



## **POST-OP REHAB PROTOCOL FOLLOWING TOTAL KNEE ARTHROPLASTY**

These rehabilitation guidelines are presented in a criterion based progression. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion (ROM), strength and health/functional status, rehabilitation compliance, learning barriers and complications. Specific time frames, restrictions and precautions will also be given to protect healing tissues and the surgical reconstruction. Attention may also be given to other musculoskeletal issues in areas above or below the replaced joint that can influence the outcome of the total knee arthroplasty (TKA). The goal of this procedure is to restore daily function and allow return to an active, healthy lifestyle.

### **Basic Principles for the Patient and Therapist**

- These guidelines describe prioritized rehabilitation following TKA.
- Post-operative recovery begins with “Total Care for Total Joints” class, a pre-operative evaluation, training and educational visit at the hospital. Patients learn an initial postoperative set of exercises, including isometric and active range of motion (AROM) exercises. Patients may also learn how to walk with crutches or a front wheeled walker, in order to facilitate a faster return to normal walking, as well as allowing practice within the home to expedite a safe return, and allay fears associated with this.

Generally, this rehabilitation should start within 1–3 days after leaving the hospital, depending on destination immediately after hospital discharge. Patients can schedule physical therapy at a location of their choice and are encouraged to use a facility close to and within scheduling guidelines.

### **Phase I (surgery to about 2 weeks after surgery)**

#### Appointments

- Physician assistant appointment within 2 weeks after surgery
- Rehabilitation is usually 2 times per week. This can be modified based on findings of evaluation.

#### Rehabilitation Goals and Priorities

- Safe transfers and movement with assistive device, progressing distance towards one half mile, heel strike and use of available knee flexion during gait.
- Restore range of motion (ROM), increasing each visit with goal of 90° flexion and 0° extension. Do not force knee beyond 90 degrees for first two weeks.
- Literature supports ROM returning to prior level (if patients had flexion contracture before TKA, they are more likely to have one after).
- Each patient must be encouraged to get back more ROM than he or she previously had.
- Active extension without lag
- Consistent compliance with home exercise program (HEP), check pain rating and compliance each visit



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### Suggested Therapeutic Exercises

- Quadriceps set (QS), straight leg raise (SLR), prone hamstring curls, supine heel slides, supine heel down wall slides, extension on bolster. HEP consists of the same
- Sit to stand squats, with weight bearing as tolerated (WBAT), supine leg press from 0 degrees of extension to current flexion end range versus minimal weight, (20–40 lbs) and stationary bike with no resistance if able to get on and off

### Treatment

- Ice, electrical stimulation (E-stim) to augment poor quad contraction, and transcutaneous electrical stimulation (TENS) for pain control if other means are unsatisfactory
- Swelling reduction soft tissue mobilization in elevated positions, if needed

### Precautions

- Watch incision for signs of separation and/or infection. • Keep incision strain at a minimum; watch blanching during flexion to monitor this. • Pain should not persist after rehabilitation visits for more than 24 hours and should be within patients' tolerance. • Provide education on "hurt vs harm." • No resisted knee extension with weights during first two weeks

### Cardiovascular

- Upper body ergometer (UBE) if patient desires

### Progression Criteria

- Improvement in ROM, muscle function and gait over the first 2 weeks

## **Phase II (begin after meeting Phase I criteria, usually 3–6 weeks after surgery)**

### Appointments

- Physician appointment at 6 weeks after surgery
- Rehabilitation appointment frequency is based on patient's ROM. If gains are occurring at twice weekly, continue this until goal ROM of 110–125° flexion and 0° extension is met.
- More frequent visits or at least 2 times per week if no gains in ROM are occurring
- If ROM from 0–125 exists, once per week is enough, barring any other issues

### Rehabilitation Goals and Priorities

- ROM of 110°–125° flexion and 0° extension
- Progression of strength toward bodyweight, functional ambulation and normalization of gait, stairs with reciprocal gait, use of affected knee with equal weight bearing with sit to stand transfers
- Based on patient progress, between post-operative weeks 3 and 6, patients should be able to transition to one crutch or use a cane and begin walking short distances without an assistive device.



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- This needs to be with a useful, non-antalgic gait pattern.

### Suggested Exercises/ Treatment

- Knee ROM as needed
- Manual therapy as needed, with appropriate magnitude based on healing status. Skin needs to slide in order to have optimal flexion range.
- Neural mobilization for tibial nerve may help improve flexion contracture.
- QS, SAQ, SLR, supine and/or standing, leg press, sit to stand squats, single leg balance, gastrocnemius strengthening, step ups in multiple directions, lunges through partial range if safe
- Standing total knee extension (TKE) with theraband
- Hip and core strengthening as needed
- Stand-to-floor transfer training
- Neuromuscular reeducation as needed for appropriate mechanics of gait, equalizing weight bearing during function, balance and proprioception
- Pool if needed once incision is completely closed (not before 4 weeks, must have surgeon approval)

### Treatment

- E-stim if patient's quadriceps lag is still slow to improve
- Soft tissue mobilization (STM) in elevated positions for edema if this inhibits quadriceps

### Precautions

- ROM to be achieved with minimal force provided by rehabilitation therapist. Care should be exercised during stand-to-floor transfers and weight-bearing exercises to avoid rapid forced flexion due to weakness, incision/infection issues.
- Impact such as running is not allowed
- Single leg balance is incorporated somewhere into the week 3–12 portion, in a functional exercise or three. TKA patients have a 25% higher fall rate within the first year post-operative, hence, some structured balance/proprioception movements are reasonable.

### Cardiovascular

- UBE
- Stationary bicycle in partial or full revolutions if incision looks OK during and pain does not limit use

### Progression Criteria

Continuing improvement in ROM, quadriceps function, gait and activity tolerance



## **Phase III (begin after meeting Phase II criteria, usually 6–12 weeks after surgery)**

### Appointments

- Physician appointment 3–6 months after surgery, depending on patient's progress
- Rehabilitation appointment 1–3 times per week, less if maximal ROM already achieved and muscle control/power improving predictably, more if ROM or muscle function is slow to progress

### Rehabilitation Goals and Priorities

- ROM 110°–125° flexion to 0° extension
- No extensor lag
- Normal gait without assistive device
- Stairs with reciprocal gait for 1–2 flights up and down with or without rails
- Independent transfers to and from the ground
- Independent function pertaining to personal goals

### Suggested Exercise/ Treatments

- Therapeutic exercise versus bodyweight, in functional, dynamic movements
- Lateral and multidirectional movements during strengthening, as well
- Continued LE strengthening, emphasizing quadriceps, hip and core strengthening
- Continued emphasis on use of the affected side during function such as rising from sitting, moving from stand to sit Treatment
- If flexion contracture persists, ultra sound (US) for tissue extensibility increase prior to stretching

### Precautions

- Lifting more than 50 lbs should be discouraged during functional activities most of the time.
- 30–50 lbs is reasonable on occasion, but the patients need to know that repeated heavy lifting is discouraged.
- Emphasis needs to be on continuing fitness activity so that patients do not gain weight after TKA.

### Cardiovascular

- Stationary bike for ROM and fitness with some resistance after 6 weeks if not painful
- Walking without devices, up to a mile or more after 6 weeks

### Progression Criteria

- Achievement of goals above