

Anterior Cruciate Ligament Reconstruction

Accelerated Rehabilitation Protocol

Dr. Mark Adickes

Introduction:

- This rehabilitation protocol is designed for patients with ACL injuries who anticipate returning early to a high level of activity following ligament reconstruction.

Goals of rehabilitation are to:

- Control joint pain, swelling, hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination

The physical therapy is to begin post-op day #1. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program.

Important post-op signs to monitor:

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitive
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature

Return to activity:

- It requires both time and regular clinic evaluation to safely and efficiently return to functional activity.
- Adequate strength, flexibility, and endurance are all necessary to return to high level function, all of which are addressed in this program.
- Isokinetic testing and functional evaluation are required to assess a patient's readiness to return to sport.

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Phase 1: Week 1-2

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Range of Motion:

- Passive ROM, No limits
- Aggressive Patella mobility
- Ankle pumps
- Gastroc-soleus stretches
- Wall slides
- Heel slides with towel

Strength:

- Quad sets x 10 minutes
- SLR (flex, abd, add)
- Multi-hip machine (flex, abd, add)
- Leg Press (90-20 °)-bilateral
- Mini squats (0-45 °)
- Multi-angle isometrics (90-60 °)
- Calf Raises

Balance Training:

- Weight shifts (side/side, fwd/bkwd)
- Single leg balance
- Plyotoss

Weight Bearing:

- Wt bearing as tolerated with crutches
- Crutches until quad control is gained, then discontinued

Bicycle:

- May begin when 110 ° flex is reached

Modalities:

- E-stim/biofeedback as needed
- Ice 15-20 minutes with knee at 0 ° ext

Brace:

- Wear post-op brace at all times with the following exceptions:
 - Remove brace to perform ROM activities
 - Brace not required in bed
- Will measure for functional brace post-op day #1

Hygiene:

- OK to shower post-op day #1
- No pools, ponds or hot tubs until 2 weeks post-op (do not submerge incision)

Goals for Phase 1:

- ROM 0-110 °
- Adequate quad contraction
- Control pain, inflammation, and effusion

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Phase 2: Week 2-4



Range of Motion:

- Passive ROM, unlimited
- Aggressive Patella mobility
- Ankle pumps
- Gastroc-soleus stretch
- Light hamstring stretch at wk 4
- Wall, heel slides to reach goal

Strength:

- Quad sets with biofeedback
- SLR in 4 planes (add ext at wk 4)
- Heel raise/Toe raise
- Leg Press
- Mini squat (0-45 °)
- Front and Side Lunges
- Multi-hip machine in 4 directions
- Bicycle/EFX
- Wall squats

Balance Training:

- Balance board/2 legged
- Cup walking/hesitation walk
- Single leg balance
- Plytoss

Weight Bearing:

- As tolerated with quad control

Modalities:

- E-stim/biofeedback as needed
- Ice 15-20 minutes

Brace:

- We will switch to a functional brace at the start of Phase 2
- Wear functional brace at all times with the following exceptions:
 - Remove brace to perform ROM activities
 - Brace not required in bed

Goals for Phase 2:

- Maintain full passive knee extension
- Increase knee flexion to 125 °

- Diminish pain, inflammation, and effusion
- Increase muscle strength and endurance
- Restore proprioception
- Maintain Patellar mobility

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Phase 3: Week 4-12

Range of Motion:

- Passive ROM, unlimited
- Gastroc/soleus stretching
- Hamstring stretching

Strength:

- Progress isometric program
- SLR with ankle weight/tubing
- Leg Press-single leg eccentric
- Initiate isolated hamstring curls
- Multi-hip in 4 planes
- Lateral/Forward step-ups/downs
- Lateral Lunges
- Wall Squats
- Vertical Squats
- Heel raise/Toe raise
- Bicycle/EFX
- Retro Treadmill
- Mini-squats/Wall squats
- Straight-leg dead lifts
- Stool crawl
- Isokinetic work (90-40 °)(120-240 °/sec)

Balance Training:

- Steam boats in 4 planes
- Single leg stance with plyotoss
- Wobble board balance work-single leg
- ½ Foam roller work

Modalities:

- Ice 15-20 minutes following activity

Brace:

- Functional brace as needed

Goals for Phase 3:

- Full ROM
- Increase muscle strength and endurance.

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- Progress slowly into jogging program at week #8 as ROM normalizes, pain and swelling are minimal. Begin on mini-tramp, progress to treadmill as tolerated then move to a hard surface when tolerated.
- Enhance proprioception, balance, and neuromuscular control.
- Restore functional capability and confidence
- At week 12: Isokinetic test at 180 and 300 degrees/sec

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Phase 4: Week 12-16

Range of Motion:

- Passive ROM, unlimited
- Continue all stretching activities

Strength:

- Continue all exercises from previous phases
- Progress plyometric drills
- Increase jogging/running program
- Swimming (kicking)
- Backward running

Functional Program:

- Sport specific drills

Cutting Program:

- Lateral movement
- Carioca
- Figure 8's; decreasing the size of the course as tolerated

Modalities:

- Ice 15-20 minutes as needed

Goals for Phase 4:

- Maintain muscular strength and endurance
- Enhance neuromuscular control
- Progress skill training
- Perform selected sport-specific activity

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Phase 5: Weeks 16-36

Strength:

- Continue advanced strengthening

Functional Program:

- Progress running/swimming program
- Progress plyometric program
- Progress sport training program
- Progress neuromuscular program

Modalities:

- Ice 15-20 minutes as needed

Goals for Phase 5:

- Return to unrestricted sporting activity as determined by Isokinetic and functional evaluation
- Achieve maximal strength and endurance
- Progress independent skill training
- Normalize neuromuscular control drills
- At six and twelve months, a follow-up Isokinetic test is suggested to guarantee maintenance of strength and endurance.