



## ***Total Knee Arthroplasty***

### *Rehabilitation Guideline*

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This rehabilitation program is designed to return the individual to their activities as quickly and safely as possible. It is designed for rehabilitation following a total knee arthroplasty (TKA). Modifications to this guideline may be necessary depending on physician-specific instructions or other procedures performed. This evidence-based total knee arthroplasty is criterion-based. Time frames and visits in each phase will vary depending on many factors including patient demographics, goals and individual progress. This guideline is designed to progress the individual from rehabilitation to functional activity participation. The therapist may modify the program appropriately depending on the individual's goals for activity following total knee arthroplasty.

This guideline is intended to provide the treating clinician with a frame of reference for rehabilitation. It is not intended to substitute clinical judgment regarding the patient's post-operative care based on exam or treatment findings, individual progress and/or the presence of concomitant procedures or post-operative complications. If the clinician should have questions regarding post-operative progression, they should contact the referring physician.

## General Guidelines/Precautions:

- Observe for signs of deep vein thrombosis (DVT) or infection (increased swelling, severe knee or calf pain, erythema, fever, Well's criteria)
- Avoid torquing or twisting motions of the knee
- Revision TKA should progress with more caution to ensure adequate healing
- It is recommended to have assistance or supervision for 72 hours post-hospital stay
- The specific level of assistance will be determined on an individual basis.
- Communicate with physician regarding:
  - o Modified weight bearing
  - o Kneeling and running
  - o Length of restrictions of high-impact activities

# Total Knee Arthroplasty Rehabilitation Guideline

PHASE	SUGGESTED INTERVENTIONS	GOALS/MILESTONES FOR PROGRESSION
<p><b>Phase I</b> Patient Education Phase Pre-op Phase</p>	<p><b>Discuss:</b></p> <ul style="list-style-type: none"> <li>Anatomy, existing pathology, post-op rehab schedule, bracing and expected progressions</li> </ul> <p><b>Instruct on pre-op exercises:</b> Prospective joint replacement candidates may participate in pre-op education individually or in a class setting which includes instruction in:</p> <ul style="list-style-type: none"> <li>Home safety</li> <li>Equipment recommendations</li> <li>Pre-surgical LE exercises</li> <li>Post-op pain expectations</li> </ul> <p>Overview of hospital stay per region may include but is not limited to:</p> <ul style="list-style-type: none"> <li>Nursing care</li> <li>Therapy services</li> <li>Pharmacy</li> <li>Discharge planning</li> </ul>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>Understanding of pre-op exercises, instructions and overall plan of care</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>Surgery</li> </ol>
<p><b>Phase II</b> Inpatient/Acute Care Phase</p>	<p><b>Immediate post-operative instructions:</b> Patient and family/coach education and training in an individual or group setting for:</p> <ul style="list-style-type: none"> <li>Safety with mobilization and transfers, ADLs</li> <li>Edema management (icing and elevation)</li> <li>HEP</li> <li>Home modification</li> <li>Use of compression as indicated by physician</li> </ul> <p><b>Exercise Examples:</b> <b>Supine:</b> Ankle pumps, quad sets, hamstring sets, heel slides, short arc quad, straight leg raises and hip abduction <b>Seated:</b> AROM knee extension and flexion, quad isometrics in varying angles of flexion <b>Stretches:</b> Knee extension stretch (either supine or seated) and knee flexion stretch seated (closed-chain with body overpressure by scooting toward edge of chair)</p> <p><b>HEP:</b> Two times per day in the hospital and at home</p>	<p><b>Goals of Phase:</b></p> <p><b>Measurable goals:</b></p> <ol style="list-style-type: none"> <li>5-90-degree knee AAROM</li> <li>Antigravity quad strength with SAQ/TKE</li> </ol> <p><b>Functional goals:</b></p> <ol style="list-style-type: none"> <li>SBA transfers</li> <li>SBA bed mobility with or without leg lifter</li> <li>SBA ambulation household distances with appropriate AD</li> <li>CGA stair negotiation with appropriate AD</li> <li>MIN assist for car transfer with or without leg lifter</li> <li>SBA for bathing</li> <li>SBA for dressing with or without adaptive equipment</li> <li>SBA for shower transfer with appropriate modification</li> <li>SBA for toilet transfer with appropriate modification</li> <li>SBA with HEP</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>Discharge from acute care setting</li> </ol>

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<p><b>Phase III</b> Protected Motion &amp; Muscle Activation Phase</p> <p>Weeks 0-3</p> <p>Expected visits: 4-6</p>	<p><b>Specific Instructions:</b></p> <ul style="list-style-type: none"> <li>• Complete Knee Outcome Measure (WOMAC or KOOS JR.)</li> </ul> <p><b>Suggested Treatments:</b></p> <p><b>ROM:</b> Passive and AAROM as tolerated</p> <p><b>Manual Therapy:</b> Patellar and tibiofemoral mobilizations</p> <p>Stretching: Knee extension and flexion (supine and sitting) low-load long duration knee extension stretch in supine position</p> <p><b>Modalities as indicated:</b></p> <ul style="list-style-type: none"> <li>• Edema-controlling treatments</li> <li>• NMES or biofeedback for quad control</li> </ul> <p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>• Continue quad sets and SAQ</li> <li>• Progressive knee flexion (heel slides with toe-tapping)</li> <li>• NuStep and/or stationary bike (stationary bike when knee flexion at 105 degrees)</li> <li>• Standing SLR in four directions</li> <li>• Supine/seated static knee extension and/or prone leg hangs</li> <li>• Balance/proprioceptive retraining</li> <li>• Hip strategy exercises (i.e., clam, side-lying hip abduction, bilateral/unilateral bridge)</li> <li>• Closed kinetic chain activities (standing theraband, terminal knee extension, static single limb stance, step-ups)</li> </ul> <p><b>Gait training:</b></p> <ul style="list-style-type: none"> <li>• Continue gait/stairs training, reinforce normal gait mechanics</li> <li>• Progress to a cane in controlled environments when patient has adequate quad control</li> </ul> <p><b>Other Activities:</b></p> <ul style="list-style-type: none"> <li>• Scar mobilization if incision has healed</li> <li>• Elevation and ankle pumps for swelling</li> </ul>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. Provide environment for proper healing of incision site</li> <li>2. Demonstrate good quad control with &lt; 5-degree lag</li> <li>3. AROM (5-100 degrees) – supine position, slightly increase</li> <li>4. Minimal gait deficient with least restrictive gait aid</li> <li>5. Non-restrictive scar for allowing functional ROM</li> <li>6. Minimal knee joint swelling for allowing functional ROM</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>1. Controlled swelling</li> <li>2. Adequate quad control</li> <li>3. Safe ambulation with assistive device</li> <li>4. Control of post-operative pain (0-3/10 with ADLs)</li> </ol>
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<p><b>Phase IV</b> Motion &amp; Strengthening Phase</p> <p>Weeks 3-6</p> <p>Expected visits: 3-6</p> <p>Total visits: 7-12</p>	<p><b>Specific Instructions:</b></p> <ul style="list-style-type: none"> <li>• Continue with previous exercise program</li> <li>• May complete a 6-minute walk test, timed up-and-go, 30" sit-to-stand, or stair climbing test, if appropriate</li> <li>• Driving - Any questions should be directed to a physician</li> </ul> <p><b>Suggested Treatments:</b> ROM: Progressive ROM program (0-110) Manual Therapy: Continue with patellar and tibiofemoral mobilizations Stretching: Continue knee extension and flexion (supine and sitting) Modalities as indicated: Edema-controlling treatments if appropriate</p> <p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>• Continue the above exercises as appropriate</li> <li>• Sit-to-stand exercise/mini squats with theraband</li> <li>• Side-stepping with theraband</li> <li>• Knee stability/Proprioception exercises</li> <li>• Incorporate single limb exercises (emphasize eccentrics)</li> <li>• Forward/lateral step-ups, step-downs (with proper mechanics, ie., avoiding contralateral pelvic tilt/dynamic valgus)</li> <li>• Leg extension - try to eliminate extension lag</li> <li>• Leg press</li> </ul> <p><b>Gait training:</b></p> <ul style="list-style-type: none"> <li>• Reinforce normal gait mechanics - equal step length, equal stance time, heel-to-toe gait pattern, gait speed, etc.</li> <li>• Ambulate without an assistive device in controlled environment and progress as appropriate</li> </ul> <p><b>Other Activities:</b></p> <ul style="list-style-type: none"> <li>• Initiate hydrotherapy program if incision is healed and appropriate</li> <li>• Soft tissue mobilization techniques for pain management and ROM</li> </ul>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. Reduction of post-operative swelling and inflammation (no to trace effusion)</li> <li>2. AROM (0-110 degrees) - supine position, slightly increase</li> <li>3. Normal gait mechanics with or without assistive device</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>1. Minimal to no gait deviations</li> </ol>
<p><b>Phase V</b> Advanced Movement &amp; Strengthening Phase</p> <p>Weeks 6-9</p> <p>Expected visits: 1-2</p> <p>Total visits: 8-14</p>	<p><b>Specific Instructions:</b></p> <ul style="list-style-type: none"> <li>• Complete outcome measure (WOMAC or KOOS)</li> <li>• May complete 6-minute walk test (60 m change significant)</li> <li>• May complete stair climbing Test (5.5 s change is significant)</li> </ul> <p><b>Suggested Treatments:</b> ROM: Progressive ROM program (0-120) Manual Therapy: Continue with patellar and tibiofemoral mobilizations Modalities as indicated: If appropriate</p> <p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>• Continue with exercises as above with progression of resistance and repetitions</li> <li>• Core stabilization as appropriate (physioball bridges, side bridge, modified side and front planks, squat with shoulder flexion/extension, etc.)</li> <li>• Agility exercises as appropriate (side-stepping, retro walking, braiding)</li> </ul> <p><b>Other Activities:</b></p> <ul style="list-style-type: none"> <li>• Continue aquatic program - including pool exercises and walking</li> <li>• Instruct on safe kneeling and floor-to-stand transfers</li> </ul>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. AROM 0-120 degrees</li> <li>2. Reciprocal ascend/descend stairs independently</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p>

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<p><b>Phase VI</b> Return to Activity Phase</p> <p>Weeks 9+</p> <p>Expected visits: 0-1</p> <p>Total visits: 9-15</p>	<p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>Continue progression of above exercises as appropriate</li> </ul> <p><b>Other Activities:</b></p> <ul style="list-style-type: none"> <li>Initiate return to specific recreational activities (i.e., golf, progressive walking or biking program)</li> </ul>	<p><b>Suggested Criteria for Discharge:</b></p> <ol style="list-style-type: none"> <li>Independent non-antalgic gait</li> <li>Return to pain-free activities</li> <li>Normal lower extremity strength</li> <li>AROM 0-120</li> </ol>
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