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Rehabilitation Guidelines for Bone-Tendon-Bone Autograft ACL Reconstruction

The intent of this protocol is to provide the clinician with a guideline to establish and progress a patient through post operative rehabilitation. It is not intended to be a substitute for one's clinical decision making. The plan of care should be based upon the patient's clinical exam and individual goals.

*Prior to initiation of interventions check with surgeon/operative report regarding progression. Need to take into consideration multiple variables including:

- 1) Graft used (patellar bone-tendon-bone, hamstring, Achilles)
- 2) Concomitant procedures (chondral picking, meniscus repair)
- 3) Concomitant injuries (MCL sprain, bone contusion)
- 4) Patient characteristics
- 5) Surgeon specific philosophy/preferences.

Based upon these variables, variations of progressions and patient outcomes may exist - however the following is a basic guideline that can be used for reference.

- Notify the surgeon <u>immediately</u> of any concerns for DVT, infection, edema, loss of motion, or quadriceps inhabition.
- ✤ In order to progress across the phases of rehabilitation, the patient must meet <u>BOTH</u> the time requirement and the criterion requirement.

* <u>Pre-Op:</u>

- > Evaluation of baseline measurements (ROM, Strength, girth)
- Measure for and fit for surgical brace (functional brace measurements if needed)
- Dispense Iceman with proper instruction (if indicated)
- Perform crutch training and issue crutches
- Evaluation should be scheduled for 2- 3 days after surgery.
- > Post-op instructions and education from surgery date to hospital discharge
- > Weight bearing: WBAT with crutches and brace locked in full extension
- > Ice for swelling/ effusion while leg is elevated 20 minutes per hour

✤ Phase I: 0-6 weeks:

➤ Goals:

- Maintain integrity of repair
- Decrease pain and edema
- Promote tissue healing
- Progressively increase passive range of motion in a staged pattern
- Prevent muscle inhibition of the quadriceps
- Patient education of precautions and progressions
- Precautions:



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- Monitor edema edema results in pain, loss of motion, and quadriceps inhibition.
- Monitor for DVT and infection
- Avoid open chain knee extension
- \succ 0-2 weeks
 - PROM 0°-100°
 - \circ Must achieve 0° extension
 - Re-Ed to quadriceps to prevent inhibition
 - Brace locked at 0° and WBAT
 Beginning with week 2, patient may ambulate with a functional gait pattern without the brace while in the clinic.
- \geq 2-4 weeks
 - PROM 0° -120° with staged ROM achieving 120° by the end of week 4
 - Brace locked at 0° and WBAT
- ➤ 4-6 weeks
 - Continue with strength, ROM, and endurance
 - Progress PROM to equal of unaffected side
 - Unlock brace when quadriceps strength permits

Phase II: 6-14 weeks:

- Criteria to progress to Phase II
 - Appropriate healing by adhering to precautions in phase I
 - ROM goals achieved
 - Strength of 4+/5 of the lower extremity excluding knee extension
 - Minimal pain and edema
- ➢ Goals for Phase II
 - Normalize AROM
 - Continue to increase strength and endurance
 - Enhance dynamic stability through neuromuscular control
- ➢ 6-12 weeks
 - Continue with strength and endurance
 - Initiate perturbation training on unstable surface progressing from air disc to BOSU with feet in neutral stance to offset stance bilaterally.
- ➤ 12-14 weeks
 - Initiate low intensity SportMetrics
 - Ankle Bounces
 - o Fast Steps
 - Initiate functional activities
 - Continue to monitor for improper compensations



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Phase III: 14-24 weeks:

- Criteria to progress to Phase III
 - Appropriate healing and strength by adhering to precautions in Phase II
 - No pain with AROM and strengthening activities
 - Full AROM
 - 5/5 strength of the lower extremity excluding knee extension
- ➢ Goals
 - Enhance dynamic stability
 - Gradual restoration of strength, power, and endurance
 - Advance neuromuscular control
 - Return to full ADLs/work

▶ <u>14-16 weeks</u>

- If strength is 70% or greater and with PHYSICIANS's OK
 - Start: forward and back running, standing bike, jump rope, leg extension isotonic with a block of last 30° of extension

> <u>16+ Weeks</u>

- Multiplane activities and sport specific movements
 - Start: figure of 8, lateral shuffles, caiacas, sports drills, hops, jumps, cut/ pivots
 - Do above with brace (if has a brace), no sudden starts and stops until physician gives approval

> <u>Week 20</u>

- HEP as above
- Run up stairs, walk down, advanced cutting drills, jog to run (50-75% sprint speed)

Phase IV: 24+Weeks:

Discharge

- ▶ 80-90% strength
- ➢ No pain with ADL's
- Able to perform without deficiencies

> <u>Return to competitive sport with doctors OK and the following:</u>

- ▶ 85% strength quad isokinetically
- ► H/S/quad ratio 70- 80%
- > Functional progression of the following:
 - o Fast starts and stops
 - o Run up and down stairs
 - Single leg hop
 - o Successful sport specific drills



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- Discuss brace options with doctor
 Goal 32- 52 weeks 85% to 100% strength



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Rehabilitation Guidelines for Bone-Tendon-Bone Autograft ACL Reconstruction <u>With</u> Meniscal Repair

Autograft ACL reconstruction with <u>MENISCUS REPAIR</u> – avoid compression and shear – <u>must</u> communicate with the surgeon for specifics.

Phase I: 0-6 weeks

- ➤ Goals:
 - Maintain integrity of repair
 - Decrease pain and edema
 - Promote tissue healing
 - Prevent muscle inhibition of the quadriceps
 - Patient education of precautions
- > Precautions:
 - Monitor edema edema results in pain, loss of motion, and quadriceps inhibition.
 - Monitor for DVT and infection
- \triangleright 0-6 weeks
 - Protected weight bearing must communicate with the physician to determine weight bearing status and location of the meniscus repair.
 - AROM/PROM 0° 90° to protect meniscus repair.
 - \circ May progress to 120° at week 4 with physician approval.
 - Strength of the lower extremity: clam shells, prone hip flexion with knee flexion, side lying abduction, thera-band hip abduction,
- \succ 6+ weeks
 - Resume protocol at Phase II as above allowing for a 4 week transition phase to full weight bearing and ROM.

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