

## ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION BONE TENDON BONE (BTB) REHABILITATION PROTOCOL

### WEEK 1

- Limited activity with ice and elevation for five days to prevent hemarthrosis and minimize swelling. Out of bed to eat, use bathroom, therapy, and shower.
- WBAT using crutches for five days for balance ONLY. Encourage Full WB ASAP
- Knee immobilizer for 48 hours only, then D/C to encourage quad firing / use,
  - EXCEPTION: brace if concomitant MCL tear present per MD/PA
- Bandage on until office follow up with MD
- May shower, rolling saran wrap or press and seal over the bandage, keeping dressing dry
- ROM gentle, but not forced
- Extension stretches four times daily for fifteen minutes per session (minimum)
- Straight Leg raises, fifty twice daily as tolerated
- Start PT three to four days post op
- Ankle pumps every hour
- Ted hose twenty hours per day
- Aspirin or Advil (unless contraindicated) one pill twice daily; continue for a full two weeks

### WEEK 2 - 6

- EDEMA CONTROL: Ice full time for one week. Expect effusion to be resolved by week two or three with minimal knee swelling thereafter.
- BRACE USE: 1) With increasing experience and data available with ACL reconstruction, many patients are not placed in a knee brace post op. We have not seen any increase in untoward effects by not using a brace, and have noted less quad atrophy and quicker thigh muscle recovery post op. Certain injuries or reconstruction techniques do however require brace use. Our standard of care is:
  - Knee Immobilizer: Use for first 48 hours UNLESS NOTED OTHERWISE by MD/PA. Discontinue brace after day two post op. Exceptions would be MCL or other multiple ligament injuries. MCL / ACL combinations will transition to a hinged knee rehab brace one week post op, after bandage removed. In this situation, brace use 24 hours per day except for showers and extension stretches. Use brace during therapy for the first eight weeks post op or until cleared by MD/PA.
- RANGE OF MOTION:
  - PASSIVE: As tolerated with emphasis on extension. Extension stretches four times daily (add prone hangs as needed).
  - ACTIVE: as tolerated.
  - GOALS: Full extension cold by postop day #7.
    - 0 - 120 by four weeks postop
    - 0 - 130+ by six weeks postop.

N.B. If these goals are not met, please alert MD immediately.

- **FOUR QUADRANT LEG LIFTS:** Straight leg raises beginning postop day #1. Progress to four quadrant exercises as tolerated. Advance to progressive closed chain exercises when no limp noted and good quad control achieved.
- **CLOSED KINETIC CHAIN EXERCISES:** 1/3 knee bends and unilateral involved leg squats started when tolerated. Bicycle with involved leg against resistance allowed when no limp noted, good quad control achieved, and 110 degrees of flexion obtained; increase resistance as tolerated. Leg presses, rowing machine, Stairmaster, Nordic Track etc. started with involved leg when bicycle tolerated well for fifteen minutes. Avoid all open chain exercises for twelve weeks.
- **PATELLAR GLIDES:** Patellar mobilization in all planes (medial, lateral, superior, inferior) to start week one. Perform four times daily for six weeks, then once daily thereafter for six additional weeks.
- **WELL LEG EXERCISES / AEROBIC CONDITIONING:** Well leg exercises including bicycle, squats, leg presses etc. to start as tolerated. Upper body ergometer, weights, etc. as tolerated to maintain strength and conditioning.

#### **WEEK 7 - 8**

- **AGGRESSIVE ROM** stretches, aerobic conditioning on stationary bicycle or elliptical trainer.

#### **WEEK 9 - 12**

- **ADVANCED EXERCISES:** Jogging or free wheel biking on level surface, controlled environment, golf, and swimming beginning at week eight with surgeon's ok.
- Jogging forward and backward against sport cord, treadmill forward and backward, plyometrics, lateral sport cord, ski fitter, mini tramp and jump roping to begin thereafter as tolerated.

#### **WEEK 13 - 16**

- **OPEN CHAIN EXERCISES:** If patient has full painless ROM and is progressing on schedule, begin with five pounds max. HEP of 10 sets of 10 twice daily. When patient can perform ten sets of ten without quad fatigue, then advance 5 lbs. Continue to advance up to 25 lbs. **DO NOT** exceed 25 lbs open chain. If patient develops patellofemoral pain or crepitus, D/C open chain immediately.
- **BRIDGE PROGRAM OR EQUIVALENT MAY BEGIN AT 12-WEEK MARK WITH BONE PATELLAR TENDON BONE GRAFT. HAMSTRING GRAFT MAY START AT 16 WEEKS POST OP.**
- Retro walking and retro biking with resistance for quad specific strengthening

#### **WEEK 17 - 24**

- **RETURN TO SPORTS CRITERIA:**
  - Painless ROM equal to non-operated knee
  - No effusion
  - Excellent quad contour and control.
  - Quad girth progressing toward normal.
  - Agility training and proprioceptive feedback termed excellent.



- Get Set Train Smarter App on Apple or Google device: <https://apps.apple.com/us/app/get-set-train-smarter/id894609112>
- Use app to direct sports specific workouts that are proven to decrease recurrence of ACL tears.
- BRACE USE:
  - Functional braces have been shown to have protective effect in contact football (interior linemen), soccer, and rugby. Brace will be prescribed by treating surgeon. Current literature does not support brace use in other sports. Knee sleeve has been shown to be as effective as custom braces due to enhance proprioception.
- “Incrediwear” sleeve (or related) is one option available on Amazon.