

MENISCUS REPAIR

Phase I: 0-6 weeks	Immediate post op maximum protection phase
Goals	<ul style="list-style-type: none"> • Protect anatomic repair • Minimize knee joint effusion • Gently increase ROM per guidelines, emphasis on extension • Encourage quadriceps function • Prevent negative effects of immobilization
ROM	<ul style="list-style-type: none"> • wk 0-1: 0 degrees • wk 1-6: 0-90 degrees with brace locked into extension for ambulation only.
WB	<ul style="list-style-type: none"> • wk 0-1: TTWB • wk 1-6: WBAT with brace locked in extension if good quadriceps control and knee extension ROM, or partial WB (50%) with crutches with brace unlocked.
Precautions	<ul style="list-style-type: none"> • Encourage AROM 0-90 deg in NWB to promote healing, prevent atrophy of soft tissue and bone, and prevent a decrease in collagen content in the healing meniscus which occurs with immobilization. Early AROM in limited range does not affect the tensile properties of the meniscus. • Emphasis on regaining extension ROM ASAP as this is the most stable position for the meniscus and will decrease stress to the PF joint during ambulation. • No isolated resistance to knee flexion for 6 weeks secondary to the semimembranosus attachment to the medial meniscus / popliteus to the lateral meniscus. • Must follow the WB restrictions as mentioned above to protect the healing meniscus. • Avoid twisting and pivoting motions for 10-12 weeks to minimize shear forces. • Avoid squatting > 90 degrees until 5-6 months
Modalities	<ul style="list-style-type: none"> • Cryotherapy 15 minutes in duration 3x/day • IFC for pain/effusion if needed • NMES quadriceps if needed
Treatment Recommendations Guidelines for progression based on tolerance	<ul style="list-style-type: none"> • Active warm-up through ROM (Bike with limited motion) • Gentle stretching to attain full extension and 90 degrees of flexion. Emphasis on full return of knee extension ASAP. <ul style="list-style-type: none"> Low-load long duration stretching for extension with heat if needed (1st TERT= Total End Range Time) Manual stretching for extension with overpressure or recurvatum Patellar mobilizations PROM / AAROM / AROM • Flexibility exercises for hamstring, gastoc-soleus • Scar tissue massage • Therapeutic exercises. Gentle strengthening protecting the healing

<p>Visits may be decreased if ROM 0-90 deg, SLR w/out a lag, no excessive swelling or pain</p>	<p>meniscus. Exercise in a pain-free manner. Encourage quadriceps activation. No isolated resisted knee flexion wks 1-4 Biofeedback QS, SLR Short arc 0-30 quadriceps with biofeedback (if no chondrosis) CKC weight shifting Hip 4 way SLR NWB Gastroc soleus strengthening CKC knee extension Sidelying hip resisted ER Balance/proprioception double leg stance avoiding rotation wks 4-5 CKC exercises on leg press 0-60 deg at 50% BW with gradual increase in resistance Core stability and upper body exercises if desired</p> <ul style="list-style-type: none"> • IFC for pain/effusion, NMES for quadriceps activation and control as needed • Ice (in stretch for extension if needed) 2nd TERT • HEP for 3rd TERT
<p>Meniscus healing</p>	<ul style="list-style-type: none"> • wk 2: Fibrin clot • wk 5: Meniscal regeneration (Based on canine study) • wk 10: Complete vascular healing • wk 24 (6 months): Complete scar remodeling
<p>Phase II: 6-12 weeks</p>	<p>Moderate protective phase</p>
<p>Goals</p>	<ul style="list-style-type: none"> • Minimize knee joint effusion • Gently increase ROM with goal of full ROM by 12 weeks • Promote a normal heel-toe walking program • Gradual progression of therapeutic exercises for strengthening, stretching, and balance
<p>ROM / Brace</p>	<ul style="list-style-type: none"> • wk 6: 0-120 deg with goal of full ext to 130 deg by 10 wks, full ROM by 12 wks. • Brace unlocked for ambulation if good quadriceps control. Utilize crutches as needed until patient demonstrates a normal heel-to-toe pattern. • wks 7-8 D/C brace
<p>Modalities</p>	<ul style="list-style-type: none"> • Cryotherapy 15 minutes in duration 1-2x/day • IFC for pain/effusion if needed • NMES quadriceps if needed
<p>Precautions</p>	<ul style="list-style-type: none"> • No forceful WB stretching into flexion until 8 wks • Avoid descending stairs reciprocally until adequate quadriceps control and lower extremity alignment • Avoid twisting and pivoting motions for 10-12 wks to minimize shear forces. • Avoid squatting > 90 degrees until 5-6 months
<p>Treatment Recommendations</p> <p>Guidelines for progression based on tolerance</p>	<ul style="list-style-type: none"> • Active warm-up: Bike with resistance, Nu Step, Treadmill walking • Stretching for full extension and flexion per precautions with goal of full ext to 130 deg by 10 wks, full ROM by 12 wks. Low-load long duration stretching with heat if needed (1st TERT= Total End Range Time) Manual stretching for extension PROM / AAROM / AROM wk 8: Manual stretching for flexion wk 10: WB knee flexion stretch on leg press • Flexibility exercises for hamstring, gastroc-soleus, iliopsoas, quadriceps if indicated • Therapeutic exercises: Exercise in a pain-free manner. Gradual progression with avoiding dynamic valgus during strengthening and functional activities (focus on hip abductor and external rotator strengthening). Incorporate total leg strengthening and balance / proprioception exercises. Biofeedback QS SLR, CKC knee extension

	<p>Hip 4 way SLR</p> <p>CKC exercises: Progress from 0-60 deg to 0-90 deg: leg press, wall squats, lateral step-overs, step-ups, partial lunges</p> <p>wk 7: Elliptical Runner, leg press 2:1, partial BW squats with UE support as needed</p> <p>wk 8: Resisted sidestep with T-band, leg press 1:1, partial dead lifts, Bosu partial squats 0-60, Treadmill 5%</p> <p>wk 9: Progress to full lunges, Bosu 90 deg squats, prone hamstring curls, Stair master</p> <p>wk 10: Progress to full lunges, hamstring curls with physio ball, Euroglide</p> <p>wk 11: Isokinetic quadriceps / hamstrings VSRP 150-300 deg/sec submax to max, progressing to 90 deg/sec</p> <p>Hamstring OKC isotonics 0-90 deg in seated position with light resistance (15 reps/set initially)</p> <p>Quadriceps OKC isotonics short arc with progression to full ROM (if no chondrosis)</p> <p>Gastroc soleus strengthening</p> <p>Total leg strengthening</p> <p>Balance / Proprioception training: Double leg progress to single leg, static progressing to dynamic activities</p> <p>CV conditioning / Core Stability</p> <ul style="list-style-type: none"> • Ice (in stretch if needed) 2nd TERT • HEP for 3rd TERT if needed
Independent strengthening	<ul style="list-style-type: none"> • wk 12: Progress to independent strengthening program with monthly rechecks if good ROM, minimal effusion or pain, and good muscle control
Phase III: 12+ wks	Advanced strengthening and Return to activity phase
Goals	<ul style="list-style-type: none"> • Progress muscle strength, endurance, and balance activities. Ideally 3x/week of exercises at a fitness center, step-down, or home program • Progress to higher level activities depending on functional demands and MD approval • Return back to vocational, recreational, and sport activities
Brace	<ul style="list-style-type: none"> • Your MD may recommend a knee sleeve or functional brace to be used until 12 months from your surgery for higher level activities
Modalities	<ul style="list-style-type: none"> • Cryotherapy 15 minutes 1x/day or after strenuous activity
Precautions	<ul style="list-style-type: none"> • No deep squatting until 6 months.
Treatment Recommendations	<ul style="list-style-type: none"> • Active warm-up: Bike, Elliptical Runner, Nu Step, Treadmill walking • Continue with stretching and flexibility exercises as needed • Strengthening and endurance exercises: Advance as tolerated with emphasis on functional strengthening. Avoid dynamic valgus during strengthening and functional activities. <ul style="list-style-type: none"> Total leg strengthening Hip strengthening Heel raises Hamstring full ROM isotonics Quadriceps isotonics in ROM without chondrosis CKC exercises: Leg press, multiple direction lunges and step-ups, squats, sidestepping progress to sideshuffle with T-band Gastroc soleus exercise Isokinetic quadriceps/hamstrings in ROM without chondrosis Stairmaster, Euroglide • Dynamic balance exercises • CV conditioning and core stability • Ice

Testing	<ul style="list-style-type: none"> • wk 12 (3 months): Linea, KT 1000 • wk 16 (4 months): Linea, Biodex, KT 1000 • wk 20-24 (5-6 months): Linea, Biodex, KT 1000, Functional testing
Return to sport / work guidelines	<ul style="list-style-type: none"> • wk 16 (4 months): Return to running program if MD clearance, no pain or effusion, strength scores on Linea of 75% • wk 20 (5 months): Plyometrics, agility drills, pivoting and cutting maneuvers • wk 24 (6 months): Return back to sports based on MD approval, minimal pain at rest or with activity, no knee joint effusion, full pain-free ROM, isokinetic strength and functional testing at 90 % compared to uninvolved side, good performance on functional testing (90% compared to normative data or contralateral extremity) and adequate performance on sport-specific drills