

## ANTERIOR CRUCIATE LIGAMENT ALLO/AUTOGRAFT RECONSTRUCTION (Criteria Based)

This protocol is designed to progress through phases based on meeting certain criteria and not strictly on time. Approximate time frames are included with each phase but are not absolute. It is designed for allografts and autograft patellar tendon and hamstring grafts. It does not change if there is a concomitant meniscal repair. There are a few time-based exceptions:

- No full range open chain knee extensions until 10 weeks post-op
- No land running until >10 weeks for autograft patellar tendon and >12 weeks for hamstring/allograft
- No agilities until at least 16 weeks post-operative and after successful completion of 4 – 6 week straight plane running program
- No hamstring curls for 6 weeks with a concomitant posterior horn medial meniscal repair
- Weight-bearing may be restricted initially with concomitant articular pick or drilling and will be determined by physician based on size of lesion

### Phase I – Protective Phase (~Day 1 –7)

Gait:	WBAT with immobilizer and 2 crutches
ROM:	PROM/AAROM to tolerance for flexion/extension Prone hangs/heel props (10 min) for extension ROM PROM for flexion at end of bed using opposite leg
Strength:	Quadricep sets emphasizing VM (use E-stim if necessary) SLR's X 4 planes (in immobilizer if significant quadricep lag)
Proprioception:	Weight shifts without immobilizer
Progress Criteria:	>90° flexion; extension within 5° of opposite leg Fair/Good quad set (VL solid and some recruitment of VM) SLR with < 5° quadricep lag



Home to the Texas Rangers

## **Phase II – Early Mobility (~Day 8 – 20)**

Gait:	First wean from immobilizer when good quad control and no lag Then wean off crutches when no limp or increase in pain/effusion
ROM:	Progress to heel slides for flexion ROM Continue prone hangs/heel props (add weight if necessary) Initiate stationary cycle when >110° flexion Initiate HS/ITB/Calf stretching Initiate 1 leg retrograde walking on treadmill for extension ROM Patellar mobilizations/scar massage/massage to ITB and quads
Strength:	Continue quad sets and SLR's (no resistance) Initiate closed chain TKE's in standing with theraband Initiate bilateral calf raises on floor
Proprioception:	Continue weight shifts Initiate single leg stance (SLS) on floor
Progress Criteria:	>110° flexion and extension within 5° of opposite side Good quadricep set (solid VM/VL recruitment) SLR without a quad lag Independent gait without assistive device and without a limp ≤ 1+ effusion

## **Phase III - Controlled Mobility (~Week 3 – 6)**

Gait:	Client should be independent without limp/quad avoidance gait
ROM:	Continue heel slides and prone hangs until equal to opp. side Add quadricep stretch when appropriate
Strength:	D/C quad sets and SLR's in clinic Calf raises (2 leg floor→2leg step→1 leg floor→1 leg step) Initiate: Shuttle/leg press (high reps/low resistance for endurance) Mini-squats (0 - 45°) and progress with dumbbells Forward/lateral step-ups (6"→8"→10"→12") Hamstring curls (light resistance if HS graft) T-band resisted sidestepping for hip abductors

Proprioception: Begin and progress through proprioception progression  
Slide board

Progress Criteria: ROM (within 10 -15° flex and full ext. equal to opposite side)  
< Trace effusion  
No or very mild patello-femoral symptoms

#### **Phase IV - Advanced Strengthening/Proprioception (~Week 7 – 10)**

Gait: Initiate water running if > 8 weeks

ROM: Continue ROM and flexibility as necessary

Strength: Continue to progress previous exercises  
Initiate leg press (<90° flexion)  
Initiate open chain knee extension with the last 40° of ext. blocked  
Isokinetic (high speed/high reps)  
Isotonic (light weights/high pad on tibia)

Proprioception: Continue to progress through program increasing challenges

Progress Criteria: ROM WFL (within 5° flexion and full ext. equal to opposite side)  
No effusion  
Progressing without PF symptoms in strength/proprioception

#### **Phase V - Plyometric/Running (~Week 11 – 12)**

Gait: Water running → treadmill as outlined initially

ROM: Continue flexibility as necessary

Strength: Continue all strengthening progressing to full range knee ext.

Proprioception: Continue to increase challenges

Plyometrics: Bounding on shuttle (2 legs→ 1 leg working on landing form)  
10 – 12” step jumps both forward and lateral progressing from 2  
leg landing to 1 leg landing concentrating on proper technique

Testing at 12 wks: KT 2000 (15, 20, 30 lbs and manual max)  
Isokinetic strength test (full ROM at 60 and 180°/sec)

Progress Criteria: Stable KT ( < 3 mm side to side difference)  
Biodex deficit of < 40% in quadriceps and hamstrings

No effusion  
No PF symptoms

### **Phase VI - Independent Running/Agility (~Week 12 – 6 months)**

Gait: Initiate independent straight running program for 4 – 6 wks  
ROM: Counsel on appropriate stretching for warm-up/cool-down  
Strength: Counsel on appropriate strengthening program at gym based on biodex results  
Agility: Initiate independent 4 – 6 week agility/sport specific program after successful completion of straight running program

### **Criteria for Return to Play (~5 – 6 months post-op)**

1. Physician release
2. Stable KT (< 3mm side to side difference with firm end point)
3. Full ROM
4. No effusion
5. Satisfactory strength (> 85% compared to opposite leg)
6. Successful completion of proprioception/running/agility programs