



Improving Mobility

*Foam Rolling and Other Self-Directed Techniques
for Achieving Great Movement*

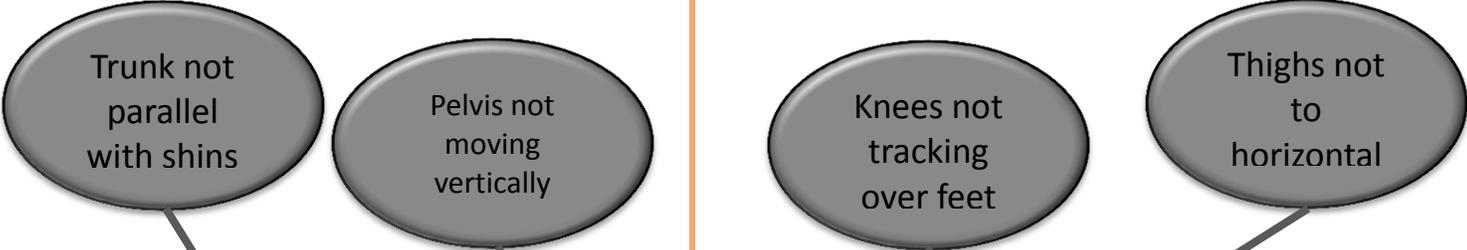
Practical Manual



Back Squat

Initial Assessment

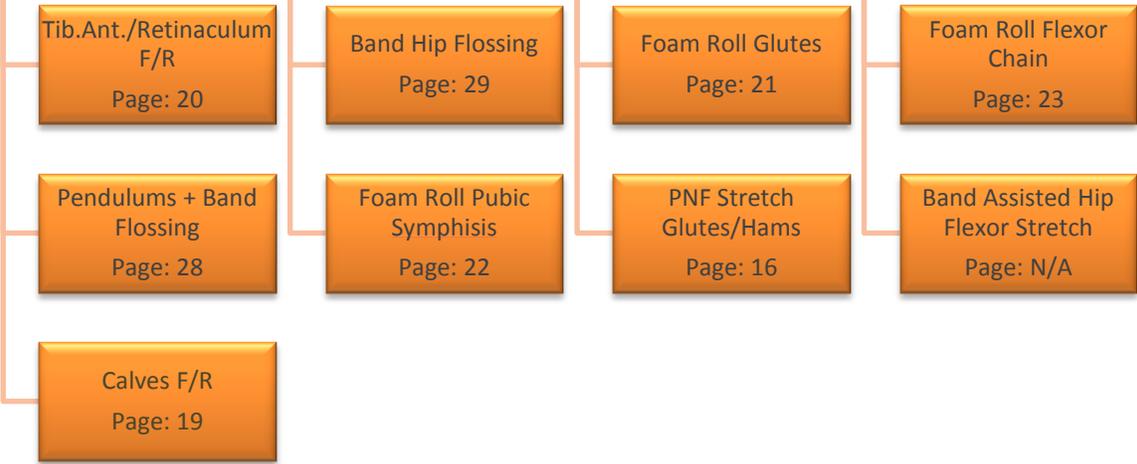
Observations



Secondary Assessments



Correctives



Initial Assessment

Overhead Reach

Observations

Neutral plumb not maintained

Scapular Hitching

Arms moving forward from frontal plane

Secondary Assessments

Prone Thoracic Extension
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Thomas Test
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Seated Overhead Reach
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Passive GHJ ROM
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Correctives

Foam Roll Extensor Chain
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PNF Hip Flexors
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Release Scap Downward Rotators
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PNF Rotator Cuff
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Rectus Abdominis Activate and Relax
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Foam Roll Anterior Hip
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Posterior Capsule Release
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Bicep SMFR
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Initial Assessment

Thoracic Rotation

Observations

Performs worse with hands behind

Severe Restriction

Restriction one side vs other

Secondary Assessments

Hands Behind Head
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Side Lying Thoracic Rotation
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Side Lying Thoracic Rotation
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Correctives

Release TFL and Pec
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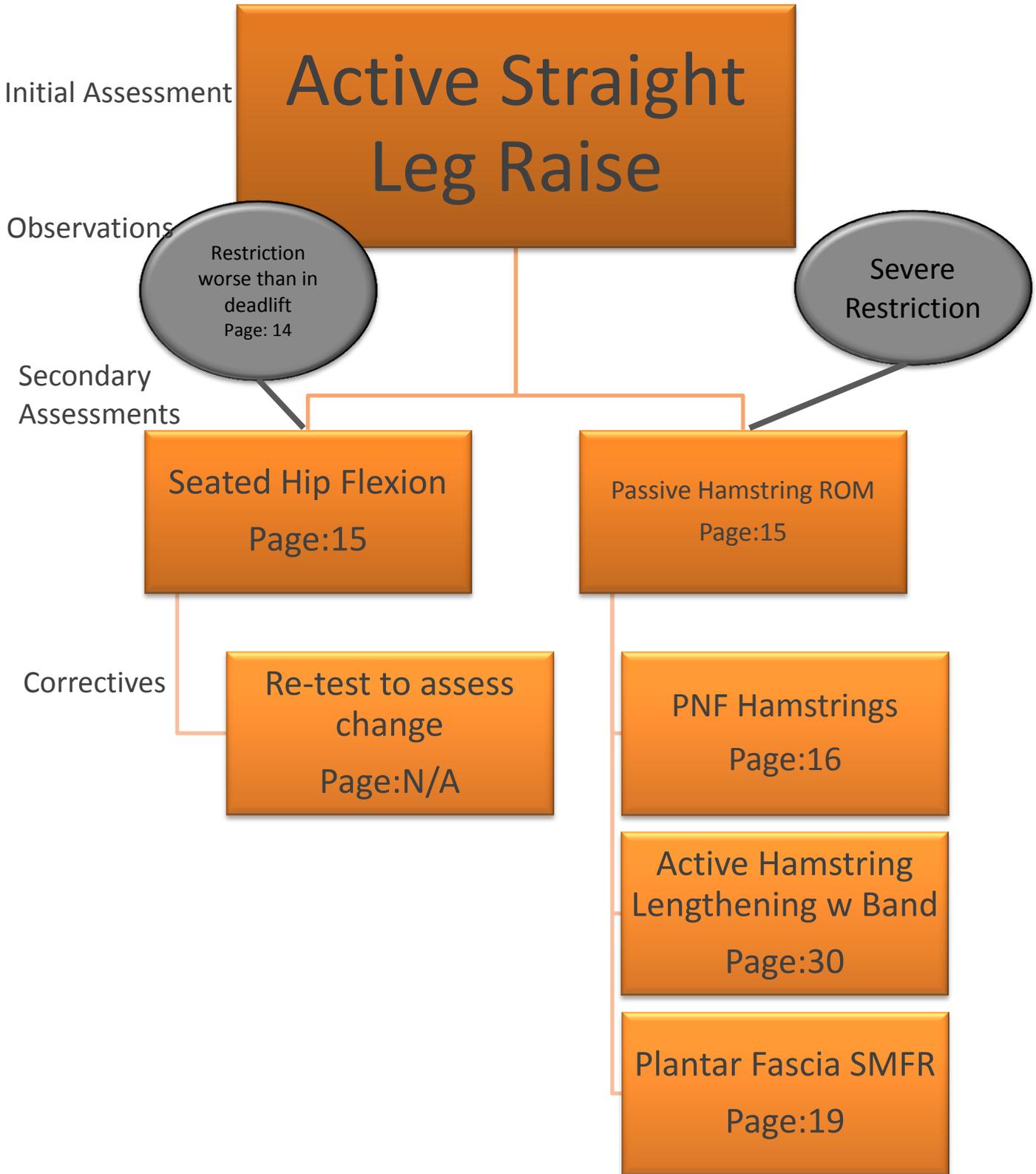
Foam Roll Lateral Hip and Thigh
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As above plus deep breathing
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Foam Roll TLF into Lats
Page: 23-24

Posterior Capsule Release
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Bicep SMFR
Page:26



INITIAL ASSESSMENTS

BACK SQUAT

Client Set up:

Client to place feet shoulder width apart with approximately 10° external rotation. Dowel to be placed and held behind the neck to simulate a 'back squat'.

Instruction to client:

Squat down as low as you comfortable can, by sitting back, as if onto a chair. Aim for thighs to reach horizontal. Ensure heels remain on ground.

QUESTIONS

Neutral lumbar position, no hyperextension or flexion

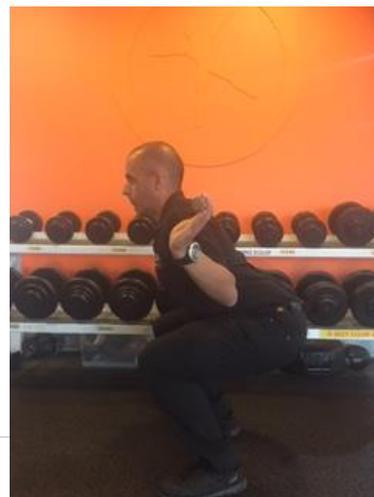
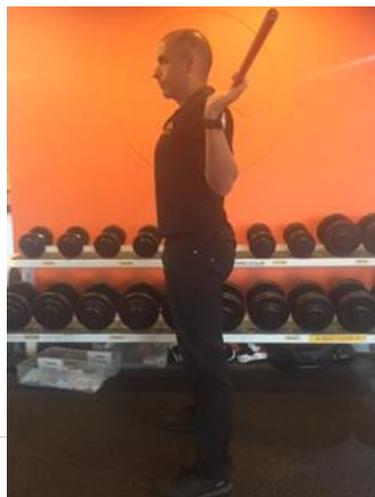
Trunk parallel to shins

Thighs reached horizontal plane

Dowel over 'footprint'

Vertical pelvic displacement

Knees in line with feet



THORACIC ROTATION

Client Set up:

Instruct the client to sit on a bench/stool that allows the hips to be flexed at 90°, with an upright and neutral spine. Place the dowel behind the back, which is then held in the crooks of the elbows, with fore-arms facing forwards.

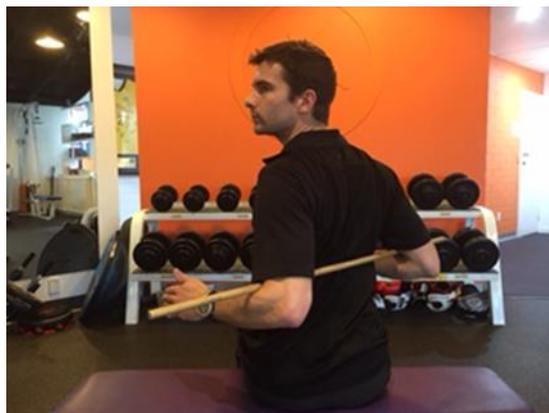
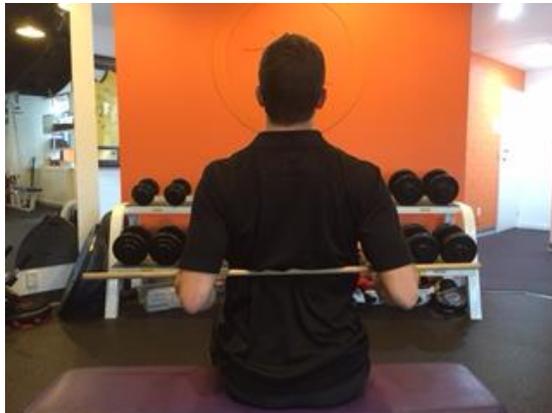
Instruction to client:

Instruct client to smoothly rotate to one side as far as possible, and then the other, while maintaining a neutral spine.

Ensure that the client doesn't move the pelvis or legs to achieve a greater rotation.

QUESTIONS

Maintains neutral vertical alignment



OVERHEAD REACH

<u>Client Set up:</u>	
<p>The client stands with feet hip width apart. Arms extended to the sides with palms facing upwards.</p>	
<u>Instruction to client:</u>	
<p>Instruct the client to keep elbows locked in extension (straight arms) throughout the movement. The client abducts the arms as far as possible, aiming for the palms to touch overhead.</p>	
<p>If observations are different for each shoulder, score the movement according to the 'worse' side.</p>	
QUESTIONS	
Palms touch overhead	
No obvious hitching of shoulders	
Arms are on frontal plane in line with ears	
Lumbar spine remains neutral	
Side plumb alignment remains neutral	



STRAIGHT LEG RAISE

Client Set up:

Client lies supine on a firm surface with legs straight and arms by their side

Instruction to client:

Instruct the client to lift one leg from the ground by flexing at the hip, but maintaining a straight knee throughout. Ask them to flex the hip as far as they can, and to keep the rest of their body still. Measure the angle achieved with the rest of the body still and the knee straight (breaking those 'rules' will usually lead to an increase in hip angle and will therefore give untrue results).

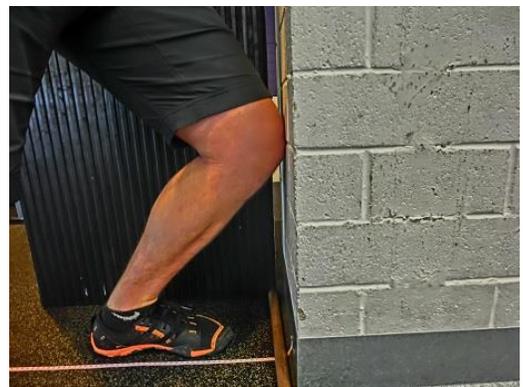
QUESTIONS



SECONDARY ASSESSMENTS

KNEE-TO-WALL ANKLE DORSI-FLEXION

- Start with the client's big toe (of the ankle you are testing) at a distance of between 8 and 12cm from the wall.
- Keeping the heel down, as them to dorsi-flex the ankle so the knee moves towards the wall in the sagittal plane (tracks in line with the gap between the second and third toe).
- If their knee touches the wall, ask them to move their foot back slightly. If it does not, move forward slightly.
- Settle on a position that your client can barely make contact with the wall with the knee whilst maintaining contact with the ground at the heel.
- Dysfunction is present if:
 - An angle of 20deg of dorsi-flexion is not achieved- this will correspond with a distance to the wall of 8-12cm.
 - The end-range is felt as a jammed feeling at the front of the talo-crural joint.
 - The tibia tracks outside in inside the line of the 2nd and 3rd toe.
 - There is asymmetry.



PASSIVE HIP RANGE-OF-MOTION

- Have the client lay supine on a massage table or mat.
- Flex the hip to 90deg and maintain an angle of 90deg at the knee.
- Using the tibia as a lever, rotate the femur internally at this angle to the comfortable end-range. 10deg of internal rotation (in this position) is acceptable, and 45deg of external rotation is acceptable.
- Dysfunction is present if:
 - ROMs do not meet these standards.
 - There is pain in the movement before end-range.
 - There is asymmetry.



PRONE THORACIC EXTENSION

- Have the client lay prone on a massage table or mat.
- **Instruct them to slowly 'peel' their sternum from the floor by extending the thoracic spine.**
- Ensure cervical and lumbar spine remain in a neutral position.
- Lower back down to the floor slowly.
- Dysfunction is present if:
 - The movement does not involve the entire thoracic spine (evidenced by pronounced 'hinging' from 1-2 facet joint segments).
 - There is pain in the movement.
 - The movement is at the lumbar spine.



OVERHEAD PATTERNING + INCLINE REGRESSIONS

- Seated upright, instruct client to perform an overhead press movement.
- Observe motion of the scapula- it should start to upwardly rotate shortly after initiation of humeral abduction and should increase its ratio of motion relative to the humerus as the arm extends upwards.
- Above 90° of abduction the upper section of the trapezius should start to decrease tone in concert with a reduction in tone of the levator scapula.
- If this is not able to be completed satisfactorily sitting upright, have your client lay back on an incline bench set at 70°-45°.
- Dysfunction is present if:
 - The upper trapezius continues to increase tone throughout the movement (does not disengage).
 - There is unnecessary elevation of the scapula (hitching).

The head moves towards the lifting shoulder.



SEATED ROTATION WITH HANDS BEHIND HEAD

- Repeat the Thoracic Rotation Assessment, this time with hands behind head.
- If the ROM is noticeably poorer in this position this indicates that the anterior myofascial chain may be influential in restricting thoracic rotation.



PASSIVE SHOULDER RANGE-OF-MOTION

- Have the client lay prone on a massage table or mat with the knee bent so the feet are flat down.
- Abduct the humerus 90° with a 90° bend in the elbow. Externally rotate the humerus to its comfortable end-range. This should be 90° (forearm flat on the bench).
- Take the shoulder into internal rotation to its comfortable end-range. This should be 70° (20° from bench).
- Straighten the arm at the elbow and take the humerus to 135° of abduction, then slowly lower the arm towards the bench to its comfortable end-range. This should be flat on the bench.
- With the arm still straight and extended upwards, take the humerus into flexion (overhead) to its comfortable end-range. This should be flat on the bench.
- Dysfunction is present if:
 - ROMs do not meet these standards.
 - There is pain in the movement before end-range.
 - There is asymmetry.



THOMAS TEST (HIP FLEXORS)

- Ensure the sacrum is lying flat upon the bench by flexing the opposite hip and locking the leg in with your body.
- In this position the thigh of the free-hanging leg should sit so that the tibial plateau sits below the greater trochanter (GT) of the femur.
- If the tibial plateau is level horizontally or if it sits above the GT this indicates tightness through the hip flexor chain.



STRAIGHT-LEGGED DEADLIFT ASSESSMENT

- This test is done in reference to the Straight-Legged Raise, so the ROM achieved here should be compared to that achieved on the Straight-Legged Raise.
- Keep the knees straight as you bow forward to the hips.
- Move as far as you can without bending the knees or flexing the spine.
- If ROM is greater here than in the Straight-Legged Raise, this may indicate Hip Flexor Weakness.



SEATED HIP FLEXOR TEST

- Sit tall on a bench with hips and knees flexed to 90°.
- Flex the hip as high as you can, keeping the rest of the body still.
- An inability to perform this movement smoothly indicates dysfunction of the hip flexors, in particular.



PASSIVE HAMSTRING RANGE-OF-MOTION

- In supine the straight-legged hamstring length should equate to 80° of flexion at the hip with a straight leg.
- If the passive hamstring ROM exceeds the Active Straight Legged Raise ROM this indicates weakness in the hip flexors.



STRETCHING TECHNIQUES

PNF GLUTE MAX

- With the hip and knee flexed to 90°, external rotate the hip as far as is comfortable.
- In this position start taking the hip into flexion with losing the rotation angle. Take it to as far as it can comfortably go (when your client first detects the stretch).
- Ask them to push back into you using only 5% of their maximal strength and hold this push for 5 seconds.
- When they relax see if the hip can move further into flexion.
- Repeat if necessary.



PNF HAMSTRINGS

- Keeping the knee straight, flex the leg at the hip until your client feels a hamstring stretch.
- Ask them to push back into you using only 5% of their maximal strength and hold this push for 5 seconds.
- When they relax see if the hip can move further into flexion.



PNF HIP FLEXORS

- Set your client up in the Thomas Test Position (see Secondary Assessments section)
- Push downward on the free-hanging leg until a stretch is felt.
- Ask them to push back up into you using only 5% of their maximal strength and hold this push for 5 seconds.
- When they relax see if the hip can move further into extension.
- Repeat if necessary.



PNF ROTATOR CUFF

- Set your client up in the Passive Shoulder ROM position (see Secondary Assessments section).
- Rotate the arm into the direction that needs the stretch and stop when your client can feel a restriction.
- Ask them to push back up into you using only 5% of their maximal strength and hold this push for 5 seconds.
- When they relax see if the shoulder can move further into the direction you are stretching.
- Repeat if necessary.



SELF MYOFASCIAL RELEASE TECHNIQUES

FEET (PLANTAR FASCIA)

- Standing in bare feet or socks, firmly roll the foot over a tennis ball, concentrating on any tender spots.
- Work along the longitudinal line to focus on the superficial back line, or more-so around the 'stirrup' of the arch of the foot for the spiral and lateral lines.



CALVES

- Gradually work your way up from the Achilles tendon into the soleus and then into the gastrocnemius.
- Try rolling more medially and laterally as you ascend to focus on the different gastroc heads.



FRONT OF ANKLE JOINT (RETINACULUM)

- Make small movements back and forth over the anterior section of the subtalar and talocrural joints.
- This technique is particularly useful for those who feel 'jammed' at the front of the ankle when applying dorsiflexion.



TIBIALIS ANTERIOR

- Typically this is a logical place to move after the previous SMFR technique. Apply pressure in an ascending fashion.



LATERAL THIGH (ITB) AND HIP

- Starting just inferior of the Greater Trochanter of the Femur work your way down the lateral thigh with the foam-roller, paying particular attention to any tender spots.
- Continue rolling for 30-60 seconds.



GLUTES

- Start in the belly of the glute max and work inferiorly and laterally into the glute insertion into ITB.
- Be mindful of not rolling over the greater trochanteric bursa as this may place a provocative stress upon this structure.



GLUTES AND OTHER DEEP HIP ROTATORS

- Draw a broad line from the Greater Trochanter (GT) of the Femur horizontally towards the Sacroiliac Joint (SIJ).
- Use that as a starting point for tennis ball releasing of the glute max, piriformis and other deep hip-cuff muscles.
- Search for any sore spots and hold until discomfort eases.
- Rolling the leg slowly from abduction to adduction may speed up the release process.
- Ensure you are not directly on the SIJ or GT.



TENSOR FASCIA LATAE

- In sitting, roll a straight leg internally and externally, palpating around the proximal antero-lateral hip.
- The muscle that contracts in internal rotation is the TFL; place the ball upon it then roll over until body weight is passing through the ball.
- Search for any sore spots and hold until discomfort eases.



PUBIC SYMPHYSIS

- Use small back and forth movements over the pubic bone to help release the distal section of the Rectus Abdominis muscle.
- This is often helpful for improving faulty lumbo-pelvic mechanics in squatting.



HIP FLEXORS

- Lie prone on the foam roller with it placed underneath one anterior-superior-iliac-spine (ASIS).
- Roll slightly down the front of the thigh then back up to the ASIS.
- Repeat this back and forth motion for 30-60 seconds.



SPINAL EXTENSORS, THORACO-LUMBAR FASCIA (TLF) AND POSTERIOR RIB-CAGE

- Work on one side at a time, in an ascending manner.
- This is often helpful for presentations of excessive lordosis/kyphosis.



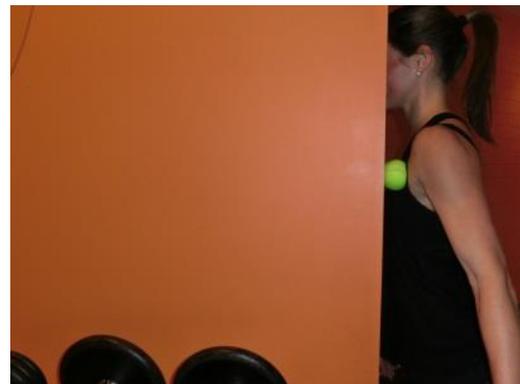
LATISSIMUS DORSI AND POSTERIOR SHOULDER

- This is often a natural progression from the previous technique.
- Moving the arm overhead can open up the rhomboids, teres major and even into the subscapularis which together play significant roles in promoting kyphosis, forward-rolled and internally rotated shoulders.



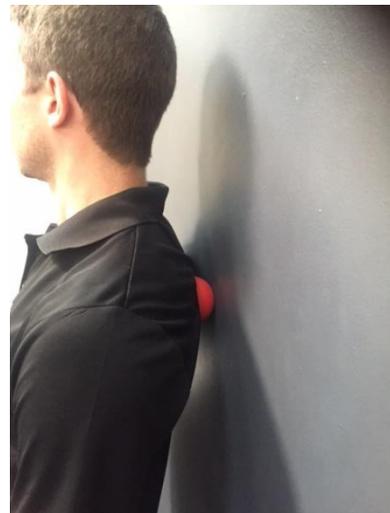
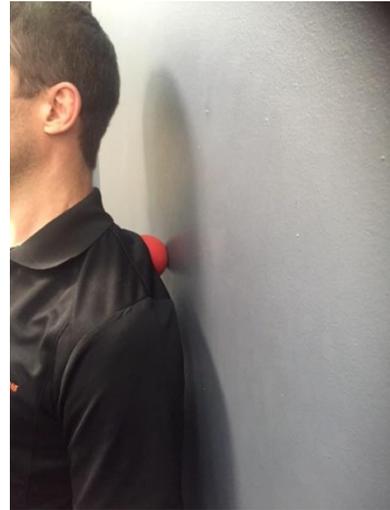
PEC MINOR RELEASE

- Place a tennis ball between your pec minor and a wall, concentrating on a sore spot but avoiding the anterior section of the acromion process.
- Abducting and adducting the humerus can speed up the release process by promoting upward and downward rotation of the scapula.



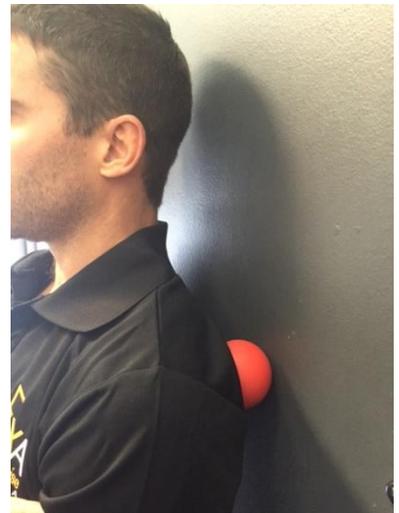
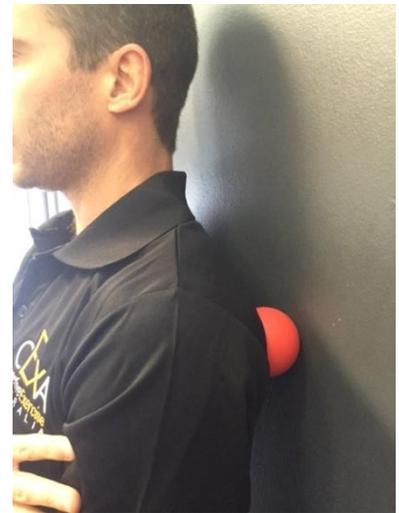
RHOMBOIDS AND LEVATOR SCAPULA (DOWNWARD ROTATORS) RELEASE

- Place a tennis ball between your back and a wall with the ball placed along the medial border of the scapula.
- Search for a tender spot then apply as much pressure as is comfortable into the spot and hold until it feels like it is easing.
- Work your way up and down the medial border of the scapula, stopping on any tender spots you find.



POSTERIOR SHOULDER CAPSULE RELEASE

- Place a tennis ball between the back of the shoulder and a wall.
- Have the ball positioned slightly superior to the arm-pit, posteriorly to the posterior deltoid.
- Search around here for a tender spot, then place pressure into it when found.
- Hold until the discomfort eases, then search for another tender spot and repeat.



BICEP AND ANTERIOR ARM LINE SELF-MASSAGE

- Using the knuckles of the opposite hand, gently massage through the medial aspect of the bicep across the elbow into the forearm in a proximal-to-distal and distal-to-proximal rhythm.
- Repeat this gentle motion for 30-60 seconds.



MOBILITY DRILLS

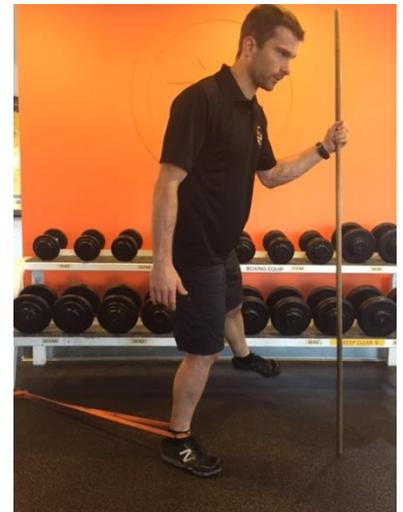
SIDE-LYING THORACIC ROTATIONS

-
- Start by sliding the top hand over the bottom hand, then slide back to the start. Lift the top hand and arms and allow the trunk to rotate as it moves through an arc.
 - Follow your top hand with your eyes.
 - Move to your comfortable end range, then slowly come back to the start position.
 - Repeat as needed then swap sides.
 - Taking some deep breaths at your end-range (expanding the belly and ribcage as you do so) can help improve end-range-of-motion.



ANKLE PENDULUMS + FLOSSING

- Standing on one leg, move the trunk in a rotation taking the left then right shoulder towards the wall.
- Allow the movement to initiate from the grounded ankle upwards (keep the knee soft).
- Allow the ankle to move into dorsiflexion as you rotate by further softening the knee.
- Increase the width of the hand placements to increase the stretch through shoulders.
- The term 'flossing' refers here to the use of an elastic band to provide an additional force upon the joint you are mobilizing. In this case the pull from the elastic band creates a posterior gliding force upon the distal tibia to try to assist gaining range of motion in dorsiflexion. This can be seen in the bottom two pictures.



HIP FLOSSING

- Have the band as high up the thigh as is comfortable applying force into the inner thigh.
- Move back and forth in the saggital plane in a comfortable ROM for 5-10 repeats.
- Move the pelvis side to side in the frontal plane for 5-10 repeats.



RECTUS ABDOMINIS ACTIVATE AND RELAX

- Lie supine on a long foam roller or tightly rolled towel so that the entire length of the spine is supported.
- Start by tucking the chin, then continue to roll up into flexion by peeling the thoracic spine of the foam roller.
- Roll up just to the bottom of the rib cage or stop before this point if a stretch is felt.
- Slowly unfold yourself back down the foam roller then take a deep breath when lying flat again before repeating.



ACTIVE HAMSTRING LENGTHENING WITH BAND

- Lying supine with the band tied to the ankle and a sturdy attachment point behind the head.
- Start flexing the hip with the knee straight, going with the resistance. Take it as far as you can comfortably.
- Come back to the start position then repeat.

