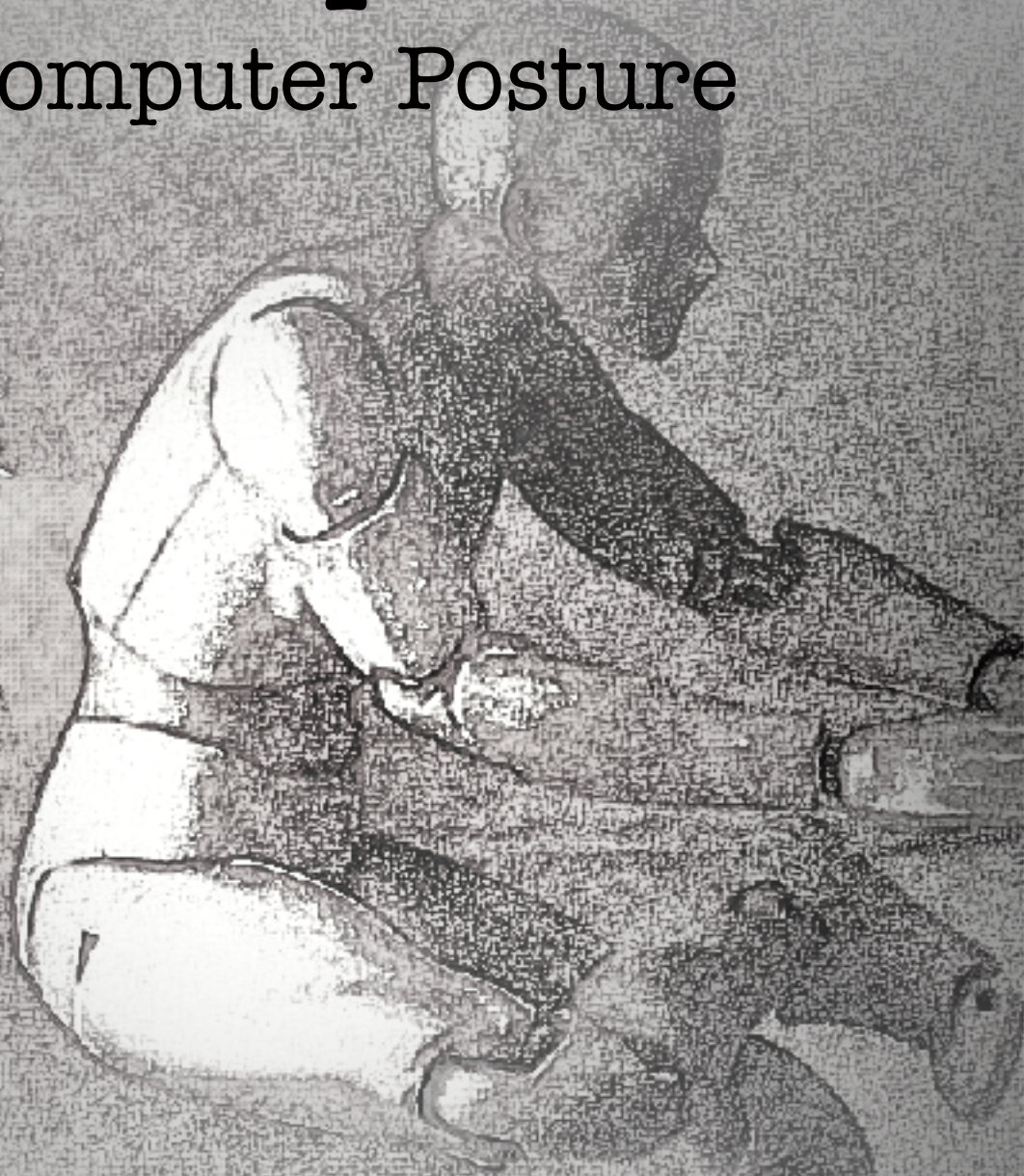


# **Neuromuscular Techniques:** For Computer Posture



Jon Clancy  
LMBT #14063



## Seated Positions: Low Back Pain

- ★ Shortening of hamstrings, weakening of quads
- ★ Shortening of abdominals, lengthening of erector muscles]
- ★ Could be a slight rotation from the position of a monitor at the desk

### Relax:

- Hip Flexors
- Abdominals
- Hamstrings

### Strengthen:

- Erector Spinae
- Hamstrings
- Quads

### Stretch:

- Hamstings
- Abdominals & Hip Flexors
- QL on short side

## Seated Positions: Mid-Upper Back Pain

- ★ Protracted Scapula puts strain on Rhomboids and Levator
- ★ Forward head position puts strain on erectors and neck extensors
- ★ Ischemia in low back muscles
- ★ Trapezius misfires due to awkward scapula positions

### Relax:

- Serratus Anterior & Pec Minor
- Abdominals
- Anterior Neck
- Trapezius

### Stretch:

- Pecs, Serratus
- Abdominals

## Seated Positions: Subscapular Pain

- ★ Dull ache under scapula
- ★ Often caused by protracted shoulders, rotator cuff imbalance, forward head posture, or compression at the neck

### Relax:

- Serratus Anterior & Pec Minor
- Anterior Neck
- Rotator Cuff Muscles
- Trapezius
- Scalenes

### Stretch:

- Lateral Neck
- Subscapularis

### Strengthen:

- Rotator Cuff
- Rhomboids

## Seated Positions: Parasthesia

- ★ Forward head posture or tension can lead to misalignment or compression of facet joints of Cervical Spine
- ★ Compression of Brachial Plexus
- ★ Depending on circumstances, this may be an orthopedic condition not treatable with bodywork

### Relax:

- Scalenes
- Pec Minor
- Subscapularis
- Coracobrachialis
- Anterior Neck

### Stretch:

- Lateral Neck
- Pec Minor

### Strengthen:

- Rhomboids
- Rotator Cuff

## Seated Positions: Stiff Neck

- ★ Forward head posture in an active position agitates Levator Scapula and Splenius Cervicis and Capitis
- ★ Can cause severe spasm, particularly when paired with trauma (ie. car accident)

### Relax:

- Anterior Neck, suboccipitals
- Scalenes
- Splenius Cervicis and Capitis

### Stretch:

- Lateral Neck

### Strengthen:

- Retractors of Head (Primarily Splenius)

## Seated Positions: Chronic Headache

- ★ Forward head posture in an active position agitates Traps, and puts excessive strain on Splenius
- ★ SCM does not function correctly due to chronic shortening or constant strain
- ★ With the head forward, the suboccipitals are always compensating

### Relax:

- Anterior Neck, Suboccipitals
- Trapezius
- Splenius Cervicis and Capitis
- Sternocleidomastoid
- Temporalis

### Stretch:

- Lateral Neck

### Strengthen:

- Erector Spinae

# Pathologies & Problems

- Whiplash
- Thoracic Outlet Syndrome

## **Whiplash**

- ★ Caused by sudden forceful trauma
- ★ Can create longterm guarding of the cervical spine

Treatment:

- See 'Stiff Neck'
- See also 'Chronic Headache'

## **Thoracic Outlet Syndrome**

- ★ Compression of nerves of the lower cervical and upper thoracic spine
- ★ shooting pain or numbness down the arm
- ★ Confirmed by nerve conduction test
- ★ symptoms overlap with Carpal Tunnel Syndrome
- ★ May require surgery for relief

Treatment:

- See 'Stiff Neck'
- See also 'Parasthesia'
- See also 'Subscapular Pain'
- See also 'Chronic Headache'

# Shoulder girdle routine

## **Mobilize the scapula, release the rotator cuff and trapezius**

### **Unroll upper traps:** Prone

- Warm up the area with effleurage, petrissage, skin rolling and/or myofascial stretching
- hook fingers under lateral upper traps and gradually feed tissue into fingers while uncurling the upper fibers that wrap around to attach at the clavicle
- Use gentle-moderate pressure (to client comfort), and as you feel the tissue soften, maintain pressure as you increase the depth of your pressure
- Trigger point pain patterns are common and may be more intense than the actual pressure, be patient and wait for the referred pain to fade



### **Serratus anterior release: Prone**

- Stand on the opposite side of the body from the shoulder you are treating
- Reach across the client anterior to the lateral border of the scapula
- Using a slow effleurage and pressing as much of the palmar surface of your hands and fingers into their ribcage, gradually draw the scapula toward midline
- hold the scapula retracted with one had as the other hand repeats this slow, dragging effleurage





### **Subscapularis release:** Prone

- Sit facing the head of the table. Use the right arm for their left side and vice versa.
- Form your hand into a 'C shape. Back of the hand rests on the table. Lubricate the tip of your thumb
- Cradle the shoulder in your 'C' shaped hand and position your thumb in the crease of their armpit on the anterior scapula.
- With your other hand, protract their scapula so the sub scapular fossa rests on your thumb and use the free hand to maneuver the scapula on your thumb. 'C' hand is static.
- wait for tissue to soften
- NOTE: This technique is highly effective and relatively comfortable for a client, but not appropriate for a therapist who suffers from thumb problems, and should be limited to the amount of time your thumb can comfortably maintain pressure. Consider prone or side-lying technique



**Mobilize the scapula, stretch serratus anterior: Prone**

- rotate your 'C' hand so the thumb is still under the scapula, but the fingers are at the medial border of the scapula on the back
- With free hand, retract the scapula (lift the shoulder girdle from below) so the medial border of the scapula slides over your fingers
- With appropriate force, lift and rotate the scapula away from the ribcage noting when it becomes more free



**Pinch compress lower traps:** Prone

- After mobilizing the scapula, this is a much easier technique
- imagine a line from the medial scapular sine to T12. Position your hands perpendicular to that line (so it aligns with your proximal knuckles)
- With all fingers and thumbs spread out, push down on the skin and muscles of the back and scoop them together. Once you have mastered this technique, the lower traps will be lifter off the ribs between your fingers
- compress to your client's delight (or relief)



**Release the rotator cuff** (except subscap): Prone

- Stripping effleurage on the infraspinous fossa
- Linger in areas of increased density or tonus
- Once warmed up, perform trigger point treatments on the more dense areas of infraspinatus. Elbows are often more comfortable for therapist and client than fists or fingers
- Repeat this process along the lateral border of scapula to treat trees minor
- Return to upper traps and unroll again above supraspinous fossa
- Perform stripping effleurage of supraspinatus, gradually working into deeper layers
- NOTE: If area is extremely tender, a tear is possible. Work gradually, and consider asking for a doctor's note if you believe there is a serious injury



**Pectoralis minor release: Prone**

- Warm up the upper pecs (as appropriate based on your client's/employers requirements) using effleurags and pinch compression
- When pliable, apply broad compression on a diagonal perpendicular to pec minor (imagine a 45° angle from the client's chin to their upper arm)
- Feel for the tight bands running from the ribs to the coracoid process. Apply appropriately direct pressure to this tissue until it softens



# 368° Neck Routine

**Restore curve, improve mobility, decrease resting tonus of scalenes**

**Upper erector release:** Prone

- Warm up the upper back
- Run fingertips, knuckles or thumbs down the lamina groove on each side of the spine from ~C5-T12
- Dragging effleurage along the erectors (superior-inferior and/or inferior-superior)
- For hypertonic or ischemic areas, compress, cross-fiber friction, compress, repeat

**Posterior scalene, rhomboid minor, serratus posterior superior:** Prone

- Palpate the area deep and lateral to C5-T2. You will almost always find tension between there and ribs 1-5 running at ~ a 45° from the spine down toward the ribs
- Compress the area, first using broad compression (fist, palm, forearm)
- As the area warms up, use more precise compression in more dense/hypertonic areas

**Scalene release:** Supine (works well side-lying)

- Using fingertips, find the anterior aspect of middle scalene. Be mindful of potential for hitting a nerve and communicate with client
- Press with mild to moderate pressure back toward the floor (side-lying, from behind the client, pull back toward you)
- Be VERY patient as these muscles can be sensitive and stubborn. They will eventually soften
- repeat with anterior scalene
- If they are unresponsive, try increasing pressure to a more aggressive level for about 5-10 seconds, let up then ease back in to a more normal pressure. This can sometimes stimulate a response
- If they are still not responsive, continue the neck routine and return to scalenes after anterior neck has been released (especially if that allowed for greater cervical movement)

### **SCM Compression:** Supine

- Sitting at the client's head., slide your fingers posterior to the lateral side of sternocleidomastoid. BEWARE of high sensitivity
- From the lateral side, start to push/bunch up SCM and compress it with your thumb.
- once you have a grip on the SCM, gently pull it up and away from the neck just slightly to avoid working on/compressing the internal jugular vein
- Work both sternal and clavicular head, inch by inch.

### **Deep anterior cervical spine (infrahyoids, longus colli & capitis):** Supine

- First you must release the infrahyoids. If, when you attempt to move the trachea there is a 'click' or 'pop', the infrahyoid muscles (and possibly the suprahyoids) will need attention to free the trachea from the spine
- Gently slide trachea to the opposite side from where you are going to work. Making sure the trachea is as shifted as possible on the client without pain
- Push finger into anterior neck alongside trachea WATCH FOR A PULSE; if you cannot move in toward the spine you will need to free the scapula more
- With your other hand cradling the patient's neck, push into their neck medial to the carotid artery and straight back to the anterior cervical stains.
- As you compress longus colli, make tiny, gentle moves of the cervical spine
- Any client with clotting issues or hx of plaque build (eg. had an angioplasty) is contraindicated for this treatment
- There is a possibility of carotid dissection if this technique is performed aggressively/carelessly. Practice this diligently before performing it on clients

### **Splenius and levator:** Supine

- Perform long slow effleurage from ~ transverse process of C1 to the spinous process of C7, stopping to compress any very tight areas. Repeat.
- Perform the same effleurage, this time from transverse tubercle of C2 to the superior medial border of the scapula. Repeat.

- With your palm under the client's head and your thumb pressing into the neck between transverse process of C1 and C2, tilt the head toward your thumb to press into splenius cervicis
- Lift the client's head and rest it on your palms, resting your elbows on the table to create a splenius stretch. Bring your elbows closer together and closer to the table to increase intensity to the patient's comfort

**Suboccipital Release:** Supine

- Place fingers between C1 and Occiput. Rest wrists on the table and lift the client's head so that your fingers press in to the space.
- IF there is limited space, tilt their head just slightly down toward their feet
- Repeat for the space between transverse processes of C1 and mastoid processes
- Repeat for the space between C1 and C2



## **The Muscles: Just the facts**

- **Origin**
- **Insertion**
- **Action**
- **Innervation**
- **Function**
- **Aggravated by**
- **Symptoms**
- **Tips**
- **Self Care tips**

### **Pec Major**

Origin: Sternum, lower 8 ribs

Insertion: Pubis, Linea Alba, Iliac Crest

Action: Compress abdomen, contralateral rotation of trunk, lateral flexion

Innervation: Lower Intercostal, iliohypogastric, & inguinal nerves

Function: Torso stability via kinetic chain, lateral stabilizer

Aggravated by: Seated posture, carrying baby on one hip, golf swing or other rotational activity

Symptoms: Rib pain, vomiting, 'heartburn'

Tips: This is gentle patient bodywork

Self care tips: Rotational stretches and lateral extension. Planks

### **Abdominals: Internal Obliques**

Origin: Lateral half of inguinal ligament, Iliac crest, thoracolumbar aponeurosis

Insertion: Pubis, lower 3-4 ribs, lines alba

Action: Compress abdomen, ipsilateral rotation of trunk, lateral flexion

Innervation: Lower 5 thoracic nerves, first lumbar nerve, iliohypogastric, & ilioinguinal nerves

Function: Torso stability via kinetic chain, lateral stabilizer

Aggravated by: Seated posture, carrying baby on one hip, golf swing or other rotational activity

Symptoms: Testicular & groin pain, stitch in side

Tips: gentle, patient bodywork

Self care tips: Rotational stretches and lateral extension. Planks

### **Abdominals: Rectus Abdominus**

Origin: Pubic bone & symphysis

Insertion: 5, 6, 7th ribs, xyphoid process

Action: flexes trunk

Innervation: Spinal nerves T7-T12

Function: Torso stability, compresses abdominal contents

Aggravated by: Seated posture, biking, slumped posture, driving

Symptoms: Horizontal back pain across low ribs or across posterior iliac crests.

Lower abdominal pain, can mimic appendicitis

Tips: Major player in low back pain and posterior tilt. Sides of rectus can separate during pregnancy, excessive lifting or obesity, feel for a depression at the line alba

Self care tips: Abdominal stretches, planks

### **Abdominals: Transverse Abdominus**

Origin: Thoracolumbar aponeurosis, lower 6 ribs, iliac crest, lateral 1/3 of inguinal ligament

Insertion: linea alba and pubis

Action: flexes trunk, compresses abdominal contents

Innervation: Lower 6 thoracic nerves, first lumbar nerve, iliohypogastric and ilioinguinal nerves

Function: Torso stability, compresses abdominal contents 'ribs' of the abdomen

Aggravated by: Seated posture, stress overexercise (too many crunches)

Symptoms: visceral abdominal pain

Tips: feel for adhesions between layers of the abdominal wall

Self care tips: Abdominal stretches, planks

### **Abdominals: Psoas**

Origin: Anterior surface of T12-L5

Insertion: Lesser Trochanter of Femur

Action: Trunk flexor, hip flexor

Innervation: Spinal Nerves L1-L4

Function: Powerfully flexes hip when already flexed, spine stabilizer

Aggravated by: Sitting, biking, improper lifting, emotional trauma

Symptoms: Vertical pain along posterior lumbar spine

Tips: Work abdominals before attempting to access psoas. In the case of anyone who has serious abdominal dysfunction or self-image issues, build up trust before attempting. Most of the muscle is not

palpable on morbidly obese or pregnant clients. Self care tips: Lunges. Lie on ground, legs on couch

### **Abdominals: Iliacus**

Origin: Iliac fossa of Pelvis

Insertion: Lesser Trochanter of Femur

Action: Powerful hip flexor

Innervation: Spinal Nerves L2-L3

Function: Powerfully flexes hip when already flexed

Aggravated by: Sitting, biking

Symptoms: Vertical pain along posterior lumbar spine

Tips: May be more accessible than psoas. If abdominals are sensitive, you may be able to gently access iliac using your elbow/forearm. Gently move the abdominals away from the ASIS ten press in with forearm. Many clients prefer this technique as it is very broad.

Self care tips: Lunges

### **Hip Flexors: TFL**

Origin: ASIS

Insertion: IT Band (lateral condyle of tibia)

Action: Abductor, medial rotator, hip flexor

Innervation: Superior gluteal nerve L4-S1

Function: Keeps your hip stable when standing on 1 leg, stabilizes lateral knee during hip flexion

Aggravated by: Extended sitting, gets lazy if you only walk in straight lines on flat ground

Symptoms: Can simulate trochanteric bursitis. Sharp pain on G. Trochanter. Can't side sleep

Tips: Find the ASIS and the Greater Trochanter. Draw an [imaginary] straight line up from the trochanter to the iliac crest. TFL is between those three landmarks. It is often very tender, and it is directly superficial to gluteus medius and minimus, both of which may also be very tender.

Self care tips: Balancing. Abduction exercises. Walk on uneven ground and move from side to side

### **Hip Flexors: Rectus Femoris**

Origin: AIIS

Insertion: Tibial Tuberosity (via common Q-ceps tendon)

Action: Knee extensor, hip flexor

Innervation: Femoral nerve, L2-L4

Function: Longest, weakest quadricep. Supports prime movers in hip flexion & knee extension, aids continuity of those two movements

Aggravated by: Fall with knee hyperflexion, sitting with heavy weight on thigh. Sitting doesn't fully extend RF.

Symptoms: Kneecap pain, low anterior thigh pain, 'awakened in the middle of the night' with hip flexed and knee extended.

Tips: Straight line down from ASIS to kneecap. Don't let sartorius lead you off track!

Self care tips: Squats, box jumps. Quad stretch with hip extension

### **Hip Flexors: Sartorius**

Origin: ASIS

Insertion: Pes anserinus tendon

Action: Flexion of hip and knee, abduction and external rotation of hip

Innervation: Femoral nerve, L2-L3

Function: Helps you cross your legs. Assists all actions

Aggravated by: Excessive foot pronation, cycling with clipless pedals, typically secondary to other pain.

Symptoms: Stinging pain in a straight line along sartorius toward ASIS

Tips: externally rotate the leg by bolsterring under the knee at a 45° angle. this will make effleurage easy. Use a 'dragging' effleurage.

Self care tips: Roller wand.

### **Erector Spinae: Iliocostalis**

Origin: Sacrum, Iliiac crest and spinous processes via common erector tendon

Insertion: lower 6 or 7 ribs

Action: spinal extension (bilaterally) lateral flexion (unilaterally)

Innervation: Dorsal rami of spinal nerves, thoracic and upper lumbar nerves

Function: posture, compensation for postural dysfunction/scoliosis

Aggravated by: Sitting, biking, 'text-neck', excessive or improper exercise

Symptoms: pain in buttocks, along the spine and extending toward the shoulder, medial border of scapula

Tips: compression or long, slow effleurage. Tok Sen Hammer very effective

Self care tips: Planks, Superman, child's pose

### **Erector Spinae: Longissimus**

Origin: All Transverse Processes

Insertion: All Transverse Processes

Action: spinal extension (bilaterally) lateral flexion (unilaterally)

Innervation: Dorsal rami of spinal

Function: posture, compensation for postural dysfunction/scoliosis

Aggravated by: Sitting, biking, 'text-neck', excessive or improper exercise

Symptoms: Refers inferiorly, QL area, ischial tuberosity, shares referrals with multifidi. Major player in low back pain.

Tips: compression or long, slow effleurage. Lamina groove workman be highly effective . Tok Sen Hammer also effective (careful with placement)

Self care tips: Planks, Superman, child's pose

### **Quadratus Lumborum**

Origin: Ilium, lumbar spine

Insertion: 12th rib

Action: Lateral flexor

Innervation: Thoracolumbar Spinal Nerves

Function: Stabilizes lumbar spine, hip hiker

Aggravated by: Sitting, leg length discrepancy

Symptoms: SI joint, lower buttock, iliac crest

Tips: There is almost universally a short side and a long side. Be cautious about working both sides as it can lead to an overwhelming sensation of weakness

Self care tips: Reclining twists

### **Gluteus Maximus**

Origin: Gluteal surface of ilium, lumbar fascia, sacrum, sacrotuberous ligament

Insertion: Gluteal tuberosity of Femur, IT band

Action: Powerful hip extensor, lateral rotator, abductor

Innervation: Inferior gluteal nerve L5-S2

Function: Jumping, lifting, walking with increased rate or load

Aggravated by: Prolonged uphill walking, side sleeping, swimming the crawl stroke, regular injections

Symptoms: 4 corners of a hip pocket

Tips: Responds well to pick-up compression

Self care tips: Weak 'butts' are very common and can cause low back pain and poor posture. Hip thrusts.

### **Lateral Rotators: Piriformis**

Origin: Anterior Sacrum

Insertion: Superior border, Greater Trochanter

Action: Lateral rotation

Innervation: Spinal Nerves L5-S2

Function: External rotation, horizontal abduction

Aggravated by: Any overload- lowering a heavy object, exercise, a slip, trauma, car accidents

Symptoms: Sexual dysfunction, pelvic floor, hip, buttock leg or foot pain, pain during defecation. Can look like Sciatica

Tips: Hard to stretch, try compression prone and side-lying.

Self care tips: Pillow between legs while sleeping, seated bow over crossed legs. 'Tennis ball' foam rolling

### **Hamstrings: The Semi's**

Origin: Ischial tuberosity

Insertion: Pes anserinus tendon, medial tibial condyle

Action: Hip extension, knee flexion, tibial medial rotation (only when knee is flexed)

Innervation: Sciatic nerve

Function: Hip extension and knee flexion

Aggravated by: Prolonged bedrest with knees propped, prolonged ischemic compression (dangling legs off a chair), acute overload from exercise or trauma

Symptoms: hip pain or posterior knee pain

Tips : responds well to compression. Consider PNF stretches to begin, then less aggressive stretched after treatment.

Self care tips: Half split, legs up the wall, hamstring curls

### **Hamstrings: Biceps Femoris**

Origin: Ischial tuberosity (long head), linea aspera (short head)

Insertion: Lateral tibial condyle (both heads)

Action: Hip extension (long head), knee flexion, tibial lateral rotation (when knee is flexed)

Innervation: Sciatic nerve

Function: Hip extension and knee flexion

Aggravated by: Prolonged bedrest with knees propped, prolonged ischemic compression (dangling legs off a chair), acute overload from exercise or trauma

Symptoms: hip pain or posterior knee pain

Tips : responds well to compression. Consider PNF stretches to begin, then less aggressive stretched after treatment.

Self care tips: Half split, legs up the wall, hamstring curls

### **Gluteus Medius**

Origin: Anterior 3/4th of iliac crest

Insertion: Greater trochanter of femur

Action: Abduction, medial rotation

Innervation: Spinal nerves L4-S1

Function: Stabilizes hip joint during walking or other 1 legged balancing acts

Aggravated by: hip pocket wallet, leg length discrepancies, sudden or awkward falls.

Symptoms: Hip or sacrum pain. Pain lying on back or affected side, when walking, or slouching in a chair. Knock-kneed

Tips: Responds well to compression

Self care tips: Lunges, one legged balancing, 'tennis ball' foam rolling

### **Gluteus Minimus**

Origin: Anterior 3/4th of iliac crest

Insertion: Greater Trochanter of Femur

Action: Hip abductor, medial rotator

Innervation: Spinal Nerves L4-L5

Function: Stabilizes hip joint during walking or other 1 legged balancing acts  
Aggravated by: Hip pocket wallet, leg length discrepancies, sudden or awkward falls.

Symptoms: Pseudosciatica, radiates down the outer leg , skips knee

Tips: Elbow/forearm compression

Self care tips: Abductor/ adductor exercises, 'tennis ball' foam rolling

### **Adductors**

Origin: Pubic ramus, ischial ramus. ischial tuberosity

Insertion: Femur, lesser trochanter down shaft

Action: Abduction, medial rotation

Innervation: Obterator nerve, sciatic nerve

Aggravated by: Running on hills

Symptoms: Groin pain, inner thigh pain, knee pain, sexual dysfunction

Tips: Side-lying posture

Self care tips: Abduction/adduction exercises, abduction stretches

### **Adductors: Gracilis**

Origin: pubic ramus

Insertion: pes anserinus tendon

Action: Abduction, knee flexion

Innervation: obterator nerve

Function: Controls angle of the knees

Aggravated by: Running on hills

Symptoms: Stinging pain in a straight line along gracilis toward pubic bone

Tips : Side-lying position. Use a 'dragging' effleurage.

Self care tips: Abduction/adduction exercises, abduction stretches

### **Pelvic Floor Muscles**

Muscles: Transverse perineum, Pubococcygeus, Iliococcygeus, Coccygeus, Sphincters

Function: Stabilize pelvic floor against intrabdominal pressure, stabilizes pelvic girdle and SI joint, support urinary and fecal continence

Aggravated by: Falls, childbirth, car accidents extended sitting, surgery, chronic hemorrhoids

Symptoms: SI Joint instability, incontinence, sexual disfunction, pain with defecation, prolapsed uterus

Self care tips: Pelvic floor exercises