



ACL Rehabilitation Guidelines

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PHASE 0 | PRE-OPERATIVE RECOMMENDATIONS

- Normal gait
- AROM 0 to 120 degrees flexion
- Strength: 20 SLR with no lag
- Minimal effusion
- Patient education on post-operative exercises and need for compliance
- Educated in ambulation with crutches
- Wound care instructions
- Educated in MOON follow-up expectations

PHASE 1 | IMMEDIATE POST-OPERATIVE PHASE

(Approximate timeframe: Surgery to 2 weeks)

GOALS

- Full knee extension ROM
- Good quadriceps control (greater than or equal to no lag SLR)
- Minimize pain
- Minimize swelling
- Normal gait pattern

Crutch Use: WBAT with crutches (beginning the day of surgery)

Crutch D/C Criteria:

- Normal gait pattern
- Ability to safely ascend/descend stairs without, noteworthy pain or instability (reciprocal stair climbing)

Knee Immobilizer: None *(Exception: First 24 hours after a femoral nerve block)*

Cryotherapy: Cold with compression/elevation (e.g. Cryo-cuff, ice with compressive stocking)

- First 24 hours or until acute inflammation is controlled: every hour for 15 minutes
- After acute inflammation is controlled: 3 times a day for 15 minutes
- Crushed ice in the clinic (post-acute stage until D/C)

EXERCISE SUGGESTIONS

ROM

- Extension: Low load, long duration (~5 minutes) stretching (e.g., heel prop, prone hang minimizing co-contraction and nociceptor response)
- Flexion: Wall slides, heel slides, seated assisted knee flexion, bike: rocking-for-range
- Patellar mobilization (medial/lateral mobilization initially followed by superior/inferior direction while monitoring reaction to effusion and 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. Discontinue use when able to perform 20 no lag SLR
- Double -leg quarter squats
- Standing theraband resisted 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 exercise is recommended

Scar Massage (when incision is fully healed)

CRITERIA FOR PROGRESSION TO PHASE 2

- 20 no lag SLR
- Normal gait
- Crutch/Immobilizer D/C
- ROM: no greater than 5 degrees active extension lag, 110 degrees active flexion

PHASE 2 | EARLY REHABILITATION PHASE

(Approximate timeframe: Surgery to 2 weeks)

GOALS

- Full ROM
- Improve muscle strength
- Progress neuromuscular retraining

EXERCISE 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 height)
- Flexibility stretching all major groups

Strengthening

Quadriceps:

- Quad sets
- Mini-squats/wall squats
- Steps-ups
- Knee extension from 90 degrees to 40 degrees
- Leg press
- Shuttle press without jumping action

Hamstrings:

- Hamstrings curls
- Resistive SLR with sports cord

Other musculature:

- Hip adduction/abduction: SLR or with equipment
- Standing heel raises: progress from double to single leg support
- Seated calf press gainst resistance
- Multi-hip machine in all directions with proximal pad placement

Neuromuscular training

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

Cardiopulmonary

- Bike
- Elliptical trainer
- Stairmaster

CRITERIA FOR PROGRESSION TO PHASE 3

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

PHASE 3 | STRENGTHENING & CONTROL PHASE

(Approximate timeframe: weeks 7 to 12)

GOALS

- Maintain full ROM
- Running without pain or swelling
- Hopping without pain, swelling or giving-way

EXERCISE SUGGESTIONS

Strengthening

- Squats
- Leg press
- Hamstring curl
- Knee extension 90 degrees to 0 degrees
- Step-ups/down
- Lunges
- Shuttle
- Sports cord
- Wall squats

Neuromuscular Training

- Wobble board/rocker board/rollerboard
- Perturbation training
- Instrumented testing systems
- Varied surfaces

Cardiopulmonary

- Straight line running on treadmill or in a protected environment (NO cutting or pivoting)
- All other cardiopulmonary equipment

CRITERIA FOR PROGRESSION TO PHASE 4

- Running without pain or swelling
- Hopping without pain or swelling (Bilateral and Unilateral)
- Neuromuscular and strength training exercises without difficulty

PHASE 4 | ADVANCED TRAINING PHASE

(Approximate timeframe: weeks 13 to 16)

GOALS

- Running patterns (Figure-8 pivot drills, etc.) at 75% speed without difficulty
- Jumping without difficulty
- Hop tests at 75% contralateral values (Cincinnati hop tests: single-leg hop for distance, triple hop for distance, crossover hop for distance, 6-meter timed hop)

EXERCISE SUGGESTIONS

Aggressive Strengthening

- Squats
- Lunges
- Plyometrics

Agility Drills

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

Neuromuscular Training

- Wobble board/rocker board/roller board
- Perturbation training
- Instrumented testing systems
- Varied surfaces

Cardiopulmonary

- Running
- Other cardiopulmonary exercises

CRITERIA FOR PROGRESSION TO PHASE 5

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

PHASE 5 | RETURN TO SPORT PHASE

(Approximate timeframe: weeks 17 to 20)

GOALS

- 85% contralateral strength
- 85% contralateral on hop tests
- Sports specific training without pain, swelling or difficulty

EXERCISE SUGGESTIONS

Aggressive Strengthening

- Squats
- Lunges
- Plyometrics

Sports Specific Activities

- Interval training programs
- Running patterns in football
- Sprinting
- Change of direction
- Pivot and drive in basketball kicking in soccer
- Spiking in volleyball
- Skill/biomechanical analysis with coaches and sports medicine team

RETURN-TO SPORT EVALUATION RECOMMENDATIONS

- Hop tests (single-leg hop, triple hop, cross-over hop, 6 meter timed-hop)
- Isokinetic strength test (60 degrees/second)
- Vertical jump
- Deceleration shuttle test
- MOON outcomes measure packet (mandatory; should be completed post-testing)

RETURN-TO SPORT CRITERIA:

- No functional complaints
- Confidence when running, cutting, jumping at full speed
- 85% contralateral values on hop tests