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Post-Operative Rehabilitation Protocol:

Anterior Cruciate Ligament (ACL) Reconstruction – Any Allograft & Hamstring Autograft

PHASE I: IMMEDIATE POST-OPERATIVE PHASE (WEEKS 0-2)

GOALS: Decrease swelling, pain control, prevent quad atrophy.

I. Immediate Post-Operative to Week 2:

A. General:

- * Brace locked in full extension. May remove for shower/bathing.
- * Elevate knee above heart level often
- * Cryotherapy unit or ice 20 minutes/hour

B. Weight Bearing:

- * Weight bear to tolerance in brace locked in full extension

C. Range of Motion Goals:

- * Active/passive ROM 0°-90°, 4-5 times per day

D. Treatment / Exercises:

- * Ankle pumps, Theraband ankle exercises
- * Gentle patellar mobilization/scar mobilization
- * VMO quad sets with biofeedback
- * Multi-angle quad isometrics (90°, 60°, 30°)
- * EMS especially important if patient unable to initiate quad sets or independent SLR
- * Straight leg raises – 4 directions
- * Gastroc/hamstring stretching
- * ***NO open chain concentric quads***

PHASE II – MAXIMUM PROTECTION PHASE (WEEKS 2-8)

GOALS: Protect healing tissue, improve motion, decrease swelling, pain control, prevent muscle atrophy.

Enter Phase II if:

- ✓ Active ROM 0°-90°
- ✓ Able to perform SLR
- ✓ Minimal pain/swelling
- ✓ Independent ambulation/transfers

II. Weeks 2-4:

A. General:

- * Unlock brace for ambulation as quad control allows
- * Wean from crutches as quad control allows and gait normalizes
- * Cryotherapy unit or ice 20 minutes/hour at patient's discretion

B. Weight Bearing:

- * Progress in WB status.

C. Range of Motion Goals:

- * Active/passive ROM 0°-120°

D. Treatment / Exercises:

- * Continue previous treatment / exercises
- * Isotonic program hip abduction/adduction
- * Leg curls
- * Standing weight shifts
- * Mini squats 0°-30°
- * Wall slides 0°-30°
- * Posterior tibial glide joint mobilization at 30° and 90° if ROM problem persists, especially in extension
- * Bicycle for ROM – ½ arcs progressing to full ROM
- * Balance/proprioception training
- * Single leg press
- * SLR in 4 planes with 1 lb. Increase lb per week
- * Aggressive patella and soft tissue mobilization
- * ***NO open chain concentric quads***

III. Weeks 4-8:

A. General:

- * Ice 20 minutes/hour at patient's discretion
- * Discontinue brace at second follow up

B. Weight bearing:

* WBAT

C. ROM goals:

* PROM/AROM 0°-135° (or match contralateral knee)

D. Treatment / Exercises:

- * Continue with previous treatment
- * Continue isotonic program (hips, hamstrings, leg press)
- * Heel walking/toe walking
- * Treadmill forward and backward walking
- * Pool walking, swimming
- * Step ups
- * Trampoline – single leg standing
- * Balance board
- * Quad/hamstring stretching
- * Chair squats
- * Wall slides
- * Patellar mobilization
 - * Cross friction massage
 - * Biofeedback for neuromuscular VMO re-education
 - * Interval stationary bike program
 - * ***NO open chain concentric quads***

PHASE III: MODERATE PROTECTION PHASE (WEEKS 8-12)

GOALS: Increase strength, improve motion, protect reconstruction.

Enter Phase III if:

- ✓ Minimal pain/swelling
- ✓ Full, symmetric or near symmetric ROM
- ✓ Voluntary quadriceps control

IV. Weeks 8-12:

A., B., C. As above

D. Treatment / Exercises:

- * Continue with previous treatment
 - * Isokinetic limited range (90°–45°), high speed above 150–180°/sec at 10 weeks
 - * Isotonic squats – Smith Machine bar weight only
 - * Lunges
 - * Stairmaster
 - * Slideboard
 - * Trampoline
 - * Single leg bouncing

- * Stepping high knee
- * Weight shifting forward, sideways, diagonally
- * Pool running
- * **NO** open chain concentric quads

PHASE IV: MODERATE STRENGTHENING (MONTHS 3-5)

GOALS: Develop strength, power, and endurance. Begin to prepare for return to functional activities.

Enter Phase IV if:

- ✓ Minimal pain/tenderness
- ✓ Minimal swelling
- ✓ Quad strength at least 75% of uninvolved leg

V. Months 3-5:

A., B., C. As above

D. Treatment / Exercises:

- * Continue with previous treatment
- * Isotonic terminal knee extension, low resistance high repetition
- * Controlled slow forward and backward jogging on level surface
- * Trampoline jogging
- * Low intensity impact activities
- * Functional closed chain evaluation

PHASE V: PRE-PARTICIPATION TRAINING (MONTHS 5-6)

GOALS: Achieve maximal strength, enhance neuromuscular coordination and endurance.

Enter Phase V if:

- ✓ No pain/swelling
- ✓ Full ROM
- ✓ Stable ligamentous exam
- ✓ Strength at least 80% of uninvolved leg
- ✓ Proprioceptive test 100% of uninvolved leg

VI. Months 5-6:

A., B., C. As above

D. Treatment / Exercises:

- * Continue with previous treatment
- * Introduce running program at Month 6 if:
 - ✓ Isokinetic test - 85% > of opposite leg (quads)

- ✓ Isokinetic test - 90% > of opposite leg (hamstring)
- ✓ Isokinetic test - quad torque/body weight (180 o/s)
- 60-65% males, 50-55% females
- ✓ KT 2000 Test – unchanged
- ✓ Satisfactory clinical exam
- * Plyometrics low intensity
- * Broad jump, Vertical jump
- * Agility limits

PHASE VI: RETURN TO ACTIVITY (MONTHS 7-9)

GOALS: Prepare for complete return to activity

Enter Phase VI if:

- ✓ No pain/tenderness
- ✓ All above goals met
- ✓ Strength at least 90% of uninvolved leg

VII. Months 7-9:

A., B., C. As above

D. Treatment / Exercises:

- * Continue with previous treatment
- * Plyometrics medium to high intensity
- * Progress sport specific drills/ practice
- * Return to full sports will be individualized
- * Formal risk assessment/ testing for return to competitive sports

*** Addendum**

This protocol provides general rehabilitation guidelines following ACL reconstruction procedures Hamstring Autograft or any Allograft tissue. It is subject to modification depending on several factors such as the degree of injury, the type and extent of associated surgical intervention, as well as your individual progress post-operatively. For any questions, please call my office at 860-244-1017.