

**ACL-R Rehabilitation
Bone Patellar Tendon Bone Graft**

Preoperative

Goals:

1. **Full Active Range of Motion (Flexion and Extension)**
2. **Restore Quadriceps Strength**
3. **0 – Minimal swelling**
4. **Normalized Walking (gait) pattern**
5. **Patient independent in HEP and postoperative instruction**

Treatment:

1. Modalities to reduce inflammation and pain
2. Compression garment/bandaging
3. ROM, Stretching, Grade2-3 joint mob involved knee, PF mobilization
4. General LE stretching for ankle and hip
5. Progress from PROM to A/A ROM to AROM
6. Quad Sets, SLR, SAQ progressed to LAQ, Leg Press minimal resistance (then progress), wall squats, Stationary Bike when patient has enough ROM
7. Other Exercises: Bridging, Resisted plantar and dorsi flexion, SLR, hip abduction, hip flexion, adductor squeezing, heel slides, hamstring sets, resisted knee flexion
8. Gait train progressing normalized gait with assistive device(s), progressing to without an assistive device and a normalized gait pattern and fair balance

Postoperative Day of Surgery

Goal:

1. **Begin controlling any postoperative swelling**
2. **Initiate Extension program. It is essential that the operative knee extends equal to the non-operative knee**
3. **Initiate flexion program**

Treatment:

1. Weight Bearing as Tolerated with crutches
2. Use of compression garment/bandage to assist in controlling swelling
3. Initiate Cold Therapy
4. Elevate when not doing exercises
5. Initiate Extension exercises: Heel Props with Quad Sets, Towel stretches
6. Initiate Flexion exercises: Heel slides, pull ankle toward buttock, CPM if ordered

Postoperative Week 1

Goal:

1. **0-120 degrees of ROM**
2. **Reduce postoperative inflammation**
3. **Progress gait**

4. Progress repetitions with HEP

Treatment:

1. Continue HEP: Extension and Flexion program
2. Initiate HEP: Quad Set, Hamstring Set, Glut Set, SLR, SAQ, Heel slides, SLR, Hip abduction, hip extension, LAQ
3. Continue compression garment/bandage
4. Continue Cold Therapy
5. Continue Elevating knee while not exercising or walking

Postoperative Week 2 – 4

Goal:

- 1. Initiate Physical Therapy**
- 2. Full PF mobility**
- 3. Full extension**
- 4. 0-135 degrees ROM**
- 5. Improve Patellar Tendon strength**

Treatment:

1. Modalities for inflammation and pain control/reduction
2. Add Closed Kinetic Chain exercises: Leg Press, Wall Squats, Calf Raises, step ups (progress to step downs), stationary bike, stool scoots
3. LE Stretching program for calf muscles, hamstrings, Quadriceps, hip flexors, hip extensors, hip rotators
4. Knee extension mild resistances
5. Resisted knee flexion
6. Knee squeezes, resisted hip abduction (clam shells)
7. Add wall squats, bridging, and calf raises to HEP
8. pool walking/jogging, deep water running (week 3-4 and only if incision sites are closed)
9. Patellar mobilization for home
10. Scar massage for home
11. Continue home extension and flexion work
12. Continue Cold Therapy
13. Gait Exercises: Tightrope, Heel Walk, Toe Walk

Postoperative Week 5 – 6

Goals:

- 1. Isokinetic testing**
- 2. Progress CKC exercise and endurance training**
- 3. Full ROM**
- 4. 70% of normal LE strength compared to uninvolved side**
- 5. Pre-Running Activity initiation**

Treatment:

1. Isokinetic Testing with 20° block at 180 and 240°/sec. if 70% or greater than the non-operative side begin lateral shuffles, carioca, light jogging, jumping rope, agility drills
2. If isokinetic testing is unavailable, utilize the single leg triple hop for distance and single leg hop for time and compare to uninvolved side
3. Elliptical
4. Treadmill walk to jog. Add incline.

5. Increase eccentric work
6. Increase resistances on knee extension and flexion
7. Resisted stool scoots
8. Patient to continue stretching, patellar mobilization, gait exercises including backward, Cold Therapy
9. SLS progressing to balance pad SLS
10. Continue modalities as needed to control/reduce inflammation and pain

Postoperative Week 7 – 10

Goals:

- 1. Patient able to initiate sport specific activities***
- 2. Good balance and proprioception***
- 3. Progressed functional movement***
- 4. Progress agility work***
- 5. No limping and tolerating running***

Treatment:

1. Jogging
2. Resisted functional propulsion with decelerating return forward and reverse progressing to lateral.
3. All direction grid drills
4. Lunges without resistance progressing to resisted.
5. Forward/reverse hopping, side to side hopping (Bilateral)
6. Speed squats without resistance progressing to adding resistances
7. Plyoball SLS with and without balance pads
8. Continue modalities as needed to control inflammation and pain

Postoperative Week 10 – 16

Goals:

- 1. Able to run in straight line at 75% of full speed or greater***
- 2. Initiate Sport specific training***
- 3. Good eccentric control***

Treatment:

1. Progress jogging time, speed, distance, elevation
2. Add skipping, hop jog, increased lateral speed drills, increased carioca speed
3. Resisted lateral shuffling with decelerating return
4. Progress endurance
5. Progress resistances with lunges, speed squats
6. Isokinetic training full ROM at 180 and 240. Patient should demonstrate 80% of uninvolved side at least to initiate sport specific training. If isokinetic testing is unavailable, utilize the single limb triple hop for distance and single limb hop for time and compare to uninvolved side. Utilize 80% as measure
7. continue modalities as needed to control inflammation and pain

Postoperative Week 16 - 24

Goal:

- 1. Safely return to sport/PLF***

Treatment:

1. Add in cutting pivoting direction changes to running program
2. sport specific training to progress

If patient demonstrates full ROM, 90% of strength compared to uninvolved side on Isokinetic testing or 85% of strength compared to uninvolved side with triple hop for distance and hop for time, and is able demonstrate all functions of their sport(s) at full speed without evidence of compensation, full balance and proprioception...at that time a decision can be made for return to competition.

Note: As with all protocols, the designated time frames and exercises are for guidance only and should not limit the patient's progress or make them worse.