

### **Knee Arthroscopy Rehabilitation: Longitudinal Meniscal Repair**

#### **MENISCAL REPAIR PROTOCOL**

This rehabilitation protocol was developed for patients who have isolated longitudinal meniscal repairs. Weight bearing following this repair actually provides increased stability to the repair and is allowed as long as the knee is locked in full extension. Because the meniscus is compressed with increased flexion, however, ROM will initially be limited to allow the repair to heal. In addition, if the medial meniscus is involved, active hamstring contraction is initially contra-indicated. The protocol is divided into phases. The first 4 weeks is the protection phase in which ROM, gait and active HS contraction (if medial meniscus) is limited. The latter phases are adaptable based on the individual patients and special circumstances.

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 1-4**

#### PRECAUTIONS:

PROM only 0-90°

Gait: WBAT with B axillary crutches with brace locked in

#### 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 medial 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
- FWB with brace locked in extension

### **PHASE TWO: WEEK 4-8**

#### PRECAUTIONS

- ROM can now be progressed gradually as tolerated.

- Limit closed chain exercises to 90°.
- Unlock brace as quad strength allows and work to achieve N gait

#### 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.