**Total Knee Replacement Rehab Protocol**

*Disclaimer: This protocol is for informational purposes only. Each individual is unique and will progress at different rates. You should follow the instructions of your physical therapists and other healthcare professionals.*

## Post-Surgical: Days: 0-7 (Week 1)

### Goals:

1. Maximize independence with all bed mobility, transfers, ambulation, and stairs. (Level of independence will determine discharge setting: Rehab/SNF/Home)
2. First 3 days: ROM: -5° extension to 80° flexion. Progress to passive knee extension of 0° and progress flexion to >90°.
3. Able to perform quadricep contraction to allow for progression to straight leg raise (SLR).
4. Understanding and independence with all precautions, including knowledge of signs of deep vein thrombosis (DVT).
5. Proper pain medication use (approximately 45 minutes before therapy session).

### Exercises Regimen:

- All exercises are to be performed 3-5 times per day (3 times on days of poor pain/swelling control)
- All exercises are to be performed with 2 sets of 10 reps (If unable to perform this frequency, use slow progression per tolerance)
- Importance of patient adherence: every time you miss an exercise session during the day, you’re allowing swelling and stiffness to return

1. Ankle pumps
2. Gluteal squeezes
3. Hip abduction/adduction in supine (lying on back)
4. Heel slides supine
5. Quad sets
6. SLR (may need assist)
7. Long Arc Quads (towel under thigh)
8. Chair exercises: knee slides with 10 second hold on last repetition of each of 2 sets. (You should complete these with an objective measurement: (ie yardstick) and your last set should be measuring 0.5 to 1" further than previous day. Goal is for approx. 1-3° per day or approximately: .25 to 1” per day on yardstick)
   - If not progressing with this exercises try option 1 and/or 2:
     8.1. Option 1: Use non-surgical leg to push back on last rep of each set and hold at new range for 10 sec
     8.2. Option 2: Slide body .5” to 1” forward in the chair and hold 10 sec
9. Standard walker stretch: 2 sets of 10 reps (hold last rep for 10 seconds), must hit same goals as 8 (ie 0.5” to 1” closer than previous day)
10. Hamstring stretch/calf stretch combo (in chair with belt/towel) (Progress from 1 minute to 5 minutes)

For Therapist: (Includes recommended order of exercises)
1. Warm-up: Option # 1: 5-15 min on stepper (week 1)/Bike (week 2) or supine exercises for muscles around knee joint: ankle pumps (legs elevated), gluteal sets, hip abduction (supine)
2. Retrograde massage/trigger point release/IASTM: quads/ hamstrings/ adductors/ abductors/ calf
3. Stretches (once ready/per protocol): hamstrings/calf/quads/hip flexor
4. Joint mobs: patellar, tib/fib
5. Strengthening: refer to exercises above for 1-7
6. Balance/gait training/stairs
7. Education on neutral hip, avoiding pillow under knee, using towel roll under ankle, observe for signs of DVT
8. Ice: after every session 20 min with elevated leg (3-5x/day week 1-2, 1-3 week 4-5)

Range of Motion Phase: (Weeks 2-6)

Goals:
1. AROM (> 0° to 110°)
2. Improved strength/proprioception
3. Improved endurance/general health of entire body
4. Gait training/stair training (2 weeks for walker, 2-4 weeks for cane, no AD after 4 weeks or per PT)
5. Decrease swelling/inflammation/pain

Exercises:
RED (*) = New/Additional Exercises
Black = Continued from first phase
Resistance (#): Resistance can be added once patient can perform 4 sets of phase one exercises each day without increased pain.

Weeks (2-4)
(*) Dynamic warm-up: partial revolutions on bike 2-25 min (add at week 2 and slowly progress time per patient tolerance). Follow stretch intensity rule (no resistance on bike)
1. Ankle pumps
2. Gluteal squeezes
3. Hip abduction/adduction in supine
(*)(#) Progression option per patient tolerance: Hip abd in side lying, hip add in side lying, hip extension in prone (standing with arm support for first 2 weeks)

4. Heel slides supine
5. Quad sets
6. SLR (may need assist) (# per patient tolerance)
7. LAQ’s (towel under thigh) (per patient tolerance)
   Curls: (#) start with low resistance TB
8. Standing exercises (*): 4 way hip: SLR, hip abduction/adduction/extension with arms support, TR/HR
9. ¼ squats with arm support
10. Chair exercise: knee slides on low friction surface (pillow case). Use yardstick to measure progress or removable tape to place on floor. Must complete 2 sets of 10 at or 1/2” beyond yesterday’s best mark. If unable to progress use non-operative leg to perform assist on last rep of each set and hold at new mark for 10 seconds. Option 2 if still unable to progress: Perform 3, 10 second holds with shifting body forward 1” on chair with foot planted at best mark.
11. Standard walker stretch: 2 sets of 10 reps (hold last rep for 10 seconds). Goal is to perform 1/2” closer each day.
12. Gait training/stair training (wean off RW at 2 week, straight cane by 4 weeks)
13. Hamstring stretch/calf stretch combo (in chair with belt/towel)

1. Bike: Pain free partial revolutions, progressing to full revolutions (slowly increase time to 25min)
2. SLR in all planes (2 sets of 20)
3. TKE’s in standing
4. Hamstring curl with TB progression in sitting
5. ¼ squats (progress slowly to 2 sets of 10)
6. Stretches hamstrings, calf (gastroc/solues), quads: 30 s x 3
7. Continue TEDS until 2-3 weeks or per MD
8. NMES electrical stimulation if needed for quadricep activation

4-6 weeks

1. Front /lateral step-ups (height progression)
2. ¼ lunge
3. Sit>stands
4. Aquatic Program

Weeks 7-12
Goals:
1. ROM : (> than 0 to 120)
2. Eccentric control of surgical LE
3. Return to functional activities as tolerated: ie walking

Exercises: add weights/reps when appropriate
   1. 4 way hip in supine: add weights/reps when appropriate
   2. 4 way hip in standing: add weights/reps when appropriate (use of UE if needed)
   3. Heel raises and toe raises
   4. ¼ squats, ¼ lunge, sit<>stands, front/lateral step-ups (progress height with step ups as strength improves)
   5. ROM: pick patient’s most productive ROM exercise: ie heel slides with belt, chair knee flexion, stairs with knee flexion, prone prop, supine heel prop, etc.
   6. Gait training: progress distance if inflammation/pain is under control
   7. Hamstring stretch/calf stretch, quad stretch combo (in chair with belt/towel)
   8. Balance program
   9. Pool program

Weeks 12-16
Goals:
   1. Return to all appropriate recreational activities
   2. Appropriate strength for all activities of daily living (ADL’s)
   3. Return to normal lifestyle

Exercises:
   1. Continue all exercises from weeks 7-12, but continue to resistance and reps as appropriate.
   2. Increase endurance on cardio exercises: bike, walking, pool
   3. If appropriate for age/health: return to sports: ie golf, biking, swimming, etc

** Resistance on any exercises if goals of 1st phase have been met.