, the hamstring isometrics and curls are not initiated until after 4 weeks.

#### **GOALS:**

- Achieve full active knee extension equal to the uninvolved extremity.
- Eliminate swelling
- Restore the ability to control the leg while weight bearing.
- Achieve at least 125 degrees of knee flexion.
- Be able to lift the leg in all directions without assistance; voluntary quad contraction and decreased inhibition.
- Normalize gait pattern with the assistance of crutches or a cane.
- Brace is locked in extension initially for ambulation and sleep

#### **EXERCISES:**

##### **RANGE OF MOTION/STRETCHING**

- Ankle pumps
- Heel slides/Wall slides
- Prone knee extension/hanging
- Seated knee flexion
- Hamstring/Gastrocnemius Stretching
- Supine knee extension stretching

##### **MUSCLE ACTIVATION:**

- Quad Sets
- Hamstring Sets
- Straight Leg Raising with inclusion of Abduction, Adduction, and Hip Extension.  
Brace should be worn until quad lag is eliminated.
- Prone or Standing Hamstring Curls

## PHASE 2: BASIC STRENGTH AND PROPRIOCEPTION: 2 TO 6 WEEKS

### GOALS:

- Restore proper body alignment and control with basic movements including: ambulation without assistance (discontinue crutches); squats; stationary lunges; and single leg balance; full weight bearing
- Increase lower extremity strength.
- Develop increased proprioception; initially with stationary postures and progressing to movement.
- Achieve active ROM equal to the uninvolved knee.

### CRITERIA FOR PROGRESSION:

- Good quad set
- Straight Leg Raising without a lag
- Full knee extension and 90 degrees of knee flexion
- Minimal to no inflammation

### EXERCISES:

#### RANGE OF MOTION/FLEXIBILITY:

- Stationary Biking
- Prone Knee Flexion
- Standing Knee Flexion
- Passive Knee Extension: Supine and Prone
- A pool program as needed to assist in ROM.
- Flexibility Exercises: Hamstrings; IT Band; Gastrocnemius/Soleus; Hip flexors and Quadriceps.

#### PROPRIOCEPTION TRAINING:

- Weight Shifting
- Standing on Airex/Foam/Rebounder
- Standing Medicine Ball Throws
- BAPS/KAT
- Balance Reach; Single Leg leaning towers; Single Leg Balance with eyes closed; Single Leg toe raises

#### FUNCTIONAL STRENGTHENING:

- Wall squats/Mini squats (0-45 degrees)
- Step ups : (2 inch to full step)
- Leg Press: (0-30 degrees)
- Multi-hip Program

- Step Backs
- Stationary Lunges

## PHASE 3: DYNAMIC NEUROMOTOR STRENGTH, ENDURANCE, AND COORDINATION: (4-12 WEEKS)

### GOALS:

- Progress from single plane strengthening and functional exercises to multi-plane strengthening and functional exercises. This is a prerequisite for future progression to cutting and pivoting activities.
- Develop eccentric neuromuscular control to allow acceptance of impact activities without increasing symptoms. Patient must be able to balance on one leg for 10 seconds and be able to perform a single leg squat to approximately 45-60 degrees.
- Develop dynamic flexibility to allow for proper alignment during activities of increasing speed.
- Improved quad control for performance of ADL's.
- Prevention of patellofemoral symptoms/stresses; normal patella mobility.

### CRITERIA FOR PROGRESSION:

- Normal gait mechanics
- Full ROM with FWB status
- Sufficient strength and proprioception for functional activities

### EXERCISES:

#### RANGE OF MOTION/FLEXIBILITY:

- Continuation of prone knee extension hangs as indicated
- Continuation of stationary biking and prone flexion
- Continuation of static flexibility exercises for the lower extremity.

#### PROPRIOCEPTION EXERCISES;

- Medicine ball throws on an unstable surface
- Carioca and Crossover
- Windmills
- Sport Specific Training: Soccer ball drills balancing on injured lower extremity; Football passes while balancing on injured lower

extremity; Tennis racket swings while balancing on injured leg; basketball shot to partner in single leg stance position.

## FUNCTIONAL STRENGTHENING:

- Begin hamstring sets and standing hamstring curls for hamstring graft patients
- Advance closed kinetic chain exercises with unilateral leg squats and standing TKE's
- Leg Press (0-60 degrees)
- Isotonic short arc quads (90 to 60)
- Walking to jogging progression with straight forward running
- Squat and Reach; reach laterally with contralateral leg while maintaining squat position.
- Step downs; use of a 4-10 inch box; patient slowly lowers their body until the foot taps the floor while maintaining body weight on the involved "step foot".
- Forward and Side Lunge
- Reverse Lunge

## PHASE 4: ATHLETIC ENHANCEMENT: (12-16 WEEKS)

### GOALS:

- Progress from double leg impact control to single leg impact control.
- Develop proper technique and appropriate neuromuscular control with start and stop movements and change of direction.
- Eliminate apprehension that may exist with complex movements related to sports and return to unrestricted activity.

### CRITERIA FOR PROGRESSION:

- No signs of patellofemoral symptoms
- No pain, edema, and full ROM
- Sufficient strength and proprioception for functional activities.

### EXERCISES:

#### DYNAMIC FLEXIBILITY:

This type of flexibility involves movement as its base and involves movement pattern exercises to stress flexibility. The following are a few examples:

- High Knee Walking
- Low intensity bounding

- Skipping with swimmer's reach
- Side shuffles with arm swings
- High Skips
- Carioca
- Crossover Steps
- Lateral Leap
- Backward Skipping
- Back Pedaling

## JUMP PLYOMETRICS:

In phase 4, speed and motion is challenged by increasing the velocity and intensity of the balance exercises. The movements are more dynamic in nature. Each phase is 2 weeks in length. An increase in time or repetitions follows each phase progression.

**PHASE 1 JUMPS :** Wall Jumps; Tuck Jumps; Squat Jumps; Barrier Jumps both side to side and forward/backward; 180 degree jumps; Broad Jumps; Bounding in Place

**PHASE 2 JUMPS:** Jump, Jump, Jump Vertical; Scissor Jumps; Single Leg Hops; Bounding for Distance

**PHASE 3 JUMPS:** Up/Down 180 degree vertical; Mattress Jumps: side to side and forward/backward; Hop,Hop, Hop Stick; Jump into Bounding.

### PHASE 5: RETURN TO SPORTS PERFORMANCE:

This phase begins when all goals have been met in phase 4 and the patient is ready to return to sport specific movements and training concepts.

### CRITERIA

- No patellofemoral symptoms or edema
- Physician clearance
- Jogging without a limp
- Full speed run without a limp
- Figure of 8 without a limp
- A functional brace may be recommended by orthopedic surgeon during sports for 1-2 years post surgery.



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## NEWS *briefs*

OSPTA would like to announce the opening of their Washington office. The office manager will be Ms. Danielle Ramsey and the physical therapist will be Ms. Kelly Hohn, PT. The location of the office is as follows:  
 Franklin Heights Professional Center

125 North Franklin Drive • Suite 3 • Washington, PA 15301.

To schedule a day or evening appointment, please call: (724) 223-1207

In addition, OSPTA@Home provides home health services to assist the homebound patient.

To schedule an appointment, at any one of the OSPTA offices, please look below for the office convenient to you. OSPTA would like to thank Mark Aaron, PT for his contribution to the newsletter.



<b>Belle Vernon</b>	<b>724-929-5774</b>	<b>Connellsville</b>	<b>724-626-3320</b>	<b>OSPTA@Home</b>	<b>724-483-4859</b>
<b>Bethel Park</b>	<b>412-835-2259</b>	<b>Elizabeth</b>	<b>412-751-0040</b>		
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