

Physiotherapy Guidelines for Rehabilitation of Anterior Approach THA

Quick Rules to follow:

- No restrictions
- Minimal ADL equipment being used
- No weight bearing restrictions, many patients self discharge gait aids by 1-2 weeks
- Quick incorporation of manual therapy, flexibility, strengthening and mobility training into physiotherapy regime

Trends that we see as Physiotherapists:

- Discussions regarding pacing of activities are more prevalent
- Less pain therefore patients are eager to resume functional activities and early return to sport
- Often reintegrating earlier to walking or gym programs (with modifications)

Mobility:

- There are no post-operative restrictions issued by the surgeon after an anterior approach THA. Although gait aids are used during the post-operative period, a patient may progress from using a gait aid as they are able. It is best to have guidance by a physiotherapist through this phase of gait progression, as there are many factors to consider.
- In the initial post-operative period, a walker or crutches are used for support to assist with balance and unload the painful joint. Once the patient achieves a level of minimal pain, a cane or one crutch should be offered to assist with ambulation until able to walk with a normal gait pattern independently.
- Walking poles have shown clinically to be an effective tool to help improve gait patterns by encouraging effective pelvic control and normalizing neuromuscular facilitation of the gluteal muscles.

- The goal is to facilitate motor control while decreasing excessive gluteal abduction. Patients should be encouraged to use poles as part of their exercise program beginning with 15 min per session working up to 30-60 min continuous daily.
- Tschentscher et al (2013) have documented health benefits associated with the use of walking poles.

Common Post Surgical Presentations that need to be addressed by Physiotherapy:

1. Decreased flexibility
2. Weakness in hip flexors
3. Poor gluteal muscle strength
4. Compensatory muscle guarding
5. Groin pain
6. Abnormal neural dynamics
7. Incision healing and pain

1. Decreased Flexibility:

The psoas muscle is not cut during surgery. The obturator internus muscle may be cut during the procedure.

A loss of hip extension often develops after surgery. This may be caused by a combination of tightening of the anterior fascial system or shortening of the psoas muscle. Patients should always be encouraged to lie flat (supine or prone) for short periods of time and to refrain from excessive sitting or resting in a flexed hip position.

Posterior and lateral hip muscle flexibility can also become reduced. The hip internal rotators and piriformis muscle can be affected due to pre-operative muscle imbalance or post-operative muscle spasm.

Approaches to consider

- Patient education to encourage gentle hip extension and avoid prolonged resting positions with hip flexed (standing and lying)
- Psoas stretch (supine lying → prone lying → standing etc)

- Soft tissue release techniques
- Referral to registered massage therapist (RMT) (6 weeks or later recommended due to stages of healing)
- **Gentle** hip stretching of internal/external rotators to the end of available range (**long holds without bouncing**)

2. Weakness in Hip Flexors

Initially, hip flexor muscles may become painful and weak. Although pre-existing muscle weakness may be present, pain is often caused because of the anterior hip incision. Note that hip flexors are not cut during surgery.

Approaches to consider:

- Patient education regarding icing the incisional area to reduce pain and swelling (note: encourage a plastic barrier placed over dressing for infection prevention)
- Gentle stretching of the hip flexors (supine lying → prone lying → standing etc.)
- Strengthening exercises (active range of motion → concentric strengthening → eccentric strengthening)
 - Example: seated hip flexion → standing hip flexion → step ups → standing hip flexion against tubing (quick forward flexion, slow return to start position)
- Soft tissue release techniques
- Referral to RMT

3. Decreased Gluteal Strength

The Gluteus medius muscle is not cut when an anterior approach to surgery has been used for THA.

Weakness in this muscle is often developed preoperatively. It is important to address motor control and provide exercises to promote hip stability during normal sagittal plane movements (Lubahan et al 2011) (Presswood et al 2008).

The gluteus medius muscle is important for stabilization of the pelvis and controlling femoral adduction and internal rotation during functional activity (Hamstra et al 2012). Ensuring adequate hip strength plays an important role for proper mechanics of the pelvis and knee (Noehren et al 2012).

Gluteus medius has been proven to be active during the single leg stand phase of gait and requires more activation dependent on the vertical load placed on it (J Back et al 2013).

Non weight bearing exercises provided no clear benefit in terms of gluteus medius activation when compared to potentially more functional weight bearing exercises in the early postoperative period (Jacobs et al 2009).

Exercises that incorporate using single leg stance on the affected side have demonstrated to be effective for strengthening gluteus medius and gluteus maximus (Lubahn et al 2011).

Approaches to Consider:

Because there are no weight bearing restrictions or major muscles that need to heal post incision, progressions may happen based on the patient's level of strength.

Although open kinetic chain exercises can be useful for activating specific muscle groups, weight bearing exercises give significant benefit for functional strength.

Suggested exercises for gluteus medius include:

- Open Kinetic Chain: standing hip abduction, clam shell (side lying hip abduction), crook lying hip abduction
- Closed Kinetic Chain: bridging, sit to stand, side stepping against tubing, double leg squat, single leg squat, split squat, dynamic lunge

All exercises should be progressed by adjusting the number of repetitions and sets, resistance applied and reduction of the patient's base of support.

Current research has demonstrated that the following exercises activate the gluteal muscles while minimizing tensor fascia latae activation (Selkowitz et al 2013).

- Clam Shell
- Side Step against tubing
- Unilateral Bridge
- Quadruped hip extension

4. Compensatory muscle guarding

The psoas muscle and the piriformis muscle often have increased muscle tone after surgery. There may be a link between the obturator internus muscle being cut (which only occurs occasionally during surgery) and a temporary increase in piriformis muscle tension. More research is needed in this area to support this theory.

Approaches to Consider:

- Gentle range of motion exercises
- Gentle stretching (i.e. psoas and piriformis muscles)
- Appropriate strengthening exercises to correct muscle imbalance
- Soft tissue mobilization techniques
- Referral to RMT

5. Groin Pain

Groin pain is a common subjective complaint often seen in the out patient physiotherapy clinic. Referral pain from the psoas muscle or an anterior hip impingement (capsular or soft tissue) is often the cause.

Approaches to Consider:

- Manual therapy including hip distraction
- Soft tissue release/mobilization of the psoas muscle
- Stretching of psoas muscle
- Referral to RMT
- Corrective muscle strengthening (gluteals, psoas)

6. Abnormal Neural Dynamics

Sensation is often altered in the area surrounding the surgical incision. Sensory nerves that are present in the skin may be cut. Sensory changes will improve with time but should be discussed with the surgeon at a follow-up appointment.

Swelling in the area may also cause the vascular system to become compressed and produce symptoms due to mild ischemia of the sensory system.

Patients that are not mobilizing well (or whom are resting for prolonged periods in positions where the neural system is placed in a slack position) may also develop neural tension symptomology. These symptoms may be in the anterior or posterior regions of the thigh.

Approaches to Consider

- Education regarding rest positions, elevation, icing and pacing
- Neural mobilization techniques
- Gentle stretching techniques

7. Incision pain/Incisional healing

Concerns regarding incision healing or pain should be directed to Dr. Lanting. If there is any suspicion of infection immediate action is required. Dr. Lanting's office should be contacted and if help is not available the patient should go to the emergency department or contact the orthopaedic resident on call.

Adhesion at the incisional site may also produce pain. Sitting in a hip flexed position or resting in a crook lying position often promotes shortening of the hip flexors and surrounding fascia. This can also result in excessive moisture at the anterior incision. Individuals with large abdominal girth need to make sure they are allowing air to reach the wound. Education needs to be provided to the patient to work on opening up the anterior hip region by lying flat supine and standing with neutral (or slightly extended) hip on a regular basis.

Research

Int J Sports Phys Ther. 2011 Jun;6(2):92-103.Hip muscle activation and knee frontal plane motion during weight bearing therapeutic exercises.Lubahn AJ, Kernozek TW, Tyson TL, Merkitich KW, Reutemann P, Chestnut JM.

J Arthroplasty. 2009 Oct;24(7):1130-6. doi: 10.1016/j.arth.2008.06.034. Epub 2008 Aug 30.Electromyographic analysis of hip abductor exercises performed by a sample of total hip arthroplasty patients.Jacobs CA1, Lewis M, Bolgla LA, Christensen CP, Nitz AJ, Uhl TL.

J Back Musculoskelet Rehabil. 2013;26(2):159-61. doi: 10.3233/BMR-2012-00361.Gluteus medius muscle activation on stance phase according to various vertical load.Lee SK1, Jung JM, Lee SY.

Eur J Phys Rehabil Med. 2009 Sep;45(3):303-17. Epub 2009 Feb 23.Rehabilitation after total hip arthroplasty: a systematic review of controlled trials on physical exercise programs.Di Monaco M1, Vallero F, Tappero R, Cavanna A.

David M. Selkowitz, George J. Beneck, Christopher M. Powers. Which Exercises Target the Gluteal Muscles While Minimizing Activation of the Tensor Fascia Lata?Electromyographic Assessment Using Fine-Wire Electrodes. JOSPT February 2013 volume 43, No. 2

Tschentscher M, Niederseer D, Niebauer J. Health Benefits of Nordic Walking A Systemic Review. American Journal of Preventive Medicine. 2013;44(1):76-84

David M. Selkowitz, George J. Beneck, Christopher M. Powers. Which Exercises Target the Gluteal Muscles While Minimizing Activation of the Tensor Fascia Lata?Electromyographic Assessment Using Fine-Wire Electrodes. JOSPT February 2013 volume 43, No. 2

Han-Yu Chen, Chia-Chen Chien, Shyi-Kuen Wu, Jiann-Jong Liao, Mei-Hwa Jan.Electromechanical Delay of the Vastus Medialis Obliquus and Vastus Lateralis in Individuals With Patellofemoral Pain Syndrome. JOSPT. September 2012.Volume 42, No. 9

Noehren B, Hamill J, Davis I. Prospective Evidence for a Hip Etiology in Patellofemoral Pain. Med Sci Sports Exerc. 2012 Dec 27.