

ACLR (Hamstring Autograft) & Meniscal Repair Protocol

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General Principles and Precautions

- **The "Meniscal Shear" Rule:** Strictly avoid knee flexion greater than 90 degrees for the first 6 weeks to protect the meniscal repair.
- **Weight-Bearing:** Weight-Bearing As Tolerated (WBAT) is permitted **ONLY with the brace locked in full extension (0 degrees)**.
- **Hamstring Protection:** No resisted hamstring curls or heavy hamstring stretching for the first 8 weeks to allow the harvest site to heal.
- **Graft Protection:** No resisted open-chain knee extension (leg extension machine) for the first 12 weeks.

Phase I: Maximum Protection (Weeks 0–2)

Goals: Protect the repair and graft, achieve 0 degrees of extension, and manage swelling.

- **Brace Use:** Brace **locked in full extension (0 degrees)** for all ambulation and sleep.
 - **Weight-Bearing:** WBAT with the brace locked in extension and use of crutches for stability.
 - **Range of Motion:**
 - **Extension:** Goal is 0 degrees (matching the opposite side) by day 7.
 - **Flexion:** Gradual progression (Strictly do not exceed 90 degrees).
 - **Exercises:**
 - **Quadriceps Activation:** Quad sets and Straight Leg Raises (SLR) in the brace.
 - **Patellar Mobilizations:** Essential to prevent stiffness.
 - **Ankle Pumps:** daily to prevent DVT.
 - **Restriction:** Do not perform any active hamstring contractions (e.g., pulling the heel toward the buttock).
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Phase II: Early Mobilization (Weeks 2–6)

Goals: Reach 90-degree flexion milestone and protect meniscal sutures and donor site.

- **Brace:** Brace remains locked in extension for walking. It may be unlocked for seated exercises and Range of Motion only.
 - **Motion Progression:**
 - **Flexion Goal:** Reach **90 degrees** by the end of Week 6. (Do not exceed 90 degrees).
 - **Stationary Bike:** Begin when flexion reaches 90 degrees. Start with no resistance and a high seat height to minimize knee/hamstring strain.
 - **Strengthening:**
 - **Quad Sets/SLR:** Continue without lag.
 - **Bilateral Closed-Chain:** Very shallow mini-squats (0 to 30 degrees) only if pain-free.
 - **Precautions:** **No** lateral movements, **No** single-leg loading, and **No** resisted hamstring curls.
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Phase III: Intermediate Strengthening (Weeks 6–12)

Goals: Discontinue brace, progress flexion to 120 degrees, and build bilateral strength.

- **Brace:** Wean from the brace as quadriceps control allows (typically discontinued by Week 7-8).
 - **Motion Progression:**
 - **Flexion Goal:** Reach **120 degrees** by the end of Week 12.
 - **Strengthening (Bilateral Only):**
 - **Closed-Chain:** Bilateral leg press and mini-squats (0 to 60 degrees).
 - **Hamstrings (Week 8+):** Begin gentle **active-only** hamstring curls (no resistance).
 - **Precautions:** **No lateral movements or single-leg loading** until the completion of week 12.
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Phase IV: Advanced Loading (Weeks 12–16+)

Goals: Achieve full flexion, initiate single-leg tasks, and return to functional loading.

- **Motion Progression:**
 - **Flexion Goal:** Reach **Full Flexion** by Week 16.
 - **Strengthening (Initiate Week 12+):**
 - **Lateral Movements:** Initiate side-steps, monster walks, and lateral shuffles.
 - **Single-Leg Loading:** Begin single-leg squats, step-ups, and Bulgarian split squats.
 - **Hamstrings:** Progress to light resisted curls and RDLs (Romanian Deadlifts).
 - **Running (Week 20+):** Requires full range of motion, no joint swelling, and at least 75 percent quadriceps strength symmetry.
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Phase V: Return to Sport (Weeks 36+)

- **Contact Sports:** Typically 9 to 12 months for combined ACL and meniscal repairs to ensure full biological healing of the graft and repair site.
 - **Discharge Criteria:** Quadriceps and Hamstring strength greater than 90 percent of the uninvolved side; Limb Symmetry Index (LSI) > 90 percent on hop testing.
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Clinical Pearls for the Therapist

1. **Extension is Critical:** Full terminal extension (0 degrees) must be achieved early. If the knee lacks extension, the meniscal repair is subjected to abnormal mechanical stress every time the patient walks.
2. **The Hamstring "Tug":** Because the hamstrings attach near the posterior horn of the meniscus, resisted hamstring work is doubly dangerous in this protocol. Ensure no resistance is added to the hamstrings until Week 10-12.
3. **No Deep Squats:** Avoid weighted squats or lunges beyond 90 degrees to protect the posterior horn of the meniscal repair from high-pressure "pinching."