



Anterior Cruciate Ligament Reconstruction Quadriceps Autograft/BTB-Accelerated Rehab Dr. David R. Guelich

This rehabilitation protocol has been designed for patients with ACL reconstruction who anticipate returning to a high level of activity early postoperatively. The ACL protocol for Quadriceps Tendon Grafts is the same as for the Bone Patellar Tendon Bone Grafts

The protocol is divided into several phases according to postoperative weeks and each phase has anticipated goals for the individual patient to reach. The **overall goals** of the reconstruction and the rehabilitation are to:

- ❖ Control joint pain, swelling, hemarthrosis
- ❖ Regain normal knee range of motion
- ❖ Regain a normal gait pattern and neuromuscular stability for ambulation
- ❖ Regain normal lower extremity strength
- ❖ Regain normal proprioception, balance, and coordination for daily activities
- ❖ Achieve the level of function based on the orthopedic and patient goals

The physical therapy is to begin post-op day 3. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. **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 (quadriceps, hamstring)
- ❖ Insufficient lower extremity flexibility

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Phase 1: Week 1-2
Quad/BTB Accelerated Protocol

WEEK 1-2

ROM 0-110°, Passive, 0-110°

Patella mobs, Ankle pumps, Gastoc/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

One crutch before FWB with no crutches

BICYCLE

May begin when 110° flex is reached

DO NOT use bike to increase flexion

MODALITIES

Electrical stimulation as needed

Ice 15-20 minutes with knee at 0° ext

BRACE

Remove brace to perform ROM activities

TROM when walking with crutches

GOALS OF PHASE:

- ROM 0-110°
- Adequate quad contraction
- Control pain, inflammation, and effusion
- PWB TO FWB as capable

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Phase 1: Week 2-4
Quad/BTB Accelerated Protocol

WEEK 2-4

ROM 0-125°, Passive, 0-125°
Patella mobs, Ankle pumps, Gastoc-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, Plyotoss

WEIGHT BEARING

As tolerated with quad control, Discharge crutches 10 days post-op

MODALITIES

E-stim/biofeedback as needed
Ice 15-20 minutes; BFR
BRACE discharge 4 weeks
Will measure for functional week 4

GOALS OF PHASE:

- Maintain full passive knee extension
- Gradually increase knee flexion to 125°
- Diminish pain, inflammation, and effusion
- Muscular strengthening and endurance
- Improve proprioception
- Patellar mobility

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Phase 2: Week 4-16
Quad/BTB Accelerated Protocol

WEEK 4-8

Full ROM, Self-ROM to gain FROM 0-135°

And maintain 0° extension

Gastoc/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, Mini-squats/Wall squats, Straight-leg dead lifts

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; BFR

STRENGTH

Continue exercises from wk 4-6

Progress with proprioception training

Isokinetic work (90-40°)(120-240°/sec)

WEEK 8-16

Walking program, Bicycle for endurance, Plyometric leg press/shuttle work

STRENGTH

Continue exercises from wk 4-10

Isokinetic test at 180 and 300°/sec

Plyometric training drills, continue with stretching

MODALITIES

Ice 15-20 minutes as needed

GOALS OF PHASE:

- Restore full knee ROM (0-135°)
- Increase lower extremity strength and endurance

- Restore functional capability and confidence
- Enhance proprioception, balance, and neuromuscular control

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Phase 3: Week 16 - 26
QUAD/BTB Acceleration Protocol

WEEK 16 - 26

Continue all stretching activities

STRENGTH

Continue all exercises from previous phases

Progress plyometric drills

Swimming (kicking), Consider early return to running

FUNCTIONAL PROGRAM

Cutting Program

Lateral movement

Carioca, figure 8's

GOALS OF PHASE:

- Maintain muscular strength and endurance
- Enhance neuromuscular control
- Progress skill training
 - Transition to sport-specific activity (Phase 4)

Phase 4-Weeks 36-52 ACL-Quad/BTB Protocol

WEEK 36 - 52

STRENGTH

Continue advanced strengthening

FUNCTIONAL PROGRAM

Progress running/swimming program

Progress plyometric program

Progress sport training program

Progress neuromuscular program

GOALS OF PHASE:

- Return to unrestricted sporting activity
- Achieve maximal strength and endurance
- Progress independent skill training
- Normalize neuromuscular control drills