

PATELLOFEMORAL (KNEECAP) REPLACEMENT

Physical Therapy Protocol

PATIENT

SURGEON

Andrew L. Merritt, MD

DATE OF SURGERY

PT START DATE

For the patient

Your surgery replaced the kneecap joint: the kneecap and the groove it slides in. Because the kneecap is directly involved, **getting your quad muscle working needs extra attention from day 1**. Swelling in the front of the knee shuts down the quad. **Icing 20 minutes on, 20 minutes off** and keeping your leg up and straight stops this cycle. **Getting your knee fully straight comes first**. Never put a pillow under your knee. Taping the kneecap can help with front-of-knee pain in the early weeks.

PROTOCOL AT A GLANCE

WEIGHT BEARING	Full weight as tolerated from day 1, with a rolling walker
WALKER · CANE	Walker at first. Most people move to a cane around weeks 2 to 3 and walk without anything by 4 to 6 weeks
MOTION GOALS	Full straightening (0°) is the first priority . About 80–90° of pain-free bending by 2 weeks, past 110° by 6 weeks, full pain-free motion by 12 weeks
PHYSICAL THERAPY	Starts 5 to 7 days after surgery, 2 times a week at first, then weekly and as needed after 6 weeks
KEY PRECAUTIONS	No bending past 90° with weight on the leg for the first 4 to 6 weeks . No pillow under the knee. Ice 20 minutes on, 20 minutes off while awake
RETURN TO ACTIVITY	Most people return to recreation by about 3 months . Running and jumping are not recommended

Recovery Timeline

Phase	When	PT visits	Focus
1	Weeks 0–2	2× a week	The Quiet Knee: walker, control front-of-knee swelling, quad sets, kneecap taping
2	Weeks 2–6	2× a week	Walker → cane → no device; bike, step-ups, short-arc quads (low kneecap load), stairs
3	Weeks 6–12	1× a week, then as needed	Walking, cycling, low-impact activity; progressive and single-leg strength

For the Therapist

Check the surgeon notes first. They override anything else in this protocol. Questions or setbacks: call (425) 656-5060.

Surgeon notes and special instructions

General principles

- **The Quiet Knee.** Cryotherapy in the first 14 days is mandatory: 20 min on, 20 min off while awake. Anterior knee swelling → higher PF joint pressure → pain → quad shutdown. Keep the leg elevated and straight.
- **Quad activation is the first priority.** The patellar mechanism is directly involved in the surgery, and AMI after PFA is significant. Quad sets begin immediately and continue through all phases.
- **NMES** is provided by the therapist at PT visits only (no home unit). It starts at the first PT visit and continues until the quad lag has fully resolved.
- **Avoid deep knee flexion under load early.** PF joint reaction force rises steeply with flexion. Keep loaded flexion within the pain-free range (typically <90°) for the first 4–6 weeks. No forced deep flexion.
- **Full extension is the priority from day 1.** No pillow under the knee. An extension lag after PFA reflects quad inhibition, not a bony block; address it with NMES.
- **Patellar tracking.** The VMO is the main dynamic patellar stabilizer. Patellar mobilization (medial-glide emphasis) and McConnell taping are used throughout to improve tracking and reduce anterior knee pain.
- **PT frequency:** 2× a week in Phases 1–2.

PHASE

1

The Quiet Knee

Weeks 0–2

For the patient: what to expect

Your surgery was on the kneecap joint, so **quad strength and full straightening come first**. Ice 20 minutes on, 20 minutes off while you are awake, and keep your leg up and straight. Squeeze your quad every hour. Taping your kneecap can help with pain in the front of the knee. **Don't push into deep bending yet**; that comes gradually as the swelling settles.

WEIGHT BEARING	As tolerated from day 1 with a rolling walker
BRACE	None

Goals

- Control anterior knee swelling and PF joint inflammation with cryotherapy
- Quad activation from day 1: quad sets; NMES from the first PT visit
- Safe functional mobility: transfers and household walking with a rolling walker
- Pain-free active flexion 80–90° and full extension without a lag

Move on when

- ☐ Quad activation present; SLR without a significant lag
- ☐ Pain-free active flexion 80–90°; full extension
- ☐ Safe, independent transfers and household walking
- ☐ Swelling manageable with cryotherapy and elevation

Exercises

Exercise	How
Quad sets	3 × 15 every 1–2 hours while awake; the main day-1 exercise
Ankle pumps	3 × 20 every hour (DVT prophylaxis)
Short-arc quads (0–30°)	3 × 10; minimal PF joint load; start when pain-free
Straight-leg raise	When quad control is present with no significant lag: 3 × 10
Heel slides	Supine, gravity-assisted: 3 × 10; stop at pain
Transfer training	Supine-to-sit, sit-to-stand
Gait training	Rolling walker
Cryotherapy	20 min on, 20 min off while awake; mandatory
NMES	To the VMO and quadriceps at PT (no home unit): 20-min sessions; essential for AMI
McConnell taping	As needed for tracking or anterior knee pain

Precautions

- No pillow under the knee; calf only. Full extension is the first priority
- Avoid forced or painful flexion; PF joint reaction force rises quickly with flexion. Stay in the pain-free range and do not go past 90° under any load
- Cryotherapy is mandatory: 20 min on, 20 min off while awake. Anterior swelling compresses the PF joint and shuts down the quad
- No deep squats, lunges, or any loaded exercise beyond 90° of flexion for the first 4–6 weeks

Why: PF joint reaction force is about 0.5× body weight at 30° of flexion and rises to 3–4× body weight at 90°. Forcing flexion while the joint is inflamed multiplies the compressive load on the new implant and drives pain and quad inhibition. Low-load exercises allow near-maximal quad activation with minimal PF compression, which makes them ideal early after PFA.

PHASE

2

Motion and Quad Strength

Weeks 2–6

For the patient: what to expect

Knee motion and quad strength are the focus now. Your therapist will keep taping your kneecap as needed. Exercises stay in ranges that don't load the kneecap joint heavily. The stationary bike, starting with a limited bend, is an excellent exercise after this surgery. **Ice after every session.** Keep avoiding deep bending with weight on the leg for the first 4 to 6 weeks.

WEIGHT BEARING	Full. Progress walker → cane → no device as quad control and pain allow
BRACE	None

Goals

- Pain-free active flexion >110° with controlled PF loading
- No quad lag; normal gait and no assistive device
- Progress quad strengthening in a pain-free arc: short-arc quads, step-ups
- Optimize patellar tracking with mobilization, VMO activation, and taping
- Independent with all ADLs

Move on when

- ☐ Pain-free active flexion >110°; full extension maintained
- ☐ No quad lag on SLR
- ☐ Walks without an assistive device with a normal gait
- ☐ Ascends a 6-inch step with controlled eccentric descent
- ☐ Independent with all ADLs; anterior knee pain much reduced

Exercises

Exercise	How
Quad sets • ankle pumps	Continue 2–3× a day
Short-arc quads	Progress to 0–45° as tolerated with a band or light cuff weight
Straight-leg raise	All planes, with a progressive resistance cuff
Extension stretching	Prone hang or seated heel prop; maintain 0°
Flexion	PROM and AROM: wall slides, heel slides, seated flexion progression
Patellar mobilization	Superior-inferior and medial-lateral, medial-glide emphasis
Stationary bike	Short crank at first; advance as pain-free flexion allows; ideal for PFA
Step-ups • step-downs	Start at 2–4 inches (limit deep knee flexion); advance as tolerated
NMES	At PT; continue until the quad lag has fully resolved
Gait training	Heel strike, full knee extension at loading response
McConnell taping	For anterior knee pain, as needed

Precautions

- Keep avoiding loaded deep flexion beyond 90° for the first 4–6 weeks, and until quad control is established and the exercise is pain-free. PF joint load rises steeply with depth
- Anterior knee pain during exercise is a signal to reduce depth or resistance, not to push through
- Continue cryotherapy after every PT session

Why: Phase 2 means building quad strength, which needs load, while protecting the PF joint from high compressive force. The answer is short-arc quads and limited-range step-ups, which work the quadriceps at low PF joint angles. Full-depth squats and lunges wait until quad control is established and the full range is pain-free. VMO activation and patellar tracking are concurrent priorities.

PHASE

3

Strength and Return to Activity

Weeks 6–12

For the patient: what to expect

This last phase is about getting back to your activities. Squats, the leg press, and everyday movements go deeper as your strength and comfort allow. **Most people return to recreation by about 3 months.** People who have this surgery are often younger and more active, so talk with Dr. Merritt about your activity goals. **Running and jumping are not recommended** after a kneecap replacement.

WEIGHT BEARING	Full, no restrictions
BRACE	None

Goals

- Full pain-free motion, including functional flexion depth
- Symmetrical lower-extremity strength
- Return to recreational and functional activities
- Discharge to an independent home program

Move on when

- ☐ Full pain-free motion, including functional flexion depth
- ☐ Lower-extremity strength $\geq 4+/5$; symmetrical quad function
- ☐ Reciprocal stairs on an 8-inch step without pain or deviation
- ☐ TUG ≤ 12 sec
- ☐ No significant increase in anterior knee pain with functional activity
- ☐ Independent with the full home program

Exercises

Exercise	How
Leg press	Bilateral → unilateral; progress depth as PF pain allows
Squats	Partial to full-depth functional squats (wall, ball, body weight); advance depth gradually
Step-ups • step-downs	Progress to 6–8 inches
Treadmill • elliptical	Forward and retro treadmill, elliptical; conditioning
Stationary bike	Full crank, progressive resistance
Balance	Single-leg stance on flat ground, then foam; dynamic challenges
Single-leg work	Unilateral leg press, eccentric step-downs
Activity-specific strength	As indicated by the patient's goals

Precautions

- Progress to deep flexion gradually; increase depth only when the current range is consistently pain-free
- Running and jumping are not recommended after patellofemoral replacement. Discuss other sport goals with Dr. Merritt

Why: PFA patients are often younger and more active than TKA patients, with realistic goals for recreational sport and higher-demand activity. The preserved tibiofemoral compartments tolerate more dynamic loading than a TKA. Activity guidance is individualized by Dr. Merritt, balancing the patient's goals against implant longevity and the health of the preserved tibiofemoral cartilage.

Return to Activity

Discharge to an independent home program once the Phase 3 milestones are met.

GREAT GOALS	Walking, cycling, swimming, elliptical, golf, and pickleball
NOT RECOMMENDED	Running and jumping
CLEARANCE	Dr. Merritt clears specific sport and leisure activities

Questions about PT progress? Patients can call our office or bring them to their next appointment. We are always glad to coordinate with the therapist.