

Knee Arthroscopy Rehabilitation: Meniscal Root or Radial Repair

MENISCAL REPAIR PROTOCOL

This rehabilitation protocol was developed for patients who have isolated meniscal root or radial tear repairs. Meniscal root repairs and radial tear repairs should be progressed slowly because the tear involves complete disruption of the circumferential fibers of the meniscus. The protocol is divided into phases. The first 6 weeks are a strict protection phase and the patient is non-weight bearing. In addition, if the medial meniscus is involved, active hamstring contraction is contra-indicated in this phase. The latter phases are adaptable based on the individual patients and special circumstances. Progress should be slow until 12-16 weeks and err on the side of protecting the repair.

The **overall goals** of the repair and rehabilitation are to:

- Control pain, swelling, and hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern and neuromuscular stability for ambulation
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination for daily activities
- Optimize core strength and postural stability
- Achieve the level of function based on the orthopedic and patient goals

The physical therapy should be initiated within early post-op period. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility.

Important post-op signs to monitor:

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitive
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)

- Insufficient lower extremity flexibility
- Deficits in core strength or postural stability

Return to activity requires both time and clinic evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's readiness to return to activity. Return to intense activities such as impact loading, jogging, deep knee flexion, or pivoting and shifting early post-operatively may increase the overall chance of a repeat meniscal tear and symptoms of pain, swelling, or instability should be closely monitored by the patient. Specific exercises may be modified, substituted, or added where clinically appropriate at the discretion of an experienced sports physical therapist or athletic trainer who has expertise in sports surgery rehabilitation.

PHASE ONE: WEEK 1-6

Following surgery, the patient will be NWB for 6 weeks. A hinged brace will be worn to limit motion to 90° for the 1st 4 weeks. The brace should be worn while sleeping. The brace must be locked in extension during ambulation and sleep to prevent hamstring contraction

PROM 0-90° only for 4 weeks.

Weeks 4-6: can carefully progress beyond 90—should be gradual

ROM

- Heel slides – passive only; follow precautions (0-90° week 1-4)
- Hamstring and calf stretch – hold 30 sec
- Prone hangs to gain full knee extension

STRENGTH AND NM CONTROL

- Quad sets with EMS or biofeedback –the more the better; 100X/day
- SLR – 4 way
- SAQ
- Seated hip flexion
- Multi-hip

MODALITIES

- EMS or EGS if needed for quad facilitation or swelling, respectively
- Ice following exercise and initially, every hour for 10-15 minutes, with knee in full extension

*The hamstrings attach to the posterior portion of the meniscus and therefore, active and resistive hamstring activity should be avoided for at least 6 weeks post-op!

*Pt should perform HEP 3X/day

GOALS OF PHASE:

- Control pain, inflammation, and effusion
- Adequate quad/VMO contraction
- Independent in HEP
- NWB, with brace locked out and using crutches

PHASE TWO: WEEK 6-8

- ROM can now be progressed gradually as tolerated.
- Flexion in a weight bearing position should NOT be performed under any circumstances
- Limit closed chain exercises to 90°.
- Progress to WBAT locked in extension in brace with B axillary crutches; unlock brace when adequate quad control is achieved; d/c brace and crutches when N gait is achieved

ROM

- Goal is 0-120+°
- Patella mobilization – manual – especially superior and inferior
- Perform scar massage aggressively at portals and incision
- Heel slides – seated and/or supine at wall
- Continue with HS and calf stretching
- Bicycle – do not perform until 110° of flexion is achieved – do NOT use bike to gain ROM. Perform daily, work to maintain ≥ 60+RPM then advance intensity as able.

STRENGTH

- Quad sets are continued until swelling is gone and quad tone is good
- SLR (4 way) add ankle weights when ready
- Weight shifting – lateral; forward/backward
- Shuttle/Total gym – (limit to 90°) bilateral and unilateral- focus on weight distribution more on heel than toes to avoid overload on Patella tendon
- Multi-hip – increase intensity as able
- Leg Press (limit to 90°)
- Step-ups – forward
- Step-overs
- Wall slides (limit to 90°)
- Mini-squats – focus on even distribution of weight
- Calf raises

BALANCE

- Single leg stance – even and uneven surface – focus on knee flexion
- Plyoball – toss
- Lateral cone walking with single leg balance between each cone

GAIT

- Cone walking – forward and lateral
- D/C crutches when normal gait

MODALITIES

- Continue to use ice following exercise

*Continue with HEP daily

GOALS OF PHASE:

- ROM 0-120°
- Adequate quad/VMO contraction
- Control pain, inflammation, and effusion

- N gait
- Ascend/descend stairs with reciprocal pattern

PHASE THREE

Weeks 8-16

Goals for this phase are full quad control, good quad tone, and full ROM; patient should be able to perform ADLs without difficulty.

Exercises will be advanced in intensity based on quad tone – a patient who continues to have poor quad tone must not be advanced to activities that require high quad strength such as squats and lunges.

STRENGTH

- Continue with above exercises, increasing intensity as able
- Step-ups – forward and lateral; add dumbbells to increase I; focus on slow and controlled movement during the ascent and descent
- Squats – Smith press or standing
- Lunges – forward and reverse; add dumbbells or med ball
- Hamstring curls (not until wk 7)
- Single leg squats
- Russian dead lifts – bilateral and unilateral
- Single leg wall squats
- Cycle – increase intensity; single leg cycle maintaining 80 RPM

ROM

- Full ROM should be achieved
- Continue with hamstring and calf stretch
- Initiate quad stretch

BALANCE

- Plyoball – toss – even and uneven surface
- Squats on balance board/foam roll/airex
- Steamboats – 4 way; even and uneven surface
- Strength activities such as step-ups and lunges on airex

MODALITIES

- Continue to use ice after exercise

*Continue with HEP at least 3X/week

GOALS OF PHASE:

- ROM 0-135°
- Full weight bearing
- Control pain, inflammation, effusion
- Increase lower extremity strength and endurance
- Enhance proprioception, balance, core strength, and coordination
- Complete readiness for sport specific activity

PHASE FOUR

Weeks 16-36

- Continue with above strengthening program 3X/week focusing on increasing intensity and decreasing reps (6-10) for increased strength

- Initiate lateral movements and sports cord: lunges – forward, backward, or side step with sports cord, lat step-ups with sports cord, step over hurdles.
- Jogging
- Plyometric program – bilateral progressing to unilateral
- Plyos can include squat jumps, tuck jumps, box jumps, depth jumps, 180 jumps, cone jumps, broad jumps, scissor hops
- Leg circuit: squats, lunges, scissor jumps on step, squat jumps
- Power skipping
- Bounding in place and for distance
- Quick feet on step – forward and side-to-side – use sports cord
- Progress lateral movements – shuffles with sports cord; slide board
- Ladder drills
- Swimming – all styles

Focus should be on quality, NOT quantity

Landing from jumps is critical – knees should flex to 30° and should be aligned over second toe. Controlling valgus will initially be a challenge and unilateral hops should not be performed until this is achieved.

Initiate sprints and cutting drills.

Progression: Straight line, figure 8, circles, 45° turns, 90° cuts

Carioca

Sports specific drills

Biodex test

Single leg hop test

Biodex goals: Peak Torque/BW Males, PkT/BW Females

60°/s (%) 110-115, 80-95

180°/s (%) 60-75, 50-65

300°/s (%) 30-40, 30-45

GOALS OF PHASE:

- Enhance neuromuscular control
- Progress skill training
- Perform selected sports specific activity-unrestricted sporting activity
- Achieve maximal strength and endurance
- Achieve optimal core strength and postural stability

Advanced weight training and sports specific drills are advised to maintain a higher level of competition. Isokinetic testing at 6 and 12 months may be recommended to guarantee maintenance of strength and endurance.