

CHAPTER FIVE

Manual Therapy for Patients with Hip OA

Hip Manual Therapy Protocol

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Hip Manual Therapy Protocol

General Guidelines

The goal of manual therapy: tissue altering techniques. The intention is to treat each impairment with manual techniques which will take the joint to end of range at least once in a treatment session, imparting sufficient stress to the connective tissue to result in permanent tissue lengthening via tissue strain. The intention is to treat each impairment with manual techniques which will take the joint to end of range by employing the highest dose of mobilization appropriate. The therapist should achieve at least one set of grade III, IV or V each session.

Joint position: The therapist may select a joint position for treatment based on their assessment of the irritability of the patient's condition. Joint position can be altered in response to patient reporting or test: re-test findings.

Patient position: The therapist may modify the patient's starting position for treatment based on the patient's condition. Patient position can be altered in response to patient inability to achieve the standard position or reporting discomfort.

Dose

Accessory movements can be performed in sets of 30 oscillations. At least 3 sets should be performed. The therapist should employ the highest dose of mobilization appropriate, with at least one set of grade III, IV or V each session. A maximum of 6 sets can be performed if the patient is tolerating the technique and responding favourably.

STM duration will be of 2-3 minutes duration. Therapist to record actual time. Additional time for massage could be performed if considered high priority by the therapist and there is sufficient time. (ie during secondary treatment time)

Manual stretches to quadriceps, hamstrings and gastrocnemius should be performed. Dosage will be 120 secs total (2 x60s, 4x30s, 6x20s).

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Physiological movements can be performed 10 – 30 times. The number of sets will range from 3 to 6 according to therapist choice and patient response.

Order: The therapist can select the order of treatment techniques. They may choose to alternate between techniques (e.g. accessory movements and physiological movements).

Test-retest: The therapist can perform test: retest procedures throughout the treatment session as required.

SECTION I PRIMARY TECHNIQUES

These are all compulsory components of the Hip MT protocol.

Long axis distraction with thrust: This technique is the only MT technique that has been demonstrated to be effective for hip OA. It has been evaluated in a randomized, controlled trial (Hoeksma et al 2004). It was found to be safe and effective in older adults with moderate to severe hip OA. The trial reported that 90% of patients received this intervention on every visit, with no adverse events reported.

Seatbelt glide or distraction mobilizations, with the hip flexed: The joint position (amount of hip flexion, rotation, add/abduction) and the direction of force (caudal, lateral, inferio-lateral) can be varied at the discretion of the therapist to address movement restriction.

E.g. For hip flexion: hip flexed; distraction +/- caudal glide

For hip external rotation: hip externally rotated, lateral distraction

For hip internal rotation: hip internally rotated, lateral distraction +/- posterior glide

Antero-Posterior Progression (Posterior glide): to improve adduction and flexion by stretching the postero-lateral capsule.

Postero-Anterior Progression (Anterior glide): to improve extension by stretching the anterior capsule.

Internal Rotation in Prone: to improve internal rotation and extension of the femur by stretching the antero-lateral capsule.

Acceptable variations include:

- Patient position (supine/sitting/weight bearing, with or without seat belt)
- Med/lat glides of tib/fem jt, with/without seatbelt
- Varus/valgus stresses, internal/external rots of tibia, for accessory and physiological movements
- Combining movements and accessories

STM to Quads and adductors, hamstrings, lateral and posterior hip. Hamstring STM can be discontinued when the 90/90 test achieves $< 30^\circ$ from full knee extension.

Manual stretches to Quad stretch/ hip flexors, hamstrings, Manual gluteus/ internal rotators, external rotators. These can be discontinued when ROM goals are reached (refer to protocol for details).

SECTION 2

ADDITIONAL REGIONAL TECHNIQUES

Additional impairments-based regional techniques should be performed in the time remaining after the primary hip technique protocol. They are additional to the primary Hip MT protocol

A joint may only be included for treatment if indicated by the regional screening. The therapist can prioritise the additional regional techniques on the basis of patient presentation, response and tolerance. The therapist should select any technique from the available options that addresses the particular impairment for that joint. Again, variations to patient position, starting joint position and direction of force are acceptable. The intention is to treat each impairment with manual techniques which will take the joint to end of range by employing the highest dose of mobilization appropriate. The therapist should achieve at least on set of grade III, IV or V each session.

E.g. **Acceptable variations** to the additional techniques as outlined are:

- Patient position (supine/sitting/weight bearing, with or without seat belt)
- Med/lat glides of tib/fem jt, with/without seatbelt
- Varus/valgus stresses, internal/external rots of tibia, for accessory and physiological movements of the knee
- Addition of caudad/cephalad glide of superior tib/fib joint (by inversion or eversion of ankle)
- Addition of weight-bearing and seat belt for talocrural mobilisation
- Combinations of physiological and accessory movements.

The Home Exercise Programme (HEP)

May consist of ROM exercises, joint and soft tissue stretches, but no muscle strengthening exercises or coordination exercises (unless the patient is randomized to the Combination MT+Ex group). Exercises should be added on the basis of restricted physiologic movements and soft-tissue restrictions, including any additional regional joint treatment included in the session. The patient must be taught how to do the exercise correctly and prescribed number of repetitions and sets.

SECTION I
PRIMARY HIP MANUAL THERAPY TECHNIQUES

*All mobilizations 3-6 sets, 30 second ROM in between sets
All hip joint mobilizations performed each visit*

DECREASED HIP MOTION

LONG AXIS DISTRACTION / THRUST

The patient is positioned supine. The therapist grasps involved leg, above malleoli. The patient's Hip is placed in 15-30° flexion, 15-30 ° ABD, slight ER. The therapist performs an oscillatory passive accessory mobilization force inferiorly feeling for the restrictive barrier and imparts a thrust in an inferior direction. Progression of the distraction position into more abduction to gain further ROM. Repeated 5 x's.



**SEATBELT GLIDE OR
DISTRACTION TECHNIQUES:
CAUDAL/LATERAL GLIDE
PROGRESSION**

The therapist uses a mobilization belt placed firmly in the patient's hip "crease". The therapist flexes the patient's hip to the restrictive barrier. The therapist uses their body to apply a caudally/laterally directed force to the proximal thigh and performs an oscillatory passive accessory mobilization force. The amount of hip flexion, rotation, & add/abduction can be varied to find the position of optimal mobilization.



ANTERO-POSTERIOR PROGRESSION (POSTERIOR GLIDE)

The therapist places the patient's lower extremity with the hip in a position of flexion and adduction. The therapist uses his body to impart an oscillatory, passive mobilizing force to the postero-lateral hip capsule through the long axis of the femur. The technique is progressed by adding more flexion, adduction, & / or internal rotation.



POSTERO-ANTERIOR PROGRESSION (ANTERIOR GLIDE)

With the patient in prone the therapist grasps and supports the patient's lower extremity with his arm. The therapist places either the 1st web space, thenar eminence, or hypothenar eminence of his right hand just inferior and medial to the greater trochanter. The therapist brings the patient's hip into varying degrees of flexion/extension, abduction/ adduction, and internal/ external rotation to find the vector of force that most effectively stretches the hip. The therapist imparts an oscillatory, passive mobilizing force through the proximal femur in a posterior to anterior direction. The stretch should be felt by the patient in the anterior hip region.



TIP: To progress the technique the therapist increases the amount of extension, adduction, and internal rotation.

Can also modify by progressing into FABER position.

With the patient in prone the therapist brings the patient's hip into varying degrees of flexion, abduction and external rotation. If the patient is extremely stiff, start with patient's lower extremity on a stool. Progress to lying flat on the table when able.

INTERNAL ROTATION IN PRONE

The therapist flexes the patient's knee to 90 degrees and ensures that the hip is in neutral or slight adduction. The hip is internally rotated until the contralateral ilium raises approximately 1-2 inches from the table. The therapist stabilizes the lower leg and imparts an oscillatory, passive mobilizing force through the contralateral pelvis.

NOTE: If the patient experiences knee discomfort, grasp the distal thigh and place your forearm along the medial aspect of the patient's tibia.

Alternatives: Can stabilise knee/leg to oscillate pelvis or stabilise pelvis to oscillate leg.



STM TO QUADS AND ADDUCTORS

The patient is positioned supine with leg over the side of the plinth. The patient's quadriceps is placed on a stretch. The therapist performs an effleurage stroke along the length of the quads. The therapist proceeds from superficial to moderate depth of the effleurage depending on patient tolerance. This is repeated at 1" intervals. 2-3 min.

NOTE: If the patient cannot tolerate this positioning the effleurage is performed with the quadriceps on stretch in a position that is tolerable to the patient.



STM TO HAMSTRINGS

The patient is positioned prone with leg over plinth placing the hamstring on stretch. The therapist performs an effleurage stroke along the length of the hamstrings. This is repeated at 1" intervals. 2-3 min.

NOTE: If the patient cannot tolerate this positioning the effleurage is performed with the hamstring on stretch in a position that is tolerable to the patient.



STM TO LATERAL AND POSTERIOR HIP

The patient is positioned sidelying in the recovery position, or supine crook-lying. The therapist performs a firm effleurage stroke with the posterior/lateral hip musculature on stretch. This repeated at 1" intervals. 2-3 min.

NOTE: If the patient cannot tolerate this positioning the effleurage is performed with the posterior/lateral hip musculature on stretch in a position that is tolerable to the patient.



MANUAL QUAD STRETCH/ HIP FLEXOR

The patient is positioned prone with the involved LE dangling over the edge of the plinth.
The therapist sits alongside the involved LE and flexes the knee just before the point of patient reported stretch.

2 reps x 60 sec

OR

4 reps x 30 sec

OR

6 reps x 20 sec

Alternate position prone knee flexion with pelvis stabilised.

OR

Side lying with pelvis stabilised.
Extend hip and flex knee to point of patient reported stretch.

NB: Can be done along with STM Quads (above).



MANUAL HAMSTRING STRETCH

The patient is positioned supine with knee extended. The therapist grasps the involved LE and flexes the hip while maintaining knee extension to the point of stretch.

2 reps x 60 sec

OR

4 reps x 30 sec

OR

6 reps x 20 sec

* If patient is between 0-30 degrees of knee flexion with hip at 90 degrees of flexion – treatment may be dropped at the 2nd visit.



MANUAL GLUTEUS/ INTERNAL ROTATOR STRETCH

The patient is positioned supine. The therapist flexes the patient's knee to 90, flexes and externally rotates the hip to the point of stretch.

2 reps x 60 sec

OR

4 reps x 30 sec

OR

6 reps x 20 sec



* Stretch may be skipped after
2nd visit if there is 45 degrees
of ER.

HIP EXTERNAL ROTATOR STRETCH

The patient is positioned prone. The therapist flexes the patient's knee to 90 degrees and ensures that the hip is in neutral or slight adduction. The hip is internally rotated until a stretch is felt at the anterior hip.

2 reps x 60 sec

OR

4 reps x 30 sec

OR

6 reps x 20 sec

* Stretch may be skipped after 2nd visit if there is 45 degrees of IR.

Alternate position: The patient is positioned supine. The therapist flexes the patient's knee to 90°, flexes and internally rotates the hip to the point of the stretch.



SECTION 2
ADDITIONAL REGIONAL TECHNIQUES
5 minutes maximum per impairment

LOSS OF KNEE FLEXION

KNEE FLEXION PROGRESSION WITH VALGUS AND INTERNAL ROTATION

The therapist stabilises the patient's thigh and knee against their body while grasping the patient's ankle. The therapist gently brings the patient's heel towards the buttock to the restrictive barrier. Oscillations can be produced in a pure flex direction. (Grade 3 or 4). A seat belt can be added to produce a lateral glide of tibia through range if this decreases pain. A medial glide of the tibia can be produced by placing the seat belt around the femur and manually gliding the tibia medially.

Valgus stress can be added (heel lateral to buttock) (Grade 3 or 4).

Int rotn can be added simultaneously. Oscillatory mobilisations will be performed through a 5-6 inch arc of motion.



KNEE FLEXION PROGRESSION WITH VARUS AND EXTERNAL ROTATION

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Varus stress can be added (heel to midline) (Grade 3 or 4). Ext rotn can be added simultaneously. Oscillatory mobilisations will be performed through a 5-6 inch arc of motion.



KNEE FLEXION A-P MOBILIZATIONS

The patient lies in supine.

The therapist flexes the patient's knee to the restrictive barrier. The therapist places the 1st web space on the proximal tibia. An oscillatory mobilization is performed in an anterior to posterior direction on the proximal tibia.

Tibial rotation can be added to most effectively reach the restrictive barrier.



PROXIMAL TIBIO-FIBULAR JOINT POSTERIOR TO ANTERIOR MANIPULATION

The therapist places their 2nd MCP in the popliteal fossa, then pulls the soft tissue laterally until your metacarpo-phalangeal joint (MCP) is firmly stabilized behind the fibular head. The therapist uses their right hand to grasp the foot and ankle as demonstrated and externally rotate the leg and flex the knee to the restrictive barrier (the therapist should feel firm pressure from the fibular head over the palmar aspect of your MCP). Once at the restrictive barrier, the therapist applies a high velocity, low amplitude thrust through the tibia (direct the patient's heel towards his ipsilateral buttock).



STM TO QUADS AND ADDUCTORS

See description above.

LOSS OF KNEE EXTENSION

KNEE EXTENSION MOBILIZATIONS

The therapist places the heel of one hand over the proximal tibia while the opposite hand supports the lower leg. An oscillatory mobilization is performed in an anterior to posterior direction over the proximal tibia.



KNEE EXTENSION WITH VALGUS OR VARUS

Manual mobilization through range of motion (ROM)

and knee extension at end range

Knee extension

Knee extension with valgus or abduction (pictured)

Knee extension with varus or adduction



STM TO HAMSTRINGS

See description above.

LOSS OF PATELLA GLIDE

PATELLAR MOBILISATIONS

The patient lies supine with the knee in extension. The joint position can be progressed into increasing flexion or weight bearing if the symptoms are easing or minor.

Oscillatory movements (glides) are produced via the therapists thumbs or a cupped hand. The glides can be combined with rotation and/ or compression to meet the restriction.

Compression should be introduced with caution. Medial/Lateral/Caudal/Cephalad are selected on the basis of restriction. If no restriction is detectable caudal/cephalad glides should be used.

Caution: Impart force to borders of patella. Avoid compression.



Medial



Lateral



Caudal



Cephalad

LOSS OF ANKLE DORSI FLEXION

REAR FOOT DISTRACTION MANIPULATION

The therapist grasps the dorsum of the patient's foot with interlaced fingers and provide firm pressure with both thumbs in the middle of the planar surface of the forefoot engage the restrictive barrier by dorsiflexing and everting the ankle and applying long axis distraction. The therapist pronates, everts, dorsiflexes the foot to fine-tune the barrier. The therapist then applies a high velocity, low amplitude thrust in a caudal direction. If the therapist feels that the distraction is occurring at the talocrural joint, attempt again with more pronation/ eversion and 'scooping' motion at the rearfoot/subtalar joint before the distraction manipulation.



ANTERIOR TO POSTERIOR TALO-CRURAL MOBILIZATION

The therapist uses their left hand to firmly stabilize the lower leg at the malleoli. The therapist then grasps the anterior, medial, and lateral talus with your right hand and applies an anterior to posterior oscillatory mobilization force to the talus.



The treatment can be progressed into weight bearing in a lunge position on a chair.



This could be reinforced by an anterior glide of the tibia produced by a seat belt.

Progression:
Increase ankle dorsiflexion before imparting anterior to posterior force to talus.



DISTAL TIBIO-FIBULAR MOBILIZATION (AP TO THE DISTAL FIBULA)

The therapist places the distal leg at the edge of the table, use their leg to stabilize the foot (move into progressive dorsiflexion). The therapist grasps and stabilizes the distal tibia with one hand. The therapist places the thenar eminence over the lateral malleolus and use your body to impart an anterior to posteriorly directed mobilizing force (through your arm and thenar eminence).



GASTROC/ SOLEUS STM

The patient is positioned prone with ankle over the edge of the plinth. The therapist places the ankle in dorsiflexion through contact with his thigh. The therapist performs an effleurage stroke along the length of the gastrocs (making sure to cross the knee joint). The amount of dorsiflexion and depth of STM depends on patient tolerance. This is repeated at 1" intervals. 2-3 min.



NOTE: If the patient cannot tolerate this positioning the effleurage is performed with the gastroc on stretch in a position that is tolerable to the patient.

STM TO PARAVERTEBRAL MUSCLES

Patient is positioned prone. Alternate effleurage strokes are performed to the paravertebral muscles on either side of spine.

LUMBOPELVIC HYPOMOBILITY

LUMBOPELVIC MANIPULATION

The supine manipulation technique is performed in the following fashion. The side to be treated will be the side with the painful heel. In the figure the side to of the painful heel is the left. The physio stands opposite the side to be treated and translates the pelvis towards them and maximally side-bend the patient's lower extremities and trunk away from them and towards the side to be treated. Without losing the left sidebending the clinician lifts & rotates the trunk so the patient rests on their right shoulder. The therapist contact the patient's left ASIS with their right hand. Once the left ASIS starts to elevate, perform a smooth thrust in an anterior to posterior direction.



LUMBAR ROTATIONAL MANIPULATION

(described for L4/L5)

For the side lying manipulation the clinician will place the side of the painful heel up. In the figure the painful heel is the left. The therapist flexes the top leg until they first begin to palpate motion at L4-L5 interspace and then place the patient's foot in the popliteal fossa as shown. The therapist grasps the patient's right arm and shoulder and induce right sidebending & left rotation until the therapist begins to palpate motion at the L4-L5 interspace. The therapist places the left thumb on the left side of the L4 SP & position their left arm around their left arm. While maintaining the setup the therapist log rolls the patient towards them. While monitoring the right side of the L5 SP, the therapist uses the right arm to induce a high velocity, low amplitude (HVLA). The same set up may be used for a mobilization.



LUMBOPELVIC MOBILIZATION

If the patient is unable to tolerate either of the above manipulative positions. The patient sits at the end of the plinth. The therapist imparts a joint glide and performs pain free AROM to improve lumbar flexion or extension limitations.

