

PATELLA FRACTURE (ADVANCED APPROACH) A GUIDE TO PHYSICAL THERAPY

THE ROLE OF PHYSICAL THERAPY IN YOUR RECOVERY

Your kneecap was repaired after a simple fracture with stable fixation. Because the fixation is solid, you can begin bending from Day 1 — this early motion prevents the stiffness that is the most common complication after kneecap repair. Walking with the brace locked straight is safe from Day 1. Bending starts at 0–50° and advances at 10° per week, reaching 90° by Week 6. The brace stays locked during walking for the first six weeks to protect the repair under load.

Important: Brace locked in extension for all walking × 6 weeks. Bending is done only when seated or lying down — not while standing. This combination gives you early motion with full protection.

YOUR RECOVERY TIMELINE

PHASE	TIMEFRAME	PT VISITS	WHAT YOU'RE WORKING ON
1	Weeks 1–6	2–3× per week	• Walk with brace locked straight from Day 1 • Bending begins immediately: 0–50°, then +10° per week to reach 90° by Week 6 • Kneecap mobilization in all four directions from Day 1–2 • Electrical stimulation (NMES) and quad sets every waking hour
2	Weeks 6–12	2× per week	• Brace unlocked after surgeon confirms healing at Week 6 review • Full weight-bearing without restriction • Progressive strengthening — stationary bike, step-ups, leg press • Resisted knee extension begins at Week 7–8 in limited arc (90–45°)
3	Months 3–5	1–2× per week	• Running begins at Weeks 14–16 when quad strength allows • Jogging → sport-specific conditioning • No cutting or jumping before Month 5–6 • Limb symmetry testing to guide return to sport
4	Months 5–6	As needed	• Full sport-specific training and return to activity • Final hop and strength testing before clearance • Return to sport at 5–6 months — criteria and imaging based • Clearance by Dr. Merritt required before full return

Questions about your PT progress? Call our office or bring them to your next appointment. We are always glad to coordinate with your therapist.

PATELLA FRACTURE — SIMPLE FRACTURE PHYSICAL THERAPY PROTOCOL

ADVANCED PROGRESSION — positioned on the faster end of patella fracture rehabilitation pathways. ROM begins immediately (Day 1), reaches 90° by Week 6, and targets return to sport at 5–6 months.

Patient Name: _____
Date of Surgery: _____

Surgeon: Andrew L. Merritt, MD
PT Start Date: _____

Overview and General Principles

This protocol applies to operatively treated simple (transverse or minimally comminuted) patella fractures with stable ORIF fixation using tension band wiring, lag screws, or combined constructs. Stable fixation supports immediate ROM and early weight bearing. This advanced progression protocol is positioned on the faster end of published rehabilitation pathways: ROM begins on Day 1, advances 10°/week to 90° by Week 6, and targets return to running at Weeks 14–16. Published literature reports average return to sport at 7 months; this protocol targets 5–6 months for athletes with successful surgical repair and good quad recovery.

1. **IMMEDIATE ROM:** Simple transverse or minimally comminuted pattern with stable ORIF. ROM begins immediately — quad sets, patellar mobilization, and heel slides (0–50°) from Day 1.
2. **ROM PROGRESSION — 10°/WEEK:** 0–50° Weeks 1–2; advance 10°/week through Week 6 to reach 90°. Published protocols typically target 90° by Week 8 — this protocol reaches 90° two weeks earlier in stable fixations.
3. **WBAT LOCKED IN EXTENSION × 6 WEEKS:** WBAT with brace locked in extension × 6 weeks. Body-weight axial loading is safe with brace locked; do not WB with brace unlocked until surgeon clearance at Week 6 review.
4. **PATELLAR MOBILIZATION FROM DAY 1:** All 4 patellar glide directions (superior, inferior, medial, lateral) from Day 1–2. Essential to prevent peripatell adhesions that restrict ROM and cause persistent anterior knee pain.
5. **OKC EXTENSION DELAYED UNTIL UNION CONFIRMED:** No resisted OKC knee extension (leg extension machine) until fracture union is confirmed on imaging — typically Week 7–8. Resisted extension loads the extensor mechanism repair. OKC begins in 90–45° arc initially.
6. **NMES — PRIORITY:** NMES 2x daily from Day 1–2; quad sets every waking hour. Aggressive quad activation is the primary early goal.
7. **RETURN-TO-SPORT TIMELINE:** No running before Weeks 14–16. No cutting or jumping before Month 5–6. Return to sport criteria-based and MD directed. Radiographic union required before return to impact.

PHASE 1 — PROTECTION (Weeks 1–2)

Weight Bearing: WBAT — brace locked in extension; crutches as needed for comfort

Brace: Hinged brace locked at 0° for all ambulation and sleep; unlocked only for supervised PT ROM exercises

ROM: 0–50° — active-assisted and active ROM exercises to limit; do not push beyond 50°

Goals:

8. Restore quad activation — visible VMO contraction with quad set by Week 2
9. Achieve 0–50° ROM without pain
10. Control effusion and pain — aggressive cryotherapy
11. Establish full passive extension (0°) equal to contralateral
12. Initiate patellar mobility — prevent peripatell adhesions

Exercises:

13. Quad sets: isometric VMO activation against towel roll — every waking hour
14. NMES to quadriceps: 20–30 min, 2x/day from Day 1–2; 10–15 reps × 10s contraction, 50s rest
15. SLR (straight leg raise): begin when no extensor lag; hip flexion first, then all 4 planes
16. Heel slides (active-assisted): to 50° limit only — 3×15
17. Ankle pumps — hourly
18. Patellar mobilization: superior, inferior, medial, lateral glides — 2–3 min each direction, 1–2x/day from Day 1–2; gentle pressure, pain-free
19. Heel prop for passive extension: prone lying 10–15 min, 2x/day
20. Hip strengthening (sidelying): abduction, adduction, ER, extension — 3×15
21. Stationary bike: begin when ROM ≥50° (typically Week 2); seat HIGH; no load; partial pedal revolution only if full revolution not yet achievable
22. Cryotherapy: 20 min after each session; elevate knee above heart level
23. Well-leg and upper extremity conditioning throughout

Precautions:

24. ROM strictly limited to 50° — do not push beyond; no gravity-assisted flexion
25. No resisted active knee flexion against gravity (no prone hamstring curls, no seated resisted flexion)
26. No resisted OKC knee extension in Phase 1
27. Brace locked at 0° for all WB ambulation
28. No squatting, step-ups, or loaded knee flexion in brace
29. Monitor for reactive effusion after each session

Criteria to Advance to Phase 2:

30. ROM 0–50° achieved without significant pain
31. SLR without extensor lag
32. Quad activation present (VMO visible/palpable)
33. Effusion and pain controlled

PHASE 2 — PROGRESSIVE ROM (Weeks 3–6)

Weight Bearing: WBAT — brace locked in extension through Week 6; progress crutch wean as quad control improves

Brace: Locked 0° for all WB ambulation through Week 6; surgeon review at Week 6 for brace wean

ROM: Advance 10°/week: 60° (Wk 3), 70° (Wk 4), 80° (Wk 5), 90° (Wk 6)

Goals:

34. Reach 90° ROM by Week 6
35. Normal gait pattern in locked brace
36. Good quad control — SLR with progressive resistance

- 37. Crutch wean progressing toward unaided ambulation in locked brace
- 38. Patellar mobility maintained in all planes

Exercises:

- 39. Heel slides (active-assisted): to weekly ROM limit — do not push beyond prescribed arc
- 40. Stationary bike: adjust seat height as ROM improves; full pedal revolution typically by Week 3–4; low resistance
- 41. SLR all 4 planes with progressive resistance (0.5–1 lb/week)
- 42. Patellar mobilization: advance in all 4 planes; increase pressure as tolerated; focus on superior and inferior glides
- 43. Quad sets and NMES: continue daily
- 44. Standing hip abduction/extension/ER with resistance band — 3×12
- 45. Calf raises (bilateral): standing — 3×15
- 46. Aquatherapy (Week 4–5+, when incision healed): deep-water walking; buoyancy offloads patellofemoral joint
- 47. Short-arc quad (0–30°): if cleared by surgeon for early OKC in stable fixation
- 48. Cryotherapy after every session

Precautions:

- 49. Advance ROM only 10°/week — do not push beyond the weekly target
- 50. No resisted knee flexion against gravity
- 51. No weight-bearing with brace unlocked until Week 6 surgeon clearance
- 52. No OKC resisted extension until fracture union confirmed (typically Week 7–8)
- 53. Reactive effusion — reduce activity and reassess

Criteria to Advance to Phase 3:

- 54. ROM 0–90° achieved by Week 6
- 55. Surgeon clearance at Week 6 to unlock brace
- 56. Good quad activation — SLR with resistance
- 57. Normal gait in locked brace
- 58. Minimal reactive effusion

PHASE 3 — RETURN TO LOADING (Weeks 7–12)

Weight Bearing: Full weight bearing; brace unlocked per surgeon clearance at Week 6–8

Brace: Wean from brace as quad control and gait normalize; brace discontinued when walking symmetrically without support

ROM: Progress to full ROM (target 120–130°+ by Week 10, full ROM by Week 12)

Goals:

- 59. Full ROM (0–130°+) equal to contralateral
- 60. OKC knee extension established with progressive resistance
- 61. Quad strength 55–65% LSI
- 62. Normal gait without assistive device or brace
- 63. CKC exercises progressing without reactive effusion

Exercises:

64. OKC knee extension (Week 7–8, when fracture union satisfactory): begin 90–45° arc; 3 lbs; +2–3 lbs/week; advance arc to full range by Week 10–12 per surgeon
65. Mini-squats (0–60°): bilateral; 3×15; progress to 0–90° by Week 12
66. Leg press (bilateral, 0–60°): 3×12; expand arc as ROM improves
67. Step-ups (4" forward and lateral): 3×10; Week 8+
68. Terminal knee extension (TKE) with resistance band: 3×15
69. Stationary bike: full revolution, progressive resistance; advance duration to 30+ min
70. Elliptical trainer (Week 10+): low resistance; no incline
71. Single-leg balance: firm surface (30 sec) arrow eyes closed arrow perturbation
72. Stair training: reciprocal pattern without rail (Week 9–10)
73. Calf raises: bilateral arrow single-leg progression
74. Standing hip abduction/ER/extension: progressive resistance band and cable
75. BFR training: optional adjunct for quad and hamstring hypertrophy
76. Aquatherapy: shallow-water walking, squats, forward/backward walking
77. Patellar mobilization: continue until full ROM achieved

Precautions:

78. OKC extension: confirm fracture union with Dr. Merritt before initiating; begin in limited arc (90–45°)
79. No running until Phase 4 criteria met
80. No jumping or impact activities
81. Monitor for reactive effusion — reduce load if swelling increases
82. Avoid deep squatting (beyond 90°) until full ROM achieved and PF pain absent

Criteria to Advance to Phase 4:

83. Full ROM (0–130°+) equal to contralateral
84. Quad strength $\geq 60\%$ LSI
85. 8" step-down with symmetric mechanics and no pain — required gate for running
86. Normal gait without brace or crutch
87. Minimal effusion

PHASE 4 — ADVANCED STRENGTHENING and RETURN TO RUNNING (Weeks 13–Month 5)

Weight Bearing: Full, unrestricted

Brace: Discontinued; no brace required for PT

Running: Walk-jog intervals begin Weeks 14–16 when ALL criteria met (see box below)

Goals:

88. Quad strength $\geq 70\text{--}80\%$ LSI
89. Initiate and progress return-to-run program
90. Bilateral plyometrics progressing to single-leg
91. Sport-specific movement preparation

Exercises:

92. Progressive squatting: increase depth and resistance; single-leg squat
93. Leg press: single-leg; increase resistance progressively
94. 8" step-down program: eccentric quad emphasis; symmetric mechanics
95. Nordic hamstring curls: eccentric hamstring loading
96. Plyometrics (bilateral): vertical jump, broad jump, box jump — controlled landing, Week 14+
97. Running mechanics screen before walk-jog: assess knee valgus, pelvic drop, trunk lean
98. Walk-jog program: 60s walk / 60s jog intervals on flat surface; progress weekly
99. Agility: cone drills, lateral shuffles (Week 16+)
100. BFR training: continue for quad/hamstring hypertrophy

Running Criteria — ALL required before initiating walk-jog program:

101. 8" step-down with symmetric mechanics and no pain
102. Full ROM (0–130°+) equal to contralateral
103. Quad strength $\geq 70\%$ LSI
104. Minimal to no reactive effusion
105. Surgeon clearance for running
106. Minimum Weeks 14–16 post-op

Precautions:

107. No cutting, pivoting, or lateral agility before Month 5
108. No single-leg jump testing until bilateral plyometrics pain-free and symmetric
109. Monitor for anterior knee pain with increased impact loading

Criteria to Advance to Phase 5:

110. Running without pain or effusion for 4+ consecutive sessions
111. Quad strength $\geq 75\%$ LSI
112. Single-leg hop $\geq 75\%$ LSI
113. Minimum Month 4–5

PHASE 5 — RETURN TO SPORT (Month 5–6+)

Weight Bearing: Full, unrestricted

Timeline: No cutting/jumping before Month 5; full return to pivoting sport after Month 5–6 when all criteria met

Goals:

114. Quad strength $\geq 90\%$ LSI
115. Single-leg hop battery $\geq 90\%$ LSI
116. Full sport-specific movement patterns at speed
117. Surgeon clearance with confirmed radiographic union

Exercises:

118. Full sport-specific training: drills, conditioning, scrimmage
119. Cutting, deceleration, direction change at progressive speed
120. Single-leg plyometrics: hop progressions, reactive drills

- 121. Strength maintenance: 2–3x/week — do not drop resistance training at return to sport
- 122. Eccentric quad program: Nordic drops, depth landing, high step-down

Precautions:

- 123. Radiographic union required before clearance for cutting/jumping sport
- 124. Full return to sport requires Dr. Merritt clearance; do not clear based on time alone
- 125. Anterior knee pain or effusion at any phase — contact Dr. Merritt's office before progression

ROM Progression Schedule — Advanced Protocol

Timeframe	ROM Target	Notes
Weeks 1–2	0–50°	ROM begins immediately; heel slides to 50° limit; TTWB locked in extension
Week 3	0–60°	Advance 10°; stationary bike seat adjusted; WBAT locked in extension
Week 4	0–70°	Full bike revolution typically possible; stationary bike progressing
Week 5	0–80°	Aquatherapy Week 4–5+; WBAT locked in extension through Week 6
Week 6	0–90°	Surgeon review; brace unlock begins; 90° ROM goal met
Weeks 7–10	Progress 10°/week	Target 120°–130°+ by Week 10; OKC extension begins Week 7–8
Week 10+	Full ROM	Equal to contralateral; full ROM expected; running prep begins

Return-to-Activity Criteria

Return-to-Activity Criterion	Required Threshold
Isokinetic Quadriceps (LSI)	≥90% contralateral limb
Isokinetic Hamstrings (LSI)	≥90% contralateral limb
Single-Leg Hop Testing (LSI)	≥90% contralateral (single, triple, crossover, timed)
Full Pain-Free ROM	Equal to contralateral; no extension deficit
8" Step-Down	Symmetric mechanics, no knee pain, no valgus collapse
No Reactive Effusion	No joint effusion after functional activity
Radiographic Union	Fracture union confirmed by Dr. Merritt before return to impact
Minimum Time - Running	Weeks 14–16 (quad ≥70% LSI + full ROM + 8" step-down + surgeon clearance)
Minimum Time - Cutting/Jumping	Month 5–6 (radiographic union + ≥90% LSI strength + hop testing)
Surgeon Clearance	Required; gradual return to sport - criteria-based, MD directed

Clinical Timeline Summary

Surgery: Simple patella fracture ORIF

Supervised PT begins: Within 3–5 days post-op

ROM begins: Day 1 (0–50°) — active-assisted heel slides

Patellar mobilization: Day 1–2 — superior, inferior, medial, lateral glides

WBAT locked in extension: Weeks 1–6

Week 6 surgeon review: Brace unlock; ROM at 90°; assess fracture union

ROM 90°: Week 6

OKC extension begins: Week 7–8 (fracture union confirmed; 90–45° arc initially)

Full ROM: Weeks 10–12

Low-impact cardio (bike, elliptical): Bike from Week 2 (partial); full from Week 3–4; elliptical Week 10+

8" step-down gate for running: Must be met before walk-jog program

Running (walk-jog): Weeks 14–16 — requires 8" step-down + quad $\geq 70\%$ LSI + full ROM + surgeon clearance

Plyometrics (bilateral): Week 14+ (running established, bilateral symmetry confirmed)

Cutting / jumping: Month 5–6 (radiographic union + $\geq 90\%$ LSI criteria met)

Return to sport: Month 5–6 — criteria-based, MD directed (advanced end: published average is 7 months)

Note: All progressions are criteria-based. ROM advances 10°/week but should not be forced if reactive effusion is present. Anterior knee pain with loading is common — differentiate from hardware irritation. Contact Dr. Merritt if anterior knee pain increases unexpectedly or if effusion is persistent.

Surgeon Notes / Special Instructions: