



OHSU Health Total Knee Best Practice Rehab Guideline

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Reviser (Title): (Director)	Owner (Title): OHSU Health Protocol Team	

PURPOSE: To outline the general guideline for decision-making support, for total knee arthroplasty rehabilitation, in absence of surgeon specific protocol

PERSONS AFFECTED: Physical Therapists

GUIDELINE:
Milestones

Hospital Discharge

- 0-90 degrees ROM (rationale – promote ROM while we are aggressively managing pain, post surgical swelling, BID therapies)

Week 1

- Maintain 0-90 degrees, constant homework for ROM
- Initiate OP therapy ASAP (within 4 days from hospital d/c)

Week 2-3

- PT 2-3x/week
- Post-operative check with PA: monitor s/sx for infection, motion check
- Flag for MD follow up if not maintaining 0-90 degrees

Week 4-5

- PT – Flag MD if ROM not progressing
- MD follow up –radiographs, check component position, ROM check
- If ROM is behind see back at 5 weeks
- If need to manipulate exists, want to do at or before 6 weeks

Week 6

- Follow up with MD for X-rays
- Consider manipulation if not past 90 degrees flexion

Notes:

- Progression of phases below is based on achieving range of motion milestones and making gains in strength
- Expected ROM gains are based on pre-operative measurements:
Normal pre-op: expect 0-120 to 130 post surgical

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Limited pre-op: expect 5-10 degree post-surgical improvement

- Most patients should be completing Rehab Phase IV by week 12
- Therapeutic exercises listed are suggestions.
- Each patient's exercise program should be tailored specifically to them and based on individual impairments, functional limitations, environmental concerns, and goals.

Preoperative Visit

Assess mobility, ROM, baseline home environment, and provide education with goals of visit as follows:

- Patient will recall post-op precautions
- Patient will be able to state 4 of 4 key post-op objectives (swelling control, quad activation, full passive knee extension, immediate flexion range of motion)
- Patient will demonstrate proper crutch/walker use
- Patient will demonstrate good understanding of safe transfers and home fall prevention
- Patient will verbalize understanding of hospitalization expectations and discharge planning
- Patient will demonstrate good understanding of post operative NMES usage, including frequency, duration, electrode placement, and tetany
- Patient will have a good understanding of post-op exercises

Rehab Phase I (Immediate Post-op Phase)

Frequency of Therapy: 2-3x/week with three times daily home exercises

GOALS:

- Active quad contraction
- Isometric control of quads
- Independent ambulation with appropriate assistive device
- Passive knee extension to 0 degrees
- Knee flexion to at least 90 degrees
- Control of swelling

Therapeutic Exercises

- Ankle pumps for swelling control
- Passive knee extension stretches
- Quad sets
- Active Assisted LAQ
- Gentle knee flexion exercises (heel slides, seated bends, supine wall slides)
- Standing bilateral squats (mini)

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- Clamshells/ sidelying hip abduction
- Stationary bike without resistance for ROM/recumbent stepper
- Stretching: Hamstring, Quads_(not likely this early), Gastrocnemius, Soleus

Manual Therapy

- Patellofemoral and Tibiofemoral joint mobilization as indicated
- Retrograde massage as needed
- Scar mobilization as indicated by wound healing

Gait

- Pre-gait activities, including WB symmetry, weight shifting, multidirectional stepping.
- Transition from use of walker to single point cane as quad control and weightbearing tolerance allows
- Walking program: 5-15 minutes 2-3x/day

Modalities

- Ice and elevation 15-20 minutes 3-5x/day
- TENS for pain control as appropriate
- NMES for quad activation if quad set is poor (check on how home NMES is going)

Precautions

- Monitor wound healing/excess edema
- Monitor for signs of DVT

Progression Criteria

- *When able to complete 2x8 repetitions of above exercises without increase in pain by 2 points
- *Less than 2 cm increase in swelling with exercises
- *Soreness less than 2 hours post exercise
- *No overt changes in functional mobility following exercise
- *ROM>5°-90°



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Rehab Phase II (Motion and Mobility Phase)

Frequency of Therapy: 1-3x/week with daily home exercises

GOALS:

- AROM 0-°110°
- Continued emphasis on quadriceps activation and strengthening
- Proprioceptive Training
- Endurance Training
- Normalize gait with appropriate assistive device
- Decrease inflammation
- Gradual return to normal functional activity

Therapeutic Exercises

- Seated single leg (SL) knee extension
- SLR
- Full ROM LAQ
- Standing hamstring curls
- Standing multi hip, resisted, UE support
- Standing bilateral calf raises
- Repeated sit to stand transfers (progress depth)
- Stationary bike, no/light resistance
- Marching or SL stance (decreasing UE support)
- Step ups, downs (forward, lateral)
- Lunges (mini): forward, reverse
- Stretching: hamstring, quads, gastrocnemius, soleus

Gait

- Transition from walker to single point cane to no assistive device as able
- Walking program: 30 minutes 1x/day

Manual Therapy

- Patellofemoral and Tibiofemoral joint mobilization as indicated
- Scar mobilization as indicated

Modalities

- Ice and elevation 15-20 minutes 3-5x/day
- TENS for pain control as appropriate

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- NMES for quad activation as appropriate

Progression Criteria

- *When able to complete 2x8 repetitions of above exercises without increase in pain by 2 points
- *Less than 2 cm increase in swelling with exercises
- *Soreness less than 2 hours post exercise
- *No overt changes in functional mobility following exercise
- *ROM>5°-110

Rehab Phase III (Intermediate Rehab Phase)

Frequency of Therapy: 1-2x/week with daily home exercises

GOALS:

- AROM 0-°120°
- Progress proprioceptive training
- Progress to higher level and closed chain movements/exercises
- Return to normal functional activity
- Begin light recreational activities
- Normalize gait

Therapeutic Exercises

- Seated Bilateral to single leg ~~SL~~ knee extension and flexion
- Double to single leg press
- Bilateral to Single Leg calf press
- Standing hip extension, abduction, adduction with appropriate resistance (no UE support)
- Step ups, side step ups, step downs (increase height)
- Forward and reverse lunging (increase depth and weight)
- Single limb stance progression (shoe & sock & foam, eyes open & closed)
- Star excursion balance
- Tilt board squats
- Wall slides to 90° of knee flexion
- Stability ball supine hip extension
- Aquatic Therapy as appropriate and indicated by wound healing
- Stretching: hamstring, quads, gastrocnemius, soleus
- Stationary bike, increase resistance 10% every 2 weeks
- Walking, cycling and swimming program: 30 min 1x/day

Manual Therapy

- Patellofemoral and Tibiofemoral joint mobilization as indicated
- Scar mobilization as indicated



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Modalities

- Continue with modalities as appropriate

Progression Criteria

- *When able to complete 2x8 repetitions of above exercises without increase in pain by 2 points
- *No overt changes in functional mobility following exercise
- *Less than 2 cm increase in swelling with exercises
- *Soreness less than 2 hours post exercise
- *ROM>0°-120°
- *Good quality quad activation and control

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Rehab Phase IV (Advanced Strengthening Phase)

Frequency of Therapy: 1-2x/week with daily home exercises

GOALS

- Maximize post operative ROM
- Good general lower extremity strength
- Good patellofemoral mobility
- Return to desired functional activities including light recreational activity
- Independence with home program

Therapeutic Exercises

- Eccentric SL knee extension and flexion
- Eccentric single leg press
- Eccentric single leg calf press
- Standing hip extension, abduction, adduction with appropriate resistance
- Step ups, side step ups, step downs
- Multidirectional lunging
- Star excursion balance reaching
- Wall slides 5-10 second endurance holds at 90°
- Stability ball supine bridge with curl
- Agility: side shuffle, backward walking, braiding
- SLS progression
- Walking, swimming, cycling, or elliptical program: >30 minutes per day

Continue with manual therapy and modalities as needed and appropriate

Progression Criteria

- *When able to complete 2x8 repetitions of above exercises without fatigue, and no more than 2 point increase in pain
- *No overt changes in functional mobility following exercise
- *Less than 2 cm increase in swelling with exercises
- *Soreness less than 2 hours post exercise
- *Expected ROM achieved
- *Good quality quad activation and control
- *Progress to Phase V with appropriate patients otherwise plan for discharge



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Rehab Phase V (Return to Advanced Activities Phase)

Frequency of Therapy: 2x/month as needed and appropriate

GOALS

- Full pain free range of motion
- Minimal swelling
- Return to appropriate and desired recreational activities
- Enhance strength, proprioception, and flexibility

Therapeutic Exercise

- Sports specific movements
- Gradual return to desired activities: golf, doubles tennis, progressive walking/hiking or biking program

Discharge Criteria

- Full pain free ROM
- Non-antalgic independent gait
- At least 4+/5 LE strength throughout
- Normal age-appropriate balance, proprioception, and functional tasks
- Independence with home program

DEFINITIONS:

KEY WORDS: Total knee rehab, TKA Protocol, Total Knee Protocol

EXTERNAL LINKS/RELEVANT REFERENCES:

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APPROVING COMMITTEE(S)/ROLE(S):

OHSU Health Protocol Team

REVISION HISTORY

Revision History Table

Document Number Rev. mmddyy	Final Approval by	Brief description of change/revision
HC-REH-400.30.3-ROP-GUD Rev. 110322	OHSU Health Protocol Team	Initial Document (adapted from prior versions not in doc control)

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