

PATELLOFEMORAL CARTILAGE RESTORATION (MACI)

Post-Operative Physical Therapy Protocol



SCAN FOR THE
ONLINE VERSION



Stanford
MEDICINE

Dear Colleague,

I appreciate your partnership in the rehabilitation of this very special patient of ours. I have instructed the patient that you will be using this protocol. My belief is that the biggest predictor of success is what the patient does at home and consistently. **They should view you not just as a therapist but as a highly educated and skilled teacher** and the patient *must* be an active participant in the rehab process.

To facilitate this, I have included a copy of the rehab protocols I would like the patient to focus on at each time point in the rehab process. Please assist me by encouraging and teaching our mutual patient their home exercises as well.

With your help and the active participation of our patient, I know we can have another fantastic knee.

Please do not hesitate to reach out directly to me and my team with any questions at any time.

Respectfully,



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	WEEK 1	WEEKS 2-3	WEEKS 4-6	WEEKS 7-12	MONTHS 3-6+
Weight bearing	Foot flat <i>Brace locked</i>	Up to 50% <i>Brace locked</i>	50% to full <i>Brace locked</i>	Full <i>Brace unlocked</i>	Full
Range of motion	PROM 0-30°	A/PROM 0-45° / 0-60°	A/PROM 0-90° to 0-125°	Progress to full <i>A/PROM</i>	Full
Brace	Locked straight <i>Except exercises</i>	Locked for walking	Locked for walking	Unlocked walking <i>D/C when able</i>	None
Strengthening	Quad, HS, glute sets <i>Ankle pumps</i>	Add SLR series <i>Hip ab/ad/flex/ext</i>	SLR with resistance <i>Trunk exercises</i>	Weighted knee flexion <i>Eccentric HS; closed chain 10-12 wks</i>	Closed chain; open chain <i>Short arc first</i>
Impact and sport	Optional CPM <i>0-30°, 1-2 h/day</i>	Optional CPM <i>1-2 h/day</i>	CPM as needed	Elliptical, bike	Bike, rowing; run 6 mo <i>Sport ~12 months</i>

As tolerated means pain during exercise no more than 2/10 above baseline. Avoid pushing into pain.

WEEK 1 (DAYS 0-7)

- **Foot-flat weight bearing with brace in full extension while ambulating.**
- Brace locked in full extension when not performing the exercises below (sleeping, resting, etc.).
- **PROM and optional CPM (1 to 2 hours per day) 0 to 30° only.**
- Isometric quad, hamstring, and gluteal sets; ankle pumps.

WEEKS 2–3 (DAYS 8–21)

- Increase weight bearing up to 50% with brace locked in full extension while ambulating.
- **A/PROM and CPM (1 to 2 hours/day) 0 to 45° for week 2, 0 to 60° for week 3.**
- Continue isometrics as above and add straight leg raise activities (hip ab/ad/flex/ext).

WEEKS 4–6

- Increase weight bearing from 50% (week 4) to full weight bearing with brace locked (week 6).
- **A/PROM 0 to 90° starting week 4, progressing to 0 to 125° by week 6.**
- Utilize CPM as needed to achieve ROM goals, but may otherwise discontinue.
- Progress straight leg raise activities with resistance (e.g., ankle weights) and trunk exercises.

WEEKS 7–12

- Unlock brace for weight bearing and D/C brace while ambulating when able.
- Begin weighted knee flexion; may progress to gentle closed chain knee flexion exercises weeks 10–12.
- Progress A/PROM to full anatomic limits.
- Eccentric hamstring exercises.
- Advance to elliptical and stationary bike as tolerated.

MONTHS 3–6+

- Progress closed chain knee flexion exercises from above.
- Advance to open chain knee flexion exercises (begin short arc open chain and progress as tolerated).
- Progress stationary/outdoor bike and rowing erg as tolerated.
- **Running progression program at 6 months.**
- **Return to sport around 12 months**, once strength and hop testing are at 90% or better and Dr. Tummala clears the patient.

CRITERIA TO RETURN TO SPORT

- Full ROM compared with the uninvolved side.
- No effusion.
- Normal gait and pain-free activities of daily living.
- Quadriceps strength at least 90% of the uninvolved side.
- Single-leg hop tests at least 90% of the uninvolved side.
- Around 12 months after surgery.

WEEK-BY-WEEK PROGRESSION

EXERCISE	1	2	3	4 (1 mo)	5	6	7	8 (2 mo)	9	10	12 (3 mo)	16	20	24 (6 mo)
Initial Exercises														
Foot flat, brace locked														
Up to 50% WB, brace locked														
50% to full WB, brace locked														
Brace unlocked; D/C when able														
ROM 0-30° / 0-45° / 0-60° (weeks 1 / 2 / 3)														
ROM 0-90° progressing to 0-125°														
Progress to full ROM														
Optional CPM within ROM limits														
Quad, HS, glute sets; ankle pumps														
SLR series; add resistance and trunk from week 4														
Advanced Exercises														
Weighted knee flexion														
Eccentric hamstrings														
Gentle closed chain knee flexion, then progress														
Open chain (short arc first)														
Cardiovascular Exercises														
Elliptical, stationary bike														
Outdoor bike, rowing erg														
High-Level Activities														
Running at 6 months; return to sport around 12 months														

This protocol is a general guideline and does not replace the clinical judgment of the treating therapist and surgeon. Please contact our office with any questions.