



Return-to-Sport after ACL Revision Reconstruction Protocol

This protocol is a criterion-based protocol, with a goal of maximizing healing and strength recovery, while minimizing risk of re-injury, so the athlete can return, as quickly and safely as possible, to athletic activities at the pace that each individual progresses.

*****This is a summary of a clinical reference protocol, use the link below to view the protocol in its entirety*****

- Allograft or Hamstring Tendon Graft- Immobilizer and crutches for 2 weeks
- Initial rehabilitation protocol should follow the same criteria and goals, however, progression to activities such as running, jumping (plyometrics), and cutting may be delayed depending on how the patient presents with recovery and healing.
 - o Delayed as much as 4-6 months, depending on the fixation on the soft tissue in the bone tunnels and individual patient healing time.
- Healing time for the autograft hamstring (tendon-to-bone) is approximately 8-12 weeks
 - o *** No resistive Hamstring strengthening until weeks 6-8 to allow for graft site healing**
- Revascularization of graft occurs at 8-12 weeks post-op- Rodeo et al. JBJS 1993

*** Not a good candidate for an accelerated Rehabilitation Protocol or early running, jumping, cutting, etc. (2° to slower soft tissue->bone healing)**

Post-Operative Phase I: Approximately Day 1-7

Goals:

- 0-90 degrees PROM
- Decrease swelling
- Normalize patellar mobility
- Establish quadriceps control
- FWB with ambulation

Brace/Weight Bearing:

- WBAT in full locked extension brace with bilateral crutches

Treatment:

- QS
- 4 way SLR if good quadriceps control
- DF and Hamstring stretching
- A/PROM 0-90degrees by days 5-7
- Wall slides for increased knee flexion
- NMES if QS contraction deficit present
- Gentle OP for extension by PT or patient

Criteria for entering this phase II:

- 1- Quadriceps voluntary initiation with quad set and SLR
- 2- Full passive knee extension
- 3- Knee A + PROM of 0°-90°
- 4- Good patellar mobility
- 5- Minimal joint effusion
- 6- Independent ambulation

Post-Operative Phase II: Approximately Week 2-6

Goals:

- 0-120 degrees
- SLR with no extension lag
- Restore proprioception
- Reciprocal stair climbing
- Recumbent bike with no difficulty

Brace/Weight Bearing:

- **Immobilizer worn for 1-2 additional weeks.** Then WBAT, with a goal of discontinuing use of crutches by day 14-18 post-op- continue brace until voluntary quad control is demonstrated, ***May be subject to change by MD**

Treatment:

- Progress all exercises from previous phase
- 4 way SLR with 1# increase/week (proximal loading)
- PROM 0° to 110°-120°, OKC –Knee Extension 90° to 40°
- Mini Squats 0-30 degrees DL, add perturbations as tolerated
- Weight shift
- Step ups (painfree range)
- DL press – sub max
- Hamstring Curls (**no earlier than week 6**)
- Bike for ROM
- Gentle overpressure into extension if needed
- Patellar mob and Scar mob if limited

Criteria for entering Phase III:

- 1- P & AROM knee flexion to $\geq 110^\circ$
- 2- Quadriceps & Hamstring strength $\geq 60\%$ of the non-injured leg (Dynamometry)
- 3- Minimal to no effusion
- 4- No joint line or patellofemoral pain
- 5- Mild laxity on clinical examine, or +1 or less with the KT-2000 test (if available)
 - a. Week 4 & 6: KT-2000 test at 20 & 30 lbs anterior and posterior

Post-Operative Phase III: Approximately Week 6-8

Goals:

- 0-125 degrees, or knee ROM to within 10°-15° of non-injured leg
- Quad/HS strength to 75% of well leg
- Improve proprioception, balance, neuromuscular control and strength

Brace/Weight Bearing:

- Unlocked or DC once voluntary quad control is demonstrated **** May be subject to change per MD****

Treatment:

- Knee con/ecc 90°->40°-(no weights) at 4-5 weeks, iso. at 6-7 weeks post-op
- Front & Lateral step down exercises, Progress Lateral step-up exercise
- Forward/Lateral Mini Lunges (30°-40° flex)- **if patient has good quad control**
- Wall Squats 0°-30°- **if patient has good quadriceps control**
- Perturbation training
- Pool exercises if available: forward & backward walk/run (***forward at week ≥ 6**)
- Begin testing/training for proprioception: Functional Reach Test
- Progress bike to minimum of 10 minutes for increasing endurance
- Core stabilization/strengthening
- Continue patellar and scar mobilization if needed

- Tibiofemoral mobilization with rotation for ROM if joint mobility is limited.

Criteria for entering Phase IV:

- 1- Active knee ROM 0° - $\geq 125^{\circ}$
- 2- Quad Strength & Girth $\geq 75\%$ of well leg, Ham Strength $\geq 75\%$ of well leg

Post-Operative Phase IV: Approximately Week 8-16

Goals:

- Full ROM
- Quad and Hamstring strength to 80% of well leg
- Normal gait pattern
- Continue to improve strength, balance and proprioception

Treatment:

- Light isotonic hamstring exercises begun 7-8 weeks post-op
- Mini Squats 0° - 30° DL (BW only) Progress to 45° - 60°
- Dynamic/Plyometric Leg Press (Begin at ≥ 10 Weeks)
- Walking program- 10 minutes minimum, increasing by 10 minutes per week
- Continue and progress all exercises from previous phases
- Perturbation training
- Progress lateral stepping and step-down exercises with resistance bands
- Advance core stabilization exercises

Criteria for entering Phase V:

- Full AROM , no pain or effusion
- Quad and Hamstring strength and girth to 80% of well leg
- Clinical testing please refer to clinical reference protocol

Post-Operative Phase V: Approximately Week 16-24

Goals:

- Normalize and gain strength to greater than 80%
- Increase muscle power, endurance and neuromuscular control
- See clinical reference protocol for specific testing

Treatment:

- Continue and progress all exercises from previous phases
- Advance core exercises
- Agility exercises
- Begin walk-run protocol (see clinical reference protocol)
- Eccentric exercises for all LE muscles
- Begin plyometric training: Plyometric Training Protocol at ≥ 16 -18 weeks * **If LSI $\geq 90\%$ of uninjured leg, with hop tests-** May be delayed longer if allograft reconstruction- patient healing and graft fixation dependant
- CKC exercises may be progressed to 75° - 90° of flexion

Link to clinical reference protocol