



TriHealth
Orthopedic & Sports Institute
Meniscus Repair

1. Defined

- a. Sutures or bioabsorbable fixation devices (arrows, darts, screws, etc.) bring together and fixate the edges of a tear in the meniscus in order to maintain the shock absorption capacity of cartilage in weight bearing.

2. Goals

- a. Control post-operative pain and swelling
- b. Restore motion
- c. Restore functional strength, stability, and neuromuscular control
- d. Protect the fixation and healing tissue from undue stress

3. Rehabilitation Principles (specific to meniscus repair)

- a. When in combination with ACL reconstruction follow ACL guidelines.
- b. The healing environment with isolated meniscus repair is inferior to that with concomitant ACL reconstruction.
- c. As knee flexion increases, compressive loads across the meniscus increase.
- d. The combination of weight-bearing and knee flexion causes a combination of compression and shear across the meniscus that may be detrimental to the repair.
- e. Location of the tear and the type of fixation are key determinants of progression of rehab after meniscus repair. (too vigorous rehab can lead to failure).
- f. Limit muscular inhibition and atrophy from effusion.
- g. Initiate early activity of quads and hamstrings (isometric, isotonic, resistive), (e-stim and biofeedback).
- h. Incorporate comprehensive, lower extremity (hip and calf) muscle stabilization and strengthening activities, as well as core strengthening activities.
- i. Address limb confidence issues with progression of unilateral activity.
- j. Address limb velocity issues during gait with verbal and tactile cueing.
- k. Identify motion complications early and begin low-load, long-duration stretching activity:
 - i. ROM expectations
 - ii. Visit 2 - 0-60
 - iii. Week 2 - 90 degrees flexion, full knee extension
 - iv. Week 4 - AROM within 10 degrees of involved
 - v. Week 6 - full knee flexion (heel to buttock)

1. Initiate early proprioceptive activity and progress by means of distraction techniques:
 - i. eyes open to eyes closed
 - ii. stable to unstable
- m. Bilateral to unilateral
- n. Constantly monitor for signs and symptoms of patellofemoral irritation.
- o. Encourage low impact cardiovascular activity and patellofemoral protection strategies. (especially those found to have CMP at surgery)
4. Clinical Restrictions
 - a. No weight bearing for 4 weeks
 - b. No flexion under weight-bearing beyond 45 degrees for 8 weeks.
 - c. No flexion under weight-bearing beyond 90 degrees for 12 weeks.
5. Assistive Device Guidelines
 - a. **Post-op brace:**
 - i. Locked at 0 degrees for first 4 weeks.
 - ii. DC brace at end of week 4 (typically coincides with follow up M.D. appointment.
 - iii. In first 4 weeks patient can be out of brace at night if full extension is achieved.
 - b. **Crutch use:**
 - i. 2 crutches 4 weeks NWB then progress to 1 crutch to normalize gait
 - ii. Progression dependent upon:
 - iii. Adequate quad control
 - iv. No observed gait deviations
 - v. No change in pain, swelling or effusion.
6. Functional Activity Guidelines
 - a. Driving:
 - i. 7-14 days
 - ii. Dependent upon:
 - iii. Adequate muscle control for braking and acceleration.
 - iv. Proprioceptive/reflex control.
 - v. Adequate ROM to get into driver's side.
 - vi. Confidence level
 - vii. Car insurance restrictions on driving after surgery
 - viii. No requirement of pain medication
 - b. **Golf**
 - i. 12-16 weeks
 - ii. Dependent upon:
 - iii. Symptoms (swelling and pain)
 - iv. Range of motion
 - v. Quad control
 - vi. Proprioceptive/reflex control of limb
 - vii. No limb-velocity asymmetry with gait
 - viii. Encourage the following
 1. Backwards golf

2. Putting, chipping, short irons, 50% swing, 75% swing, 100% swing
 3. Avoid bunkers, uneven surfaces and severe slopes
 4. Warm up properly with stretching
- c. Jogging on treadmill
 - i. 2-3 months (8-12 weeks)
 - ii. Observe and minimize limb velocity asymmetry
 - iii. Encourage lower impact activity
 - d. Cutting and Rotational activity
 - i. 12-16 weeks
 - e. Return to sport
 - i. 12-16 weeks (3-4 months)
 - ii. Dependent upon:
 1. Full ROM
 2. Good quad control
 3. 80% score on hop testing
 4. 80% isokinetic score (when ordered and appropriate)

7. Modalities

- a. **Electrical Stimulation (VMS, biphasic or Russian):**
 - i. Intensity to observed contraction
 - ii. Appropriate until symmetrical intensity contraction
 - iii. Proximal, lateral quad and distal, medial quad pad placement
 - iv. Variety of positions: quad set, SLR, multi-angle isometrics, mini squats, step-ups.
 - v. Premodulated, high-volt., bi-phasic, with ice for pain and swelling as needed.

8. Rehabilitation

- a. Week 1-2 Clinical Guidelines:
 - i. Control post-op swelling and effusion
 - ii. Maintain patellar mobility
 - iii. Restore active and passive ROM in open-chain
 - iv. Inhibit post-op muscle shut down and quad atrophy (e-stim, biofeedback, verbal/tactile cueing)
 - v. Progress comprehensive lower extremity stretching program in open-chain positions
 - vi. Progress hip, calf and core strengthening activities in open-chain positions.
 - vii. Cue for proper gait with assistive device appropriately
- b. Week 1-2 Clinical Expectations
 - i. Full knee extension
 - ii. AROM knee flexion to 90 degrees
 - iii. Fair+ to Good – quad contraction
 - iv. SLR without quad lag
 - v. Mod to min effusion
 - vi. Ambulating in brace NWB with 2 crutches
- c. Week 2-4 Clinical Guidelines

- i. Control post-op swelling and effusion
 - ii. Maintain patellar mobility
 - iii. Restore active and passive ROM in open-chain
 - iv. Inhibit post-op muscle shut down and quad atrophy (e-stim, biofeedback, verbal/tactile cueing)
 - v. Progress comprehensive lower extremity stretching program in open-chain positions
 - vi. Progress hip, calf and core strengthening activities in open-chain positions.
 - vii. Cue for proper gait with assistive device appropriately
- d. Week 2-4 Clinical Expectations
 - i. Full knee extension
 - ii. AROM to within 10 degrees of uninjured
 - iii. Minimal effusion
 - iv. Good – quad control
 - v. Full patellar mobility
 - vi. Ambulation with 2 crutches NWB
- e. Weeks 5-7 Clinical Guidelines
 - i. Control post-op swelling and effusion
 - ii. Restore ROM
 - iii. Inhibit post-op muscle shut down and quad atrophy (e-stim, biofeedback, verbal/tactile cueing)
 - iv. Progress comprehensive lower extremity stretching program
 - v. Progress bilateral and unilateral, closed-chain activity to improve limb confidence with knee flexion less than 45 degrees
 - vi. Progress bilateral and unilateral, proprioceptive activity and reactive neuromuscular training (RNT)
 - vii. Progress hip, calf and core strengthening activities
 - viii. Cue for proper gait with and without assistive device appropriately.
 - ix. Progress unilateral flexion under weight-bearing activity (ie. step ups) with knee flexion less than 45 degrees.
 - x. Progress no-impact endurance activity.
 - xi.
- f. Weeks 5-7 Clinical Expectations
 - i. Symmetrical extension, full knee flexion with asymmetry to end feel
 - ii. Visible and strong quad contraction (Good- to Good)
 - iii. Ambulating without deviations
 - iv. Minimal to no effusion
 - v. Able to stand on involved extremity for 30'
 - vi. Able to perform unilateral squat to 45 degrees symmetrically
- g. Weeks 8 Clinical guidelines
 - i. Continue activities from weeks 1-8
 - ii. Initiate bilateral, low-amplitude plyometric activities with emphasis on deliberate, quality movement.

- h. Week 8 Clinical Expectations
 - i. Symmetrical extension, full, pain-free knee flexion (heel to buttock)
 - ii. Visible, strong, but asymmetrical quad contraction (Good – to Good)
 - iii. Ambulating without deviation and without limb velocity asymmetry.
 - iv. Able to land but with asymmetry to landing pattern during bilateral, low-amplitude plyometrics.
- i. Week 9 Clinical Guidelines
 - i. Continue activities from weeks 1-9
 - ii. Continue bilateral, low-amplitude plyometric activities with emphasis on deliberate, quality, movement.
 - iii. Initiate unilateral, low-amplitude plyometric activities
 - iv. Initiate and progress bilateral, moderate-amplitude plyometric activity (includes jogging)
 - 1. – (moderate amplitude = 0-6 inches high and 25-50% max distance.)
- j. Week 9 Clinical expectations
 - i. Symmetrical extension, full, pain-free knee flexion (heel to buttock)
 - ii. Visible, strong, but asymmetrical quad contraction (Good – to Good)
 - iii. Ambulating without deviation and without limb velocity asymmetry.
 - iv. Able to land but with asymmetry to landing pattern during bilateral, low-amplitude and bilateral, moderate-amplitude plyometrics.
- k. Week 10 Clinical guidelines
 - i. Continue activities from weeks 1-10
 - ii. Continue bilateral, low-amplitude plyometric activities with emphasis on deliberate, quality movement.
 - iii. Continue unilateral, low amplitude plyometrics
 - iv. Progress bilateral, moderate-amplitude plyometric activity (includes jogging)
 - v. Initiate unilateral, moderate-amplitude hopping activity
 - 1. – (moderate amplitude = 0-6 inches high and 25-50% of max distance.)
- l. Week 10 Clinical Expectations
 - i. Symmetrical extension, full, pain-free knee flexion (heel to buttock)
 - ii. Visible, strong, but asymmetrical quad contraction (Good – to Good)
 - iii. Ambulating without deviation and without limb velocity asymmetry.

- iv. Able to land but with asymmetry to landing pattern during unilateral, moderate-amplitude hopping
- m. Week 11 Clinical Guidelines
 - i. Continue activities from weeks 1-10
 - ii. Continue bilateral and unilateral, low-amplitude hopping
 - iii. Progress unilateral and bilateral, moderate-amplitude hopping (includes jogging)
 - iv. Initiate bilateral, high amplitude hopping
 - 1. –(high amplitude = 6-12 inches high, 50-75% max distance)
 - v. Progress higher level agility activities (forward, retro and lateral only – no cutting activities). Ladders, cones, lateral shuffling etc.
- n. Week 11 Clinical Expectations
 - i. Symmetrical extension, full, pain-free knee flexion (heel to buttock)
 - ii. Visible, strong, but asymmetrical quad contraction (Good – to Good)
 - iii. Ambulating without deviation and without limb velocity asymmetry.
 - iv. Able to land but with asymmetry to landing pattern during unilateral, moderate-amplitude hopping and bilateral, high amplitude hopping.
- o. Weeks 12-16 Clinical Guidelines
 - i. Continue activity from weeks 1-12
 - ii. Continue bilateral and unilateral, low-amplitude hopping
 - iii. Continue bilateral and unilateral, moderate amplitude hopping
 - iv. Continue bilateral, high-amplitude hopping
 - v. Initiate unilateral, high amplitude hopping
 - vi. – (high amplitude = 6-12 inches high, 50-75% max distance)
 - vii. Progress higher level agility activities
 - viii. Initiate sports-specific cutting and agility activity.
- p. Weeks 12-16 Clinical expectations
 - i. Symmetrical extension, full knee flexion (heel to buttock)
 - ii. Visible, strong, symmetrical quad contraction (Good)
 - iii. Ambulating without deviation and without limb velocity asymmetry
 - iv. No effusion
 - v. Able to demonstrate good landing with all hopping activity
 - 1. Good athletic posture (spine erect and shoulders back)
 - 2. No valgus with landing
 - 3. Soft landing
 - 4. Able to “stick the landing”
 - vi. Demonstrate 80-100% score on single leg hop test.
 - vii. Proper coordination with sport-specific, agility activity.