

Meniscus/Cartilage Protocol

ACUTE AMBULATION – PHASE 1

The specific goals of the acute phase are to restore:

- 1. FULL KNEE EXTENSION & QUADRICEPS ACTIVATION**
- 2. PATELLAR & FATPAD MOBILITY**
- 3. RESTORE BALANCE & GAIT/WALKING**

CRITERIA FOR PHASE PROGRESSION	MEASUREMENT OUTCOMES
Functions and Symptoms	-> Pain \leq 5/10 (Worst) & IKDC Score \geq 30
0° of Knee Extension ROM or Symmetry	-> Extension ROM (Goniometer)
110° of Knee Flexion ROM*	-> Passive Flexion ROM (Goniometer)
Adequate Single Leg Balance	-> Balance Error System Scoring System (FIRM) \leq 5
Good Quadriceps Activation & Endurance	-> Straight Leg Raise Test
Progress to Phase 2	-> MD or PT Approval

FUNCTIONAL SYMMETRY – PHASE 2

The *Functional Symmetry Phase* is intended to:

- 1. PROGRESS STRENGTH & SYMMETRY WITH FUNCTIONAL MOVEMENTS**
- 2. NORMALIZE BALANCE AND PROPRIOCEPTION**

CRITERIA FOR PHASE PROGRESSION	MEASUREMENT OUTCOMES
Function and Symptoms	-> Pain \leq 4/10 (Worst) & IKDC Score \geq 40
Near Normal Knee Extension	-> At least 0 degrees extension
Adequate Knee Flexion	-> See Appendix*
Symmetrical Double Leg Squat	-> Overhead Squat (FMS) \geq 2
Adequate Single Leg Balance	-> Balance Error System Scoring System (Unstable) \leq 5
Progress to Phase 3	-> MD or PT Approval

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STRENGTH – PHASE 3

The main focus of the *Strength Phase* is to:

- 1. EMPHASIZE SINGLE LEG SQUAT MECHANICS AND BALANCE**
- 2. PROMOTE STRENGTH ON THE INVOLVED LOWER EXTREMITY**
- 3. IMPROVE STRENGTH OF COMPOUND MOVEMENTS**

CRITERIA FOR PHASE PROGRESSION	MEASUREMENT OUTCOMES
Functional and Symptoms	-> Pain \leq 3 (Worst) & IKDC \geq 60
Maintain Knee Extension	-> At least 0 degrees extension
Increase Quad/Hamstring Strength	-> Isometric Strength: Handheld Dynamometer \geq 60% of the uninvolved side
Good Single-leg balance and neuromuscular control	-> Y-balance: Anterior Reach/Single-Leg Squat (within 4 cm)
Restore Single-Leg Muscle Endurance	-> Vail Single Leg Squat Test > 1 minute
Progress to Phase 4	-> MD or PT Approval

The criteria for jogging are:

- 1. FULL KNEE EXTENSION & NO PAIN > 3/10**
- 2. \geq 1 MINUTE OF SINGLE LEG SQUATS**

JOGGING PROTOCOL	Walk Time (minutes)	Jog Time (minutes)	Total Time (minutes)
Phase 1 (3 days)	1	2	12
Phase 2 (3 days)	1	4	15
Phase 3 (3 days)	1	6	21
Phase 4 (3 days)	1	8	24
Phase 5 (3 days)	1	10	20+
Phase 6	Progress as tolerated without walking breaks		

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POWER & AGILITY- PHASE 4

The main focus of the power & agility phase is to continue gaining strength and introduce plyometric & agility movements

CRITERIA FOR PHASE PROGRESSION	MEASUREMENT OUTCOMES
Full Range of Motion	-> Passive and Active ROM (Goniometer)
Symmetrical Knee Strength	-> Hamstring/Quadriceps Ratio > 55% and within 85% of the uninvolved side
Neuromuscular Control with Jumping	-> Landing Error Scoring System (LESS)
Demonstrate Single Leg Power	-> Single Leg Hop for Distance \geq 80% of the uninvolved side
Progress to Phase 5	-> MD or PT Approval

SPORT-SPECIFIC - PHASE 5

The main focus of the Sports Specific phase is introduce sports specific stimuli, unpredictable movements & to facilitate a graded return to full competition

CRITERIA FOR FULL PARTICIPATION	MEASUREMENT OUTCOMES
Restore Confidence, Reduce Fear of Movement	-> Tampa Kinesiophobia Scale < 20
Full Knee Range of Motion	-> Passive and Active ROM (Goniometer)
Symmetrical Quadriceps and Hamstring Strength	-> Biodex (Speed: 60, 180-, 300°/sec) H/Q Ratio \geq 55%; Quadriceps and Hamstring \geq 90% of the uninvolved side
Neuromuscular Endurance and Control with Dynamic Activity	-> Landing Error Scoring System (LESS)
Symmetry on Hop Tests	-> Hop Tests (1. Single Leg Hop for Distance, 2. Triple Hop for Distance, 3. Cross-Over Hop for Distance, 4. Timed Hop Test)
Symmetrical Agility	-> Figure of 8 Test, 5-10-5 Test \leq 1 second of the uninvolved side
Complete Injury Prevention Program	-> Sports Metrics
FULL RETURN TO ACTIVITY/SPORT	-> MD or PT Approval

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APPENDIX. Range of Motion, Weightbearing, and Functional Restrictions

Passive ROM Limitations for Meniscus & Chondral Procedures	
MENSCAL/CHONDRAL PROCEDURE	PROM LIMITS (EXTENSION - FLEXION)* TIMEFRAME GOAL(S)
Body Repair (Small)	Allow Full ROM Immediately
Body Repair (Large)	Weeks 0-2 Allow 0-90 After Week 2 Allow Full ROM
Root Repair	Weeks 0-2 Allow 0-60 Weeks 2-4 Allow 0-120 After Week 6 Allow Full ROM
Meniscus Transplant	Weeks 0-2 Allow 0-60 Weeks 2-4 Allow 0-120 After Week 6 Allow Full ROM
Trochlear MicroFx	Allow Full ROM Immediately
Chondral MicroFx/ Carticel/ OATS	Weeks 0-2 Allow 0-60 Weeks 2-4 Allow 0-90 Weeks 4-6 Allow 0-120 After Week 6 Allow Full ROM
*All Motion and Timelines are for Non-Weight Bearing Activities	

Weight Bearing & ROM Limitations for Meniscus and Chondral Procedures

MENISCAL/CHONDRAL PROCEDURE	WEIGHT BEARING TIMEFRAME LIMITATIONS
Body Repair (Small)	Allow Immediate FWB* in Extension Allow Loaded Flexion > 90 at 4 Weeks
Body Repair (Large)	Allow Immediate FWB* in Extension Allow Loaded Flexion > 90 at 6 Weeks
Root Repair	Weeks 0-4 TTWB* Allow FWB in Extension at 4 Weeks Allow Loaded Flexion > 90 at 8 Weeks
Meniscus Transplant	Weeks 0-4 TTWB Allow FWB in Extension at 6 Weeks Allow Loaded Flexion > 90 at 10 Weeks
Trochlear MicroFx	Allow Immediate FWB in Extension Allow Loaded Flexion > 90 at 4 Weeks
Chondral MicroFx/ Cartice/ OATS	Weeks 0-4 TTWB Allow FWB in Extension at 4 Weeks Allow WB in Flexion > 90 at 8 Weeks
<p>*FWB - Full Weight Bearing *TTWB - Toe-touch Weight Bearing</p>	

Functional Progression of Meniscus & Chondral Procedures

MENISCAL/CHONDRAL PROCEDURE	MINIMAL TIMELINE FOR PROGRESSION
FULL AMBULATION WITHOUT ASSISTIVE DEVICE	
Body Repair (Small)	2 Weeks
Body Repair (Large)	4 Weeks
Root Repair	6 Weeks
Meniscus Transplant	6 Weeks
Trochlear MicroFx	2 Weeks
Chondral MicroFx/ Carticel/ OATS	6 Weeks
INITIATE JOGGING	
Body Repair (Small)	3 Months
Body Repair (Large)	4 Months
Root Repair	4 Months
Meniscus Transplant	4 Months
Trochlear MicroFx	3 Months
Chondral MicroFx/ Carticel/ OATS	5 Months
INITIATE AGILITY	
Body Repair (Small)	4 Months
Body Repair (Large)	5 Months
Root Repair	5 Months
Meniscus Transplant	6 Months
Trochlear MicroFx	4 Months
Chondral MicroFx/ Carticel/ OATS	6 Months
FULL RETURN TO SPORT	
Body Repair (Small)	6 Months
Body Repair (Large)	7 Months
Root Repair	8 Months
Meniscus Transplant	9 Months
Trochlear MicroFx	6 Months
Chondral MicroFx/ Carticel/ OATS	9 Months