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Assessment for

Range of Motion Part 1

Very Important!!!

Please note: This slide deck shows both STRENGTHENING and STRETCHING poses/exercises in some cases, but remember that the ROM testing indicates restrictions for RANGE OF MOTION (ROM) or pain but will not test for strength unless indicated.

In other words, if a test is designed to test the subscapularis, it is testing for ROM (not strength) or a point of pain. However, I may still show you ways to both strengthen **and** stretch the muscle being tested on some slides.

For example, if a specific test reads:

"If the client has restrictions with the listed ROM test , then the muscle that is probably restricted is the subscapularis" this means the client is either experiencing pain when trying to move thru a normal ROM or is unable to move thru a normal ROM.

This means you need to STRETCH (NOT strengthen) the subscapularis because it means there is a **range of motion restriction**. It is possible that the muscle is both short AND weak, but you'd have to test for strength separately.

Very Important!!!

So, why did I include some strengthening exercises in this slide deck?

#1) If we suspect **weakness** in a muscle, we can use the movement listed to contract or strength it as a strength test. For example, if doing a biceps curl strengthens the bicep muscle, you could also use a client's ability to do a bicep curl under load as an indicator of their bicep strength.

However, we have to use careful consideration because it is hard to isolate muscle groups. For example, say that I asked you to hold plank so I could test your transverse abdominal (TrA) strength and you were unable to successfully hold plank pose. There are many reasons why you might not be able to hold plank and your TrA strength is only one of them, so I can't automatically assume the weakness is with your TrA.

#2) Many people who need to stretch muscles in a particular area may also be weak in that area. NOT NECESSARILY…so don't automatically assume they need strengthening, but use common sense (and TEST for strength when needed – which we will discuss more). For example, if a client is tight in their pecs, but they are a weight lifter, they probably only need stretching for the pecs. But, if a client is tight in their pecs and they are very sedentary, chances are good that they will need both stretching and strengthening.

Very Important!!!

Note: I have not specified to "repeat on opposite side" for tests that should be done on both sides. It is a given that you will do the tests on both sides. For example, if you test neck rotation on one side, you will always do it on both sides.

I didn't note this in the slides for brevity, but please remember that you'll always test both sides.

Key to Slides

- Thomas Myers Anatomy Trains uses the "lines" noted below. I included them because many students are familiar with them, but if you are not, you do not need to do anything with this info. I include it because some of the tests we use refer to these abbreviations and I wanted you to know what they reference.

- BFL – Back Functional Line
- LL – Lateral Lines
- DFAL – Deep Front Arm Line
- DFL – Deep Front Line
- DBAL – Deep Back Arm Line
- FFL – Front Functional Line

Key to Slides (cont'd)

- LL – Lateral Line
- SBAL – Superficial Back Arm Line
- SBL – Superficial Back Line
- SFAL – Superficial Front Arm Line
- SFL – Superficial Front Line
- SL – Spiral Line

Notes

- Where you read "TGB" in this deck (usually with page numbers), this refers to the 5th edition of the *Trail Guides to the Body* book

- Just as with the postural assessments, I would never perform every assessment on a client. How do you know which tests to perform? The results of their postural assessment, pre-assessment and verbal assessment should help you. For example, if a client complains of neck and shoulder pain and you notice that their shoulder blades are elevated and their neck is more laterally flexed to one side (off center), this may indicate a need for muscle testing in the neck and shoulder area. Chances are good they have some tightness (and maybe weakness) in these areas. If this same client has no lower body complaints and assesses well in the lower body, there would be no reason to do any muscle assessments for the lower body. If there are multiple issues, select 1 or 2 major issues to work on at this time and put the rest off until later.

Why Perform ROM or Strength Testing?

- Often, our postural assessment results will provide enough information for us to begin a yoga therapy plan. For example, if our client has poor over-pronation and poor dorsiflexion, there are some assumptions we can make about the feet, lower legs and even the glutes that will allow us to suggestion certain myofascial release, strengthening and stretching exercises or asanas. We would not necessarily need to do further ROM or strength testing with the client, unless we had poor success with the assigned program, in which case we might decide to do further assessment at some point.

- Summary: You can do ROM and strength testing immediately following the postural assessment if you'd like, or you can create a therapy plan off the postural assessment results and then get more specific with muscle tests (ROM/Strength) only when needed.

Why Perform ROM or Strength Testing?

- When would it be "needed"? If your client is not responding (after a couple of weeks) to the exercises/asanas you recommended based on the postural assessment, then you might do more in-depth testing.

- You might do ROM or strength testing to show a client where they are (create a baseline) on day 1 so you can later demonstrate how much progress they've made.

- You might do this testing if you are unsure of your postural assessment results, or you are getting mixed results. For example, the client feels no discomfort in the lower leg/feet and they have great dorsiflexion, yet you 'see' over-pronation in their feet. These mixed results might lead you to further testing.

- You suspect tightness/weakness in a muscle based on the verbal or postural assessment, but you want to verify your finding with further testing.

Use WITH Postural Assessment

- I can't stress enough that you need to use the results of any muscle tests you perform (ROM or strength) in conjunction with the postural assessment. Otherwise, you risk missing the underlying cause, offering only partial or temporary relief for your client.
- You also have to look at multiple muscles sometimes. Let's look at an example scenario.
- **Example:** Your test reveal there is lack of ROM or pain in the levator scapulae. You know which exercises and asanas to offer to stretch it. But that's only part of the answer. Look at the root cause. Why is the levator tight?
- When you did the Big 5 assessment, you may have found a forward head and kyphosis.

Use WITH Postural Assessment

- Forward head posture contributes to levator scapulae pain because when you hold your head in this way, it requires constant firing of your levator scaps – muscles that are not designed to be a postural, long-firing muscle.
- When these muscles are forced into over use, they become chronically tight and painful symptoms like trigger points and headaches develop.
- And, remember that forward head posture changes the line of action of your levator scapulae, exaggerating the anterior tilt of your shoulder blade. This can cause alignment issues and muscular imbalances.
- If you don't address the forward head position, you will have limited success. Teach your client a neutral cervical spine. You might have her do 'chin tuck' exercises to get used to the feel of a neutral neck.

Use WITH Postural Assessment

- Another reason we see dysfunction in the levator scapulae is that the levator muscles are compensation for the serratus anterior and traps. These muscles should upwardly rotate the scapula, but if they don't perform well, the levator (which is actually designed for DOWNWARD rotation) steps in to try to help. **
- As we know, a muscle that is doing a job it is not designed to do leads to dysfunction.
- If you didn't see a forward head or kyphosis, but you did see levator scap issues, look at the serratus anterior and traps to see if they are working properly.
- This is how we use postural and muscular assessments together to see the whole picture.

**Note: Contracting the levator scapulae moderately can be helpful for maximizing final elevation after the scapula is rotated completely upward, but it is otherwise not optimal to engage the levator in upward rotation.

TESTING INSTRUCTIONS

Neck, Head and Jaw

Review the link below and learn to test ROM for:
Cervical Rotation
Cervical Lateral Flexion
Cervical Flexion
Cervical Extension
Scalene Relief
Scalene Cramp
Opening and Closing (Masticatory muscles)
2-Knuckle (Masticatory muscles)
http://www.round-earth.com/CervicalTests.html

Note: This link is active at the time of publication. If it is not working, please Google "round earth cervical tests" to find the current link.

How Do I Use This Info?

When testing (lateral flexion, rotation, etc. in the case of the head/neck/jaw), if you notice restriction (lack of ROM or pain), the next step is to figure out which muscles might be responsible for the restriction, so we can show the client asanas or exercises to help relieve the restriction. But, remember, think about this in conjunction with postural assessment results.

For example, cervical rotation restrictions are often caused by lack of flexibility in the levator scapula, and/or the splenius cervicis and/or the splenius capitis. We don't need to stress about specifically which muscle(s) is causing the restriction, because we stretch these muscles using the same movements.

I hope you'll learn to appreciate what knowing a little anatomy can add to your yoga therapy plans.

You could see that a client had poor ROM with lateral flexion of the neck and easily ask her to start doing stretches of taking the ear to the shoulder. That would work fine. You might even know that it intensifies the stretch of the opposite arm reaches out toward the sky.

But, isn't it nice to understand, anatomically, WHY reaching the opposite arm toward the sky helps? (Because when the shoulder blade is rotated upward, the attachment of the levator moves downward creating more stretch.)

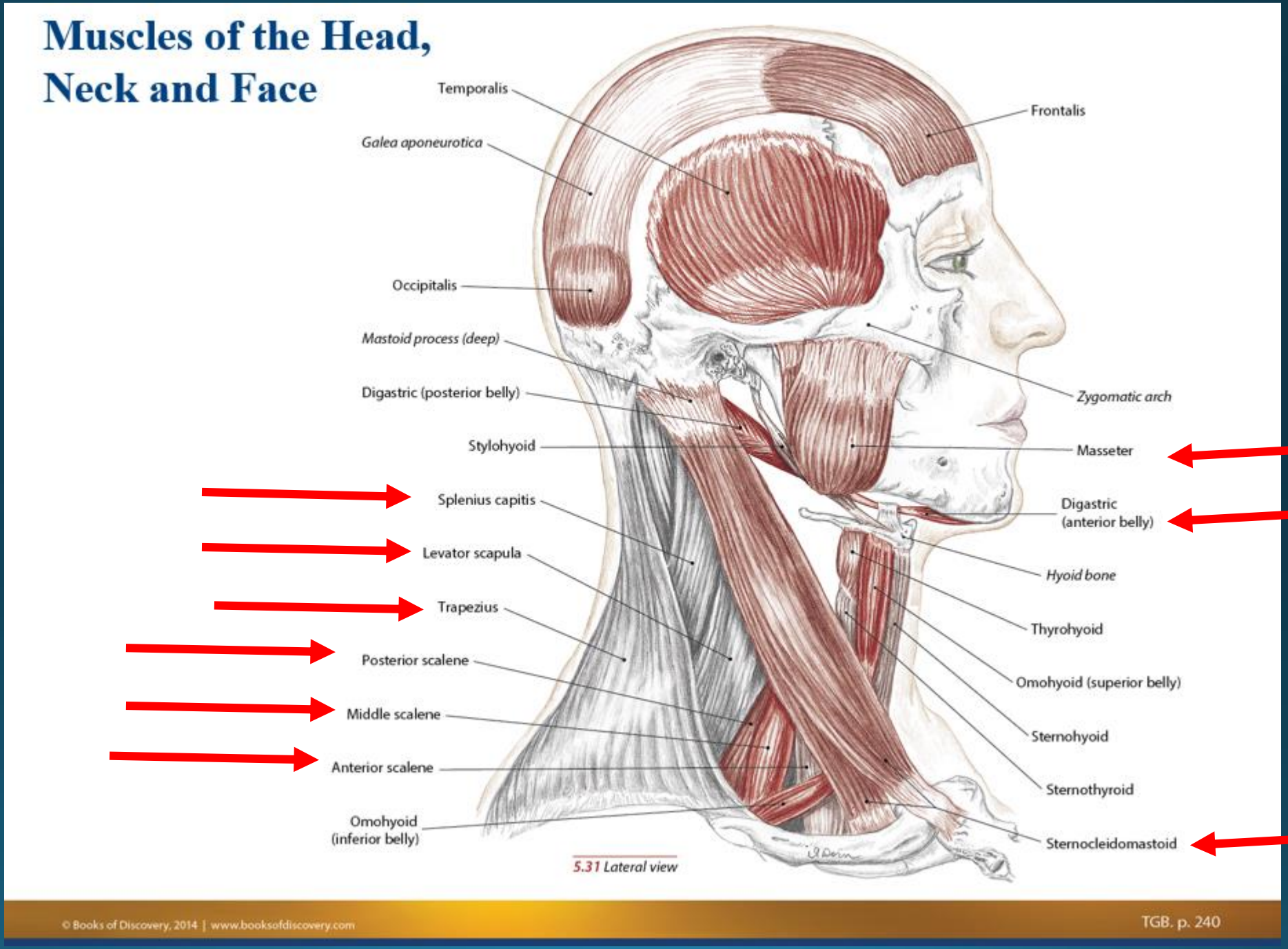
Don’t Stress

Don’t stress! Sometimes, you may not know exactly which muscle(s) is causing a restriction. Many times, it is not one muscle, but several muscles that act to create a certain movement that have become dysfunctional.

Don’t get caught up on figuring out the minutia. If you can’t figure out specifically which muscle it is, but you know what the restriction is, you can work with what you know. (If the ROM is restricted in lateral flexions, then work on lateral flexions!)

- Cervical Rotation Restrictions are often caused by:
- Levator Scapulae - DBAL (TGB p 83-85)
- Splenius Cervicis – SL - and Splenius Capitis –LL, SL (TBG 203-204)

DBAL - Deep Back Arm Line
LL - Lateral Lines
SL - Superficial Line



Cervical Rotation Restrictions

- Levator Scapulae (TGB p 83-85)

When Do You Use Your Levator?

- *Rotating head when changing lanes in traffic*
- *Holding a phone between your ear and shoulder*
- *Lying on your side, snuggling your head into your pillow*

A *Unilaterally:*
Elevate the scapula (scapulothoracic joint)
Downwardly rotate the scapula (S/T joint)
Laterally flex the head and neck
Rotate the head and neck to the same side
Bilaterally:
Extend the head and neck

O Transverse processes of first through fourth cervical vertebrae

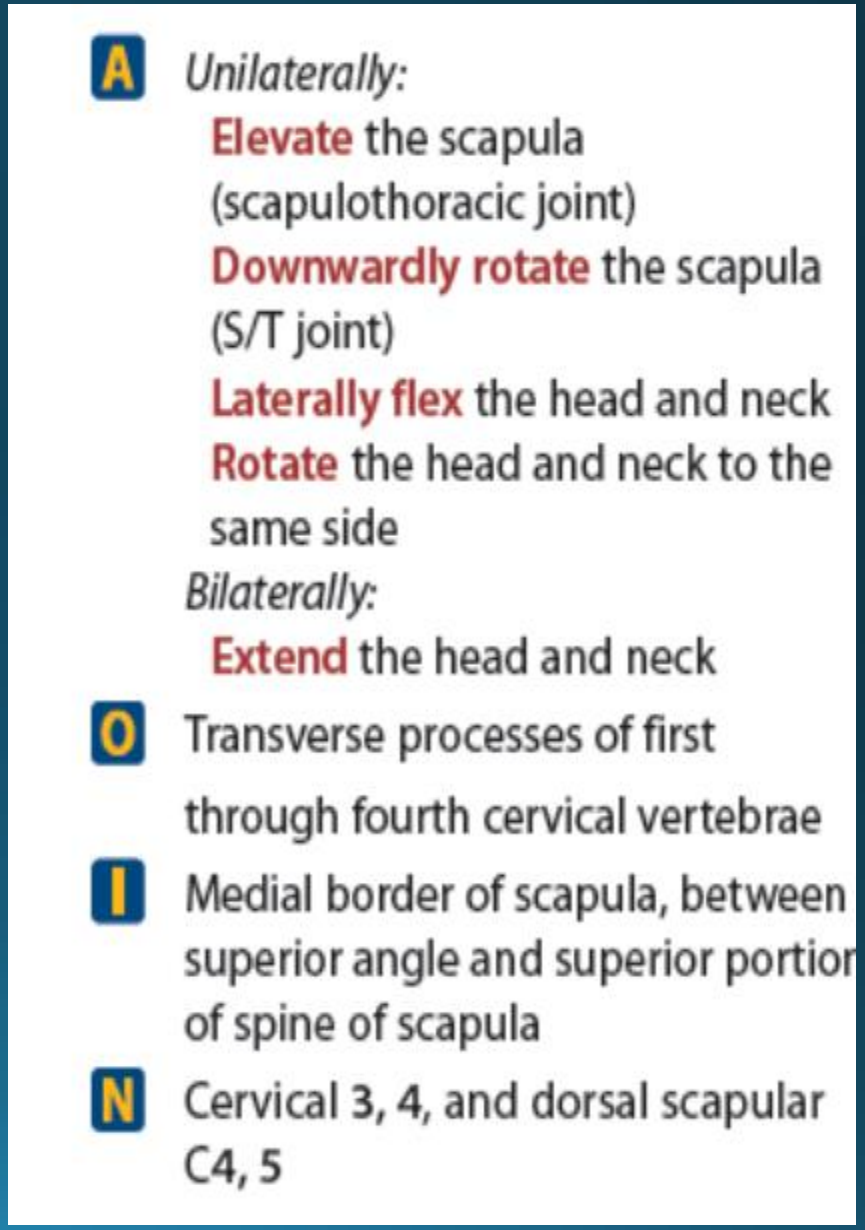
I Medial border of scapula, between superior angle and superior portion of spine of scapula

N Cervical 3, 4, and dorsal scapular C4, 5

What is the S/T Joint? See below. This is an active link at the time this document was published. If it is not active, please Google "view scapulothoracic joint" for the same information.
http://www.physio-pedia.com/Scapulothoracic_Joint

Cervical Rotation Restrictions

Remember: The Trail Guides card shows you actions of the muscle, which are actions that STRENGTHEN (contract) the muscle, but if it is a unilateral movement, that means it strengthens the muscle on one side and stretches it on the other. So when you laterally flex your neck, for example, you are contracting one side and lengthening the other side.



Cervical Rotation Restrictions

- Note: Levator Scapula also acts as a synergist to the rhomboids, which rotates scapulae downward and adduct the shoulder blades (opens the chest)

Cervical Rotation Restrictions

- Levator Scapulae – restriction can be due to overuse, especially if you spend too much time elevating the scapula. Think about a person who paints houses or does a lot of overhead work or keeps shoulders hunched at a computer.

- Poses that contract the levator (this muscle does more than rotation):

1. It is contracted in poses where we downwardly rotate scapula, such as **binding poses** where we reach our arm behind our back

2. In **Shalabasana (locust)** levator assists in holding head up – extension of head and neck

3. Looking toward the outstretched arm in **Triangle** (contracting same side when rotating neck) or **laterally flexing the neck to the same side** (as often done in Easy Seated or Thunderbolt pose)

Cervical Rotation Restrictions

- Levator Scapulae

- Poses that stretch the levator (Remember, this muscle does more than rotation)

1. **Halasana (plow)** lengthens levator as we take the neck into flexion
2. **Sirsasana (headstand)** lengthens the levator because we upwardly rotate our scapula as well as depress them.
3. Rotating and laterally flexing the neck

Cervical Rotation Restrictions

- Splenius Cervicis and Splenius Capitis (TBG 203-204)

When Do You Use Your Splenii?

- **Rotating your head and neck before changing lanes in traffic**
- **Applying ear drops (holding your head in lateral flexion)**
- **Crouched over in a huddle during a football game (neck extension)**

Unilaterally:

Rotate the head and neck to the same side

Laterally flex the head and neck to the same side

Bilaterally:

Extend the head and neck

Cervical Rotation Restrictions

- Splenius Cervicis and Splenius Capitis

- If you have a bike rider who complains of neck pain, it may be because he/she is riding long hours. When riding a bike, the ability to look forward to see where you are going requires you to use your splenius capitis (and splenius cervicis). If they have not trained their muscles (by looking upward/doing neck extension exercises) they may get sore/injured

Cervical Rotation Restrictions

Splenius Cervicis and Splenius Capitis

- Yoga poses that use (contract/strengthen) these muscles:

1. In **Shalabasana (locust)** and **Ardha Uttanasana (flat back pose)** if yogi looks somewhat upward - holding head up – extension of head and neck
2. **Cat/Cow**
3. **Fish Pose**
4. **Warrior II** (neck rotation)
5. Looking skyward in **Triangle** and **Ardha Chandrasana** (neck rotation)

You'd do the opposite of these movements to stretch these muscles. Bilaterally, you'd flex the neck, unilaterally, you are strengthen one side and stretching the other in neck rotations and lateral flexions.

Cervical Lateral Flexion Restrictions:

Trapezius - SBAL (TGB p 68-70)

SBAL – Superficial Back Arm Line

Cervical Lateral Flexion Restrictions

- Trapezius (TGB p 68-70)

When Do You Use Your Trapezius?

- *OK, not you—but when a Tour de France cyclist extends his neck over the handlebars of his bike*
- *Holding a phone between your shoulder and ear*
- *Carrying articles strapped across the shoulder (luggage, backpack, purse)*
- *Pulling shoulders posteriorly in a military fashion*

O External occipital protuberance, medial portion of superior nuchal line of occiput, ligamentum nuchae and spinous processes of C-7 through T-12

I Lateral one-third of clavicle, acromion and spine of the scapula

N Spinal portion of cranial nerve XI (accessory) and ventral ramus C2, 3, 4

A *Upper Fibers:*

Bilaterally

Extend the head and neck

Unilaterally

Laterally flex the head and neck to the same side

Rotate the head and neck to the opposite side

Elevate the scapula (scapulothoracic joint)

Upwardly rotate the scapula (s/t joint)

Middle Fibers:

Adduct the scapula (s/t joint)

Stabilize the scapula (s/t joint)

Lower Fibers:

Depress the scapula (s/t joint)

Upwardly rotate the scapula (s/t joint)

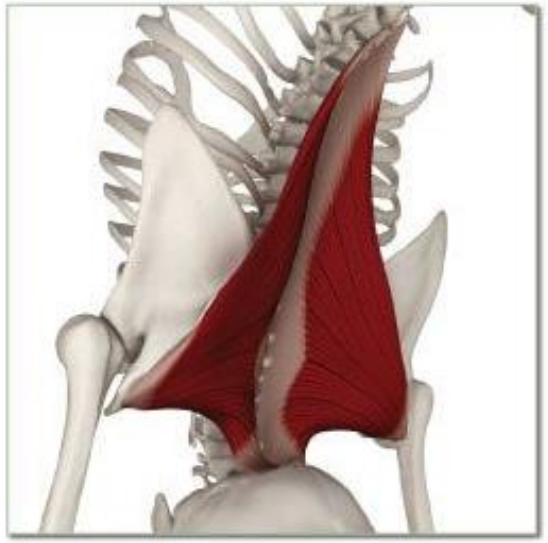
Cervical Lateral Flexion Restrictions

- Traps also act as synergists to the quadratus lumborum muscles, which are the “hip hike” muscles.

  These muscles laterally tilt (elevate) the pelvis, laterally flex the vertebral column to the same side and assist in extending the vertebral column.

Cervical Lateral Flexion Restrictions

The upper fibers of the trapezius contract in Urdhva Danurasana, assisting the lift of the upper body, outwardly rotating the scapula, and drawing the glenoid into greater contact with the humeral head.



Source: Key Muscles of Yoga Ray Long

Cervical Lateral Flexion Restrictions

The middle and lower fibers of the trapezius contract in Tolasana, lifting the body and retracting the scapulae inward and downward. Weakness in this muscle limits the ability to perform this pose.

Source: Key Muscles of Yoga Ray Long

Cervical Lateral Flexion Restrictions

We also use the traps to lift and rotate the shoulder blades in these poses when the arms are overhead:

Warrior I
Chair Pose
Extended Mountain

In these poses, the traps help support the body weight with the arms reaching past the head:

Down Dog
Handstand

Cervical Lateral Flexion Restrictions

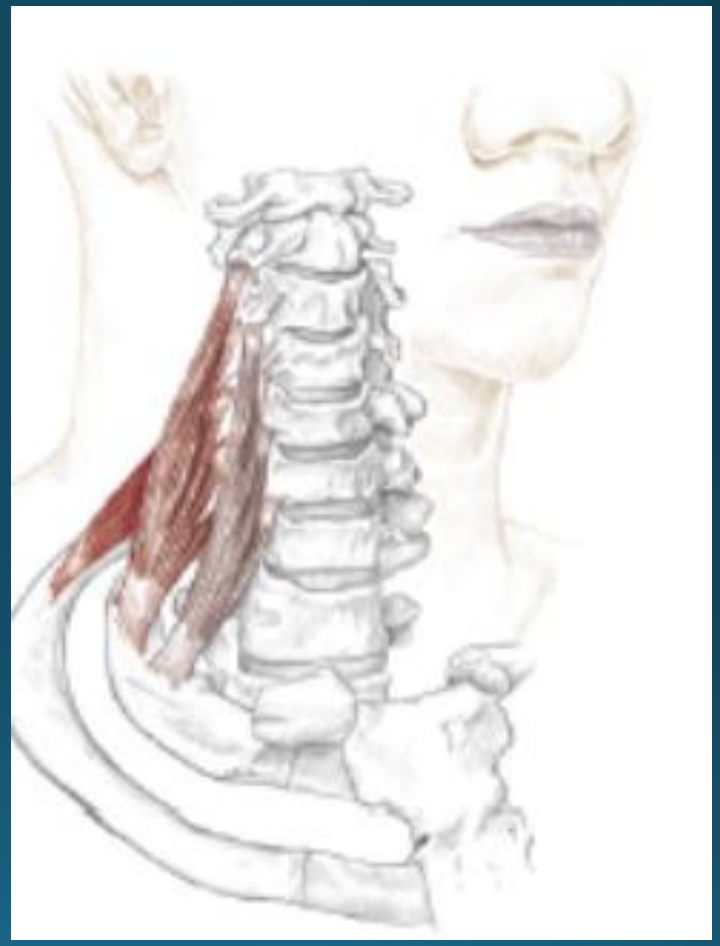
Stretch the Traps:

- Extended child's pose
- Chin to chest (neck flexion) or ear to shoulder to stretch the upper fibers of the traps
- Eagle arms will stretch middle and lower fibers of traps

Cervical Lateral Flexion Restrictions:

Scalenes – LL, DFL (TGB p 246 – 249)

LL -Lateral Line
DFL - Deep Front Line



Cervical Lateral Flexion Restrictions

- Scalenes (TGB p 246 – 249)

Middle Scalene

- **O** Transverse processes of second through seventh cervical vertebrae (posterior tubercles)
- **I** First rib
- **N** C(3), **4-8**

Posterior Scalene

- **O** Transverse processes of sixth and seventh cervical vertebrae (posterior tubercles)
- **I** Second rib
- **N** C(3), **4-8**

Neck flexion – looking down

All Scalenes

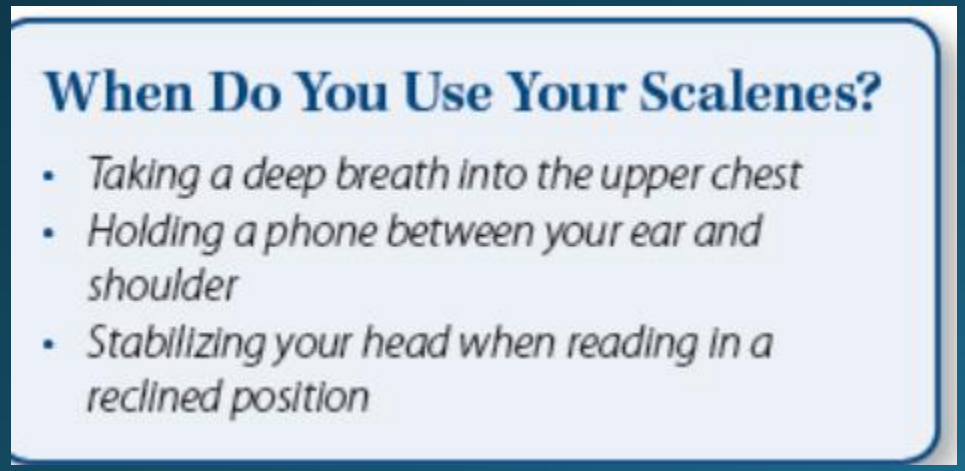
- **A** *Unilaterally:*
  - With the ribs fixed, **laterally flex** the head and neck to the same side (All)
  - **Rotate** head and neck to the opposite side (All)
- *Bilaterally:*
  - **Elevate** the ribs during inhalation (All)
  - **Flex** the head and neck (Anterior)

Anterior Scalene

- **O** Transverse processes of third through sixth cervical vertebrae (anterior tubercles)
- **I** First rib
- **N** C(3), **4-8**

Cervical Lateral Flexion Restrictions

- Scalenes (TGB p 246 – 249)



One of the best ways to utilize the scalenes in yoga is deep breathing!

Cervical Lateral Flexion Restrictions

- Scalenes Exercises

  Always assume you work both sides unless there is a valid reason not to do so

In this exercise, your left-side scalenes turn your head to the right. Then your right-side scalenes attempt to turn your head back to the left while your hand resists the action .

In this exercise, turn your head to the left as if saying no and keep your head in that position. Then slowly nod as if saying yes.

Cervical Lateral Flexion Restrictions

- Scalenes Exercises

Let head gently slope to the left and push right shoulder down. Place left hand on right side of the head, gently pull. Lift the chin to turn head as if you were looking up toward where the ceiling and wall meet Can also look downward.

Yoga poses that use the scalenes:

Cat/Cow
Triangle (rotating neck) **Ardha Chandrasana**

Cervical Flexion Restrictions

- Splenius Cervicis and Splenius Capitis (splenii) (TBG 203-204 – previously reviewed)
- Suboccipitals (TBG 205-206)

Cervical Flexion Restrictions

- Splenius Cervicis and Splenius Capitis (TBG 203-204 – previously reviewed)

When Do You Use Your Splenii?

- **Rotating your head and neck before changing lanes in traffic**
- **Applying ear drops (holding your head in lateral flexion)**
- **Crouched over in a huddle during a football game (neck extension)**

Unilaterally:
Rotate the head and neck to the same side
Laterally flex the head and neck to the same side

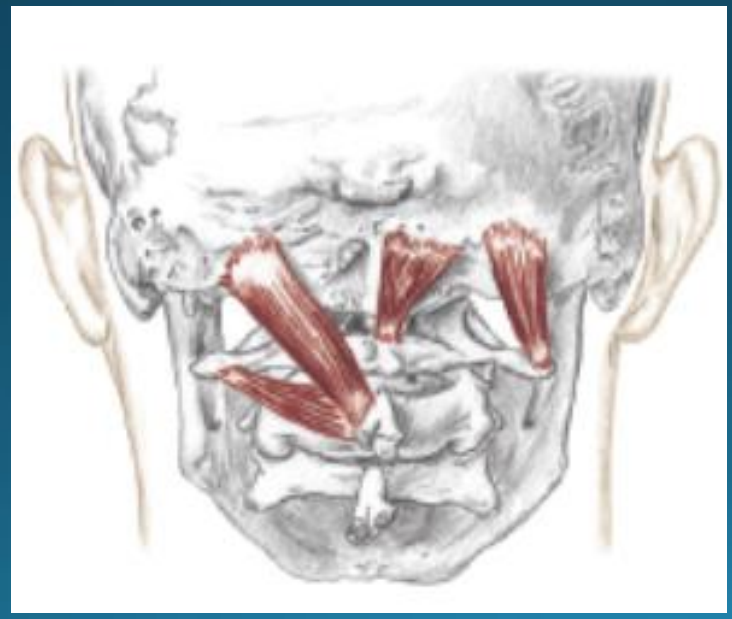
Bilaterally:
Extend the head and neck

Cervical Flexion Restrictions

- Suboccipitals (TBG 205-206)

When Do You Use Your Suboccipitals?

- *Shampooing your hair*
- *Appreciating a large painting from a close proximity (small, fine movements of the head and neck)*
- *Nodding your head incessantly to a person you wish would just stop talking*



Suboccipitals

A *Rectus Capitis Posterior Major*
Rectus Capitis Posterior Minor
Oblique Capitis Superior
Rock and **tilt** the head back into extension
Rectus Capitis Posterior Major
Oblique Capitis Inferior
Rotate the head to the same side
Oblique Capitis Superior
Laterally flex the head to the same side

Lateral Flexion Restrictions

- The Levator Scapulae is not listed on the test for lateral flexion, but it can be an issue, so I've listed a stretch for it here.

- Levator Scapulae Stretch

  Lean right ear toward right shoulder. Place right hand on side of head and gently pull. Take left arm overhead and place on chin-up bar or door frame OR lift left arm up and then (leaving elbow pointing up) place hand on back of neck.

  Why does the left arm reaching up help? Because when the shoulder blade is rotated upward, the attachment of the levator moves downward creating more stretch.

Cervical Extension Restrictions

- Suprahyoids and Digastric - DFL - (TBG 253-254) – Digastric listed as separate but …

How many suprahyoids are there and what are their names? *(four: geniohyoid, mylohyoid, stylohoid, digastric)*

Suprahyoids

A **Elevate** hyoid and tongue
Depress mandible (temporomandibular joint)

O *Geniohyoid, Mylohyoid:* Underside of mandible
Stylohyoid: Styloid process

I Hyoid bone

N *Geniohyoid:* C1, 2
Mylohyoid: Trigeminal (V)
Stylohyoid: Facial (VII)

Digastric

A With hyoid bone fixed, **depress** the mandible (temporomandibular joint)
With mandible fixed, **elevate** the hyoid bone
Retract the mandible (TM joint)

O Mastoid process (deep to sternocleidomastoid and splenius capitis)

I Inferior border of the mandible

N *Anterior belly:* Trigeminal (V) (mandibular division)
Posterior belly: Facial (VII)

DFL – Deep Front Line

When Do You Use Them?

- *Chewing, swallowing, sucking on a straw*
- *Singing and speaking, since their actions affect the position of the larynx (voice box)*

Suboccipitals – Cervical Flexion Restrictions

- Stretch: Stand with back to wall and pull neck back so head meets wall. Hold 10 seconds. Repeat several times. Can also do this on yoga mat. (This also strengthens the thoracic extensors and deep cervical flexors.)
- Stretch and Fascia Release: Put 2 tennis balls in a sock or use appropriately shaped trigger point tool. Lie on back with balls on the suboccipital muscles. Do not extend neck. Hold 5 minutes.

Cervical Extension Restrictions

- Infrahyoids – DFL (TBG 255)

When Do You Use Your Infrahyoids?

- *Drinking and swallowing*
- *Speaking (through their opposing action with the suprahyoids)*
- *Tightening the tissue of the anterior neck when threatened*

A Depress the hyoid bone and thyroid cartilage

O *Sternohyoid and Sternothyroid:* Top of manubrium
Thyrohyoid: Thyroid cartilage
Omohyoid: Superior border of the scapula

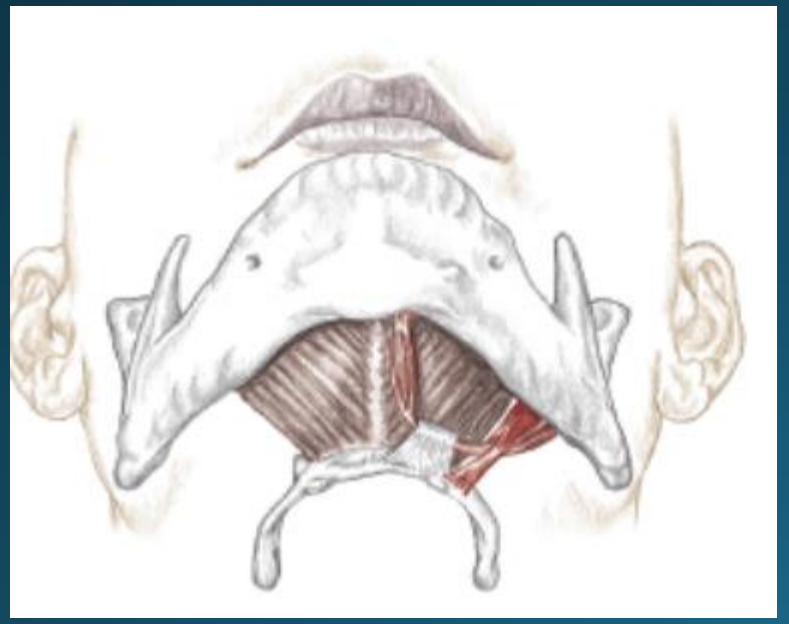
I *Sternohyoid, Thyrohyoid and Omohyoid:* Hyoid bone
Sternothyroid: Thyroid cartilage

N *Sternohyoid, Sternothyroid and Omohyoid:* C1, 2, 3
Thyrohyoid: C1, 2

Cervical Extension Restrictions

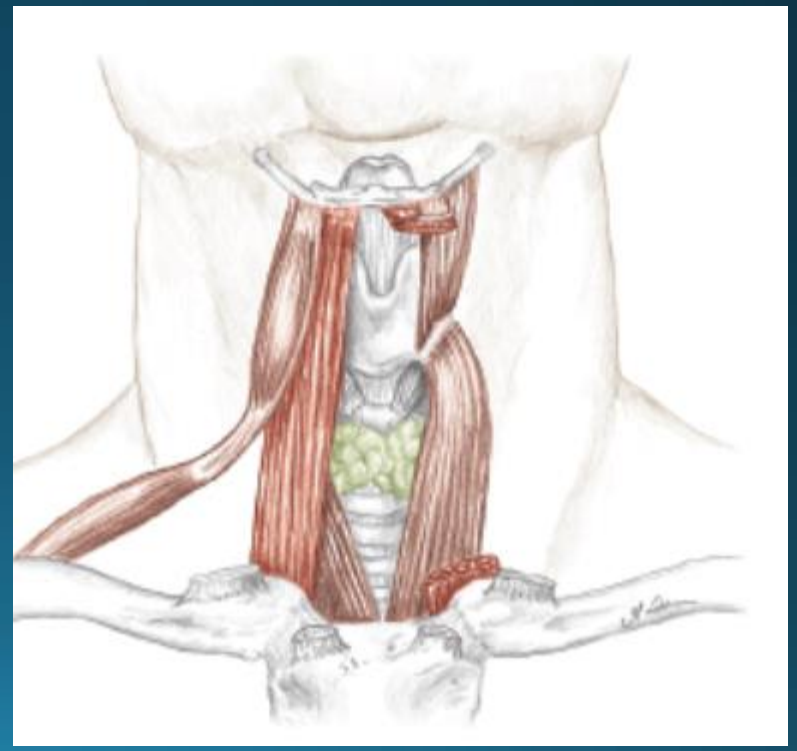
- Suprahyoids and Digastric (TBG 253-254)
- Infrahyoids (TBG 255)

Suprahyoids and Digastric



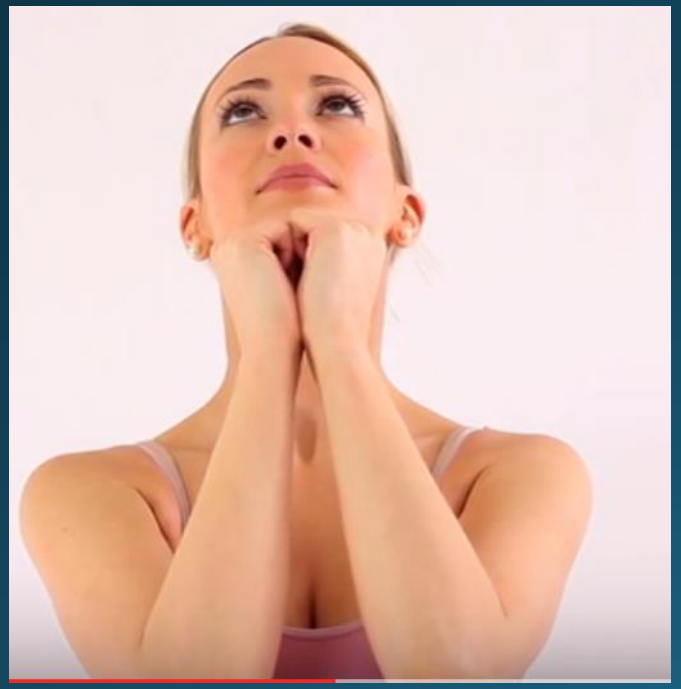
Stretch
Suprahyoid: Open jaws to the max and hold 10 seconds. Do 2 sets of 5 several times a day

Infrahyoids



Cervical Extension Restrictions

- Digastric – DFL (TBG 253-254)



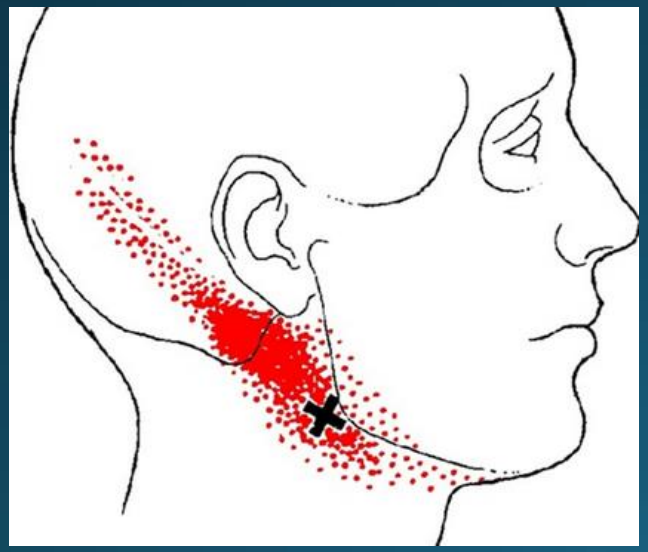
Digastric stretch: Jut chin slightly forward and tilt head slightly up wards, placing the tips of both thumbs under the chin. Place of tongue against roof of mouth, gradually increasing pressure of your tongue while holding your thumbs firmly against the muscle.

Cervical Extension Restrictions

Sometimes, the digastric can refer pain to the sternocleidomastoid, so be sure you consider this muscle if a client presents with SCM pain. Don't do many of the stretching exercises in the previous slide if someone already has a forward head or it proves too painful. You might choose to use trigger points instead, or in addition to, the previous stretch. Below is a good resource to show this:

https://www.yogatuneup.com/blog/2014/03/19/dont-be-so-superficial-when-looking-for-pain

Note: This link is active at the time this document is being published. If it is no longer active, please Google "trigger points of the digastric. "



Scalene Relief and Scalene Cramp Restrictions

- Scalenes (TGB p 246 – 249) previously reviewed

Yoga poses that use the scalenes:

Cat/Cow
Triangle (rotating neck)
Ardha Chandrasana

When Do You Use Your Scalenes?

- *Taking a deep breath into the upper chest*
- *Holding a phone between your ear and shoulder*
- *Stabilizing your head when reading in a reclined position*

All Scalenes

A *Unilaterally:*
With the ribs fixed, **laterally flex** the head and neck to the same side (All)
Rotate head and neck to the opposite side (All)
Bilaterally:
Elevate the ribs during inhalation (All)
Flex the head and neck (Anterior)

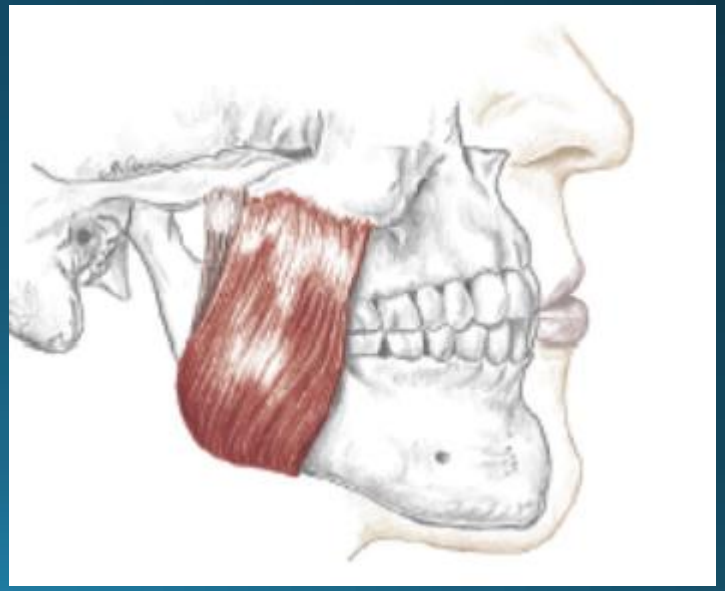
Anterior Scalene

O Transverse processes of third through sixth cervical vertebrae (anterior tubercles)
I First rib
N C(3), **4-8**

Opening and Closing and 2 Knuckle Test Restrictions

- My be restriction of several muscles, the most important of which are the masseter and temporalis
- Masseter – DFL (TBG p. 250-251) and shown below

What is the masseter's "claim to fame?" *(It's the strongest muscle in the body relative to size. The bulkiest muscle in the body is the gluteus maximus—about 2.25 lbs; the longest is the sartorius—about 19.5 inches; and the 18-inch external oblique is the widest.)*

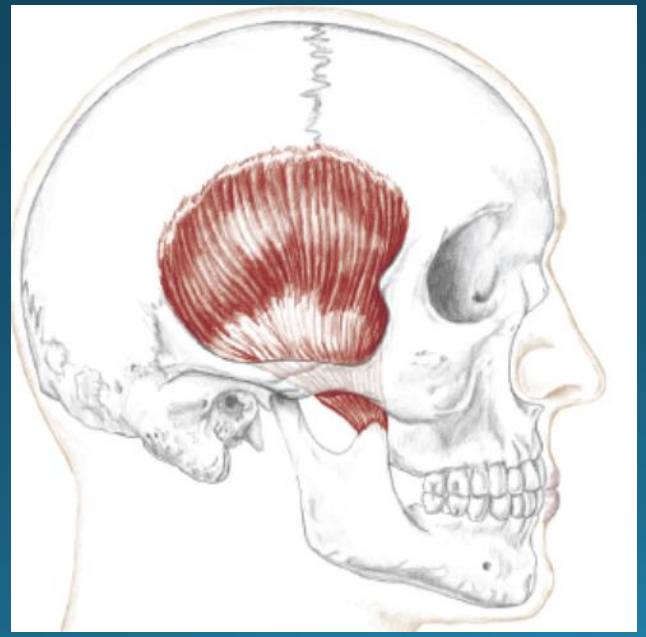


Opening and Closing and 2 Knuckle Test Restrictions

- Temporalis – DFL (TGB p. 251-252)

When Do You Use Your Temporalis?

- *Ripping off a piece of beef jerky*
- *Chewing that beef jerky*
- *Grinding your teeth while you sleep, dreaming about beef jerky*



A Elevate the mandible (temporomandibular joint)
Retract the mandible (TM joint)

O Temporal fossa and fascia

I Coronoid process and anterior edge of ramus of the mandible

N Trigeminal (V) nerve (mandibular division)

Opening and Closing and 2 Knuckle Test Restrictions

Stretch Masseter (same as Suprahyoid): Open jaws to the max and hold 10 seconds. Do 2 sets of 5 several times a day.

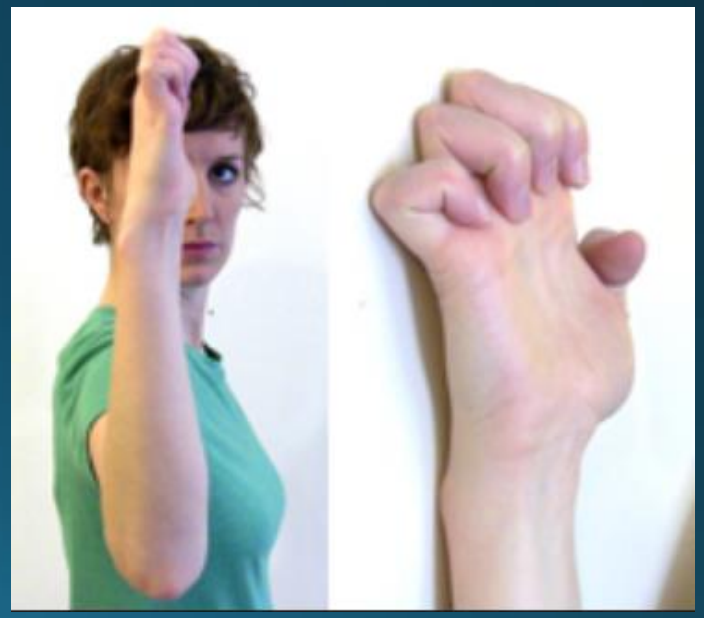
Also, option to apply moderate pressure to each masseter with the pads of each thumb (or tips of the fingers) as you slowly open mouth.

Opening/Closing, 2 Knuckle Restrictions

Temporalis stretch: Take both hands, spread them out and place them on the areas shown in blue in the photo. Press the temporalis muscle upward while opening the mouth. Repeat 10 times.

Scalene Finger Flexion

1. Raise arm to 90 degree "stop sign" position
2. Fold fingers down so pads of fingers contact hand. Make sure wrist is straight and joints are completely extended and straight.
3. Look for breakaway (fingers unable to come down) in 1 or more fingers.
4. Test quickly to avoid compromising subclavian vessels.
5. Be sure wrist is straight. No flexion/extension in wrist; wrists and fingers stay straight/vertical.



Scalene Finger Flexion

No Restrictions: All finger pads contact hands

Breakaway in 1 or 2 fingers: **finger extensors** (SBAL – superficial back arm line)– see Phalen's test and wrist/finger extensors test

Breakaway in all fingers: **scalenes** (LL, DFL – lateral line, deep functional line)

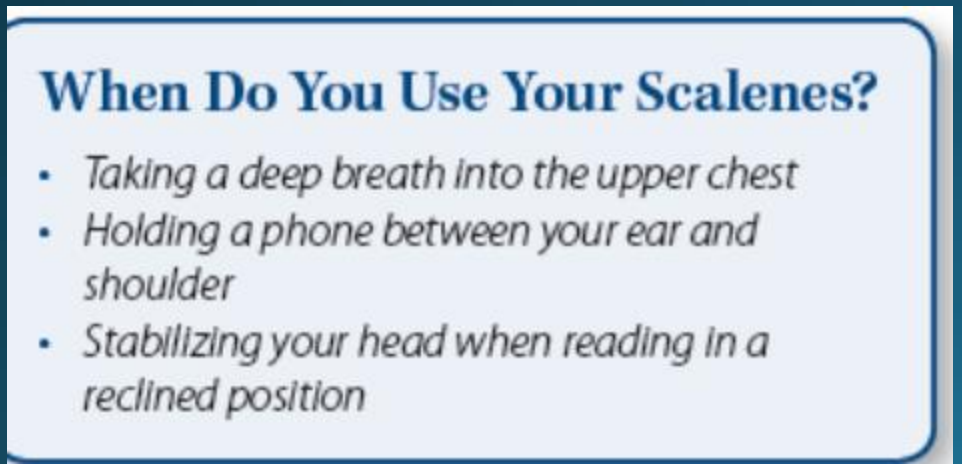
Inability to assume the stop-sign position: **subscapularis** (DBAL – deep back arm line)

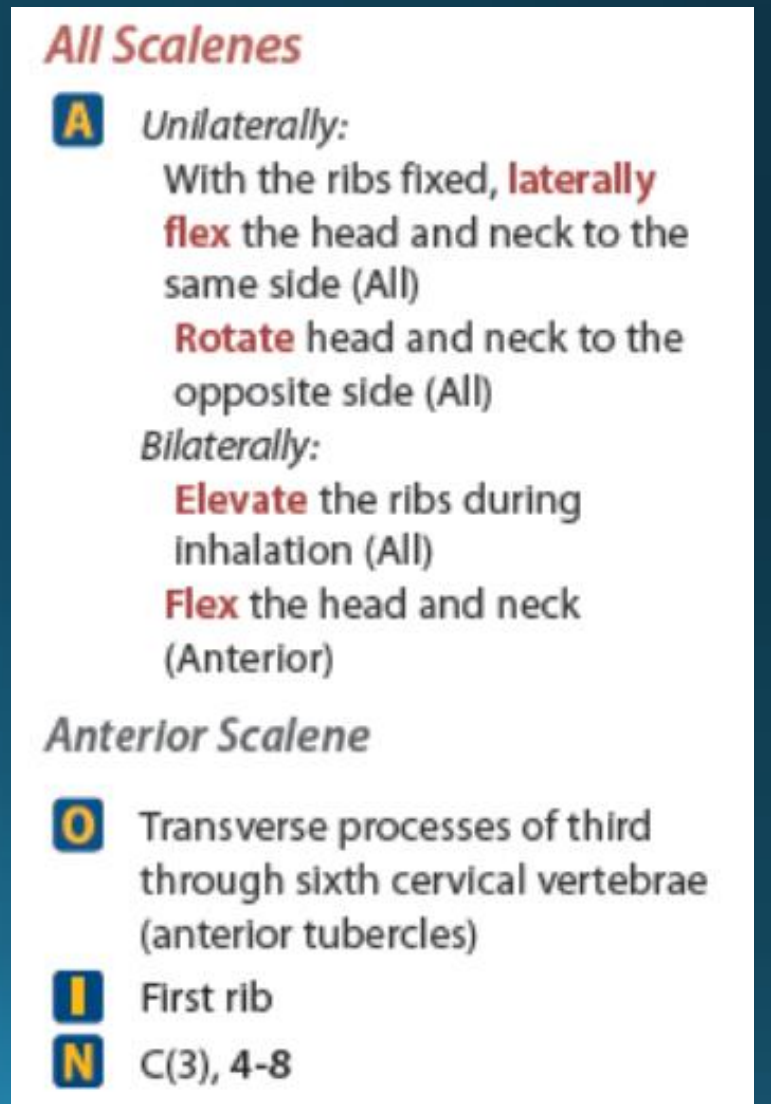
Scalene Finger Flexion Restrictions

- Scalenes (TGB p 246 – 249) previously reviewed

Yoga poses that use the scalenes:

Cat/Cow
Triangle (rotating neck)
Ardha Chandrasana



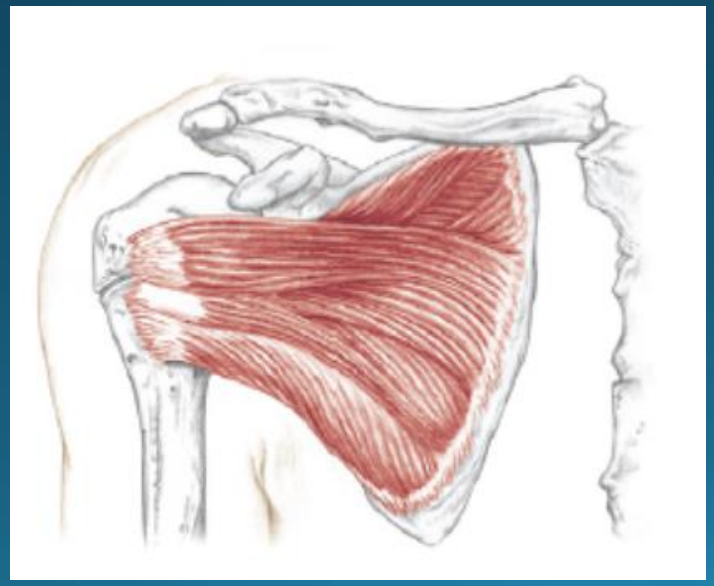


Scalene Finger Flexion Restrictions (stop-sign)

- Subscapularis - DBAL (TBG) – one of rotator cuff muscles – others are supraspinatus, infraspinatus, teres minor (SITS)

Subscapularis

- *Reaching your hand around to scratch your back*
- *Clutching* Trail Guide to the Body *to your chest*



Subscapularis

A **Medially rotate** the shoulder (glenohumeral joint) **Stabilize** the head of humerus in glenoid cavity

O Subscapular fossa of the scapula

I Lesser tubercle of the humerus

N Upper and lower subscapular C5, 6, 7

Scalene Finger Flexion Restrictions (stop-sign)

- Subscapularis (TBG p. 74-75) – one of rotator cuff muscles – others are supraspinatus, infraspinatus, teres minor (SITS)

Yoga poses that stretch subscapularis:

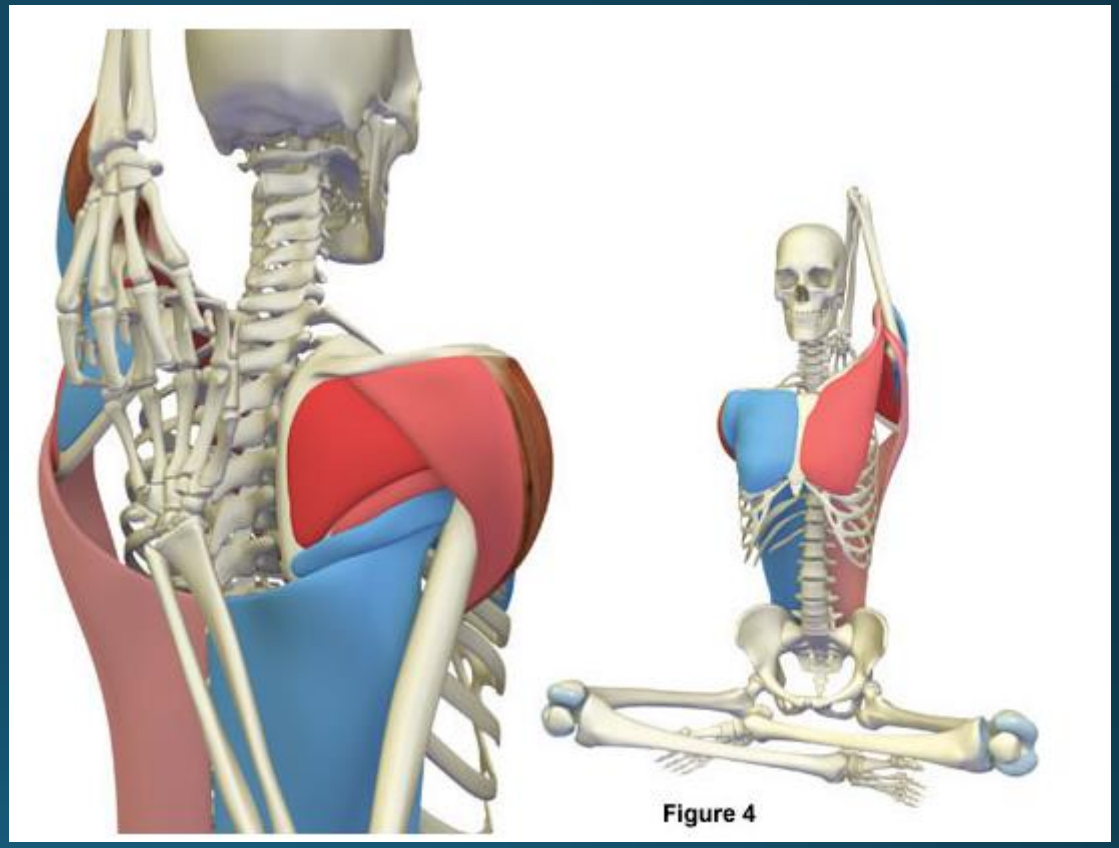
Garudasana (Eagle Arms)
Gomukasana (Cow Face) Upper Arm

Broom-stick stretches for infraspinatus and subscapularis is shown in the youtube video below. This link is active at the time this document is being published. If no longer active, Google "broom stick stretches for infraspinatus and subscapularis"
https://www.youtube.com/watch?v=ZDZvtgGOFA8

Scalene Finger Flexion Restrictions (stop-sign)

Subscapularis is strengthened in **cow face arms** (lower arm) because it is contracted to draw the lower shoulder further up the back.

It is also strengthened in Ardha Matseyandrasana as the arm works to turn shoulder inward on the arm behind the back

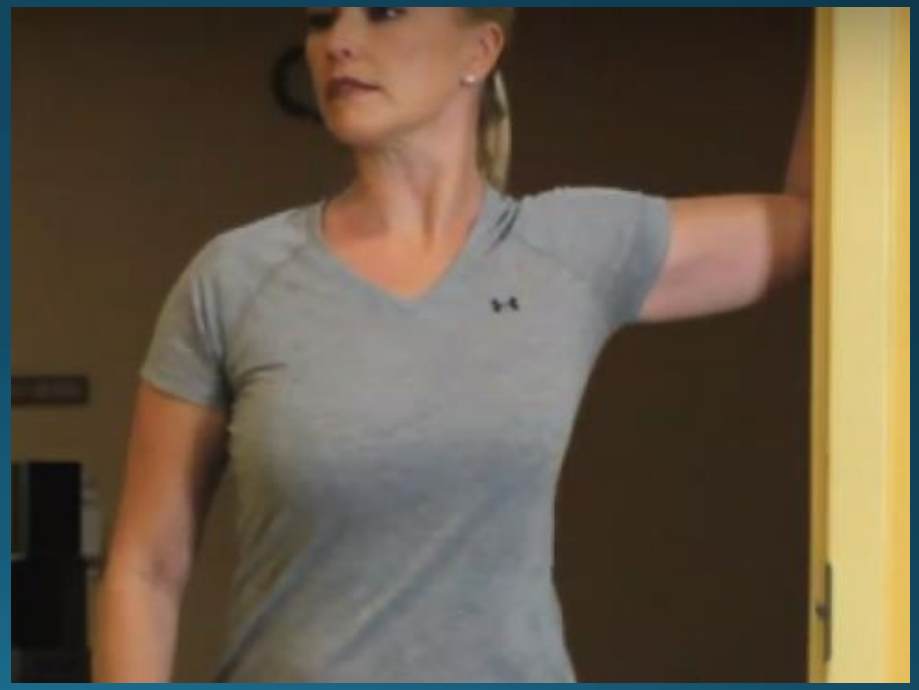


Source: Key Poses of Yoga by Ray Long

Figure 4: The lower shoulder extends and turns inward (internally rotates), stretching the infraspinatus, teres minor, and rotatory fibers of the posterior deltoid. Contracting the latissimus dorsi, teres major, subscapularis, and pectoralis major draws the lower shoulder further up the back, intensifying the stretch.

Scalene Finger Flexion Restrictions (stop-sign)

Subscapularis Stretch: Line yourself up in a door frame and abduct your shoulder to 90 degrees and bend your elbow so you can place your hand/forearm on door frame/wall surface. Slowly turn to look the other way and lean slightly inward



Source: http://www.livestrong.com/video/1008770-stretching-subscapularis-door-frame/ Note: This link is active at the time of publication. If no longer active, Google "door frame subscapularis stretch".

Scalene Finger Flexion Restrictions (stop-sign)

Subscapularis Stretch: Arms bent at 90/90, elbows into waist, palms up. Curl fingers in lightly and slowly move shoulders so thumbs point back toward wall, then come back to starting point.

Shoulder Girdle, Upper Back and Arms

Shoulder Drop

1. Client lies on back, shoulders on table
2. Observe shoulders. Do they lie flat on table or are they tilted forward or upward?

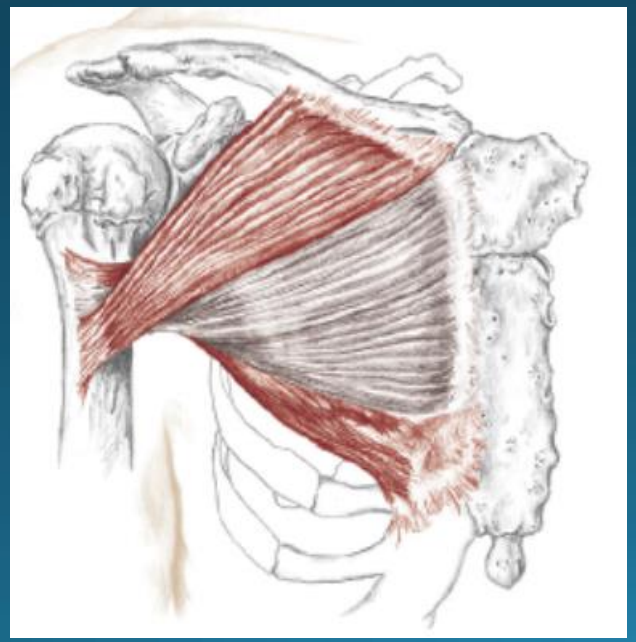
No Restrictions: Shoulders lie flat on table

Restriction: Shoulders appear raised. **Pectoralis Major** (FFL, SFAL – front functional line, superficial front arm line)

Shoulder Drop Restriction
Pectoralis Major (TBG 89-91)

When Do You Use Your Pec Major?

- *Doing a chin-up*
- *Using almost any swim stroke ever invented*
- *Sawing a piece of wood (both directions)*



A *All fibers:*
- **Adduct** the shoulder (glenohumeral joint)
- **Medially rotate** the shoulder (G/H joint)
- Assist to **elevate** the thorax during forced inhalation (with the arm fixed)

Upper fibers:
- **Flex** the shoulder (G/H joint)
- **Horizontally adduct** the shoulder (G/H joint

Lower fibers:
- **Extend** the shoulder (G/H joint)

O Medial half of clavicle, sternum and cartilage of first through sixth ribs

I Crest of greater tubercle of humerus

N *Upper fibers:*
Lateral pectoral C5, 6, 7

Lower fibers:
Lateral and medial pectoral C6, 7, 8, T1

Yoga Poses that Stretch Pec Major

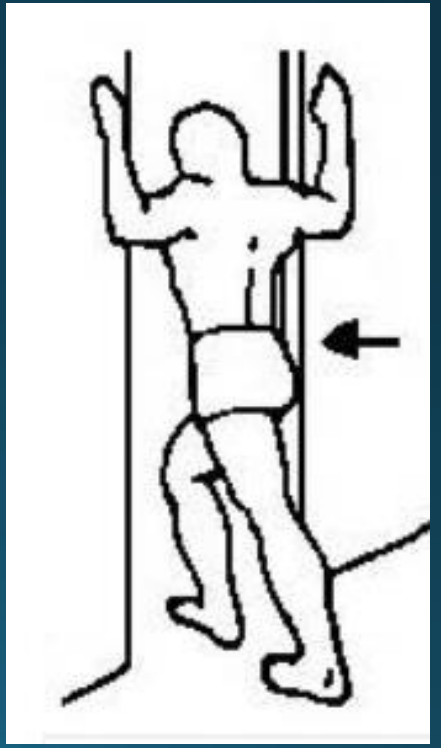
Purvottanasana– Inline or Reverse Plank

Dhanurasana – bow pose

Eka Pada Rajakapotasana (King Pigeon) – top arm that reaches back toward foot . To understand why, look back at chart on TBG p 89 to see all the movements the pec major is involved in.

Any Chest Expansion pose (Cobra, Dvikonasana, Baddha Virabhadrasana, etc).

Non-yoga pose: Doorway Stretch – lean forward with arms on door frame as shown



Shoulder Drop Restriction - Pectoralis Major

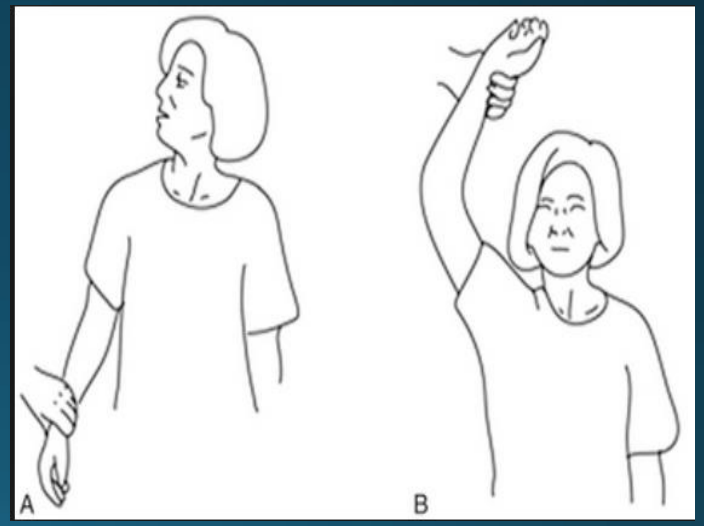
Yoga Poses that Strengthen Pec Major

Chaturanaga Dandasana -4 Limbed Staff

Garudasana (Eagle) arms because pec major draws draws humerus toward midline of body

Wright Manuever

1. With client seated, check for radial pulse (thumb side of wrist). Use your fingers, not your thumb.
2. Bring client's arm up and behind head.
3. Note whether pulse lessens or disappears
4. Note that abduction beyond 90 degrees may give false positive



No Restrictions: No change in pulse

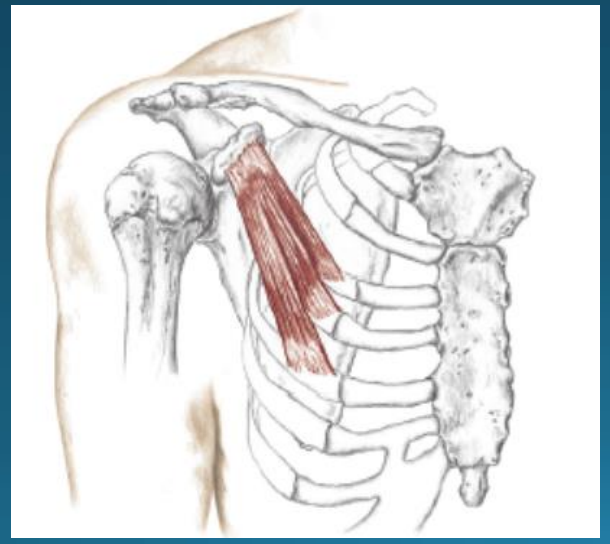
Restriction: Pulse lessens or disappears. **Pectoralis minor** (DFAL – deep front arm line)

Wright Manuever Restriction- Pectoralis Minor

Pectoralis Minor (TBG 92 -94)

When Do You Use Your Pec Minor?

- *Throwing a punch*
- *Reaching into a deep front pocket*
- *Taking a deep inhalation*



A **Depress** the scapula (scapulothoracic joint)
Abduct the scapula (S/T joint)
Downwardly rotate the scapula (S/T joint)
With the scapula fixed:
Assist to **elevate** the thorax during forced inhalation

O Third, fourth and fifth ribs

I Medial surface of coracoid process of the scapula

N Medial pectoral, with fibers from a communicating branch of the lateral pectoral C(6), **7, 8**, T1

Wright Manuever Restriction- Pectoralis Minor

Pectoralis Minor (TBG 92 -94)

Yoga Poses and Exercises that Strengthen Pec Minor:

Tadasana and , Navasana (boat), Virabhadrasana Dvi (Warrior II), Marichyasana 3 (twisting), Sirsasana (headstand) etc. – because pec minor contracts to lift the lower ribs and help open the chest

Wright Manuever Restriction- Pectoralis Minor

Pectoralis Minor (TBG 92 -94)

Yoga Poses and Exercises that Stretch Pec Minor:

Gomukasana (lower arm)

Reverse Namaste Hands

Ardha Matsyendrasana, Svarga Dvidasana (bird of paradise) – binding arm

Prasarita Padotanasana or Dvikonasana with chest expansion

Wright Manuever Restriction- Pectoralis Minor

Pectoralis Minor (TBG 92 -94)

Other Pec Minor Stretches (Note: These links are active at the time of publication. If no longer active, Google "pec minor stretches" and look for credible sources, or use the stretches listed previously.

http://www.yogajournal.com/article/anatomy-yoga-practice/anatomy-101-understand-pectoralis-minor-deeper-backbends/

https://www.yogatuneup.com/blog/2012/11/07/when-your-pec-minor-becomes-a-major-pain/

The link below contains tests for:

Mouth Wraparound

http://round-earth.com/RotatorCuffTests.html

Note: If this link is no longer active, Google “round earth rotator cuff test”

Mouth-Wrap Around Restrictions

Major restrictions

Infraspinatus
Middle Deltoid
Subscapularis (already covered)
Posterior Deltoid
Supraspinatus

Mouth-Wrap Around Restrictions

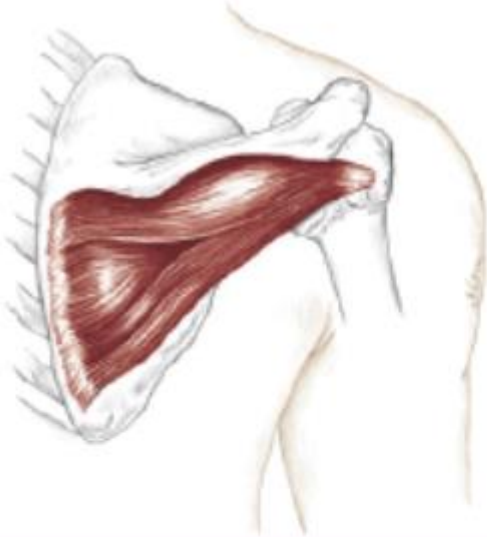
Infraspinatus - DBAL -TBG (p.74-75)

DBAL – Deep Back Arm Line

Lateral rotation is external rotation

Infraspinatus/Teres Minor

- *Starting a pull-cord lawnmower*
- *Fanning a smoke-filled room with your arms*



Infraspinatus

A **Laterally rotate** the shoulder (glenohumeral joint)
Adduct the shoulder (G/H joint)
Stabilize the head of humerus in glenoid cavity

O Infraspinous fossa of the scapula

I Greater tubercle of the humerus

N Suprascapular C(4), **5, 6**

Mouth-Wrap Around Restrictions - Infraspinatus

Yoga poses to stretch infraspinatus:

Gomukasana (bottom arm)
Ardha Matseyandrasana (arm that goes behind back)

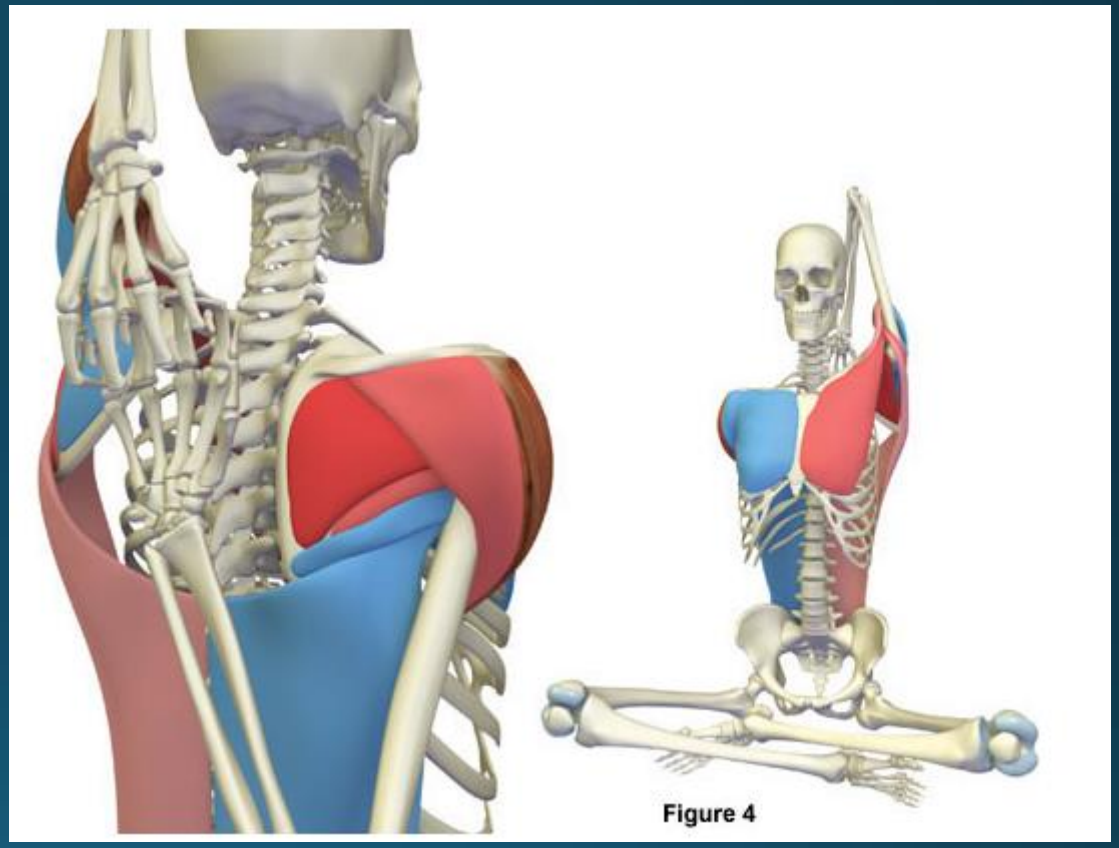
Broom-stick stretches for infraspinatus and subscapularis are listed below. If no longer active, Google "Broom stich stretch for infraspinatus and subscapularis"
https://www.youtube.com/watch?v=ZDZvtgGOFA8

Yoga poses to strengthen infraspinatus:

Gomukasana (top arm)

Mouth-Wrap Around Restrictions - Infraspinatus

Infraspinatus is stretched in lower arm in Gomukasana



Source: Key Poses of Yoga by Ray Long

Figure 4: The lower shoulder extends and turns inward (internally rotates), stretching the infraspinatus, teres minor, and rotatory fibers of the posterior deltoid. Contracting the latissimus dorsi, teres major, subscapularis, and pectoralis major draws the lower shoulder further up the back, intensifying the stretch.

Mouth-Wrap Around Restrictions - Infraspinatus

Infraspinatus is strengthened in the upper arm in Gomukasana

Source: Key Poses of Yoga by Ray Long

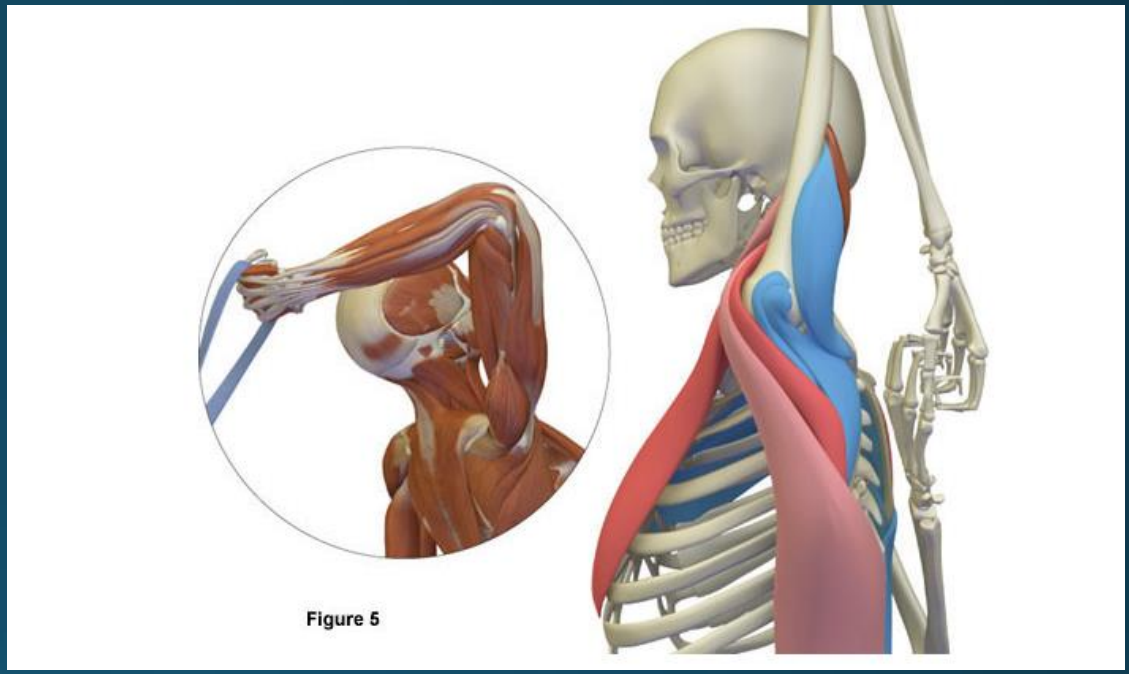


Figure 5: The upper shoulder flexes and turns outward (externally rotates), stretching the teres major, latissimus dorsi, pectoralis major, and subscapularis muscles. Contracting the infraspinatus, teres minor, and anterior (front) part of the deltoid draws the hands closer, intensifying the stretch. Attempting to draw the hands apart for a few moments facilitates the stretch by stimulating the Golgi tendon organs. The hands can then be drawn closer together.

Mouth-Wrap Around Restrictions

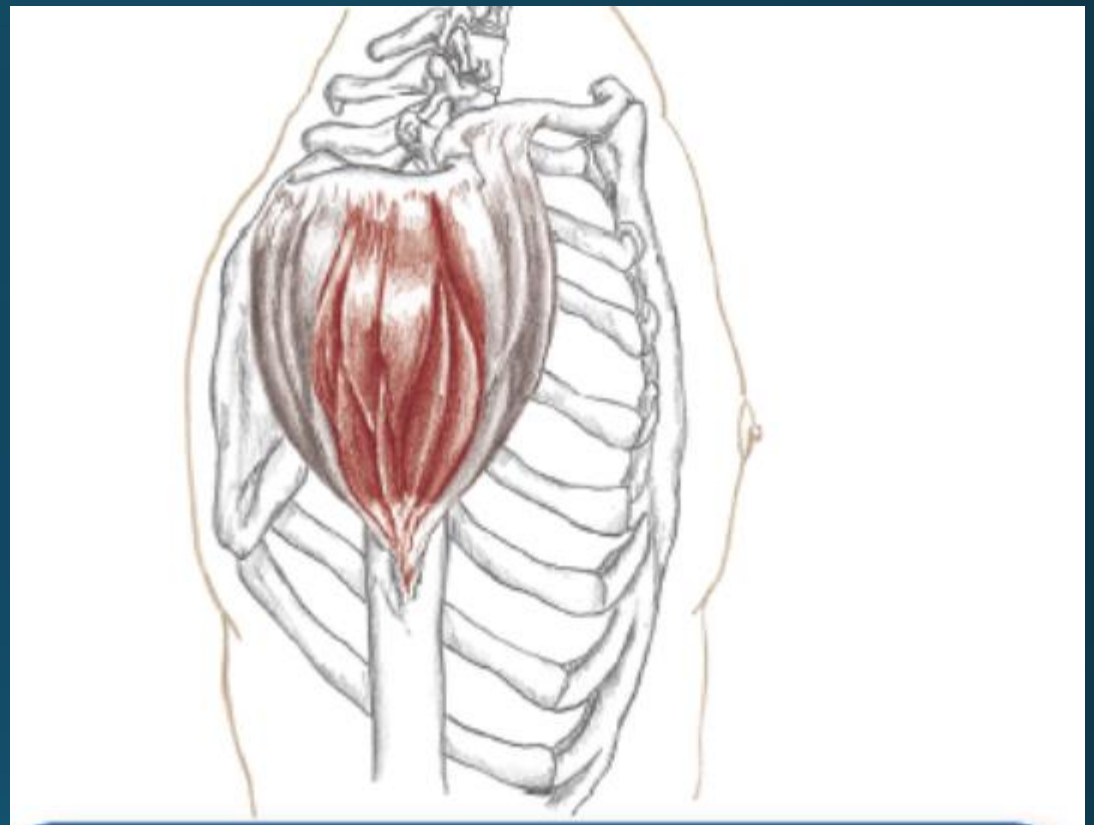
Deltoid TBG (p.67-68)

A *All fibers:*
Abduct the shoulder (g/h joint)
Anterior fibers:
Flex the shoulder
Medially rotate the shoulder
Horizontally adduct the shoulder
Posterior fibers:
Extend the shoulder
Laterally rotate the shoulder
Horizontally abduct the shoulder

O Lateral one-third of clavicle, acromion and spine of scapula

I Deltoid tuberosity

N Axillary C5, 6



When Do You Use Your Deltoid?

- *Virtually all movements that involve the shoulder*
- *Slipping your arms into a jacket*
- *Raking, shoveling, sawing*
- *Rowing a dinghy*

Mouth-Wrap Around Restrictions
(Middle) Deltoid - SBAL TBG (p.67-68)

SBAL - Superficial Back Arm Line

Yoga Poses that contract the middle deltoids:

Trikonasana, Parivrtta Trikonasana, Ardha Chandrasana, Vasisthasana (side plank)– abducts shoulders drawing them away from trunk

Chaturanga Dandasana

Bakasana (Crow)

Yoga Poses that stretch the middle deltoids:

Thread the Needle (seated, on knees, or standing)
Arm to wall at 90 degrees, push weight forward and twist (more anterior, but some middle delts)

Mouth-Wrap Around Restrictions – Posterior Delts - SBAL - TBG (p.67-68)

Yoga Poses that contract the posterior deltoids:

Purvottanasana– Inline or Reverse Plank

Uttitha Parsvakonasana - Posterior delt on lower arm draws arm away from midline. Since the hand is fixed on the floor, this action turns the chest upwards and opens it.

Yoga Poses that stretch the posterior deltoids:

Lower arm in Gomukasana arms (source: Ray Long, Key Poses of Yoga

Thread the Needle (seated, on knees, or standing)

Garudasana (Eagle Arms)

More advanced yoga shoulder stretches (If no longer active link, use stretches above).
http://www.yogajournal.com/article/practice-section/open-arms/

Mouth-Wrap Around Restrictions

(Posterior) Deltoid TBG (p.67-68)

Yoga Poses that stretch the posterior deltoids

Source: Key Poses of Yoga by Ray Long

Shoulder Extensor Stretch (with chair)

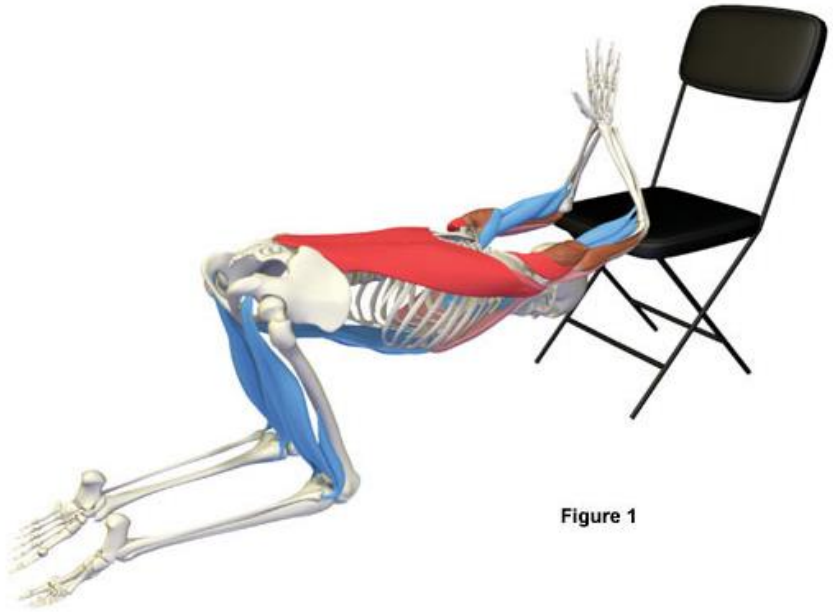
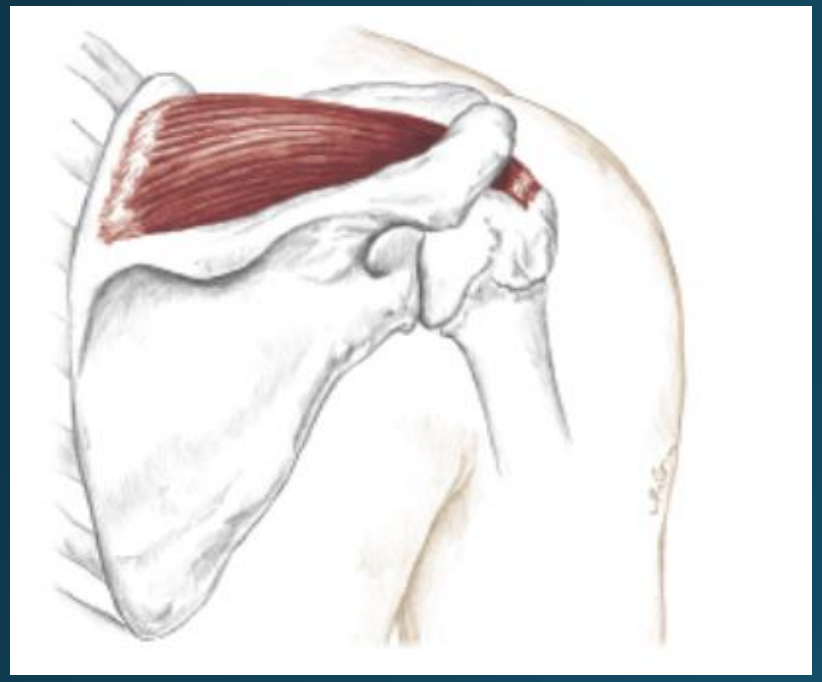


Figure 1

Mouth to Restrictions – Supraspinatus (TBG p.75-76)



Supraspinatus

- **A** **Abduct** the shoulder (glenohumeral joint)
  Stabilize the head of humerus in glenoid cavity
- **O** Supraspinous fossa of the scapula
- **I** Greater tubercle of the humerus
- **N** Suprascapular C4, 5, 6

When Do You Use Your Rotator Cuff?

Supraspinatus

- *Conducting an orchestra*
- *Installing ceiling tiles overhead*

Mouth to Restrictions – Supraspinatus

Exercise that strengthens supraspinatus:

"Empty Can" exercise using thera-band

Instructions:
Begin with one end of the band or tubing stabilized under your foot. Grasp the other end in your hand with slight tension on the band or tubing. Bring your arm slightly in front of your body (about 30 degrees). Lift your arm from your side, keeping your elbow straight and **your thumbs down**. Stop at shoulder level and slowly return. Do not perform this if it causes shoulder pain. Keep your back straight, and avoid leaning over or shrugging your shoulders.

Mouth to Restrictions – Supraspinatus

Yoga poses that strengthens supraspinatus:

Adho Mukha Svasana (Down Dog) - Because the supraspinatus helpds hold the ball of the shoulder joint into tis socket against the downward pull of gravity on the arm

Vashistasana (Side Plank) and Virabhadrasana II (Warrior II) – Activates first 30 degrees of abduction

Mouth to Restrictions – Supraspinatus

Yoga poses that stretch supraspinatus:

Garudasana (Eagle) Arms

Postures where the arm binds behind you such as Ardha Matseyandrasana