Complex Meniscal Repair Guideline

This rehabilitation program is designed to return the individual to their activities as quickly and safely as possible. It is designed for rehabilitation following arthroscopic repair of a complex meniscal tear. Modifications to the protocol may be necessary dependent on location of repair, concomitant injuries or procedures performed. This evidence-based meniscal repair rehabilitation protocol is criterion-based and time frames in each phase will vary depending on many factors including patient demographics, goals, and individual progress. This protocol is designed to progress the individual through rehabilitation to full sport/activity participation. The therapist must modify the program appropriately depending on the individual's goals for activity following meniscal repair.

This protocol is intended to provide the treating clinician with a guideline for rehabilitation. It is not intended to substitute for making sound clinical decisions regarding the patient's post-operative care based on exam/treatment findings, individual progress, and/or the presence of concomitant procedures or post-operative complications. If the clinician should have questions regarding post-operative progression, they should contact the referring physician.

General Guidelines

- Patient will be placed in a hinged knee brace locked in full extension immediately post operatively.
- Patient will be non-weight bearing for 6 weeks immediately following surgery unless otherwise directed.
- Progress to partial weight bearing with brace at week 6.
- Progress to full weight bearing with brace unlocked (if adequate quad control) near week 8.
- Discharge of brace or progression to alternate brace at week 6-8 or as cleared by physician.
- Limited PROM 0-90 degrees for 4 weeks, full motion near week 12.
- Locked brace worn at all times except with ROM exercises until week 6.
- Brace on and opened to appropriate ROM for all activities until week 6-8, then brace is discharged (alternate brace may be ordered by physician at that time).
- No resisted hamstring exercises for 12 weeks.
- Persistent effusion (>10 weeks) may require altered or slower progression through remainder of protocol.
- Light running is permitted between 16-24 weeks postoperatively as cleared by physician.
- Limited depth closed chain strengthening (0-70 degrees) for the first 16 weeks.
- No full depth closed chain strengthening (90 or greater) until 6 months.
- Return to sport is allowed at 6-8 months postoperative if the patient is symptom free & has passed a functional evaluation (as determined by physician).

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Postoperative Rehabilitation (6-8 months depending on patient goals and progress)

PHASE	SUGGESTED INTERVENTIONS	GOALS/MILESTONES FOR PROGRESSION
Phase I *Maximum Protection Phase* *Weeks 0-2* *Expected visits: 0-2*	***Edema controlling treatments:*** • Ice, compression therapy/garments, elevation • NWB in locked knee brace (full extension) for 2 weeks • Passive and AAROM within protected ROM (0-60 degrees) **No Active Knee Flexion, No Biking** • Patella mobilizations • Compression (donut) pad for edema control • Quad sets with NMES as needed SLR in 4 directions	***Goals of Phase:*** 1. Provide environment of proper healing of repair site 2. Control of post-operative pain (0-1/10 with ADL's in brace) 3. Resolution of post-operative effusion (trace to 1+) 4. Prevention of post-operative complications 5. Restoration of full extension (compared to contralateral side) 6. PROM 0-60 degrees
Phase II *Protected Mobility Phase* *Weeks 3-4* *Expected visits: 2-4*	*(continue with previous exercise program)* • ROM progression: 75 degrees at week 3 90 degrees at week 4 • Multi-angle quad isometrics with NMES as needed • Open chain knee extensions in available range with no additional resistance	***Goals of Phase:*** 1. Prevention of complications through gentle protected motion (symmetrical hyper-extension to 90 degrees flexion) 2. Reduction of post-operative swelling and inflammation (no to trace effusion) 3. Re-education and initiation of quad control with active SLR without extension lag
Phase III *Motion and Muscle Activation Phase* *Weeks 5-10* *Expected visits: 5-10*	*(continue with previous exercise program)* • Begin weight bearing progression in locked knee brace at week 6 Unlock brace if patient can demonstrate excellent straight leg raise with no lag for 20 repetitions 25-50% WB at week 6 50-75% WB at week 7 Full WB at week 8 • FWB with brace opened to appropriate range (0-90 degrees max) at week 8 • Bike for ROM when motion allows • Progression of ROM program (adding bike for ROM) with following goals 120 degrees flexion near week 6 135 degrees flexion near week 8 • Flexion ROM to within 5 degrees of contralateral knee near week 12. • Limited depth closed chain quad strengthening (0-60 degrees) while avoiding rotation and dynamic valgus stress at knee. Includes: Forward and lateral step ups Low weight leg press Mini squats (BW only) (0-45 degrees) Wall squats *(continued on next page)*	***Goals of Phase:*** 1. Restoration of nearly full pain-free PROM/AROM (equal to contralateral knee) 2. Improve muscle activation and strength 3. Control of forces on extensor mechanism 4. Normalized level ground ambulation 5. Improved double limb balance and stability

Postoperative Rehabilitation (6-8 months depending on patient goals and progress)

Phase III *(continued)*	*(continued from previous page)*
	• Light resisted open chain knee extension (SAQ 0-90 degrees)
	• Clamshells
	• Fire Hydrants
	• Weight shifts in knee brace at week 6
	• Proprioception training (double leg beginning at week 5 - **No twisting, pivoting**)
	  BOSU or rocker board balance training
	  Squats on rocker board
	• Mat based trunk stabilization program for core strength (no planks)
		Goals of Phase: *(continued)*

Phase IV
Protected Strengthening phase
Weeks 10-16
Expected visits 5-10
	(continue previous hip and quad strengthening exercises)
	• Progression of ROM program to full
	• Initiation of light resisted hamstring curls at week 12
	• Progress closed chain strengthening exercises in limited ROM (0-70 degrees)
	  Front lunges
	  Bridge
	• Static proprioception training (double to single leg) with perturbation and variable surfaces (rocker board, airex pads, air discs, etc.) with emphasis on preventing/controlling rotary stress at knee.
	• Aquatic program (if available) - including pool walking, and closed chain strengthening/balance consistent with restrictions above - no running/ jumping, swimming allowed with straight knee only
	• Plank progression for core strength and stabilization
		Goals of Phase:
		1. Normal pain-free ADL's
		2. Normalized reciprocal stair ambulation
		3. Normalized single leg static balance with proper proximal control (no valgus and hip medial rotation)
		4. Normalized single leg static balance with proper proximal control (no valgus and hip medial rotation)

Phase V
Advanced Strengthening and Eccentric Control Phase
Months 4-6
Expected visits: 5-10
	(continue previous exercises)
	• Progression of closed and open chain quad strengthening (0-90 degrees)
	  Squat progressions (rocker board, BOSU)
	  Lateral dips
	  Forward step downs
	  Front lunges
	  Isotonic knee extension
	  Heel raises
	• Progression of single leg dynamic proprioception to with emphasis on single leg balance and reaching in multiple planes
	• Aquatic running at 4 months
	• Non-impact cardiovascular training
	  Walking program – (4 months)
	  Elliptical - (5 months)
	  Stairmaster – (5 months)
	(continued on next page)
		Goals of Phase:
		1. Normal pain-free ADL's
		2. Normalized reciprocal stair ambulation
		3. Normalized single leg static balance with proper proximal control (no valgus and hip medial rotation)
		4. Normalized single leg static balance with proper proximal control (no valgus and hip medial rotation)

Postoperative Rehabilitation (6-8 months depending on patient goals and progress)

Phase VI *Return to Sport Progression* *Months 6-8* *Expected Visits: 5-10*	• Progression to running program (with appropriate bracing) with training to improve/ normalize form and shock absorption **(as cleared by MD)** • Progression of open and closed chain strengthening for the entire LE chain with emphasis on single limb strengthening. • Initiating double limb jump training at 6 months • Initiate deceleration and single leg hopping at 7 months • Initiate cutting activities at 7 ½ months **NOTE:** Progression of functional activities should be performed only as pain and proper biomechanics allow. Emphasis should be on proper shock absorption and control of dynamic valgus stress at knee (hip medial rotation with knee valgus) with each task performed. Progression to single limb-based tasks (deceleration, hopping, cutting) should not be performed until double limb activities have been mastered. Activities requiring dynamic control of rotational stress at the knee (cutting, multiple plane lunges/jumps/hops) should not be performed until sagittal and frontal plane control has been mastered (in that order). Return to sport may occur at any time during this stage as cleared by physician and as progress and goal achievement occurs.	***Goals of Phase:*** 1. <10% strength deficit in quads and gluteals 2. Limb similarity index of 90% on functional tests. 3. 45/50 on Biomechanical functional assessment tests 4. No pain or complaints of instability with functional progression of sport specific skills

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