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of the Knee and Shoulder

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ACL Reconstruction with Allograft or Hamstring Autograft AND Mensical Repair: Post-op Protocol
This protocol is intended to be a general outline only. The physician reserves the right to either advance or delay this protocol as deemed necessary. If so, this should be done by direct communication with the therapist, or in writing on the therapy referral form given to the patient on the day of surgery.

Guidelines for Crutches and TROM Brace
- Bilateral axillary crutches to be used immediately post-op.
- Meniscal Repairs:
    - **SMALL AND STABLE:**
    - Maintain NWB with brace locked in extension for 4 weeks
    - After Week 4, WBAT with TROM locked in extension weaning from crutches.
    - Once crutches have been discontinued, advance to unlocking TROM, then removing brace. Patient must demonstrate excellent quadriceps control.
    - **LARGE OR UNSTABLE:**
    - Maintain NWB with brace locked in extension for 6-8 weeks
    - After Week 6-8, WBAT with TROM locked in extension, wean from crutches.
    - Once crutches have been discontinued, advance to unlocking TROM then removing brace. Patient must demonstrate excellent quadriceps control.
- TROM brace to be worn and locked in 0o extension with all ADL's for time frame as specified above.
- TROM may be removed for bathing and exercises.
- TROM brace may be unlocked for slight flexion in sitting for short periods of time and for driving.

Initial goals/precautions:
- Achieve full ROM by 8-10 weeks post-op
- No closed-chain knee flexion for first eight weeks
- No resisted hamstring exercises (open or closed chain) for first three weeks
- Avoid hyperextension of knee
- No deep squats or lunges past 45 degrees of flexion until 16 weeks post-op
- Knee flexion ROM performed in supine or prone to tolerance is OK after restrictions are removed
    - Knee flexion restricted to 90 degrees for the first 4-8 weeks pending size of repair. To be indicated on PT referral.
- No running till 4 months post-op
- No torsion or cutting drills until 6 months post-op
- No competitive sports participation until 8 months post-op

Initial goals/precautions:
- Place occlusive dressing over steri-strips at wound sites at first visit. Change occlusive dressing every other day, leaving steri-strips on unless they come off easily. Cover old steri-strips with new ones if needed.
- Keep wound sites covered with occlusive dressing until stitches are removed. After that, cover with standard adhesive bandages until wounds are fully healed (wrap knee in plastic wrap for showers).

Frequency of Physical Therapy Visits
Schedule physical therapy visits 3x/week for the first four weeks, or until full passive ROM flexion and extension is achieved and there is no quad lag with SLR. Then decrease to 2x/week until about 8 weeks post-op, at which time the patient may be seen 1x/week or once every other week as appropriate based on patient status and compliance with HEP.

Day 1 Post-Op
- Remove bulky dressings. Leave steri-strips on; place occlusive dressing over all portals and incisions.
- Discard post-op immobilizer if issued. Issue TROM brace (adjusted to fit patient at pre-op visit).
- Begin PROM knee flexion per repair restrictions.
- Begin PROM knee extension to zero degrees, no hyperextension.
    - No prone hangs or heel props due to allograft/hamstring (risk of stretching graft)
- Patellar mobilization
- Quad sets, SLR, sidelying hip add/abd AROM
- Ankle pumps/elastic band ankle exercises
- Apply e-stim to distal quad for improved muscle recruitment as needed.
- Frequent icing using "Game Ready" machine or Cryocuff for first 48 hours
- Issue home e-stim unit for open-chain QS and SLR assist to prevent atrophy during NWB'ing period.

Week 1-4: Patient to be seen 3x/week as needed.
If ROM and quad strength are progressing well, consider decreasing to 2x/week with home e-stim unit.
- Continue above exercises.
- Apply e-stim to the quadriceps for muscle recruitment in open-chain as needed.
- Add sidelying hip abduction, adduction, and extension exercises.

Week 5-8: Patient seen 2x/week as needed
Only add below exercises after WBing restrictions are lifted, at 4-8 weeks per MD instruction.
- Begin scar massage once wounds are fully healed
- Add standing weight shifts
- Standing resisted TKE's
- Heel raises, soleus reaches
- At 5 weeks: Bilateral leg to single leg balance activities on stable surfaces as tolerated.
- At 6 weeks: start stationery bike (or Airdyne) slowly and without resistance for ROM.

Week 8-12: Patient seen 1x/week as needed
Closed-chain knee flexion exercises can be added at 8 weeks.
- Stationary bike without resistance
- Single leg stance with reaching activities, ball toss, etc.
- Leg press from 10-45 o of flexion, bilateral legs
- When patient has good quad recruitment, add closed-chain exercises: heel raises, linebackers (0-45 o), soleus reaches, mini-squats (0-30 o), etc.
- Retro-walking on treadmill and retro-Stairmaster for quad recruitment
- Progress from bilateral to unilateral leg exercises on stable surfaces as tolerated.
Step-ups (forward and lateral) and resisted sidestepping using pulley around waist or elastic band around thighs. Avoid motions past 45 degrees of knee flexion and torsional movements.
- Training on the Proprio 5000 machine if available. Begin with small angles and slow speeds in bilateral stance, gradually progressing to large angles and high speeds including unilateral stance.
- At 10 weeks: Add lateral lunges to the non-operative side no greater than 45 degrees
- Incorporate total-body strengthening, focusing on core control:
    - Unilateral bridges, fire hydrants, resisted clamshells, prone and side planks.

Week 12-16: Patient seen 1x/week as needed
Goal: Full ROM achieved at end of Week 12.
• Add step-downs, step-up without rotation.
• Perform unilateral leg press.
• Add forward lunges and lateral lunges to operative side to 45 degrees of knee flexion.
• Forward Stairmaster and elliptical machine.
• Add resistance to above exercises as tolerated.
• Add lunge walking with dumbbells to 45 degrees of knee flexion only.

Week 16-24: Patient seen on as-needed basis for HEP progression.
• Begin jogging and then progress to running drills if patient has good control and endurance with above exercises (see below).
• Add destabilization and uneven surfaces to double and single-leg closed-chain co-contraction exercises.
• Add forward and lateral lunges, progressing to lunge walks with weights.
• Add slide-board activities.
• Begin plyometric lateral shuffles, progressing to karaoke shuffles.
• Add step-downs, step-up with rotation, full-range squats, star squats, and cone pickup from floor.
• Progress to advanced Proprio 5000 drills, including endurance protocols.
• At 4 Months: Begin walk / jog / run if patient has good control and endurance with above exercises. Begin independent jogging at 4 months post-op, increasing running time by 5-minute increments to tolerance. Begin more strenuous running programs incorporating various terrain and inclines at 6 months post-op.

At 6 Months Post-Op: Patient seen on as-needed basis for HEP progression.
Phase IV Rehab:
At some point after 6 months post-op or when deemed appropriate by therapist and surgeon, assess for return to sport-specific training using the ACE program or other specific tests such as the Triple Hop Test, Single Leg Hop (Goal = within 80% of non-operative LE), and Quad Girth within one inch of non-operative LE. Once patient has excellent eccentric control of LE, progress to the following:
• Bilateral and unilateral hopping drills
• Running, cutting, and pivoting.
• Begin sport-specific drills using soccer ball, basketball, etc.

Contact Sports:
Prior to return to sports, patient should complete standard Proprio Test, showing good leg control and side-to-side symmetry. Begin non-competitive or competitive play at **8 months post-op**, once physician and therapist are satisfied with sport-specific functional drill performance.

The use of a custom or off-the-shelf sports brace (Defiance or Full Force) may be recommended by the physician or therapist for improved proprioception.