



# Post Operative Total Hip Replacement Protocol

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*The intent of this protocol is to provide guidelines for progression of rehabilitation. It is not intended to serve as a substitute for clinical decision making. Progression through each phase of rehabilitation is based on clinical criteria and time frames as appropriate. These guidelines should be administered under the supervision of a physical therapist.*

## Terms and Definitions:

**ROM** – *Range of Motion*

This defines the amount of mobility in your knee

**PROM** – *Passive Range of Motion*

Mobility exercises remain completely passive without the use of muscles to move your knee

**AAROM** – *Active Assisted (or partner assisted) ROM*

Range of motion with the assistance of a partner or your other leg and minimal use of the muscles of the surgical leg.

**AROM** - *Active Range of Motion*

Range of motion using the muscles of the surgical leg

**POD** – *Post-Operative Day*

**NWB** – *Non Weight Bearing*

This means that you should keep all weight off of your leg.

**TTWB** – *Toe Touch Weight Bearing*

This means that you may place a small amount of weight on your leg for balance purposes.

**PWB** – *Partial Weight Bearing*

This means that you may place some weight on your leg. The amount may be defined by your doctor

**WBAT** – *Weight Bearing as Tolerated*

This means that you may place weight on your leg, but to your tolerance. If your leg can not accept your full weight, crutches are advised.

**DVT** – *Deep Vein Thrombosis*

This is a blood clot that can form in a deep vein.

**Proprioception**

This is a term to describe joint sense or your ability to feel how bent or extended your knee is without looking at it.

**Neuromuscular re-education**

This is the term used to train your muscles to fire in patterns that mimic function, such as balancing while standing.

**Open Chain**

This describes a position in which your leg can be moved about you, such as kicking. Your foot is not on the ground or a platform for these types of exercises

**Closed Chain**

A position in which your foot is on the ground or a platform, such as a squat or leg press.

## Prehab (Presurgical Phase)

### Goals:

- Prepare patient for surgery
- Achieve optimal ROM for easier recovery
- Achieve optimal conditioning for improved healing potential

### Interventions:

- Patient education on post-operative protocol, ADL, hip precautions and ambulation with walker or crutches.
- ROM, stretching and manual therapy to address ROM limitations
- General conditioning (i.e. stationary bike) and light strengthening regimen

## Phase 1 - Inpatient Protection Phase (POD 1 - hospital discharge)

### Goals:

- Thorough assessment of living situation, availability of caregiver, need for home care and functional and cognitive status
- Patient and caregiver understanding of post-operative parameters, hip precautions, weight bearing precautions and post-operative protocol
- Achieve independent ambulation with assistive device
- Independent transfers (bed to stand, bathroom)
- Independent with ADL with assistance of caregiver or assistive devices (hip kit)
- Assist in reducing pain to tolerable levels
- DVT prevention and monitoring

Hip Precautions - maintain these precautions for ~ 3 months

### **Posterior Dislocation Precautions – for posterior and lateral approaches**

- Avoid isolated and combined movements of adduction, internal rotation and flexion.
- Limit flexion to 90° - *this includes flexing the torso! (eg. Sitting and leaning forward to reach for an object)*
- Limit hip extension to neutral

### Pain and Swelling

- PRICE – Protection, Rest, Ice, Compression, Elevation
  - Use these items together to reduce pain and swelling
  - At minimum, 5-6 times per day for 20-30 minute sessions
  - There is no maximum!
- Modalities as indicated - Ultrasound, Electric Stimulation, Iontophoreses

- Ankle Pumps, quad sets, glute sets, regular ambulation – for swelling and DVT prevention

### Range of Motion

- Passive Range of Motion
  - Partner assisted ROM to be taught to patient and caregiver
  - Self ROM exercises with strap (PROM and AAROM)
  - Knee PROM and AROM
- Active Assist Rang of Motion
  - Stationary Bike without resistance
- Manual therapy as indicated

### Gait (walking) and ADL

- WBAT unless otherwise noted
- ADL
  - Supine to sit and sit to stand transfers to be instructed while maintaining hip precautions
  - Positioning to maintain hip precautions
  - Instruct toilet, car, bath and shower transfers and address living situation needs for functional mobility at home
  - Instruction of use of assistive devices necessary for discharge to home (eg. hip kit)

### Strength

- Isometrics
  - Abduction
  - Adduction – may be limited with osteotomy
  - Flexion
  - Extension
  - Quadriceps
  - Hamstrings
  - Calf Muscles

### Proprioception and Neuromuscular Re-education

- Begin open chain proprioception exercises
- Light co-contraction exercises
- Light closed chain stability balance exercises (if weight bearing status permits)

## Phase 2 – Outpatient Protection Phase - (hospital discharge - post-operative week 7)

### Criteria to advancement to Phase 2

- Independent ambulation with assistive device to distance required for discharge to home
- Independent with hip precautions
- Independent with post-operative protocol and HEP supplied
- Caregiver and/or patient independence with ADL and transfers while maintaining hip precautions
- Needs for functional mobility in living situation met
- Other goals established by therapists met

### Goals:

- Reduce swelling and pain
- Restore mobility within set limitations
- Promote return of strength in lower extremity musculature while maintaining hip precautions
- Hip flexors, abductors, adductors, extensors
- Knee extensors and flexors
- Continue DVT prevention and monitoring
- Restore normal gait within limits set by surgeon
- Promote normal proprioceptive and neuromuscular control

### Pain and Swelling

- PRICE – Protection, Rest, Ice, Compression, Elevation
  - Use these items together to reduce pain and swelling
  - At minimum, 5-6 times per day for 20-30 minute sessions
  - There is no maximum!
- Modalities as indicated - Ultrasound, Electric Stimulation, Iontophoreses
- Ankle Pumps, quad sets, glute sets, regular ambulation – for swelling and DVT prevention

### Range of Motion

- Passive Range of Motion
  - Partner assisted ROM to be taught to patient and caregiver
  - Self ROM exercises with strap (PROM and AAROM)
  - Knee PROM and AROM
- Active Assist Rang of Motion
  - Stationary Bike without resistance
- Advance to active ROM while maintaining hip precautions
- Manual therapy as indicated
- Hydrotherapy
  - ROM exercises are permitted when incisions have healed (~2weeks)

### Gait (walking) and ADL

- Continue to maintain weight bearing precautions. Ambulation distances may be increased for cardio-vascular benefit. If WBAT, weaning from assistive device progression may begin as tolerated.
- Weaning from crutches or walker
  - Begin with weight shifting exercises
  - Begin walking with more weight on leg using crutches
  - Single crutch or cane walking
    - This will reduce weight on your surgical leg by 25%
    - Be sure to place the crutch under the *opposite* arm
  - Walk small distanced in home without crutches and take crutches with you for longer distances
- Hydrotherapy – water walking (*may begin when incisions are healed*)
  - Walk in water at shoulder level
  - Advance to walking at waist level

### Strength

- Isometric with progression to standing, open-chain exercises
  - Abduction
  - Adduction – may be limited with osteotomy
  - Flexion
  - Extension
  - Quadriceps
  - Hamstrings
  - Calf Muscles

### Proprioception and Neuromuscular Re-education

- Begin open chain proprioception exercises
- Light co-contraction exercises
- Light closed chain stability balance exercises (if weight bearing status permits)

## **Phase 3 – Initial Strength (post-operative weeks 7-15)**

### **Criteria for advancement to phase 3**

- PROM and AROM within limitations
- Minimal pain
- -4/5 strength assessed in hip flexors, abductors (unless osteotomy precautions are being maintained), adductors, quads and hamstrings

## **Goals**

- Eliminate Swelling
- Pain free active and passive ROM within set limitations
- Restore normal gait without deviations to distance of at least 300ft. without assistive device
- Increase leg strength to allow for:
  - Ambulation without assistive device
  - 1/3 knee bend without compensations
  - Single leg stance without Trendelenburg

## **Swelling**

- Continue PRICE'ing with residual swelling
- Modalities as indicated - Ultrasound, Electric Stimulation, Iontophoreses

## **Range of Motion**

- Continued PROM, AAROM and AROM – advance to full motion when cleared
- Quad and Hamstring stretching as indicated
- Advance to Low Load Prolonged Stretches as indicated
- Manual therapy as indicated for joint, capsular and soft tissue limitations.

## **Gait (walking) and ADL**

- Patient is encouraged to continue weaning from assistive device if this progression has already been started
- Continued use of assistive device may be necessary with gait deviations, such as antalgic gait and Trendelenburg pattern
- Weaning from crutches or walker
  - Begin with weight shifting exercises
  - Begin walking with more weight on leg using crutches
  - Single crutch or cane walking
    - This will reduce weight on your surgical leg by 25%
    - Be sure to place the crutch under the *opposite* arm
  - Walk small distanced in home without crutches and take crutches with you for longer distances
- Hydrotherapy – water walking (*may begin when incisions are healed*)
  - Walk in water at shoulder level
  - Advance to walking at waist level
- Advance to ascending and descending stairs as tolerated

## **Strength**

- Hip exercises
  - Sidelying open chain exercises in all directions
  - Theraband Around the world exercise
  - Side Steps with thera-band

- Single leg stance, Glute Medius exercise
- Closed Chain Strength progression (Glutes and Quads)
  - Leg press with light weight and high repetitions beginning with double leg and advancing to single leg
  - Mini Squats, 1/3 knee bends
  - Double knee bends to 90°
- Hamstring Specific Exercises
  - Carpet Drags
  - Hamstring Curls
  - Physio-ball bridging with knee bends
- Calf Muscles
  - Heel-toe raising
  - Calf raises
- Cardio
  - Begin stationary bike with resistance
  - Elliptical trainer if tolerated

#### Proprioception, Balance and Neuromuscular Re-education

- Begin double leg stability exercises on balance board
- Single leg balance on stable/semi unstable (foam) surface
- Single leg balance on balance board
- Variations of balance exercises with perturbation training
- Variations of balance exercises during alternate activity (i.e. ball tossing)

## Phase 4 – Advanced Strengthening (Post-Operative weeks 15- outpatient discharge)

#### **Criteria for advancement to Phase 4**

- No residual swelling present
- Full Active and Passive ROM
- Ascending and Descending stairs with involved leg without pain or compensation
- At least 1 minute of double knee bends without compensations
- Single knee bends to 70° flexion without compensations

#### **Goals:**

- Restore multi-directional strength
- Restore ability to absorb impact on leg (plyometric strength)

#### Strength, Agility, Balance and Stability Training

- Increase time on double knee bends with resistance
- Increase time on single knee bends. Add resistance as tolerated

- Forward backward jog exercises with sport cord with minimal impact
- Lateral Agility exercise with minimal impact
- Advanced perturbation, balance and stability exercises
- Continue with cardio training
  - Add treadmill walking with incline, swimming and outdoor biking as tolerated
- Begin following sports at specified times or according to the discretion of surgeon and/or physical therapist
  - Mountain biking 4-5-6 months
  - Golf – 5 months
  - Sports involving running, cutting, and high-impact should be discussed with surgeon and physical therapist