The goal of this protocol is to guide patients through the recovery process following meniscal root repair surgery. It is crucial to follow each phase carefully to ensure proper healing, avoid re-injury, and progressively return to normal function.

Week 1: Immediate Postoperative Phase

- **Brace**: Your knee will be immobilized with the leg locked in full extension (0 degrees) for the entire first week after surgery. This is necessary to protect the surgical repair and promote optimal healing.
- **Crutches**: Ambulation is non-weight bearing, meaning no pressure should be placed on the affected leg. Crutches are mandatory for walking during this period.

Exercises:

- o Ankle Pumps and Motion: While the knee is immobilized, it's important to prevent stiffness and promote blood flow by performing ankle pumps. Move your ankle up and down multiple times throughout the day.
- o Quad Sets: You can perform quad activation exercises with the leg straight. This involves tightening the quadriceps muscle while keeping the knee fully extended (straight), gently pushing down on the leg to engage the quad muscles.
- **Dressing**: Keep the ACE wrap applied for the first week to help with swelling and support. Showering should be done around the dressing to keep the surgical site dry.

Weeks 2-6: Early Healing and Protection Phase

Brace and Dressing:

- o The surgical dressing can be removed after the first week, and you may begin showering normally. Ensure the incision site remains clean and dry.
- o You must remain non-weight bearing (NWB) for the first 4 weeks postoperatively. Crutches should continue to be used.
- **Toe-Touch Weight bearing**: Starting at week 4, you may begin toe-touch weight bearing. This means you can gently touch your toes to the ground for balance only, but no significant weight should be placed on the leg.
 - o Progress weight bearing slowly, aiming for full weight bearing by week 6 with the leg still locked in full extension.

Range of Motion:

- o Do not allow the knee to bend past 90 degrees of flexion during this phase. It is critical to protect the repair by limiting motion.
- o Passive knee flexion can be introduced but must stay within the safe range.

Physical Therapy:

o PT should start 1 week after surgery to work on quad activation, knee stabilization, and controlled movement. This will also include maintaining muscle strength in the non-operated leg and upper body exercises.

Weeks 6-8: Controlled Weight Bearing Phase

• **Weight bearing**: By week 6, you can begin full weight bearing while continuing to wear the brace locked in extension (0 degrees).

Brace:

- o During this period, progress with the brace. If quadriceps strength is adequate, you can gradually unlock the brace and allow flexion between 0 to 90 degrees.
- o Continue wearing the brace for any weight bearing activities.

· Exercises:

- o Leg Press: Start with the leg press machine, keeping the range of motion between 0-90 degrees.
- o Stationary Bike: Cycling with a stationary bike is recommended. Adjust the seat to limit knee flexion to 90 degrees or less.
- o Focus on controlled movements that build strength without risking damage to the repair.

Weeks 8-12: Progressive Strength and Motion Phase

- **Weight bearing**: Full weight bearing without the brace is encouraged as long as the quadriceps strength is sufficient to stabilize the knee.
- **Graduation from Brace**: If you demonstrate adequate quad strength and stability, you may begin to wean off the brace. Full return to activities without the brace should be done cautiously, focusing on form and function.
- **Single-Leg Activities**: As your strength and stability improve, begin performing single-leg exercises such as leg lifts and balance drills. These activities will help restore full functional strength.
- Return to Full Activity: While everyday activities may resume, be cautious with high-impact or strenuous exercises. Full athletic return should be guided by your physical therapist and surgeon.

· Restrictions:

- o **Squatting**: Avoid deep squatting (past 90 degrees) for a total of 6 months postoperatively to prevent strain on the repaired meniscus.
- o Gradually introduce more dynamic exercises and sports-specific drills, depending on your recovery progress and clearance by your physical therapist.

General Guidelines:

- Pain and Swelling: Ice your knee regularly to reduce swelling and discomfort. Keep the leg elevated when resting.
- **Adherence**: Sticking closely to the protocol is essential to prevent damage to the repaired tissue and to optimize recovery.
- **Follow-Up**: Regular follow-up appointments with your surgeon and physical therapist are critical to ensure the repair is healing properly and to adjust the rehabilitation plan as needed.

Always consult your orthopedic surgeon or physical therapist if you experience increased pain, swelling, or any concerns during recovery.