

Patella ORIF

Physical Therapy Protocol · Extensor Mechanism Protection, Criterion-Based Progression

Modeled on the Ohio State University Wexner Medical Center patellar ORIF rehabilitation guideline (criterion-based progression) and the HSS post-operative patella ORIF guideline. Progression through each phase is based on functional criteria, not time from surgery alone.



AT A GLANCE

TIMELINE	Approximately 6 months; criterion-based progression (time windows are approximate)
WEIGHT BEARING	WBAT from day 1 with hinged brace locked in full extension for ambulation through ~6 weeks
KEY MILESTONES	0°–90° flexion by week 6 · ≥120° by week 9 · brace and assistive-device discharge ~week 9 · jogging ≥week 16
RETURN TO ACTIVITY	Return to sport ≥6 months with isokinetic quad/hamstring symmetry ≥90%, hop-test LSI ≥90%, and physician clearance

KEY PRECAUTIONS

- Protect the extensor mechanism: brace locked in extension for all weight bearing through ~6 weeks; no knee flexion ROM for the first 2 weeks and no forced/aggressive passive flexion for the first 6 weeks.
- Progressive brace unlocking per surgeon: open to 30° at week 2, then an additional 30° every 2 weeks.
- Red flags requiring surgeon contact: lack of full extension by 4 weeks, mechanical block or clunk, instability episode, or signs of DVT (calf tenderness, disproportionate LE swelling, pitting edema).
- Do not advance phases on time alone - each progression requires the listed criteria.

PHASED REHABILITATION

PHASE 1 — PROTECTION & EXTENSION PRESERVATION		Weeks 0–6
GOALS	- Protect the fixation and extensor mechanism - Full active knee extension immediately post-op; flexion to 90° by end of phase - Re-establish quadriceps activation and control effusion	
INTERVENTIONS	- WBAT with brace locked in full extension; no flexion ROM first 2 weeks, then heel/wall slides within progressive brace limits (30° at week 2, +30° every 2 weeks) - Low-load, long-duration extension stretching; positioning to preserve full extension - Quadriceps sets emphasizing superior patellar translation; NMES to quadriceps in long sitting - Patellar mobilization in all planes (superior, inferior, medial, lateral) 4-way straight leg raises performed in the locked brace - Blood flow restriction training 2x/week (20–40% 1RM, 30-15-15-15 scheme) if no contraindications - Weight shifting and early single-leg balance work; cryotherapy and compression for effusion	
CRITERIA TO ADVANCE	- Knee ROM 0°–90° - Quad set with normal superior patellar translation - SLR held 10 seconds without extensor lag - Effusion ≤2+ (modified stroke test) - Tolerates WBAT without increased pain	
PHASE 2 — EARLY LOADING & RETURN TO FUNCTION		Weeks 6–9
GOALS	- Progress knee flexion ROM to ≥120° and normalize patellar mobility - Initiate open- and closed-chain quadriceps loading with proper mechanics - Wean brace restrictions based on functional strength	
INTERVENTIONS	- WBAT with gait aide; gradually unlock brace as quadriceps control improves; avoid forced passive ROM - Stationary bike without resistance once ROM permits - Multi-angle knee isometrics progressing to light resistance - Open-chain knee extension: short-arc quad progressing to long-arc quad - Weight-bearing quadriceps exercises (sit-to-stand, leg press, step-ups) with attention to limb mechanics - Gluteal and lumbopelvic strengthening; single-leg balance progression - NMES at 60°–90° flexion; continue BFR 2x/week (2–5 exercises per session)	
CRITERIA TO ADVANCE	- Flexion ≥120° with pain-free active ROM - Effusion ≤1+ - Pain-free SLR 2x10 without extensor lag - Tolerates closed-chain exercise without increased pain or effusion >1+ - Proper bilateral lower-extremity mechanics	

PHASE 3 — STRENGTHENING		Weeks 9–12
GOALS	- Discharge brace and assistive device once criteria met - Restore full, pain-free ROM equal to the uninvolved limb - Progressive quadriceps and lower-extremity strengthening	
INTERVENTIONS	- Brace/assistive-device discharge at ~9 weeks when criteria met: full active extension, strong quad set with superior glide, 2x10 SLR without lag, effusion $\leq 1+$, pain-free gait without deviation - Normalize gait mechanics; treadmill and functional gait training - Loaded open-chain knee extension 100°–60°, progressing toward full arc as tolerated - Progressive resistance: squats, leg press, step-downs, lunges, deadlift patterning - Isometric quadriceps strength testing (fixed at 90°) no earlier than 9 weeks - Advanced single-leg balance and proprioceptive training	
CRITERIA TO ADVANCE	- Full, pain-free active ROM equal to uninvolved limb - Effusion $\leq 1+$ - Tolerates full therapeutic exercise program without pain or reactive effusion $>1+$ $\geq 7/10$ on IKDC question #10	

PHASE 4 — RETURN TO IMPACT & SPORT		Week 12 to ≥ 6 Months
GOALS	- Restore strength and power symmetry (isokinetic testing from week 16) - Reintroduce impact: hopping, jogging, then running and agility - Return to sport with objective criteria and physician clearance	
INTERVENTIONS	- Progressive strengthening: squats, leg press, knee extension/curl, deadlifts, lunges, rotational trunk work - Hopping initiation when full pain-free ROM, effusion $\leq 1+$, IKDC #10 $\geq 7/10$, and isokinetic symmetry $\geq 80\%$ ($60^{\circ}/s$ and $300^{\circ}/s$) - Jogging progression once hop-downs show appropriate landing mechanics with rhythmic, symmetric strike pattern - Plyometric progression from bilateral to single-leg - Agility at 50–75% effort initially: shuffling, carioca, figure-8, zig-zags, backpedaling - Low-impact endurance (bike, stepper, elliptical) provided no reactive effusion	
CRITERIA TO ADVANCE	- Isokinetic quad/hamstring symmetry $\geq 90\%$ at $60^{\circ}/s$ and $300^{\circ}/s$ - Functional hop test LSI $\geq 90\%$ on all tests - No reactive effusion $\geq 1+$ with sport-specific activity - Appropriate mechanics and force attenuation with high-level agility and plyometrics - Physician clearance; return to sport typically ≥ 6 months post-op	

GUIDING PRINCIPLES

This protocol follows criterion-based progression over rigid time-based advancement; phased rehabilitation balancing tissue healing with controlled stress application; objective milestones (ROM, strength LSI, functional testing) to guide phase transitions; individualization based on surgical findings, tissue quality, and patient factors; and ongoing surgeon–therapist communication throughout recovery.

REFERENCES

1. Ohio State University Wexner Medical Center Sports Medicine. Patellar Open Reduction Internal Fixation (ORIF) Rehabilitation Guideline. 2023. <https://medicine.osu.edu/-/media/files/medicine/departments/sports-medicine/medical-professionals/knee-ankle-and-foot/patellar-orif-2023.pdf>
2. Nwachukwu BC (Hospital for Special Surgery). Post-Operative Rehabilitation Guidelines for Patella ORIF. <https://manhattansportsdoc.com/post-operative-rehabilitation-guidelines-for-patella-orif/>

For clinical use by licensed physical therapists treating patients of Robert Pettit, MD. This document is a rehabilitation guideline, not a substitute for clinical judgment. Progression must be individualized based on intraoperative findings, tissue quality, and patient response. Scan the QR code for the current version of this protocol.