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.

Post Operative Total Hip Replacement Protocol
Brian J. White, MD
www.western-ortho.com

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 cannot 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.

This protocol was provided by Howard Head Sport Medicine Centers (303) 295-1403
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, Iontophorese

This protocol was provided by Howard Head Sport Medicine Centers (303) 295-1403
- 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 Range 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 Range 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)

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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

This protocol was provided by Howard Head Sport Medicine Centers (303) 295-1403
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:
  o Ambulation without assistive device
  o 1/3 knee bend without compensations
  o 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
  o Begin with weight shifting exercises
  o Begin walking with more weight on leg using crutches
  o 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
  o Walk small distanced in home without crutches and take crutches with you for longer distances
- Hydrotherapy – water walking (may begin when incisions are healed)
  o Walk in water at shoulder level
  o Advance to walking at waist level
- Advance to ascending and descending stairs as tolerated

Strength

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

This protocol was provided by Howard Head Sport Medicine Centers (303) 295-1403
Single leg stance, Glute Medius exercise
• Closed Chain Strength progression (Glutes and Quads)
  o Leg press with light weight and high repetitions beginning with double leg and advancing to single leg
  o Mini Squats, 1/3 knee bends
  o Double knee bends to 90°
• Hamstring Specific Exercises
  o Carpet Drags
  o Hamstring Curls
  o Physio-ball bridging with knee bends
• Calf Muscles
  o Heel-toe raising
  o Calf raises
• Cardio
  o Begin stationary bike with resistance
  o Eliptical 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

This protocol was provided by Howard Head Sport Medicine Centers (303) 295-1403
- 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