



## **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

**Dr. David R. Guelich**  
**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

**Dr. David R. Guelich**  
**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

**Dr. David R. Guelich**  
**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

**Dr. David R. Guelich**  
**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