

## **Knee Arthroscopy with Meniscal Root Repair/ Meniscus Radial Tear Repair**

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The intent of this protocol is to provide a general framework for meniscal root repair rehabilitation. Within this framework there are specific guidelines for activity progression which directly relate to tissue tolerance and directional preference of movement. Staff will provide special instructions in the case that specific individual restrictions exist. Please fax initial assessment and subsequent progress notes directly to TCO at 952-944-0460.

### **GENERAL REHABILITATION PRINCIPALS**

- Early Hamstring Precautions to Protect the Repair
- Early Resolution of Tissue Irritability/Effusion
- Slow/Progressive Loading into Knee Flexion ROM
- Gradual Return of Functional Strength & Conditioning
- Criteria-Based Return to Sport at 6+ Months

### **PHASE 1 (WEEKS 0-6): IMMEDIATE POST-OP PHASE WITH RESTRICTED MOTION**

#### **Precautions**

- Non-Weight Bearing
- No Active Hamstring Contractions
- PROM: **(full extension to 90° flexion only for the first 2 to 3 weeks then gradually progress flexion to full as tolerated. Anticipate near Full ROM by 8 weeks)**
- Brace on except for showering (Brace locked in extension when ambulating)

#### **Interventions**

- Passive Heel Prop Terminal Knee Extension Stretch
- Passive Knee Flexion ROM (**No Hamstring Contraction**)
- Patella, Patellar Tendon, Quadriceps Tendon Mobilizations
- Progressive Quadriceps Activation with Focus on Terminal Knee Extension
- Passive Quadriceps Thomas stretch ROM from 0-90
- SLR Series (**Excluding Prone SLR**)
- Non Weight-Bearing Calf stretching and Strengthening
- Core and Upper Body Strengthening as appropriate

#### **Goals/Criteria to Advance**

- Achieve Symmetrical Terminal Knee Extension/Hyperextension
- Successful Management of Joint Effusion to Trace Amount
- Pain-Free ROM

## PHASE 2 (WEEKS 7-9): PROGRESSIVE WEIGHT BEARING IN PROTECTED ROM

### Precautions

- Gradual Progression of Weight-Bearing
- Gradual Return of Full Knee Flexion ROM
- Closed-Chain Activity limited to Weight-Bearing Status
- No WB flexion > 90 degrees for 2-3 months

### Interventions

- Non Weight-Bearing Knee Flexion ROM to Full (Monitor pain/effusion)
- Stationary Bike (No Resistance)
- Gait Training/Walking Program to 30 minutes
- Progressive, Weight-Bearing Balance Training
- Calf Raises and Stretching
- Core and Upper Body Exercise as appropriate
- Continue Passive quadriceps Thomas stretch (within pain-free)
- Continue Hip Strengthening/SLR Series (Including Prone SLR)

### Goals/Criteria to Advance

- Nearly Normalized Knee Range of Motion (Non Weight-Bearing)
- Resolve Effusion and Tissue Irritability in Full Weight-Bearing
- Normalize Gait on Flat Ground
- Tolerating 25-30 min of Weight-Bearing Activity

## PHASE 3 (WEEKS 10-15): ENDURANCE TRAINING WITH PROTECTED ROM

Note: Exercise dose should follow high-repetition/low-load program of multiple sets with 30-60 second rest periods. (ex. 3-4 sets of 15-25 repetitions)

### Precautions

- < 70° of Knee Flexion with Closed-Chain Exercise
- Closely Monitor Pain and Swelling

### Interventions

- Stationary Bike with Resistance, Elliptical, Treadmill Walking, Light/Protected Freestyle Swim **(Starting Week 12)**
- Single/Double Leg Press PRE's
- Double-to-Single Leg Squat in Protected Motion with Excellent Technique
- Static-to-Dynamic Lunge Series **(Sagittal Plane Only)**
- Step-up/Step-Down Series in Protected ROM (Anterior/Lateral/Posterior)
- Continue Progressive, Weight-Bearing Balance Training
- Continue Calf Raises and Stretching
- Continue Hip Strengthening/SLR Series (Including Prone SLR)

### Goals/Criteria to Advance

- Symmetrical Knee Motion with Absent Knee Pain/Effusion
- Able to Maintain Single-Leg Squat for 90 seconds at 45° of knee flexion (Excellent Control)
- Quad Index: 75-80%

## PHASE 4 (WEEKS 16-21): HYPERTROPHY / STRENGTH TRAINING WITH PROTECTED ROM

Note: Exercise dose should follow Moderate-Repetition/Load program of multiple sets with 30-90 second rest periods. (ex. 3-4 sets of 8-12 repetitions)

### Precautions

- Until Week 17, No Isolated Hamstring Strengthening
- Until Week 17, Maximum of 70° Knee Flexion with Closed-Chain Exercise
- Until Week 20, Maximum of 90° Knee Flexion with Closed-Chain Exercise

### Interventions

- Single-Leg Squats
- Single-Leg Deadlifts
- Multi-Directional Lunge Matrix with Progressive Load
- Return to Running Progression (**Starting Week 16 if >80% Quad Index**)
- Continue Single/Double Leg Press PRE's
- Continue Step-up/Step-Down Series with Progressive Load (Anterior/Lateral/Posterior)
- Continue Progressive, Weight-Bearing Balance Training
- Continue Calf Raises and Stretching

## PHASE 5 (WEEKS 22+): PLYOMETRIC / RETURN-TO-SPORT TRAINING

### Precautions

- No Deep Squatting for 6+ Months (this very conservative and maybe change to no Deep squatting with greater than body weight)

### Interventions

- Progressive Double and Single Leg Jump Training with Excellent Landing Mechanics
- Ladder Drill Agility
- Lateral Hops with/without Perturbation Training
- Progressive Cutting Activities
- Sport-Specific Drills/Conditioning

### 6-Month Goals / Return-To-Sport Criteria

- Quad Index: 95-105% of Contralateral Side
- Functional Performance Testing: > 90% Symmetry on Hop Testing with Excellent Mechanics
- Global Rating of Knee: > 90%
- Knee Outcome Score: > 90%
- Psychometric Score: >90%

<b>Return to Running Progression*</b>	
<b>Week</b>	<b>Walk-Run Protocol</b>
Week 1	4-Minute Walk, 1-Minute jog at 50-60% Intensity   15-20 Minute Workout
Week 2	3-Minute Walk, 2-Minute jog at 50-60% Intensity   15-20 Minute Workout
Week 3	2-Minute Walk, 3-Minute jog at 50-60% Intensity   20 Minute Workout
Week 4	1-Minute Walk, 4-Minute jog at 50-60% Intensity   20 Minute Workout
Week 5+	Gradually increase the Intensity and Duration of Jog
*allow 1-2 days of rest between Running Progression Workouts, reduce load if Pain/Effusion present	

Reference: Mueller et al. "Rehabilitation following meniscal root repair...." *JOSPT* (2016)