

EXERCISE PRESCRIPTIONS USEFUL IN OMT PRACTICE

(Give patient copy, train patient and check technique, perhaps repeating check on technique on return to office visit)

Mary Goldman D.O.

Many thanks to Dr. Dakota Dalton for volunteering his time to model for this lecture. We wish him great success as he continues with Family Practice Residency in Texas.



Disclaimer: The information is provided "as is" and without warranties of any kind either express or implied. To the fullest extent permissible pursuant to applicable law, the authors and MOA disclaim all warranties, express or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose.

This information is not intended as a substitute for the medical advice of physicians, particularly with respect to any symptoms that may require diagnosis or medical attention. Decision to utilize the exercises or apply the information in a particular situation remains the professional responsibility of the practitioner as the clinical treatments described and recommended may not be considered absolute and universal considerations. It is the responsibility of the treating practitioner, relying on independent expertise and knowledge of the patient, to determine the best treatment and method of application for the patient. As such, the Author, Model, and Michigan Osteopathic Association (MOA) will not assume any responsibility for any loss or injury and/or damage to persons or property arising out of or related to any use of the information contained in this collection.

Format: Microsoft Word Document for printing for patient use, suggest take picture of patient doing exercise/stretch with their phone, if patient gives their permission first, so that patient can see their alignment and be able to refer to the corrections that you make. Make sure to have the patient perform the exercise/stretch, check their technique, then prescribe frequency and repetitions until next office visit expected. On the next office visit it is helpful to have the patient perform the stretch or strengthening exercise to check the technique (and whether they remembered to do the work).

Stretch and Strengthening Exercises for Home Practice,

Table of Contents:

1 Elongation stretch

Reference page:

Purpose of Exercise: To correct gravitational and injury related shortening of the fascial lines spanning the length of the body

Reasons not to perform (not exhaustive): Patient too anxious to breathe or disrupted tissue engaged in stretch

2 Lazy glut exercises for Gluteus Medius

Reference page:

Purpose of Exercise: reverse Trendelenburg gait and imbalance

Reasons not to perform (not exhaustive): injury to tissues of gluteus medius or upper thighs, unhealed fractures of pelvis, deep tissue infection or hematoma in gluteus medius

3 Back protective posture, alignment of spine and ribs over pelvis, shoulders to sides, neck over body and spinal curves

Reference page:

Purpose of Exercise: improve balance and ability to use core to protect extremities and neck; use of core muscle lowers risk of urinary incontinence in elderly females

Reasons not to perform (not exhaustive): can be done prone and often supine if patient not able to assume another position; psychiatric issue may preclude patient handling

4 Back protective squat

Reference page:

Purpose of Exercise: protect back in lifting and bending or shoving/pulling heavy items

Reasons not to perform (not exhaustive): knee problems, disrupted nerve function in back, knee diseases may be aggravated by squatting

5 Cat and Cow (also with modification for tender knees)

Reference page:

Purpose of Exercise: increase flexibility and strength of back and core muscles

Reasons not to perform (not exhaustive): consider risk in moderate to severe scoliosis, would need to be modified for patient unable to stand; if pressure on knees is a problem, overhanging the knees on a towel or cushion is advised (cushion under tibial tuberosity to avoid pressure on knee or patellae)

6 Standing Cat and Cow (modification for those unable to do kneeling)

Reference page:

Purpose of Exercise: for use in patients unable to utilize hands and knees position

Reasons not to perform (not exhaustive): unable to follow instructions, unable to stand independently

7 Hamstring stretch

Reference page:

Purpose of Exercise: For those who can bend forwards most of the way to touching the floor: gently stretch hamstring muscles in backs of thighs without allowing gluteus maximus or iliotibial band stretch to get in the way

Reasons not to perform (not exhaustive): not able to stand, ripped hamstring muscle/fascia, unhealed pelvic fracture, balance problems make fall risk, dizziness or neck problems that may be affected by head down position

8 Standing hamstring stretch (modification for those limited in bend forwards)

Reference page:

Purpose of Exercise: For use by those unable to bend forwards with bent knees and place hands on floor

Reasons not to perform (not exhaustive): same reasons as #7 hamstring stretch

9 Ankle stretches

Reference page:

Purpose of Exercise: to release adhesion in ankles and align the foot with the knees and hips, reducing the likelihood of injury to those structures and to the back, also reducing the jarring of the body (especially the back and hips) by increasing the use of the foot motion to absorb shock

Reasons not to perform (not exhaustive): Fracture or other disrupted very weakened tissues, especially in hypermobile ankle support or in acute infection in the ankle or foot

10 Wall plank walking (for alignment and coordination and loosening of ankle and foot joints)

Reference page:

Purpose of Exercise: align feet with knees and hips to avoid undue wear and tear on these structures and body above, especially in running and jumping or sports or other types of physical performances (includes instrument playing)

Reasons not to perform (not exhaustive): exercise can be modified for feet and ankles with patient sitting, but not as effective in supine position

11 Wall plank bends and low rises (for alignment and coordination and bounce and strengthening of ankle joints)

Reference page:

Purpose of Exercise: coordinate aligned motion of knees and ankles and increase fluid motion in jumps and rises to protect body from shock and excess wear and tear on joints

Reasons not to perform (not exhaustive): unable to align feet and knees and hips, cannot lower heels onto floor without jarring body after receiving instructions to assist this motion, disrupted lower extremity joints; caution in severely fixated bowed or knock-knee situations

12 Supine Marching for psoas minor spasm

Reference page:

Purpose of Exercise: protect hip joint from further injury from psoas minor pull on the anterior ligamentous support for the hip, causing marked tenderness and often pain at the anterior hip joint, with excessive MRI's performed trying to find the cause of the hip pain

Reasons not to perform (not exhaustive): hamstring not effective, disrupted tissues in hip or upper thigh region or in lower abdomen

13 Bouncing up before down and down before up

Reference page:

Purpose of Exercise: increase fluidity of jump or up/down motion in order to protect joints and improve fascial strength, lessening the chance of both acute and long-term injury

Reasons not to perform (not exhaustive): disrupted tissue, including skin

14 Child's position (yoga) and modifications (to relax, breathe in back ribs, and regain flexibility of lower back)

Reference page:

Purpose of Exercise: excellent position for recurving the lumbar spine; gently stretches your

spine, thighs, hips, and ankles; relation if done along with deep breathing exercises, calming your mind, reducing anxiety and fatigue
 Reasons not to perform (not exhaustive): knee ankles (toes can drop off of table or other stable surface if ankles unable to bend)

15 Downward Dog (Yoga) for lower back, inner thighs and for opening for core use

Reference page:
 Purpose of Exercise: stretches hamstrings, calves, and ankles fully, improving posture and stretching out tension in the muscles of the feet; strengthens the upper body, stimulates blood flow, and if done properly, helps with core muscle development
 Reasons not to perform (not exhaustive): dizzy with head down position, injury to Achilles tendon, pain with bending forwards extensively

16 TheraBand exercises for sprained ankle (must be done after alignment returned)

Reference page:
 Purpose of Exercise: gradually strengthen ankles after a sprain to reduce chances of reinjury, but must be paired with balance exercises and proper support on uneven ground to be effective
 Reasons not to perform (not exhaustive): only minimal discomfort, not pain, is allowable, so if ankle or foot hurt a lot during exercise, tissue disruption may preclude these exercises until Physician clearance

17 TheraBand exercises for inner thigh muscles (first muscle to weaken during aging)

Reference page:
 Purpose of Exercise: Adductor muscles pulling the thighs together are the first muscles to weaken during the typical aging process; the adductors' primary function is to provide lower body stability and mobility during daily activities, and they are important leg rotators
 Reasons not to perform (not exhaustive): inability to perform exercise without notable pain

18 Basic Breath Coaching—how to relax and make your stretches work

Reference page:
 Purpose of Exercise: reduce anxiety, improve oxygenation to tissue, relieve shortness of breath when no other apparent cause is present, allow your body to release tension and be able to stretch out much more effectively
 Reasons not to perform (not exhaustive): death

19 Balance exercise

Reference page:
 Purpose of Exercise: reduce fall and injury risk, increase efficiency of motion and work capacity
 Reasons not to perform (not exhaustive): cannot stand up, not safe balancing on one foot (may be done supported with a stable bar/chair)

20 Easier: Balance exercise

Reference page:
 Purpose of Exercise: perform when more stable standing on two feet
 Reasons not to perform (not exhaustive): unable to stand on two feet that are not next to each other

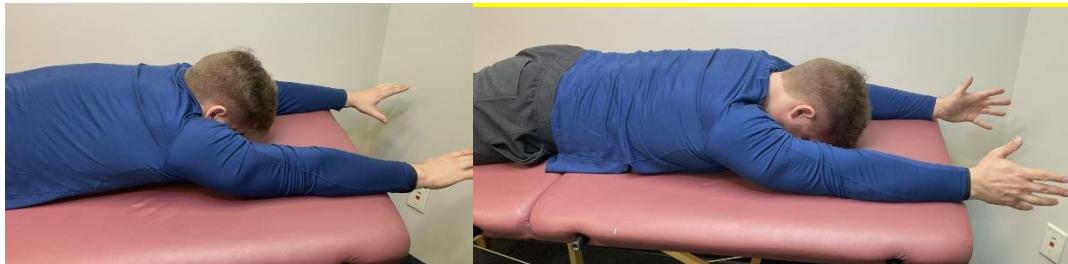
21 9-inch Therapy Ball Spinal Stretch

Reference page:
 Purpose of Exercise: stretch the sudden disturbances in the spine's gentle curve, including both sudden bends and flattened regions
 Reasons not to perform (not exhaustive): disrupted spine or surrounding tissue, deep infection or pain in the region, such as from a hematoma or injury//

#1: Elongation stretch

- Can be done supine (lying on back) or prone (lying face down), but prone offers the advantage of the feeling of length of core supported by table
- Hands facing up will stretch the front of the upper body, facing down stretches the posterior torso, but turning the palms medial or lateral will stretch the corresponding arm lines and help lengthen the side lines; the front and back of the body are more effectively stretched with gentle progression into firm traction on the neck, physician holding the head at the base of the skull (avoid heavy or uneven pressure on the mastoids or styloid process)
 1. Lay flat and reach arms overhead and legs long, about hip width apart
 2. Start with one arm and then add same side leg,
 3. Do not grip or tighten muscles, but rather try to lengthen fingertips towards the wall above the head
 4. At first the shoulder will be raised to enhance reach towards wall, but when the side of the torso is reached long, the shoulder may be relaxed while the arm and the flank are still reached long (it is better to get the full reach comfortable before trying to lower the shoulder)

5. Without gripping/shortening the thigh muscles, reach the same side leg barely off the table and lengthen out towards the wall below the feet
6. Relax and then repeat on the other side, starting with lengthening the upper body and adding the lower body reach
7. When rested, repeat using right arm and left leg and then left arm and right leg
8. To get the best results, fingers should be reaching long as if to touch the wall above and toes should be either reaching long for the wall below OR heels or flexed ankles reach for the wall below (see below), but DO NOT ALLOW CLENCHED TOES OR CLENCHED THIGHS!



Pictures demonstrate facing of palms, with the medial or lateral facing of the palms generally more productive in creating elongation of the body as a whole

#2: Lazy glut exercises

- In general, for the core muscle-fascia group strength to be engaged, the pelvis cannot be tucked under, or held in external rotation (legs and knees turning outwards) of the innomates (hip bones)
- Gluteus medius maintains frontal plane stability of the pelvis as a part of the lateral fascial sling (along with tensor fascia latae on the same side and the quadratus lumborum on the other side), so it keeps the side of the pelvis that would drop in place, allowing the leg on the other side to swing forward during gait.
- Gluteus medius can be inhibited by sleeping on your side with top leg bent forwards at the hip and knee dropped down, or by standing on one foot while pulling the other hip into the midline which allows the pelvis to move sideways, or by sitting crossed legged, or by tight hip adductors reciprocally inhibiting the muscle (Crossed Syndrome of Janda, reference: https://www.physio-pedia.com/Gluteus_Medius, accessed 4/10/2022), the latter causing many lower-limb musculoskeletal and gait disturbances.

1. Lie on your stomach with arms in a comfortable position
2. Make sure that your legs are not turned out at the hips
3. Squeeze the buttocks like you are squeezing a lemon (as in juicing the lemon), but carefully avoid tucking your buttocks under you! Your behind should stay behind you with the front of your pelvis and abdomen remaining flat on the table, but then tighten only the buttocks from the sides, as if you were forming dimples at the lower sides of the buttocks (think about the dimples in the cheeks of your face)-- Your body will actually elongate more with this tightening as your core begins to engage
4. As you hold the lemon squeeze that is making your buttocks into a heart shape from the back view, stretch one leg out very, very long and then reach it off the table by ONE inch (this is elongation of the leg, not a tightening of the thigh!)
5. As you breathe to relax, hold the leg in the air for five seconds, and then release it to the table, allowing the buttocks to relax at the same time
6. After resting, again “squeeze the lemon”, tightening the buttocks without tucking them under you (not pulling the bottom of the buttocks down towards your feet and tucking under toward the table)
7. Reach the other leg long, stretching out the toes as far as you can towards the wall below your foot and then reach longer as you lift the leg one inch off the table, hold for five seconds
8. Lower the leg as you release your dimples (gluteus medius muscle).
9. Repeat five repetitions on each leg, or stop when you feel pain after you release the leg, building up over time to ten or fifteen repetitions on each leg

What to avoid:

- Clenching feet
- Lifting leg before engaging gluteus medius muscle (lemon squeeze), because this will strain your upper back muscles
- Tucking your buttocks down which pulls the upper front of the pelvic bones away from the table
- Turning your legs out at the hips, because it inhibits the core muscle strength that allows the body core to engage in lifting your leg to the back
- Tightening the thighs rather than lengthening them



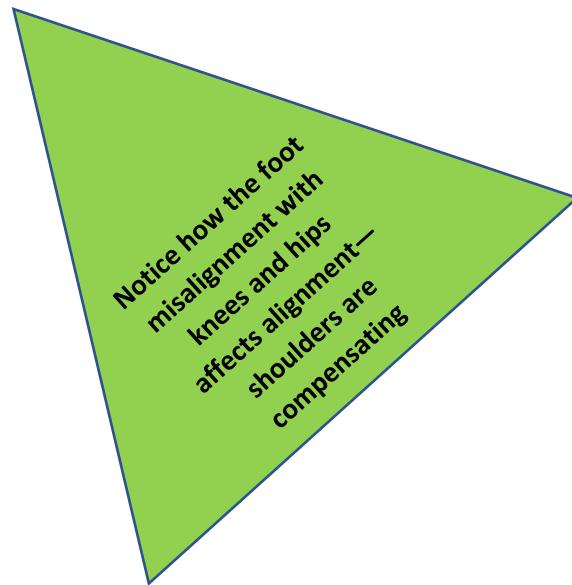
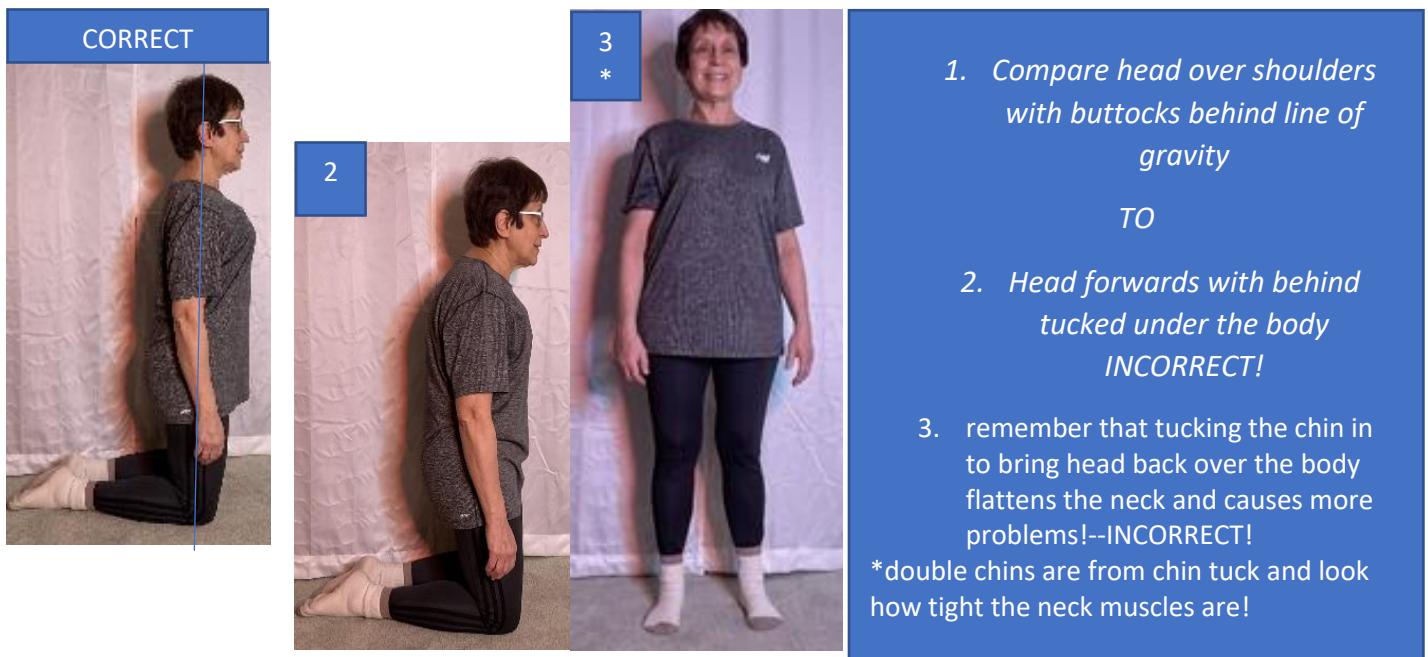
An elongated leg will stretch up the front, both sides, and lengthen along the back of the leg as well. Note that the lifted right leg is not quite reaching long in the back of the leg in this picture



1. Separating the legs too much generally results in more out turn (external rotation) at the hips, pulling the buttocks under the pelvis, so it is hard to squeeze the lemon. 2. Squeezing the lemon (tightening the gluteus medius) will pull the buttocks into a heart shape (more narrow at the bottom)

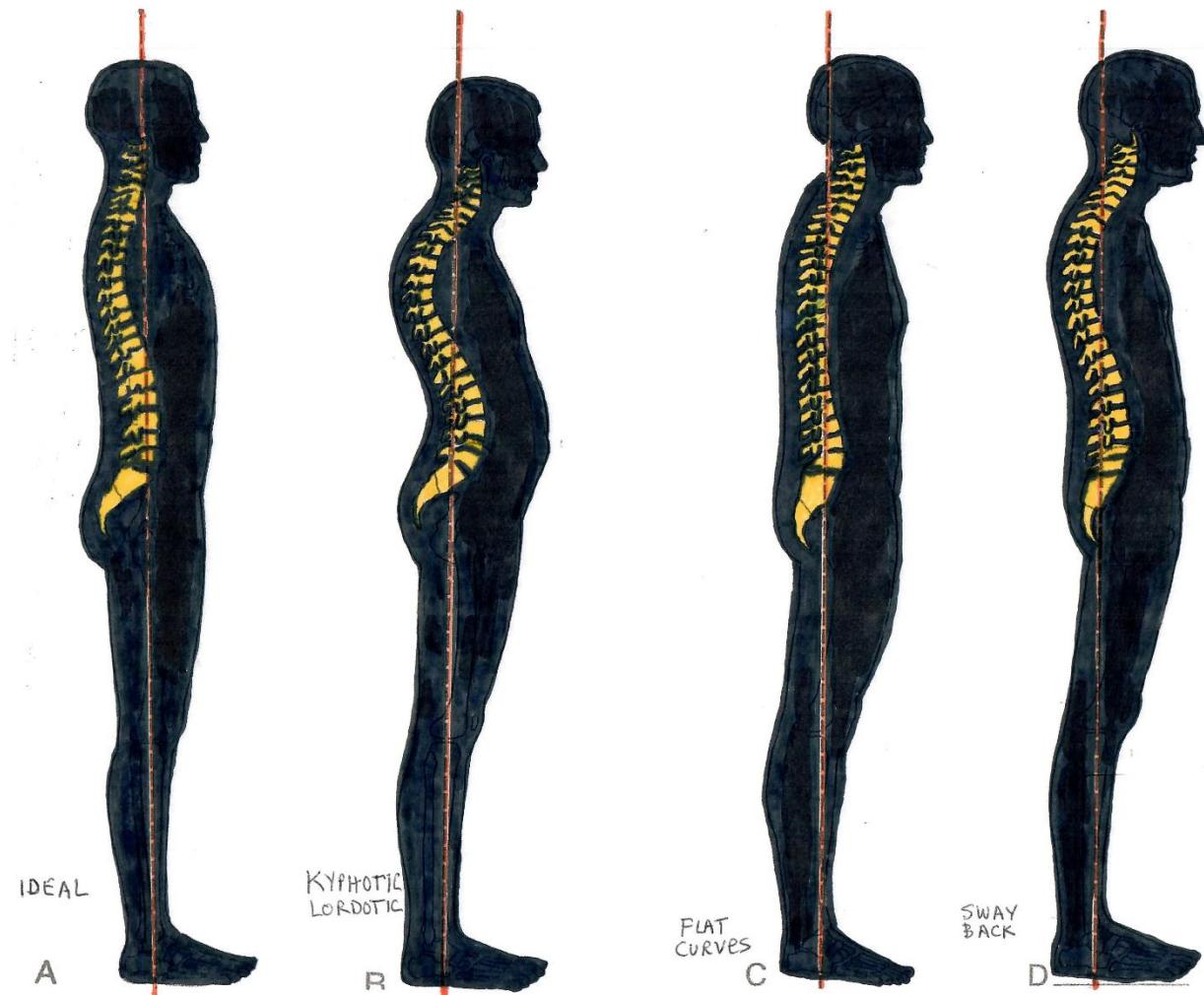
#3: Back protective posture: alignment of spine and ribs over pelvis, shoulders to sides, neck over body and spinal curves that are smooth and elongated so that fascia (especially spinal ligaments) support spine against gravity and injury

- Note that a smooth long curving spine distributes the forces in lifting, bending forwards and backwards, bending sideways, and twisting, rather than focusing the forces as when vertebral alignment is lacking
- Shoulders that hang forwards or bow towards the center of the body place excessive weight away from the center of the body, resulting in chronic strain patterns, lack of full shoulder movement, likely decreased hip range of motion, and a tendency towards very disturbed aging of the body
- When the pelvis is tucked under the body rather than the behind (buttocks) maintained behind the body, the head tends to move forward (or worse yet, the chin is tucked to keep the head from moving forward so that part or all of the neck curvature is flattened)
- Psoas, the main hip flexor muscle of the body, when shortened, can tighten the diaphragm attachments to the spine, decreasing freedom of breathing



Common types of psoas major shortened postural stance:

1. Hips bent so that body hinges from hip joints
2. Buttocks tucked under so that head is either forwards or chin tucks in to keep head over body with variant of upper back well behind line of gravity (sticks out behind)
3. Buttocks stick out so that head is forwards or chin tucks in to keep head over body



#4: Back protective squat

1. Stand tall with feet shoulder width apart and toes facing straight forwards as much as possible
2. Fix your gaze ahead of you as you raise both arms parallel to the floor in front of you at shoulder height
3. Bend knees about 2 inches in front of body without the torso sinking into the bend and without bending your spine, hinging from the hips like you are sitting onto a chair, that is:
4. As you tighten your core muscles to keep your back muscles straight, bend forwards from the hips by pushing your buttocks backwards (it helps to inhale taller when tightening the core muscles because it is easier to lengthen your torso)
5. Reach your back very long and reach the top of your head straight up in the direction of the long axis of the spine (your chest will reach forwards from the spine, not down towards the floor)
6. Imagine you were having your ears pulled out of your head towards the top of the back wall of the room and your imaginary tail pulled out and back, so that back is stretched long into smooth curves without the head sinking lower into the neck or the back of the neck shortening
7. As you stretch your back longer and settle into this position, allow weight to shift into your heels, buttocks to move towards the floor without tucking the seat under (the behind belongs behind you)
8. To return to standing position, exhale while tightening core muscles and push up from your heels

AVOID:

- Lifting heels from floor
- Leaning forwards
- Letting the knees buckle together or outwards (keep them aligned with the toes)
- Do not bend anything except your hips, your knees, and your ankle joints during a squat
- No bouncing! Move smoothly and breathe



Core muscle use:

Core muscles are used to extend the strength of the back into the extremities.

Try this approach:

If your stomach is hanging down, lift the abdomen out of the pelvis with both hands scooping, as if you were making one long motion from the inguinal ligaments to scoop up rice with a ladle shape made by your hands (easier to do if you are lying on your back)

Next imagine that you had a very long tailed shirt on, and tuck the tails of the shirt in behind the pubic bones, the tails representing the transversus abdominus muscles and their fascia, found above the inguinal ligaments where the front of the hip joints bend

Now use a fist to gently and then increasing gradually up to firm pressure, push the midline of the abdomen just above the pubic bones into the area just behind the pubic bones (it may not go very far, so stop when you feel uncomfortable pressure); it feels like you are slowly stuffing the shirt tails into your pelvis with a fist aimed at just under the pubic bones

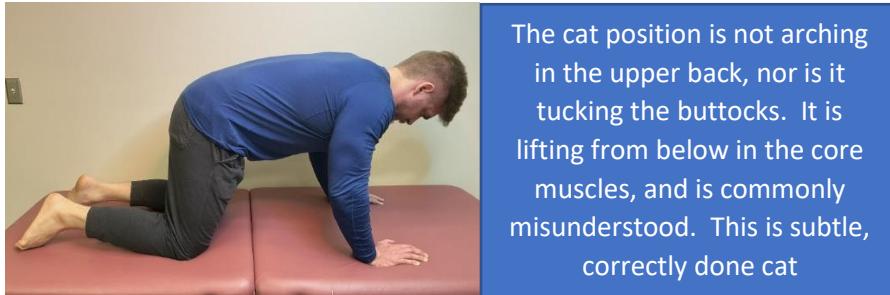
Lastly, without leaning back or forwards, stretch your torso upwards, as if you were on a rack— You will feel your middle body elongate like in the elongation stretch

#5: Cat and Cow (also with modification for tender knees)

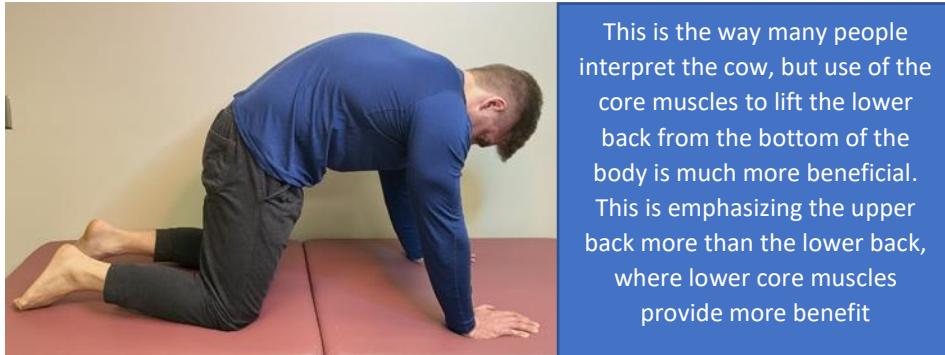
- For tender knees, place a rolled towel underneath the tibial tuberosities to allow the knees to hang over, avoiding pressure on the patellae and knee joints (or use standing modification below)
- Move into hands and knees position



- CAT:
 1. Position on hands and knees with flattened back, neck reaching long, inner elbows [antecubital fossae] turned towards the front of the room and slightly bent to comfort – called tabletop position because the back is flat enough to allow a dinner to be served on the back. The antecubital fossae (inside bend of the elbow) are brought facing front to allow the shoulders to open to the sides and the back to flatten into this position
 2. Instead of lifting the upper back into the cat arch, lengthen the abdominal core and then pull with the transversus abdominus muscle so that the lower abdomen is tucked up from the bottom of the body into the region behind the pubic bones, almost like a fist being pushed into the lower abdomen and then down behind the pubes: picture a very long tailed shirt being tucked behind the pubic bones
[arching the upper back is simply stretching the area that gets over stretched when sitting slouched with the pelvis tucked, currently a very popular sitting position, allowing gravity to shorten the spine, so lifting from the belly side to stretch the back is of much more use]
 3. Allowing the pelvis to tuck under during this exercise will inhibit use of core muscles, so be careful to lift from below and not tuck from above the back with the buttocks!
 4. Neck should be lengthened, but head will tip mildly downwards
 5. Remember to release breath involuntarily (without effort: let go!) and relax



(suggest stretch the feet flat on the table rather than clench toes and curl feet)



- COW (below pictures):

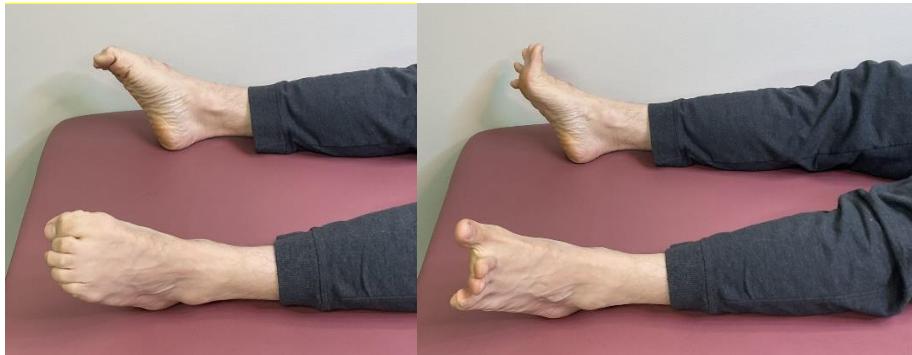
 1. Moving through **tabletop** position described above with a fluid motion, drop the upper abdomen towards the table and stick out the tailbone as high and far into the air as possible
 2. Keeping neck elongated, lift face towards front of room without straining neck or stopping your breath
 3. Exaggerate spread of buttocks towards back upper corners of the room
 - REPEAT until three of each position has been completed (cat and cow), remembering that flowing motion is optimal, as is flowing breath, when changing positions



Opening the buttocks to the sides helps release tension in the lumbosacral area and open the pelvic muscles, but this can also be enhanced by a gentle side to side rock of the hips

ADDENDUM: CLENCHING OF FEET CORRECTION

Feet – what is clenching? Curling the toes or shortening the sole of the foot in a tight arch is clenching and it often leads to cramps in the feet and calves. To stretch the feet and toes, try turning the toes upwards and spreading them apart while keeping the length of the foot stretched long along the axis of the leg (once you can do this it does feel really good to slightly rotate the top of the foot slightly outwards. A tight foot will give you less upwards motion of the little toes. A great foot stretch is reaching the toes out as far as possible to the wall below your feet, especially if you try to reach the leg long and the entire foot about half an inch farther than you think you can, with the best stretch obtained during a good relaxed (letting-go of effort) exhale.



#6: Standing Cat and Cow (modification for those unable to do kneeling)



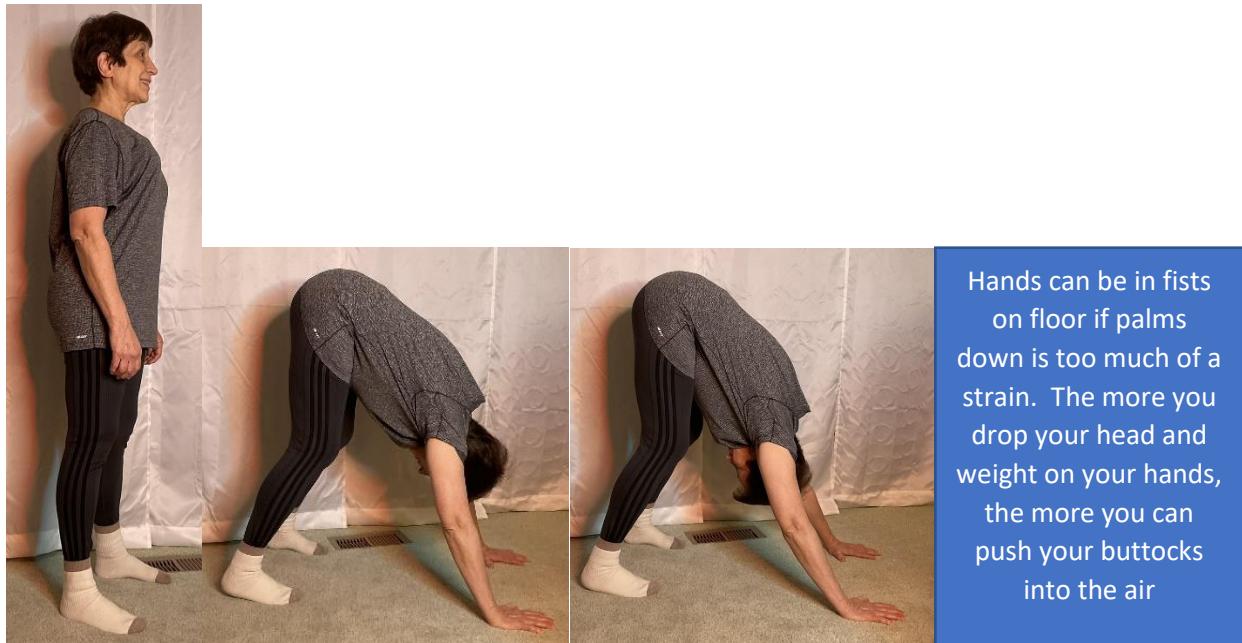
- Find a table/countertop that allows you to bend forwards at the hips above 90 degrees and still lets you bend your knees and lay your upper body onto it, keeping knees from fully straightening throughout the exercise
 - Keep your knees bent slightly to moderately during this exercise until instructed otherwise
 - Breathing with relaxation (letting go) makes this exercise work
1. Step about one foot away from the table/countertop and return knees to bent again, adjusting feet so that their outside edges are parallel (if possible) – keeping the bend in the knees!
 2. Breathe letting go a few times to relax in this position
 3. Now start CAT and then do COW (three times each):
 - CAT:
 - 4. Instead of lifting upper back into the cat arch, lengthen the abdominal core and then pull with the transversus abdominus muscle so that the lower abdomen is tucked into the region behind the pubic bones, almost like a fist being pushed into the lower abdomen just above the pubic bones and then pushed down behind the pubes: picture a very long tailed shirt being tucked behind the pubic bones as if your transversus abdominus fascia was the shirt tail being tucked in; [arching the upper back is simply stretching the area that gets over stretched when sitting with the pelvis tucked, currently a very popular sitting position, allowing gravity to shorten the spine, so curving the upper back is not a very useful stretch]

[note that if legs turn out (external rotation), it tends to force the buttocks into a tucked position and the core muscles will be inhibited, so remove all external rotation of the legs, that is, do not allow the knees and feet to turn away outwards from each other—toes and knees should face directly forwards or even slightly towards each other]
 - 5. Allowing the pelvis to tuck under during this exercise will inhibit use of core muscles, so be careful to lift your back from below with the abdominal core and not tuck your pelvis from above using the buttocks to pull down the hips!
 - 6. Neck should be lengthened, but head will tip mildly downwards

7. Remember to release breath without effort and relax (let go rather than push out air to get the best stretch)
- COW:
8. Moving through tabletop position described above with a fluid motion, drop the upper abdomen towards the table and stick out the tailbone as high and as far to the side-back as possible
9. Sometimes shifting side to side in this position helps loosen the buttock muscles
10. Keeping neck elongated, lift face comfortably towards front of room without straining neck or stopping breath
11. Exaggerate spread of buttocks towards back upper corners of the room
- REPEAT until three of each position (cat and cow) has been completed, remembering that flowing motion is optimal, especially when accompanied by letting go of breath in exhale whenever stretch is desired
12. When ready to rest, bend knees as you push yourself off from the table/countertop and then use hands to push up from the surface

#7: Hamstring stretch (for those who can bend forwards to rest on hands or fists on the floor)

- Start with lifting tall and then smoothly bending knees deeply without strain
- 1. Bend forwards and placing hands or fists on floor in front (not to touch feet but out in front about two to three feet in front of the feet)-KEEP HEELS ON FLOOR AT ALL TIMES!
- 2. Shift weight to the hands as much as possible, dropping head to hang down, as if doing a handstand, but not taking all the weight off the feet, so feet remain flat on the floor with knees still bent and KEEP TOES FACING FORWARDS
- 3. Without any pulling straight of the knees (avoid backwards straightening motion of the knees), further lift of the buttocks up into the air and forwards towards the hands will start a stretch up the calves and eventually into the upper back of the leg in the hamstring muscles
- 4. Hamstring muscles – patience and gradual stretch is the only way, because overdoing this stretch might rip the tissues and this begins a very slow, long and miserable recovery
- 5. [Note that this stretch from yoga avoids circumventing hamstring stretch with iliotibial band and gluteus maximus, so you are more likely to get release of hamstrings than with some other common stretches for hamstrings]
- 6. When uncomfortable, drop buttocks as you bend knees forwards and push weight back onto the feet and then roll body up to straight



#8: Standing hamstring stretch (modification for those limited in bend forwards from the hips, that is:

for those who cannot bend forwards and nearly touch the floor)

- Find a table/countertop that allows you to bend forwards at the hips less than 90 degrees and still lets you bend your knees and lay your upper body onto it
 - Keep your knees bent slightly to moderately during this exercise until instructed otherwise
 - Breathing with relaxation (letting go) will help make this exercise work
1. Step about one foot away from the table/countertop and return knees to bent again, adjusting feet so that outside edges are parallel (if possible) – keep bend in knees!
 2. Breathe letting go a few times
 3. Slide your chest forwards along the table, allowing the knees to lengthen in the back – you will feel the stretch in the calves or back of the legs as needed, as the legs tilt more forwards
 4. DO NOT pull knees backwards into a straightened position – this causes locking of the knees and you may incur injury
 5. Breathe letting go and increase the stretch to the edge of resistance – DO NOT FORCE, but instead lean into the edge of the resistance until it is uncomfortable [hamstring injuries take a long time to heal, so do not rush this process!]
 6. When ready to rest, bend knees before you push yourself off from the table/countertop and then use hands to push up from the surface



The goal is to slide forwards, pulling legs straighter from tilting and thus lengthening the back of the legs, but never straightening the legs by moving the knees back, because this could damage the knees

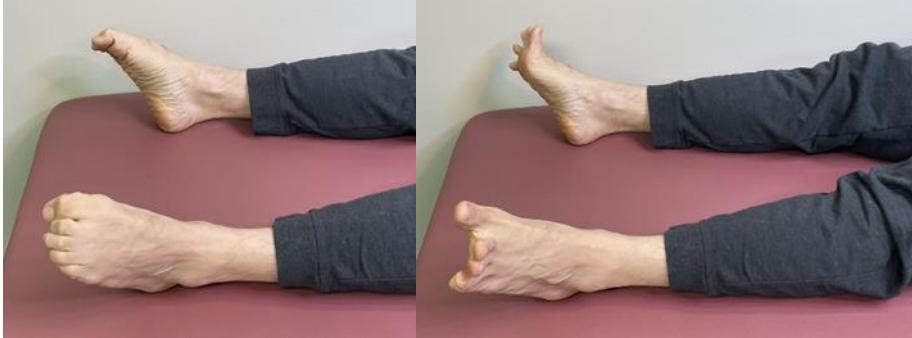
For Standing Hamstring Exercise, to get out of end position, bend the knees again and roll up:



#9: Ankle stretches

Ankles stretch best if the calves are released, but sometimes the ankle stretch needs to come first. Toe or metatarsal bones or tarsal bones all need to be freed for the ankle and foot unit to reach long. Clenching the toes can cause severe cramps in feet and calves, so release by turning toes upwards and spreading the toes as much as possible and then wiggling the toes. Looseness of the entire foot can be encouraged by drawing the printed Arabic alphabet (printed, not cursive) with the toes of each foot. The direction that letters are drawn really does not matter, just get all of the various movements into the foot and ankle stretches.

Note clenched toes undone by spreading and lifting the toes (plantar flexion) until all toes lift evenly:



The goal is below:



#10: Wall plank walking (for alignment and coordination and loosening of ankle and foot joints)



The goal is to align feet and knees and hips and move the legs without pulling the central body/hips out of alignment. The knees and toes in this picture may at first glance appear in alignment, but note that the tibial plateau of the left knee is rotated more so outwards, pulling the body weight laterally and forcing the left foot weight onto the lateral foot, with the other leg adjusting in order to balance. Misalignment of knees and feet can have far reaching consequences in the body.

1. Start in straight leg position, feet with toes AND heels firmly together (avoid letting feet separate at either heels or toes—if not possible then place a small block between feet and keep each foot pressing in on the block during the entire exercise)
2. From a position about one foot from a wall, lean forwards onto the wall with your elbows, keeping your head up and your body straight in a plank (be careful, as it is easy to bend at the hips or drop the gaze downwards—you should be looking directly at the wall)
3. Now lift one heel up at a time, always keeping feet together and then put lifted heel down before (or as) you pick up the other heel (like walking in place but tilted in a plank leaning with your elbows on the wall)



Starting position in plank leaning
elbows on the wall, feet one foot or so
out from the wall, heels and toes
together

--note that side position will be shown
on a ladder to better see the feet, but
the plank position is preferred



Sometimes it is easier to go through feet together, but it is fine to walk changing the lifted heel without feet coming together on the ground; however, hips must not move from side to side as the gluteus maximus needs to be engaged on the side on which you are putting your heel down so that the hips stay in place



#11: Wall plank bends and low rises (for alignment and coordination and bounce (elasticity) and strengthening of ankle joints)

To make the picture clear, the demonstration is turned sideways using a ladder as a leaning prop, but the exercise is done on a wall leaning on the elbows, feet about one foot away from the wall and body in a plank, head held in line with the plank position.

1. Always keep feet together, heel touching heel and toes touching toes
2. Bend knees forwards, not allowing hips to rock out of alignment (like pushing your knees down on a brake, they come forwards without the buttocks moving out of alignment)
3. Check your feet to make sure that they are still together at heels and toes
4. Lift body up the plank axis to straighten knees
5. Raise heels just one to two inches (the height heels lift from the floor may be increased as soon as you can rise without heels falling out of alignment, meaning that the heels stay together without falling inwards or outwards)[envision bubble gum on your heels holding you to the floor so that you have to pull straight up to get the heels off of the floor]
6. Return heels to floor without bending knees
7. After you are confident that you can control your ankles to keep them straight up and down, you can move from bent to half point and down to bend, but you must still move through the straight knee position and not rush the movement
8. Repeat several times, perhaps 10-15 knee bends and heel raises daily



(Side note: the ladder is lower than the wall support, so heel raise position would require less tilt forwards to maintain length of body, therefore use the elbows on the wall)

#12: Supine Marching for psoas minor

1. Psoas minor insertion pull causes point tenderness at the ligaments forming the anterior hip joint ligamentous support. Release by tracing the tight muscle back up to its origin on the front side of the upper lumbar segments (deep in the abdomen), follow the tight muscle down to the front of the hip joint and, gently reaching deep within the abdomen, compress the ends of the muscle together to shorten the muscle until it relaxes. Sometimes the severe pain at the front of the hip joint prohibits this deep abdominal work and a formal counter-strain technique is required. Physicians should teach the patient how to perform whichever process succeeds, because recurrence of the problem is common. It is sad how many patients do not get diagnosed with this anterior hip pain (no evidence is found on hip x-rays or MRI's), so they self-treat, sometimes in very destructive ways, such as poking into this delicate area with probes and, for example, tearing tendons that attach in the region. Or they get discouraged and stop exercising.
2. Know the technical error that causes this: If the hip is pulled up before the leg is lifted forwards (flexing more at the waist than bending at the hip), the result is overload of the psoas minor that pulled the hip up, so it spasms
3. If you practice lengthening your leg (such as by pushing your heel out as in the elongation stretch) to engage the back leg muscles (especially hamstring biceps femoris) so that it pulls down and holds the hip in place before you lift your leg (knee bent or straight), the leg will rise to an average of about 30 degrees and then the hip will be pulled up by the leg if the leg lifts higher, but no pain occurs in the anterior hip area
4. Practicing by laying on your back, stretching the back of your leg long, and then lifting the leg to under 40 degrees (by bending at the hip) with a bent knee while your hips stay flat on the table/bed. This usually results in the hip staying in place until about 30 degrees and then the leg pulling the hip up, and with enough practice you can break the habit of overworking your psoas minor. Check the other side to see if you have this problem there also, but it is most often only on one side. By the way, if you cannot do this, try keeping the hip bone (innominate) in place when you barely lift the leg and increase the bend over time, backing off when the hip will not stay in place
5. It is usually helpful to roll a towel and place it in the small of your back to keep your hips from tucking under as this tucking encourages the psoas minor to spasm

In the below pictures, notice how the hip on the left (side of bent knee) does not lift before the leg pulls it up. Keep in mind that the psoas minor curls the pelvis forwards, which is a separate motion from the gluteus maximus curling the buttocks under (but sometimes the gluteus maximus starts curling the buttocks under to protect the delicate tendons in the hip region and now you have no core muscles working)





#13: Bouncing up before down and down before up

As described under Wall Plank Knee Bends and Rises, elasticity develops (over three-to-four-months) as the fascia displays more ability to bounce down to go up and bounce up to go down. Flowing motion is the key to this resilience, and it is based on elasticity developed by the fascia building collagen crimping, which is why it is slower to develop than muscle strength.

Progression to bounce -- rise (lift/lengthen body taller with breathing in) to bend [“lift up to go down”] and bend to rise/jump:

This exercise is usually done with feet hip width apart, but always with a very lifted/elongated body to avoid jarring.

Feet cushion the blow when you leave from or land by coming through the foot like a dancer: leave the floor lifting the heel and peeling the foot off the floor through a highly arched foot as you push off of the floor with the heel, then the ball of the foot, and then the toes. Reverse to land, ending in a smooth bending of the knees and then straighten up as part of the continuous movement comes to a rest.



The continuous bend moving into straightening of the knees as a dancer leaves the floor in a jump allows a bounce going into the air, the foot providing continuous momentum to power the ascent from the floor; when the dancer lands the reverse motions provide a bounce up from the floor ending in an upward motion. This elasticity in the fascia provides protection from trauma: landing is a continuous smooth motion



Jumping is a continuous motion, heavily influenced by breath

Bend while standing tall to smoothly go up and then land flowing into a bend

#14: Child's position (yoga) and modifications (to relax, breathe in back ribs, and regain flexibility of lower back)

- Start in hands and knees position on the table or floor with the feet together and the knees apart (if desired), then sit on your heels (if too tight, use a roller over lower legs to sit the buttocks and/or upper back thighs to sit on)
- Lower chest towards or to table, as able, and position arms outstretched, possibly palms together, or under chest if not able to reach forwards



- Over time or with gentle release of breath (letting go) you may be able to stretch your arms and your back out longer and even align your neck stretched out with the body length



- If you start expanding your rib cage outwards to the sides on your inhale (rather than opening ribs just to the front), you can open out the breathing in the back of your body, which is a major area of air intake often prevented by stiff ribs
- If you then start to open your lower back out to the sides you may eventually be able to include widening the SI joints open, symmetrically as possible, and the result is an amazing opening of the pelvic musculature
- During OMT treatments, this position is often helpful in releasing a very backwards stuck sacrum (bilateral sacral extension with compression), as the release of posterior pelvic musculature assists in release using Ligamentous Articular Strain, for example, and the Physician may use this position to speed up results from OMT

#15: Downward Dog (Yoga) for lower back, inner thighs and for opening back muscles to allow use of core

- This is not the same exercise as the hamstring stretch and should not be done by those who have balance issues or cannot tolerate head down positions such as in dizziness, aneurysm, or breathing or blood pressure problems when inverted.
1. Start by bending down and placing hands on floor about 2.5 feet in front of you (make comfortable); hands can be placed on floor in fists, palms down with fingers turned forwards or outwards, or palms down, digging fingertips into the floor like dog claws (preferred as you can push backwards from the arms more easily)
 2. Keep knees bent, turn toes straight forwards, heels may be raised
 3. Lengthen the back from the base of the spine to the tips of the fingers by pushing buttocks up into the air and pushing up from the floor to obtain a long stretch in the back
 4. This is a good time to work to lower the heels towards the floor (eventually they reach the floor, but breath out as you let go rather than pushing the stretch)
 5. If your legs and/or toes turned out during the above movements, try rotating the knees slightly towards each other in the front (symmetrical internal rotation at the hip sockets) as this allows the buttocks to reach further up into the air and the core muscles to engage and lengthen the body further
 6. Hold and breathe with ease
 7. To release, bend the knees while the feet absorb some of the weight from the hands, then walk the feet under you and roll up to standing



Yoga generally involves slightly bent knees to avoid hyperextension of the knees from locking the joints with the final twist, so if you wish to straighten your knees in this position, make sure to do so by lengthening the back of the leg into the final pose, rather than pushing the knee backwards into the lock

#16: TheraBand exercises for sprained ankle (must be done after alignment returned)

COLORS OF THERABands from easiest to hardest – start with easiest first, build repetitions and then increase strength:

--Tan-Yellow-Red-Green-Blue-Black-Silver-Gold, (note that Silver and Gold have a greater jump in resistance progression than other bands and that bands made by other manufacturers might vary in progression of resistance)

--Some sources of TheraBands or equivalent: Amazon or sporting goods stores or Surgical supply companies

--For beginning treatment, suggest red TheraBand for plantar dorsiflexion, but start with green or yellow for the thinner muscles in the calves, such as those that invert (turn the sole of the foot inwards) or evert the foot (turning the sole of the foot outwards) and for the peroneus muscles in the ankle/lower leg region

- For use with ankle sprains, ankle can be a little sore but not inflamed or swollen when strengthening starts – stop the repetitions if soreness is increasing and wait a few days to a week or more to restart, allowing time for elevation, ice and rest
- For strengthening lateral ankle muscles:
 1. Place flat of middle of TheraBand around instep and grasp band with other hand, reaching out to the side of the body opposite the direction that you will turn your foot (band is across the body); band may be attached to a non-movable table or coach leg instead of holding
 2. Adjust resistance by stretching or relaxing band
 3. With a smooth and consistent force, move foot from the ankle joint, heel fixed on the floor, into the resistance band until a tolerable resistance is met and then hold for five seconds
 4. Release in a smooth, controlled manner and rest for a few seconds
 5. Repeat four to fifteen times



- For strengthening medial or inner side of the ankle muscles (picture below):
 1. Place flat of middle of TheraBand around the instep and grasp the band with the hand on the same side of the body as the ankle in the band
 2. Anchor the heel of that foot into the floor
 3. Adjust resistance by stretching or relaxing band
 4. With a smooth and consistent force, move foot from the ankle joint, heel fixed on the floor, into the resistance band until a tolerable resistance is met and then hold for five seconds
 5. Release in a smooth, controlled manner and rest for a few seconds
 6. Repeat four to fifteen times



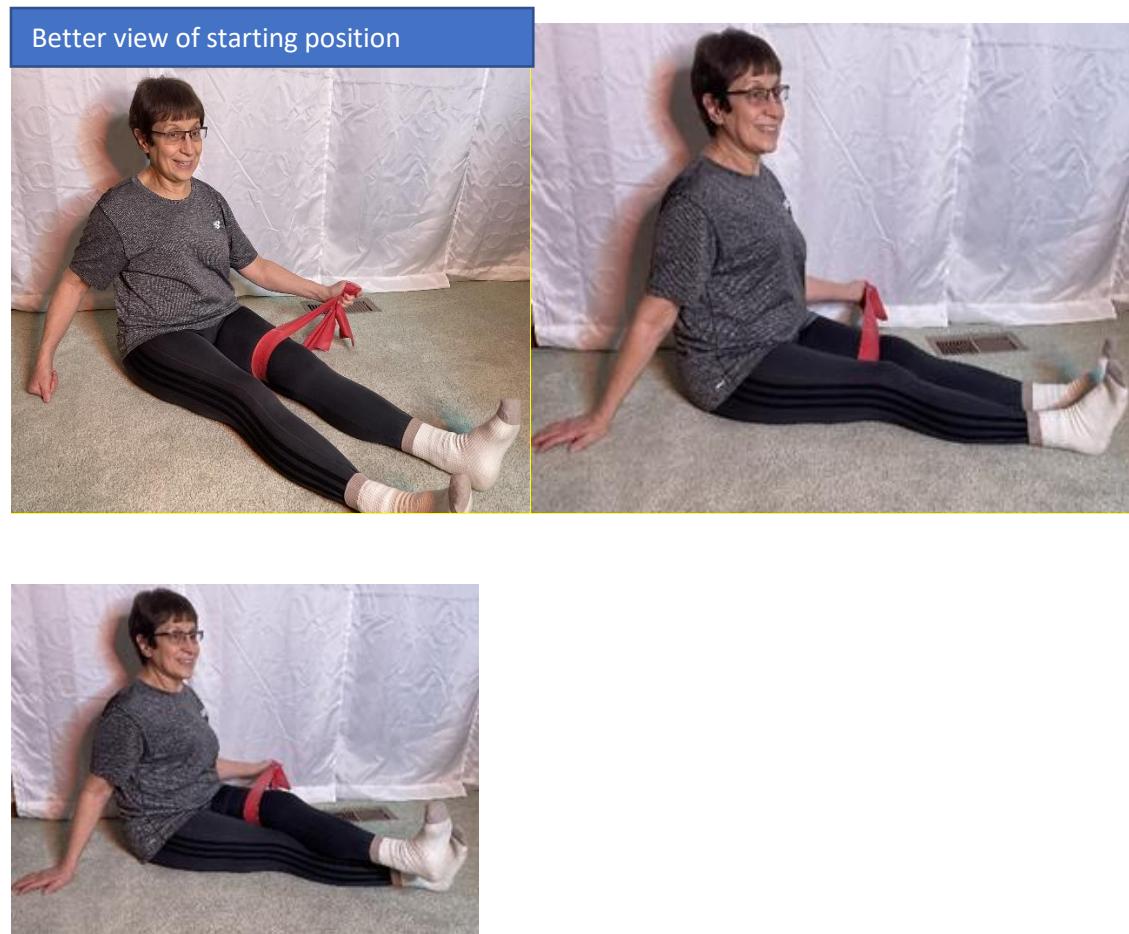
- For strengthening plantar flexion after a sprain (picture below)
 1. Broaden out the belly of the middle of the TheraBand and stretch it across the ball of the foot, grasping the ends of the band in one hand and pulling band tight to comfort
 2. Sit up straight and smoothly push ball of foot into the band to tolerable resistance
 3. Release smoothly and rest
 4. Repeat push repetitions five times, building up over time to fifteen repetitions



- Results will be much better if these resistance strengthening exercises are done with a stretched tall back and elongation of the legs

#17: TheraBand exercises for inner thigh muscles (first muscle to weaken during aging)

- An elongated seated body with fixed symmetrical hips is essential to good results
 1. Start with or without back support
 2. Open distance between thighs to a comfortable space
 3. Place middle of TheraBand around inside of thigh and grasp the ends with hand holding the ends outside of the same leg
 4. Without rotating the legs from a position with knees and toes facing the ceiling, pull the straightened banded leg just above and across the other leg until appropriate resistance is felt, then hold the resistance for 5 seconds
 5. Smoothly return leg to starting position and allow to rest
 6. Repeat five times, as tolerated



#18: Basic Breath Coaching—how to relax and make your stretches work

- Perhaps easier to learn when laying on your back relaxing
- The goals are:
 - to open the airway by relaxing the jaw (mandible) and allowing the teeth to approximate in the front (upper and lower front teeth almost touch and are aligned)
 - and to let go of the breath on exhale
- This is not the only correct way to breathe, but it allows a full stretch of fascial restrictions to occur when elongating the body to release the effects that gravitational pull has shaped in the fascia
 1. Since most people have an overbite (top teeth are forwards from lower jaw in order to chew foods with molar teeth which do not align without pulling back the lower jaw), release and relaxation of the temporomandibular joint (TMJ) and moving the lower jaw forwards to align is necessary to allow a fully open airway; note the release of anxiety that often occurs with opening the airway.
 2. Next place the thumb side of the knuckle of the pointer finger up against the chin, as you would when saying “Shush” and then place the thumb side of the end of the same finger on the tip of the nose
 3. If your chin is tucked, untuck it; if your chin is elevated above looking straight forward position, bring it into alignment with the horizon; if your head is forwards, your pelvis is probably tucked under so correct this and then stretch your neck up to the ceiling keeping a gentle curve in the back of the neck (if a puppet string to heaven were helping you, it would attach at the midline point on the top of the head just behind the top of the head, because this will be directly above the foramen magnum, the opening into the skull that the spinal cord traverses)



The Shush positioning of the hand indicates the line on which the chin, the lower lip, the upper lip, and the chin should touch.

To the left the head is forwards due to disruption of smooth curves in the back when the pelvis is tucked under, balanced by the head more forwards than where it should be over the body

4. The breath in should be easy and breathing should always be with the mouth closed to allow for humidification, cleansing, and warming of the air before it enters the airway further on. Exceptions to this are when you are running very hard or when you have obstruction to your breathing such as when you are heavily congested
5. Take an easy breath in so that your lungs relax and then, without stopping, allow the breath to escape without controlling it as this allows total relaxation and engages the Parasympathetic Nervous System; note that pushing through pursed lips, pushing your breath out with effort, or otherwise controlling the exhale in any way prevents the full

- elastic recoil of the lungs from occurring and more used air remains in the lungs making it harder to pull more air in
6. Check to see that you are relaxed by noting that the expiration is much longer than the inspiration, expiration is effortless (passive exhalation), and inspiration is silky smooth and gentle, as there is room for air to easily enter the lungs
 7. Now check how easily you can stretch longer, even in areas that have resisted stretching before
 8. If you retain this type of breathing your anxiety level generally decreases and you feel less overwhelmed
 9. Note that there are many types of training in how to breathe, this concept focusing on letting go, a skill not currently well understood by most people

#19: Balance exercise from Anterolateral Ankle Shift

1. Stand with feet shoulder length apart
2. Shift weight from side to side while taking deep breaths
3. Work to keep body from hips up through head stacked straight up and down
4. Shift center of gravity with inhalation and then exhale when move to the other side
5. Change to inhale with shift of center of gravity starting on the other foot
6. Do 3 repetitions x 3 sets and build to 10 repetitions per set x 3 sets
7. Now move feet closer together: every time you reach 10 cycles x 3 sets, move feet to 4 inches apart, working hips, knees, and ankles to return proprioception to joints

#20: Easier Balance exercise

Basically the same thing with a different position in that one foot is in front of the other as if in step

#21 9-inch Therapy Ball Spinal Stretch

Purpose: to elongate the STRETCH of the fascia (including anterior and posterior ligaments) which support the spine so that the smooth curve of the spine returns to the spine in areas of sudden bend or flattened regions of spine

Who suitable for: patients without fracture or disrupted organs, including skin that cannot be safely stretched

Starting position: sit patient up with feet on the bottom of the table and have ready supporting pillows about the height of the underinflated (to comfort) 9 inch therapy ball*, with extra supporting pillows for kyphotic patients; then place ball just below the level where treatment is desired (will be pushed upwards when patient lays down on it); assist patient in reclining onto ball; ask patient if the ball is centered on the spine and if it is not, correct to center; check that head is level with adjoining body and that neck is relaxed in a natural position

*anti-burst balls, often called 9 inch therapy balls, can be obtained from Amazon or other sports facilities, do not stick to the skin, do not have elevated lines, and will warm up with skin contact because they are not made out of the very shiny plastic so they have a hazy shine

Be sure to underfill to about $\frac{3}{4}$ full and adjust to comfort



Steps in performing: patient rests on ball until breathing is relaxed and back stretches out, but pillow height may need to be adjusted as elongation of spine occurs so that neck is always supported at height adjoining that of the length of the body; make sure to elongate neck at all times into a natural curve, never allowing head to tilt backwards and encourage patient to release exhalation letting go; arms are laying on table at patient's sides while patient turns palms up to the ceiling so that ante-cubital fossae (inside of the elbows) face the ceiling of the room and allow the back to open fully; shoulders may drop below the level of the body but need to be relaxed

Common mistakes: failure to relax breath; holding antecubital fossae turned towards body or downwards

Frequency: daily for about five minutes, or until patient feels the ease of an elongated back; may be repeated with ball at a different level of the back; easiest to remember if the ball is left on the bed pillow to remind patient to stretch before sleep

