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# MACI Cartilage Implantation – Femoral Condyle

**REHABILITATION PROTOCOL**

| PHASE | RANGE OF MOTION | BRACE / WEIGHT BEARING | THERAPEUTIC EXERCISE |
|---|---|---|---|
| **Phase I**<br>**0–6 weeks**<br>GOAL TO ADVANCE<br>*Flexion >120°; leg raise without lag* | Full extension. Flexion: 90° (week 2), 105° (week 3), 115° (week 4), 120° (week 6). CPM 6-8 hours/day if prescribed | Weeks 0-4: touch-down weight bearing (20-30%) with brace locked straight. Weeks 5-6: progress with crutches, brace unlocked; discontinue brace at 6 weeks | Quad sets, straight-leg raises, heel slides; bike (no resistance) from week 2; pool walking from week 4 once incision healed |
| **Phase II**<br>**6–12 weeks**<br>GOAL TO ADVANCE<br>*Full motion; normal gait; pain-free stairs* | Full. No weight-bearing bending past 90°* | Weeks 6-9: progress to full weight bearing; wean crutches | Heel raises, bridges, short-arc quads, step-ups, side-stepping; mini-squats from week 8; single-leg balance |
| **Phase III**<br>**3–6 months**<br>GOAL TO ADVANCE<br>*Controlled squat to 90°* | Full | Full | Single-leg strength, leg press and lunges <90°, hamstring curls; elliptical, aqua jogging. No impact, cutting or sport |
| **Phase IV**<br>**6–9 months**<br>GOAL TO ADVANCE<br>*Strength ≥80% of other side* | Full; loaded bending past 90° allowed | Full | Deeper squats, walking 5-10 km, uneven terrain, low-impact recreation |
| **Phase V**<br>**9–18 months**<br>GOAL TO ADVANCE<br>*Strength and hop tests ≥90%* | Full without discomfort | — | Running at 9-12 months, then plyometrics, agility and cutting; return to sport at 12-18 months** |

**NOTES**

*The new cartilage matures slowly; deep loaded bending and impact are added gradually over a year

**If approved by physician