



CARING BEYOND MEDICINE

Department of Physical Rehabilitation

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ACL Reconstruction Protocol

This is an outline of the major exercises that are commonly incorporated. Individual patient response should be considered and therefore modifications may need to be made. Communication should be made to the MD if concerns arise during rehabilitation.

- Special cases:**
1. If a meniscal repair is performed, range of motion will be limited 0 to 90° for four weeks
 2. Revision ACL reconstruction may proceed more slowly

Weeks 0-2

Goals:

- Protect graft fixation
- Minimize effects of immobilization
- Control inflammation
- Achieve full extension, 90 degrees flexion
- Educate patient about rehabilitation process

Partial Weight bearing with brace until day 10, then unlock brace and progress off crutches and brace by 2 weeks (3 weeks max)

Full Weight bearing by 10 days

Post-Operative Day 1-2

Brace: brace locked in 0° extension immediate post-op

Weight Bearing: Assistive device, as appropriate, as specified by MD upon initial order. Gait training with brace locked at 0°. **Partial Weight bearing with brace until day 10, then unlock brace and progress off crutches and brace by 2 weeks (3weeks max)**

Exercises: (Encourage patient to perform exercises 2-3x a day)

1. Ankle pumps
2. Passive knee extension to 0°, flexion up to 90° as tolerated
3. SLR without extensor lag



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4. Quad sets
5. Non weight bearing hamstring/gastrocsoleus stretches
6. Heel slides

Ice and Elevation: Encourage patient to ice 10 minutes as needed and elevate with knee in extension. Pillow or towel roll under heel – **NOT UNDER KNEE.**

Week 1 -Goals: 0-90° and SLR with no lag

Brace: Immobilizer to maintain full extension during weight bearing. May discontinue brace when good quadriceps control is achieved.

Weight Bearing: Partial Weight bearing with brace until day 10, then unlock brace and progress off crutches and brace by 2 weeks (3weeks max)

Exercises:

1. Continue post operative exercises
2. Multi-angle quad isometrics at 90°, 60°, 30°
3. Standing weight shifting
4. Seated and prone knee flexion
5. Supine wall slide
6. Patellar mobilizations
7. SLR in all planes with brace in full extension until quadriceps strength is sufficient to prevent extensor lag
8. Prone leg hangs for extension
9. Phase 1 functional training
 - a. Aerobic Conditioning
 - i. Upper extremity ergometry (UBE)
 - ii. Well- leg bicycling
 - b. Proprioception
 - i. Active/passive joint positioning
 - ii. Balancing activities
 - iii. Stable platform, eyes open
 - iv. Stable platform, eyes closed
 - v. Seated ball throwing and catching
10. Other exercises as per Physical Therapist



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Ice: Encourage patient to ice knee for 10-15 minutes every 2-3 hours

Modalities: - Electrical stimulation to decrease pain and edema and to improve quad control

Weeks 2-3

Criteria for Progression:

Good quad set, SLR without extension lag
Approximately 90° knee flexion
Full extension
No signs of inflammation

Goals:

Restore Normal Gait
Restore full ROM
Protect graft fixation
Improve strength, endurance, and proprioception to prepare for functional activities
Full Weight bearing by 10 days

Week 2- Goal: 0-100°, good quadriceps control

Weight Bearing: Partial Weight bearing with brace until day 10, then unlock brace and progress off crutches and brace by 2 weeks (3 weeks max). **Full Weight bearing by 10 days**

Patellar tendon graft: continue ambulation with the brace locked in extension, may unlock the brace for sitting and sleeping, may remove brace for ROM exercises

Hamstring graft and allograft: may discontinue brace use when a normal gait pattern and quadriceps control are achieved

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Exercises:

1. PROM by therapist as indicated
2. Patellar mobilizations
3. SLR in all planes, add weight above the knee when appropriate
4. Continue prone hangs with progressively heavier ankle weights until full extension is achieved
5. Toe raises
6. Closed chain extension (leg press, 0-30 degrees)
7. Stationary bike for ROM (begin with high seat, low tension)
8. Theraband standing terminal knee extension
9. Continue hamstring, gastrosoleus, quadriceps and hip flexors stretching, progress to weight bearing gastrosoleus stretches
10. Mini squats (0-30°)
11. Phase 2 functional training
 - a. Aerobic Conditioning
 - i. Advance to two-leg bicycling
 - ii. Continue UBE
 - b. Plyometrics/Eccentric exercises
 - i. Stair walking- up/down, forward/backward
 - ii. Aquatherapy (if available) Pool walking and jogging
 - iii. Proprioception
 1. Balancing exercises
 2. Unstable platform (BAPS) eyes open/eyes closed
 3. Mini-tramp standing
 4. Standing ball throwing and catching

Modalities: - Electrical stimulation to decrease pain and edema and to improve quad control
-Ice

**Week 3- Goal: 0-115°, walking with non-antalgic gait or crutches,
Full knee extension**

Weight Bearing: discontinue crutches once good quad control and able to maintain knee extension at heel strike and MD approval

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Exercises:

1. Continue exercises from above
2. Stepper
3. Treadmill (retro or forward as desired)
4. Wall squats 0-40°

Modalities: - Electrical stimulation to decrease pain and edema
- Ice

Week 4- Goal: 0-135°

Exercises:

1. Scooter/stool for hamstring strengthening
2. Step ups/lateral steps
3. Increase grade on treadmill
4. Walking on heels
5. Progress wall squats to 80°
6. Unilateral balance drills
7. Leg press

Ice: Continue especially now that patient is more active on knee.

Week 5

Exercises:

1. Bungee walking with lighter therabands
2. Progressive resistive exercise of hamstrings
3. Increase resistance of stationary bike

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Week 6-10

Criteria for Progression:

Normal gait
Full ROM
Sufficient strength and proprioception to initiate functional activities
Stable graft on Lachman and KT1000 testing

Goals:

Improve confidence in the knee
Avoid overstressing the graft fixation
Protect the patellofemoral joint
Progress strength, power, and proprioception to prepare for functional activities

Exercises:

1. Phase 3 Functional Training- (weeks 6-12)
 - a. Aerobic Conditioning
 - i. Continue bike and UBE
 - ii. Pool running/swimming
 - iii. Stair stepper/elliptical stepper
 - iv. Cross county skiing machine
 - b. Proprioception
 - i. Mini-tramp bouncing
 - ii. Pogoball balancing
 - iii. Lateral slide board
 - iv. Ball throwing and catching on unstable surface

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Months 3-4

Criteria for Progression

Full painless ROM

No evidence of patellofemoral joint irritation

Sufficient strength and proprioception to progress functional activities

Physician clearance to initiate advanced closed-kinetic chain exercises and functional progression

Goals:

Return to unrestricted activities

Weeks 12-16

Exercises:

1. Jump rope
2. Jogging
3. Functional training (12+ weeks)
 - a. Agility
 - i. Start at slow speed, advance slowly
 - ii. Shuttle run
 - iii. Lateral slides
 - iv. Caricoa cross overs
 - b. Proprioception
 - i. Add sport-specific activities (1/4 to 1/2 speed)
 - c. Running
 - i. Figure of eight pattern
 - ii. Small circles, running
 - d. Plyometrics
 - i. Stair running
 - ii. Box jumps
 1. 1-2ft height



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Return to Sports

Return to sports is usually anticipated around 6 months post op

Criteria for Progression:

No patellofemoral joint or soft tissue complaints
All criteria met for return to sports
Physician clearance to resume full activity

Goals:

Safe return to athletics
Maintenance of strength, endurance and proprioception
Patient education concerning any possible limitation

References:

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