Advanced Orthopedics and Sports Medicine
Meniscal Repair -Treatment Guideline

Phase I: Immediate Post-operative (IP) 0-4 weeks

Evaluate:

1. Pain
2. Hemarthrosis
3. Patellar mobility
4. ROM
5. Quadriceps contraction
6. Soft tissue tightness/flexibility.
7. Subjective functional scores (eg LEFS)

Goals:

1. Maintain integrity of the repair
2. Diminish inflammation, swelling and pain of the knee.
3. Gradually increase PROM (restore full extension)
4. Re-establish quadriceps muscle control.
5. Wean patient off crutches and emphasize normal gait.

Precautions:

1. Watch for infection (constant throbbing pain, systemic signs), DVT
2. AROM hamstrings in 2 weeks and resisted only after 6 weeks (posterior horn repair)
3. Avoid tibial rotation for 8 wks to protect meniscus

Treatment Summary:

1. Modalities include electrical stimulation for re-education of quadriceps contraction or electrical stimulation for pain relief (IFC, TENS) or edema control (HVPG). Ice and compression (elevation) for pain control should also be used as appropriate.
2. Mobs/MFR: Initiate patellar mobilization for normal patellar mobility, manual retrograde massage (efflurage) for swelling, soft tissue massage for muscle guarding and pain.
3. Range of motion exercises include but not limited to heel slides, heel props, wall slides, prone hangs, ankle pumps. Goal 0-30 wk 1, 0-50 wk 2, 0-70 wk 3, 0-90 wk 4.
4. Stretching for flexibility of lower extremity musculature includes but not limited to the following musculature hamstrings, gastrocnemius, iliotibial band, hip flexors.
5. Strengthening exercises include but not limited to Quadriceps sets at multiple angles (0, 20, 40, 60), gluteus sets, hamstrings sets at 20 (delay for 6 weeks with posterior horn repair), SLR all directions. NWB proprioceptive exercises. Lumbopelvic/ "core" stabilization exercises.
6. Gait training: Weight bearing Status: NWB 0-2 wks, PWB 2-4 wks.
7. Bracing: Hinged knee brace locked in full extension during ambulation. Pt often sleeps in brace for 1-2 weeks. Gradually increase ROM of brace.

Criteria for progression:

1. If greater than 10% bilateral difference in swelling, ROM then rehab focused on specific parameter.
2. Good pain control (< 2-3/10 with all exercise)
3. Performance of SLR without an extension lag.

Phase II: Early Rehabilitative (ER) 4-6 weeks

Evaluate:

1. Pain
2. Hemarthrosis
3. Patellar mobility
4. ROM
5. Quadriceps contraction
6. Soft tissue tightness/flexibility.
7. Subjective functional scores (eg LEFS)

Goals:

1. Increase knee ROM 0-120
2. Develop good muscle control and early proprioceptive skills
3. Restore independent ambulation with normal gait.

4. Reduce any persistent effusion
5. Early recognition of complications (motion loss, RSD, patellofemoral changes)

Precautions:

1. Avoid weight bearing with flexion > 90
2. Avoid weight bearing with rotation for 8 wks to protect meniscus

Treatment Summary:

1. Physician or physical therapist will determine when to discontinue the crutches and brace.
2. Modalities include electrical stimulation for re-education of quadriceps contraction or electrical stimulation for pain relief (IFC, TENS) or edema control (HVPG). Ice and compression (elevation) for pain control should also be used as appropriate.
3. Mobs/MFR: Initiate patellar mobilization for normal patellar mobility, manual retrograde massage (efflurage) for swelling, soft tissue massage for muscle guarding and pain.
4. Range of motion exercises include but not limited to heel slides, heel props, wall slides, prone hangs, ankle pumps. Goal knee ROM 0-120 by wk 6.
5. Stretching: same as previous phase.
6. Strengthening exercises Continue/progress with previous phase. Add resistance to Quadriceps exercise not greater than 10% BW. CKC exercises include but not limited to heel raises, mini squats, step up forward/sideways in protected range. Initiate hamstring curls to 90, multi hip and leg press exercises at wk 6.
7. Balance Training includes weight shifting, progression to single leg balance (UE and LE movement eg ball throws), balance board
8. Aerobic exercise can include leg bike (initially for ROM progressing to aerobic conditioning)
9. Gait training: FWB. Gait training, weaning off crutches by wk 6. Cup/cone walking exercises for normalization of gait. Lateral step over cones at week 6
10. Bracing: Discontinue brace after 6 wks

Criteria for progression:

1. No increase in effusion with 20-30 min of biking or ambulating.
2. If greater than 10% bilateral difference in swelling, ROM then rehab focused on specific parameter.
3. Good pain control (< 2-3/10 with all exercise)
4. Patient has normal gait pattern.

Phase III: Progressive Strengthening (PS) 6-12 weeks

Evaluate:

1. Pain
2. Effusion
3. Patellar mobility
4. ROM
5. Muscle control/Manual muscle testing
6. Gait
7. Soft tissue tightness/flexibility
8. Subjective functional scores (eg LEFS)

Goals:

1. Restore full knee range of motion 0-135
2. Continue to improve total leg strength
3. Improve endurance capacity of the muscles
4. Improve proprioceptive, balance and neuromuscular control
5. Improve limb confidence and function

Treatment Summary:

1. Modalities PRN as indicated. Ice and compression (elevation) for pain control as appropriate.
2. Mobs/MFR: Patellofemoral and tibiofemoral joint mobs as indicated. Initiate perturbation training.
3. Range of motion : Focus on end range of motion
4. Stretching: same as previous phase. Add Quadriceps stretching.
5. Strengthening exercises: Continue/progress phase II exercises. Progress to resisted hamstring curls to 90, mini squats, step ups forward/sideways in protected range, lunges, multihip and leg press exercises (limit ROM 0-90). Advanced strengthening can be added on unstable surfaces (eg squats on BOSU or balance board). Emphasize single leg exercise to decrease compensation.

6. Balance training single leg balance (upper extremity and lower extremity movement eg ball throws), balance board, BOSU, reaction bal, star balance (introduce knee torque across the body by week 8-9)
7. Aerobic exercise : leg bike, pool walking/running, swiiming (avoid breast stroke), elliptical trainer.
8. Gait training: Cone/cup walking and lateral step over cone exercises for normalization of gait. Backward walking for co-ordination.

Criteria for progression:

1. Balance and proprioception should be within 10% of uninvolved LE.
2. Full pain free AROM equal to uninvolved LE.
3. Less than 25% difference in quadriceps side to side comparison with Isokinetic testing at wk 12.

Phase IV: Advanced Activity (AA) 12 wks – 5 months

Evaluate:

1. Pain
2. Effusion
3. ROM
4. Manual muscle testing
5. Gait
6. Soft tissue tightness/flexibility
7. Functional tests, Isokinetic testing
9. Subjective functional scores (eg LEFS)

Goals:

1. Incorporate sports specific activity
2. Introduce agility and reaction time into proprioceptive work
3. Increase total leg strength
4. Develop patient confidence.

Treatment Summary:

1. Modalities Ice post exercises for pain/edema control.
2. Mobs/MFR: Patellorfemoral and Tibiofemoral joint mobs PRN. Advanced perturbation training.
3. Range of motion: Focus on end range of motion exercises.
4. Stretching: same as previous phase.
5. Strengthening exercises: Continue/progress strengthening exercises phase III. Emphasize single leg exercise. Advanced strengthening on unstable surfaces.
6. Balance training includes single leg balance, balance board, BOSU, reaction ball, star balance
7. Aerobic exercise can include leg bike, pool walking/running, swimming, walking, stair machine, ski machine
8. Gentle plyometric exercises on level surfaces double legged by week 16 if < 20% deficits on isokinetic testing. Progress plyometric and box drills by week 20-24.
9. Running program: Initiate return to running at wk 16. Includes but not restricted to jogging straight line, backpedals, progression to quick starts and stops and increasing speed and distance. Running and agility (and cutting maneuvers) drills only if < 30% deficit on isokinetic testing and/by wk 20.
    a. Sprint-Front
    b. Sprint Retro Run
    c. Side Shuffles – Both Ways
    d. Cariocas – Both Ways
    e. Figure 8's – Both Ways
    f. 45° Angle Cuts – Both Ways
    g. 90% Angle Cuts – Both Way
    h. Cross-Over Steps – Both Ways
10. Sports: Can initiate light sports specific exercises at 20-24 weeks

Criteria for Progression:

1. Balance and proprioception should be within 10% of the uninvolved lower extremity.
2. Less than 25% difference in quadriceps side to side comparison with isokinetic testing at wk 12
3. Isokinetic values (at 180°) quadriceps bilateral comparison 75%, equal hamstrings bilaterally, quadriceps peak torque/body weight 65% at 180°/sec (males) 55% at 180° (females), hamstrings quadriceps ratio 66% to 75%, hop test (80-90% of uninvolved leg).

Phase V: Return to Sports > 5 mos

Evaluate:

1. Manual muscle testing.
2. Functional tests , Isokinetic Testing.
3. Sports Specific Testing
4. Subjective functional scores (eg LEFS)

Goals:

1. 10-15% difference in Isokinetic testing
2. 85% of uninvolved lower extremity on functional tests (one legged distance hop, one-legged timed hop, % limb symmetry)
3. Proprioceptive test 100% of opposite side
4. Return to sports safely and with confidence

Treatment Summary:

1. Continue stretching exercises.
2. Continue strengthening exercises.
3. Continue neuromuscular control drills
4. Functional Training: Plyometric training (box hops), sports specific drills if < 15% deficits on isokinetic test.
5. Progress sports specific training: running/cutting/agility drills. Gradual return to sports drills.
6. Balance exercises: Continue and progress Phase IV
7. Aerobic exercise can include leg bike, water walking, swimming, walking, stair machine, ski machine.

Criteria for return to Sports/Work (5-6 mos)

1. No pain or effusion with full ROM
2. Isokinetic strength: quadriceps bilateral comparison 80% or greater, hamstrings bilateral comparison of 110%, quadriceps torque/body weight ratio 55% or greater, hamstrings/quadriceps ratio 70% or greater
3. Functional tests 90% of uninvolved LE
4. Proprioceptive test 100% of contralateral side.
5. Begin sports at discretion of surgeon and/or physical therapist possibly at 8 months.