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ACL Reconstruction with Hamstring Graft

Phase I - Immediate Post-Operative Phase (Weeks 0-2)

Goals:

1. 20-90 degrees as tolerated (Do not push extension)
2. Prevent quadriceps inhibition
3. Control post op pain/swelling
4. Emphasis on full passive extension

Post-Op Week 1:

- Drain will be pulled as ordered by M.D.
- Leave dressings and brace intact until ordered by M.D. to be removed by medical professional
- Knee Immobilizer- Only Sleep in immobilizer for 1 week post-op; do not wear during waking hours.
 - *Caution:* Watch for increased pain or swelling.
 - May need to loosen straps or dressing.
 - TED hose or tubigrip for edema control.

Weight Bearing:

- Partial weight bearing 25% using two crutches.
- **** for ACL with meniscal repair:** TTWB weight-bearing for 4 weeks.

Therapeutic Exercises:

- Ankle pumps
- Passive knee extension to 20 degrees
- Multi-angle isometrics at 90, 60, 30 degrees (for quads)
- Intermittent ROM exercises
- Straight leg raises (all 4 directions- maintain good quadriceps contraction)
- Quad sets, gluteal sets, hamstring sets
- Use caution with hamstring stretching/strengthening based on donor site morbidity
- Continue quad sets, gluteal sets, and hamstring sets (back off hamstring sets if had hamstring tendon graft)

Modalities:

- Electrical muscle stimulation may be used during quad sets to decrease atrophy.
- Ice and elevation with knee in extension should be applied for 20 minutes every hour during waking hours

Special Activities:

- Follow-up with physician at 7-10 days
- Shower on day 3. May bathe in tub after incision is fully healed.
- May drive when achieve quad control

Phase II: Maximum Protection Phase (weeks 2-6)**Goals:**

1. ROM 15-100 degrees, May increase flexion as tolerated, Do Not Rush Extension!
 - a. Progress to 0-135 degrees by week 6
2. ****ACL For meniscal repair**, limit ROM to 15 to 110 degrees for 3 weeks
 - i. Progress to 0-135 by week 6.
3. Absolute control of external forces and protect graft
4. Nourish articular cartilage
5. Decrease fibrosis
6. Stimulate collagen healing
7. Decrease swelling
8. Prevent quad atrophy

Weight Bearing:

- Partial weight bearing 25-50% using 2 crutches
 - Week 3-4 Full weight bearing
- ****ACL with Meniscal Repair:** TTWB weight-bearing for 4 weeks
 - At 4 weeks ambulation with 2 crutches partial weight bearing (30-60%)

Therapeutic Exercise:

- Continue all previous exercises
- Passive knee extension to 15 degrees
- Gentle active knee extension 90 to 30 degrees
- Bicycle for ROM and endurance
- Hamstring and Calf stretching, careful with extension, do not push.
- Standing weight shifts and mini squats (0 to 40 degrees ROM) unless NWBing
- Proprioception training
- PRE Program: Start with 1-3 pounds, progress 1-3 pounds per week as tolerated.
- Initiate eccentric quads 40-100 degrees (isotonic only)
- Leg press (0-60 degrees)
- Begin scar massage as soon as incision is healed
- **NOTE:** If patient does not have full knee extension by week 8, physician must be contacted

Modalities:

- Electrical muscle stimulation as needed.
- Cryotherapy as needed.

Criteria for Advancement to Phase III:

- PROM 0-135 degrees (full)
- AROM 0-135 degrees (full)
- Quad Strength 60% of contralateral side (isometric test 60 degree knee flexion angle)
- Minimal effusion

Phase III: Controlled Ambulation Phase (week 6-10)**Goals:**

1. ROM 0-135 degrees, do not push it!
2. Control forces during walking

Brace:

- Fit for ACL brace. Physician will order if patient is to return to high activity/sport.

Therapeutic Exercise:

- Continue Previous exercises
- Initiate Aquatics program
- Bicycle- 20 minutes
- Increase closed kinetic chain rehab.
- Increase proprioception training

Special Activities:

- Pitching and Putting for golf (no cleats)
- Throwing sports may throw (soft toss)- no pitching, not hitting, NO CLEATS
- Bike on level ground
- Walk on level ground
- May swim easy for ROM and endurance using side stroke or scissor kick: no flutter kicks, no breast stroke kicks, no butterfly

Criteria for Advancement to Phase IV:

- Full range of motion
- Quad strength of 60% of contralateral side (isokinetic testing for athlete/high activity patient at 4-5 months at M.D. discretion)
- Minimal effusion
- No patellofemoral complaints
- Satisfactory clinical exam

Phase IV: Moderate Protection Phase (week 10-12)**Goals:**

1. Protect patellofemoral joints articular cartilage
2. Maximal strengthening for quadriceps, lower extremity

Isokinetic Test:

- Full ROM 180 & 240 degrees/seconds (week 12-16) at M.D. discretion based on quad control and type of graft.

Therapeutic Exercise:

- Emphasize eccentric quad work
- Continue closed chain exercises, step ups, mini squats, leg press
- Continue knee extensions 90-40 degrees
- Hip abduction/adduction
- Hamstring curls and stretches
- Calf raises and stretches
- Bicycle for endurance

(Therapeutic exercise continued from Phase IV)

- Pool running (forward/backward)
Walking program
- Stairclimber
- Initiate isokinetic work 100-40 degrees

***For accelerated isolated ACL Rehab: Increased agility workouts and sport-specific activities may be added as early as 10 weeks.

Special Activities:

- Bowling, outdoor bike, jog on level ground, pitch & putt (No Cleats), lift/carry 20 pounds increasing by 20 pounds per month.

Criteria for Advancement to Phase V:

1. Full ROM
2. Minimal/no effusion
3. Satisfactory clinical exam

Phase V – Light Activity Phase (Weeks 12-20)

Goals:

1. Development of strength, power, and endurance
2. Begin to prepare for return to functional activities

Isokinetic Test: WEEK 12-16: at M.D. discretion based on quad control and type of graft.

Therapeutic Exercise:

- Continue strengthening exercises
- Initiate plyometric program
- Initiate running program
- Initiate agility drills – start easy 3 months (use discretion)
- Sport specific training and drills

Criteria to initiate running program:

1. Satisfactory clinical exam
2. Satisfactory isokinetic test
3. Functional test 70% of unaffected LE
4. Unchanged KT1000 results (M.D. does this)

Special Activities:

- 16 weeks– swim, shoot free throws, golf (NO cleats), volleyball (serving only, 2 man drills – NO diving. Only controlled lateral movements)
- 20 weeks – baseball, softball- hitting allowed now

Criteria for Advancement to Phase VI:

1. Isokinetic test that fulfills criteria
2. KT 1000 test unchanged
3. Functional test 80% - unaffected LE
4. Proprioceptive test 100% of unaffected LE

Phase VI – Return to Activity Phase (Weeks 20-24)

Goals:

1. Achieve maximal strength
2. Hop test > 85% limb symmetry
3. Further enhance neuro-muscular coordination and endurance.

Therapeutic Exercise:

- Continue plyometric program
- Continue strengthening program
- Continue running and agility program
- Accelerated sport specific training and drills
- Continue closed chain strengthening program

6 MONTHS FOLLOW-UP

- Unlimited return at 6 months if isokinetic results are greater than 90% strength of unaffected LE.

12 MONTHS FOLLOW-UP

- Isokinetic test
- KT 1000 test
- Functional test