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**ACL Reconstruction Postoperative Protocol: BTB and Hamstring**

**(ACL Reconstruction with Meniscal Repair: PWB (50%) with brace locked in extension x 4-6 weeks, restrict NWB flexion to < 90°**

**PHASE I - 1-4 weeks:** Goals: Quad activation, control effusion, early ROM, normalize gait, SLB 30 sec.

WBAT with crutches, brace locked in extension until good quad control.  
D/C crutches when able to walk with out a limp. D/C brace when normal quad control.  
0-125°

Exercises

BTB only:	Patellar mobs
ROM:	Flexion: Wall slides (0-30 degrees until week 3, heel slides, stationary bike. Extension: Prone hangs, heel sags if not equal to opposite side.
Strengthening:	Quad/Ham/Glut. sets, SLR x 4, Toe raises, assisted squats, leg press/shuttle, hip and core strengthening. Leg curls – as tolerated with hamstring graft.
Stretching:	Calves, hams (no quad stretch)
Function:	SLB eyes open/closed, weight shifting all planes
Gait:	Gait training with brace, progress to without crutches (fwd, bwd, sidestep, high knees, step-overs)
Modalities:	ES for quad activation as needed; ice, IFC
Aquatics:	Address problem areas

**Phase II - 2-6 weeks:** Goals: FWB without assistive device, no gait deviations  
AROM equal to opposite side

Exercises

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ROM: Extension: Add weight to prone hangs if ROM not equal to opposite side, heel sags.

Flexion: Heel slides, stationary bike, wall slides (0-60 degrees)

Strengthening: SLR's x4 (add weight if no extensor lag), assisted squats/ wall squats, bilateral leg press (0-60 degrees)/ shuttle, hip and core strengthening, SL toe raises..

Hamstring only: *Add isotonic hamstring curls at week 4*

Proprioceptive Ex: Dynamic SLB, standing BAPS, SL balance reach progressing below waist level, avoid rotation

CV Conditioning: Stationary bike (high seat/low resistance initially), treadmill walking fwd/bwd, Stairmaster after week 4

Aquatics: Address problem areas

Function: Single leg step and squat, sidestep with tubing, forward step-ups, medial step-downs

Gait: On land or in pool as needed, all directions

**Phase III Progressive Rehabilitation- 6-12 weeks :** Goals: No PF symptoms, increase eccentric neuromuscular control to allow acceptance of impact activities, full ROM

Exercises

ROM: PROM or bike with low seat, if not meeting flexion goals, at 6 weeks may add quad stretch with belt.

Strengthening: Advance as appropriate, add unilateral leg press and/or shuttle if not doing so already; hip and core strengthening. Leg extension 90<sup>o</sup>-40<sup>o</sup> if needed, single leg wall squats. Stool scoots or MRE hams to increase ham strength.

Proprioceptive Ex: Progress as tolerated on gradually less stable surfaces, eyes closed, perturbation training, sport-specific exercises, etc. Avoid rotation.

CV Conditioning: Stationary bike or in pool, treadmill walking, Stairmaster. Elliptical after 6 weeks.

Function: Progress step-ups, medial step-downs, progress to multi-plane strengthening and functional exercises, forward, side, retro lunges, medial rotation lunges at 8-10 weeks, single leg squat. Pre-jump exercises (side jumps, calf jumps). Single leg wall squats, slide board, sport cord.

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**8-10 weeks:**

Begin walk/jog program carioca, side shuffle, high knee skipping, jump rope. Functional knee class if >70% pre-op scores. Use functional brace.

**Phase IV- Return to Full Function: 10-16 weeks**

Progress to Phase IV when Phase IV goals met and MD approval

Running/cutting without a limp

Exercises

Plyometric Ex:	Start with two leg jumping on level surface "Head up, Land soft, flexed knees, knees pointing straight ahead". AP, ML, box, horseshoe patterns; ice skater. Progress to single leg hopping program with good technique if can single leg press body weight
Running:	Gradually progress program, add cutting, turns.
Strengthening:	Open chain knee extension full ROM if needed, continue hip and core strengthening
Function:	Progress difficulty of lunges, sport specific balance, agility, and functional strengthening activities
Proprioceptive Ex.	Progress difficulty, sport specific
CV Conditioning:	Continue as previous

**Physical Performance Testing** when requested by physician:

**Pre-operatively**

- KT-1000 Arthrometry: bilateral
- Biodex of uninvolved LE: 6 reps at 60° and 180° per second
- Single leg balance reach of uninvolved LE, best of 3 attempts
- Single leg hop for distance of uninvolved LE, best of 3 attempts
- Range of motion of uninvolved LE

**4 months post-operatively**

- KT-1000 Arthrometry: bilateral
- Biodex bilateral LEs: 6 reps at 60° and 180° per second: should be > 85% to return to sport
- Single leg balance reach of surgical leg (s), best of 3 attempts: should be > 85% to return to sport

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- Single leg hop for distance of surgical leg(s), best of 3 attempts: should be 85% to return to sport
- Range of motion of surgical leg

**Revised 9/04**