CLINICAL PATIENT INFORMATION LEAFLET | SURGICAL REHABILITATION

Knee Surgery Prehab & Rehab: Your Pathway to Joint Recovery

Evidence-based pre-operative preparation, biological healing timelines, and staged rehabilitation protocols.

Knee surgeries—including Total Knee Arthroplasty (TKA), Unicompartmental Arthroplasty (UKA), Anterior Cruciate Ligament (ACL) reconstruction, and complex meniscal/cartilage repairs—are highly effective procedures designed to restore joint function. Successful outcomes depend not only on surgical precision, but on active, structured preparation and progressive rehabilitation. Starting recovery with **prehabilitation ('prehab')** builds muscular reserve before surgery, while a guided **post-operative rehabilitation** protocol restores full extension, normalizes gait, and protects healing tissues.

1. Why Prehabilitation (Prehab) Matters

- **Quadriceps & Gluteal Pre-activation:** The quadriceps experience reflexive inhibition post-operatively. Building strength beforehand accelerates voluntary motor recruitment and early weight-bearing stability.
- **Preserving Terminal Extension (0°):** Regaining a completely straight knee post-operatively is significantly easier if full joint extension is preserved and practiced before surgery.
- **Gait Aid & Stair Familiarization:** Rehearsing crutch/frame walking and stair techniques ('up with the good, down with the operated') prior to admission reduces fall risk and post-operative anxiety.
- **Home Environmental Setup:** Removing trip hazards (rugs, cables), arranging a firm high chair with armrests, and preparing cryotherapy packs in advance ensures a safe home transition.
- **Systemic Optimization:** Smoking cessation, strict glycemic control in diabetic patients, and balanced protein intake significantly reduce wound complications and infection risks.

2. Staged Post-Operative Rehabilitation Protocol

Phase & Timeline	Clinical Objectives	Precautions & Restrictions	Core Exercise Protocols
Phase 1: Acute Protection & ROM ***(Weeks 0–2)***	• Full extension (0°). • Flexion to ≥90°. • Swelling control. • Reactivate quads.	• Use gait aids (crutches/frame). • **Never place a pillow directly under the knee**. • Avoid pivoting/twisting.	• Isometric quadriceps sets. • Ankle pumps for venous return. • Gentle heel slides (0°–90°). • Straight leg raises (no extensor lag). • Patellar mobilizations.
Phase 2: Early Strength & Gait ***(Weeks 2–6)***	• Flexion to 0°–110°+. • Normal non-antalgic gait. • Safe aid weaning. • Reciprocal stairs.	• Avoid high impact/pivoting. • Do not push into sharp pain. • Discontinue aids only when gait is stable and symmetrical.	• Stationary cycling (rocking to full revs). • Terminal knee extensions. • Mini-squats (0°–45°) & shallow step-ups. • Standing hamstring curls & calf raises. • Single-leg balance work.
Phase 3: Kinetic Chain Stability ***(Weeks 6–12)***	• Full functional ROM (0°–125°+). • Rebuild quad/hamstring strength. • Neuromuscular control.	• Controlled loading only. • No ballistic directional changes. • Monitor for post-exercise joint effusion/swelling.	• Leg press & squats (0°–90°). • Lateral step-ups & step-downs. • Romanian deadlifts & bridging. • Dynamic balance (wobble board, tandem stance).
Phase 4: Functional Conditioning ***(Months 3–6+)***	• Limb symmetry (>85–90%). • Endurance for work/sport. • Long-term joint health.	• Running, cutting, or sport-specific drills require explicit medical clearance (6–9+ mos for ACL).	• Agility drills & jogging progressions. • Multi-planar plyometrics. • Heavy functional strength training. • Low-impact cardio (swimming, cycling).

3. The Multidisciplinary Knee Care & Rehabilitation Team

Restoring knee biomechanics requires synchronized medical, surgical, and therapeutic oversight throughout recovery:

- **Orthopaedic Surgeon:** Executes the reconstruction or joint arthroplasty, establishes weight-bearing parameters and brace settings, evaluates tissue healing on radiographic follow-ups, and clears milestone progressions.
- **Rehabilitation Medicine Physician:** Leads the comprehensive medical rehabilitation plan, optimizes analgesia to ensure therapy participation, manages co-morbidities, addresses arthrofibrosis or persistent joint effusions, and coordinates allied health discharge planning.
- **Physiotherapist:** Supervises manual passive/active-assisted joint mobilizations, administers progressive quadriceps loading, retrains non-antalgic gait patterns, and ensures kinetic chain alignment to prevent hip/back compensations.
- **Occupational Therapist:** Evaluates home bathroom safety, prescribes mobility equipment (raised toilet seats, shower chairs), and assists with adapting activities of daily living during the early weight-bearing phase.
- **Exercise Physiologist:** Guides intermediate-to-advanced gym conditioning, delivers high-level strength and neuromuscular retraining, and conducts return-to-work or return-to-sport physical screening.

4. Practical Daily Guidelines for Patients

- **Prioritize Full Extension (0°) Early:** Regaining full terminal extension is vital for a normal gait cycle. Never place a pillow directly behind the knee joint in bed; place support under the calf/heel to encourage extension.
- **Control Swelling Proactively (R.I.C.E.):** Joint effusion shuts down quadriceps motor recruitment. Apply cryotherapy for 15 to 20 minutes several times daily, elevate the limb above heart level when resting, and wear prescribed compression garments.
- **Adhere to Prescribed Analgesia:** Take recommended pain relief 30–45 minutes prior to scheduled physical therapy sessions in the initial weeks. Controlling discomfort allows you to achieve necessary range-of-motion milestones.
- **Progressive Weight-Bearing Adherence:** Follow your surgeon's specific weight-bearing protocol (Full Weight-Bearing vs. Protected/Touch-down). Wean off crutches only when gait is smooth, steady, and limp-free.

5. Warning Signs Requiring Immediate Medical Attention

Promptly contact your surgical team, rehabilitation physician, or emergency department if you experience:

- Persistent or increasing calf pain, tenderness, heat, or swelling (signs of Deep Vein Thrombosis / DVT).
- Spreading redness, heat, opening of wound edges, or continuous foul-smelling drainage.
- Systemic fever (>38°C), chills, or profuse night sweating.
- Sudden severe pain, a feeling of knee joint 'giving way', or complete inability to bear weight.

Knee Prehab & Rehab Pathway | Practice Attachment

This leaflet is designed as a patient educational guide. Because surgical techniques, implant types, and ligament/meniscal repair protocols vary, always adhere strictly to the individual timeline and weight-bearing instructions given by your Orthopaedic Surgeon and Rehabilitation Physician.