

Meniscus Repair

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GENERAL PRINCIPLES

This protocol for rehabilitation after knee meniscus repair surgery is designed to provide the rehabilitation professional with a general guideline for patient care with the [AlterG Anti-Gravity Treadmill](#) Anti-Gravity Treadmill. As such, it should be stressed that this is only a protocol and should not be a substitute for professional clinical decision-making regarding a patient's progression. And it should be further noted that progression should be individualized based upon each patient's specific needs, surgical variables, pain level, the specific surgeon's guidelines, physical examination, progress, and presence of any complications.

PHASE I: MAXIMUM PROTECTION PHASE (Weeks 1-6)

GOALS

- Control inflammation/effusion
- Allow early healing
- Full passive knee extension
- Gradually increase knee flexion
- Independent quadriceps control

STAGE 1: IMMEDIATE POST-SURGERY DAYS 1 THROUGH 10

- Ice, compression, elevation
- Brace locked at 0 degrees for ambulation and sleeping only
 - Brace may be unlocked while sitting, etc.
- ROM (passive 0-90)
- Patellar mobilizations
- Stretch hamstrings and calf
- **Strengthening exercises:**
 - Quad sets
 - SLR flexion
 - Hip Abd/Adduction
 - Knee extension 60-0 degrees
- Avoid active knee flexion
- **Weight bearing:**
 - For peripheral tears: 25-50% WB as tolerated with 2 crutches
 - For complex tears: toe touch with crutches
- **Gait training:**
 - For complex tears: Avoid [AlterG Anti-Gravity Treadmill](#) training at this time
 - For peripheral tears:
 - Ambulation on the [AlterG Anti-Gravity Treadmill](#) treadmill may begin as soon as the patient can begin 25% weightbearing.
 - Gait training may be performed daily and begins at 2.0 MPH with no incline. Gait training begins at 5 minutes per day and may progress to up to 10 minutes during this phase
 - Monitor pain levels and gait mechanics during [AlterG Anti-Gravity Treadmill](#) training; body weight

support may be increased on the [AlterG Anti-Gravity Treadmill](#) to reduce pain and correct gait kinematics during training

STAGE 2: WEEKS 2 THROUGH 4

- Continue use of ice and compression
- Brace locked for ambulation and sleeping, may unlock for sleeping with a peripheral tear
- **ROM Guidelines**
 - Gradually increase PROM
 - Week 2: 0-100 degrees
 - Week 3: 0-110 degrees, may progress to 0-120 degrees for peripheral tears
 - Week 4: 0-120 degrees, may progress to 0-135 degrees for peripheral tears
- **Weight Bearing**
 - For peripheral tears:
 - Week 2: 50% WB
 - Week 3: FWB as tolerated
 - For complex tears:
 - Week 2: 25-50% WB
 - Week 3: 50-75% WB
 - Week 4: FWB as tolerated

**Discontinue crutches when safe and proper gait (usually 3-4 weeks in peripheral tears and week 4-5 in complex tears)complex tears)*

- **Gait training:**
 - Gait training may be performed daily and begins at 2.0 MPH with no incline. Gait training begins at 5 minutes per day and may progress to up to 20 minutes during this phase
 - As the patient progresses to 50% WB, they may begin to increase the speed of the treadmill to a comfortable level of ~3.0-3.5 MPH with no incline.
 - As the patient progresses to 75% WB, they may begin to increase the speed of the treadmill to a comfortable level of ~3.5-4.0 MPH with no incline.
 - Monitor pain levels and gait mechanics during [AlterG Anti-Gravity Treadmill](#) training; body weight support may be increased on the [AlterG Anti-Gravity Treadmill](#) to reduce pain and correct gait kinematics during training
- Continue PROM exercises and stretching
- **Strengthening exercises**
 - Multi-angle quad isometrics
 - SLR (all 4 planes)
 - Knee extension 90-0 degrees
 - CKC weight shifts
 - Peripheral tears may also progress to:
 - CKC mini-squats 0-45 degrees
 - CKC wall squats
 - CKC weight shifts (diagonal)
 - Balance training (cup walking)
 - Bicycle (once ROM appropriate)

**Avoid twisting, deep squatting and stooping*

**Avoid hamstring curls*

* Peripheral tears can progress to Phase II: Moderate Protection Phase at week 5 if progressing well and displays normal gait mechanics on the AlterG Anti-Gravity Treadmill

STAGE 3: WEEKS 5-6 (FOR COMPLEX TEARS ONLY)

- **Weight bearing:** as tolerated
- Initiate CKC exercise such as:
 - ½ squat 0-45 degrees
 - Leg press 0-60 degrees
 - Wall squat 0-60 degrees
- Initiate proprioception training
 - Tilt board squats
 - Biodex stability
- Continue CKC exercise
- Continue **AlterG Anti-Gravity Treadmill** training
 - Continue to monitor the patient for pain relief and proper gait mechanics. Modify **AlterG Anti-Gravity Treadmill** body weight support in order to minimize pain and maintain normal gait mechanics.
- Initiate hip Abd/Adduction and hip flexion/extension on multi-hip machine

PHASE II: MODERATE PROTECTION PHASE (Weeks 5-12)

* Peripheral tears can progress to Phase II at week 5; Complex tears can progress to Phase II at week 7

GOALS

- Full PROM
- No swelling/inflammation
- Re-establish muscle control
- Proper gait pattern
- Continue use of ice and compression as needed
- Continue ROM and stretching;
 - Peripheral tears maintain 0-135 degrees
 - Complex tears progress to 0-125/130 degrees
- **Strengthening Exercises**
 - Leg press 70-0 degrees
 - Knee extension 90-40 degrees
 - Hip Abd/Adduction
 - Wall squats 0-70 degrees
 - Vertical squats 0-60 degrees
 - Lateral step-ups
- Balance/proprioception training
 - Biodex stability
 - Squats rocker board
 - Cup walking
- Continue with **AlterG Anti-Gravity Treadmill** training and slowly progress walking speed as tolerated
- Bicycle (if ROM permits)
- Pool program
- Discontinue brace at weeks 5 for peripheral tears, week 8 for complex tears

*Avoid twisting, pivoting, running and deep squatting
*Peripheral Tears can progress to Phase III at week 9

WEEKS 10-12

- Continue all exercises listed above
- Initiate "light" hamstring curls
- Initiate toe calf raises

PHASE III: CONTROLLED ACTIVITY PHASE (Weeks 9-16)

*Peripheral tears can progress to Phase III at week 9; Complex tears can progress to Phase III at week 13

GOALS

- Improve strength and endurance
- Maintain full ROM
- Gradually increase applied stress

WEEK 9 (FOR PERIPHERAL TEARS ONLY)

- Continue all strengthening exercises listed above
- Initiate light resisted hamstring curls
- Initiate stair stepper
- Toe calf raises
- Progress balance training
- Progress to isotonic strengthening program
- Initiate pool running week 12
- Progress speed to running on **AlterG Anti-Gravity Treadmill** week 12
 - Monitor the patient for maintenance of normal gait mechanics during jogging. The body weight support can be increased or the treadmill speed can be decreased if the patient exhibits abnormal gait mechanics. The therapist should correct gait abnormalities by observation and verbal cues.
- Progress to Phase IV at 4 months

WEEK 13 (FOR COMPLEX TEARS ONLY)

- Continue all strengthening exercises listed above
- Initiate stair stepper
- Toe calf raises
- Progress balance training
- Progress to isotonic strengthening program
- Initiate front lunges
- Initiate pool running (forward and backward)
- Initiate walking program
- Initiate running in pool week 16
- Progress speed to running on **AlterG Anti-Gravity Treadmill** week 16
 - Monitor the patient for maintenance of normal gait mechanics during jogging. The body weight support can be increased or the treadmill speed can be decreased if the patient exhibits abnormal gait mechanics. The therapist should correct gait abnormalities by observation and verbal cues.
- Progress to Phase IV at 6 months

PHASE III: CONTROLLED ACTIVITY PHASE (Weeks 9-16)

*Peripheral tears can progress to Phase IV at month 4; Complex tears can progress at month 6

GOALS

- Improve strength and endurance
- Prepare for unrestricted activities

CRITERIA TO PROGRESS TO PHASE IV

- 1) Full non-painful ROM
- 2) No pain or tenderness
- 3) Satisfactory clinical exam

- 4) Satisfactory isokinetic test
- 5) Normal gait mechanics while running on the [AlterG Anti-Gravity Treadmill](#)

EXERCISES

- Continue and progress all strengthening exercises and stretching drills
- For peripheral tears:
 - Deep squatting permitted at 4 months
 - Initiate straight line running: 4 months
 - Initiate pivoting and cutting: 5 months
 - Initiate agility training: 5 months
 - Gradually return to sports: 6 months
- For complex tears:
 - Deep squatting permitted at 5 ½ months
 - Initiate straight line running: 6 months
 - Initiate pivoting and cutting: 7 months
 - Initiate agility training: 7 months
 - Gradually return to sports: 7-8 months