

Total Knee Arthroplasty (TKA) Rehabilitation Protocol

Outpatient Discharge Criteria

You are ready for discharge from outpatient PT typically when you reach 70-80% functional level compared to before surgery. This can vary greatly based on your prior level of function. Some criteria may include:

- Walking normally without any assistive device
- Negotiate stairs reciprocally and safely
- Getting in/out of a car without difficulty
- Donning/doffing shoes and socks without difficulty

Being discharged from PT does NOT mean that you are exempt from your home exercise program. For optimal outcome after surgery, it is important to continue with your specific program designed by your PT.

Rehabilitation

The following is an outlined progression for rehab. Time tables are approximate and advancement from phase to phase, as well as specific exercises performed, should be based on each individual patient's case and sound clinical judgment by the rehab professional.

Phase 1: Phase (Day 0- Hospital Discharge)

Goals

- Control pain and swelling
- Protect healing tissue
- Begin to restore range of motion (ROM)
- Knee flexion at least 90 degrees
- Knee extension less than or equal to 0 degrees
- Establish lower extremity muscle activation
- Restore independent functional mobility

Precautions

- WBAT with crutches or walker unless otherwise ordered
- Screen for sensory/motor deficits
- Screen for DVT, symptomatic orthostatic hypotension, symptomatic low hematocrit

Recommended Exercises

Range of Motion

- Passive knee flexion and extension
- Heel slides
- Active assisted knee flexion/extension in sitting
 - Ankle pumps Strength
- Quad sets
- Glut sets
- Hamstring sets
- Straight leg raises (SLR): emphasizing no lag
- Hip abduction/adduction
- Long arc quads (LAQ)
 - Seated hip flexion Functional Mobility
- Bed mobility

- Transfer training
- Gait training on level surfaces
- Stair training
 - Activities of daily living with adaptive equipment (as needed)

Positioning (when in bed)

- Use a towel roll under ankle to promote knee extension
- Use a trochanter roll to maintain hip in neutral rotation and promote knee extension
- Never place anything under the operated knee

Guidelines

Perform 10 repetitions of all exercises 3-5 times a day. Use ice after exercising for 10-20 minutes.

Inpatient Plan of Care

Day of Surgery

- Out of bed to a chair
 - PT Evaluation Post Op Day 1
- PT and OT Evaluations
- Therapeutic Exercise including ROM, Strengthening, and Functional Mobility as appropriate
 - ADL Training as appropriate Post Op Day 2-Discharge
- Progression of Therapeutic Exercise and Functional Mobility
- Continued ADL Training

Phase 2: (Hospital Discharge-6 Weeks)

Goals

- Continue to improve ROM with a goal of 0- 110 degrees
- Begin to restore muscle strength throughout the operated leg, with special focus on the quadriceps
- Initiate proprioceptive training
- Initiate endurance training
- Normalize all functional mobility
- Wean all assistive devices, emphasizing normal gait pattern

Precautions

- WBAT with crutches or walker, progressing to cane, then weaning devices as appropriate
- Monitor for proper wound healing
- Monitor for signs of infection
- Monitor for increased swelling

Recommended Exercises

Range of Motion

- Continue with all phase 1 ROM exercises
- Heel slide with towel
- Prone knee flexion
- Heel prop (towel under ankle) and/or prone knee hang to promote full extension
- Initiate stationary biking, starting with back and forth motion progressing to full revolutions as able

Joint Mobilizations and Stretching

- Initiate patellofemoral and tibio-femoral joint mobilizations as indicated
- Initiate hamstring, gastroc/soleus, and quadriceps stretching Strengthening
- Quad sets, glut sets, hamstring sets

- Use neuromuscular electrical stimulation (NMES) to quads if poor quadriceps recruitment is present
- SLR without lag, add resistance towards the end of this phase
- Hip abduction/ adduction/ extension against gravity, add resistance towards the end of this phase
- Progress to closed chain exercises including terminal knee extensions, mini-squats, step ups, and mini-lunges by the end of this phase

Proprioception

- Single leg stance Functional Mobility
- Gait training with appropriate device emphasizing normal gait pattern
- Stair training with appropriate device

Guidelines

Perform 10-20 repetitions of all ROM, strengthening, and strengthening exercises 3x/day. Hold stretches for 30 seconds and perform 2-3 repetitions of each. Bike daily for 5-10 minutes if able.

Phase 3: (6-12 Weeks)

Goals

- Maximize knee ROM
- Restore normal LE strength, especially normal quadriceps function
- Return to baseline functional activities

Precautions

- Avoid high impact activities
- Avoid activities that require repeated pivoting/twisting

Recommended Exercises

Range of Motion and Flexibility

- Continue ROM exercises from phase 1 and 2
 - Continue biking, adding mild to moderate resistance as tolerated
- Continue Joint Mobilizations
- Continue with phase 2 activities as indicated

Strengthening

- Continue with phase 2 exercises adding and increasing resistance as tolerated
- Add resistance machines as appropriate including leg press, hamstring curl, and 4-way hip machine
 - Emphasize eccentric control of quadriceps with closed chain exercises

Proprioception

- Single leg stance
- Static balance on Bosu/wobble board/foam/etc
- Add gentle agility exercises (i.e. tandem walk, side stepping, karaoke, backwards walking)

Endurance

- Biking program
- Begin walking program

Guidelines

Perform ROM and stretching exercises once a day until normal ROM is achieved. Hold stretches for 30 seconds and perform 2-3 repetitions of each.

Perform strengthening exercises 3-5 times a week. Do 2-3 sets of 15-20 Reps. Bike daily for ROM at least 10 minutes if able.

Progress to biking/walking for at 20-30 minutes 3x/week for endurance.

Phase 4: (12 Weeks and Beyond)

Goals

- Continue to improve strength to maximize functional outcomes
- Return to appropriate recreational activities (i.e. golf, doubles tennis, cycling)

Precautions

- Avoid high impact, and contact sports
- Avoid repetitive heavy lifting

Recommended Exercises

ROM and Flexibility

- Continue daily ROM and stretching exercises Strengthening
- Continue with all strengthening exercises increasing resistance and decreasing repetitions Proprioception
- Continue with all phase 3 exercises, increasing difficulty as tolerated.

Endurance

- Continue with walking, biking, elliptical machine programs

Guidelines

Perform ROM and flexibility exercises daily.

Perform strengthening and proprioception exercises 3-5x/ week, performing 2-3 sets of 10-15 repetitions.

Continue endurance program 30-45 minutes 3x/ week