Classroom FAQs

- Bathroom codes can be found on the coffee table in the waiting area. Women's bathroom is across the hall and Men's is located further down the hall.
- Help yourself to the water cooler in our waiting area- it has both hot and cold water. There is a selection of tea on the counter available for all students.
- Class will break for lunch around 2pm. There are several restaurants in the area (see a short list at the bottom of this email) that are perfect for a quick lunch. You are also free to pack a lunch and eat in the classroom or on the building's roof deck. Please do not congregate or speak loudly in our client waiting area. Our classroom space is located inside our Midtown studio where our staff will be working with clients.

Mobilizing the Rib Cage

Day 1

- Review the relevant anatomy and learn to assess client alignment
- Practice assessing alignment and discuss how to create treatment plans
- Observe and practice treatment techniques in prone position

When the body is out of alignment, muscles need to fire dysfunctionally in order to keep the body upright and moving. Over time, these overworked muscles can cause pain in numerous ways including overstretching their antagonists, pinching nerves, putting pressure on joint structures, and more. The figure on the left may have began from an ankle sprain much earlier in life.





Why Ribcage Mobility Matters: Breathing & Postural Support are meant to be separate functions

- When properly aligned, the skeleton is designed to support the body while allowing the ribcage to move freely
- Ribs should expand on inhalation and contract on exhalation
- When joints are misaligned in gravity, the ribcage muscles get overused for postural support which restricts breathing
- Many client complaints stem from structures attached to the ribcage

What is An Ideal Balance?

- Most muscles live on a spectrum from purely providing postural stability to purely providing movement
- Some sit more towards the postural support end of the spectrum such as the spinae erectors
- Others sit more towards the movement end of the spectrum such as the biceps
- The diaphragm and intercostals are somewhat unique they should float freely without being needed for posture and are only used for internal movement, not to move through space

Basic Muscle Function In Respiration

- During inhalation, the diaphragm contracts and pulls downwards while the external intercostal muscles pull upwards and expand the ribcage
- Ideally, exhalation is simply a relaxation of both of these muscles allowing the diaphragm to release upwards and the chest to relax and contract
- Internal intercostals push air out of the lungs in a controlled way such as when speaking or singing





Relaxed Breathing Requires Postural Muscles to Fire Correctly

- When joints are misaligned in gravity, diaphragm and intercostals get recruited for postural support
- Respiration obviously still needs to happen...so ancillary breathing muscles such as serratus groups, scalenes, abdominals, etc take over for respiration and let go of some of their postural support duties
- Breath expands into the belly instead of the ribs abdominals let go of postural support while back extensors work twice as hard to keep the body upright

Goal #1: Help the Body Restore Proper Balance in Respiration

- Are you finding it difficult in many clients to get back muscles to stop "bricking?"
- These cannot release until the diaphragm lets go of postural support and rib cage expansion and contraction during breathing is restored
- Once breathing movement is restored in the rib cage, the abdominals can fire properly for postural support and allow back extensors to soften into balance

Anatomy Review: Bones & Cartilage of the Rib Cage

- Menumbrium, Sternum, Xiphoid Process together create what is usually referred to as the "sternum"
- Ribs 1 to 5 wrap around from sliding joint attachments at T1-5 and are connected to the sternum by chondral cartilage
- Ribs 6-10 wrap around from sliding joint attachments at T6-10 and are connected to the sternum via a more complex piece of chondral cartilage
- This arrangement can vary in different people (some have separate cartilage for 1-6 instead of 1-5)
- Ribs 11 & 12 "float" and do not attach in front to the sternum through cartilage

In this example, ribs 1-5 have their own cartilage and 6-10 are attached by a complex single piece of cartilage



In this example, ribs 1-6 have their own cartilage and 7-10 are attached by a complex single piece of cartilage



Anatomy Review: Muscles Attached to Rib Cage

Surface Layer Muscles Attaching to Rib Cage

- Latissimus Dorsi (attaches to ribs 11 & 12)
- External & Internal Abdominal Obliques (lowest ribs)
- Rectus Abdominis (lowest rib, xiphoid process, sternum)
- Pectoralis Major (ribs 6 & 7 cartilage, Sternum & Menumbrium)
- Serratus Anterior (ribs 3 through 9)
- Platysma (Manubrium)











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Anatomy Review: Muscles Attached to Rib Cage

Deeper Layer Muscles Attaching to Rib Cage

- Quadratus Lumborum (rib 12)
- Serratus Posterior Inferior (ribs 9-12)
- Serratus Posterior Superior (ribs 1-4)
- Internal Abdominal Obliques (lowest ribs)
- Pectoralis Minor (ribs 3-5)
- Iliocostalis Group of Spinae Erectors (all ribs)
- Internal & External Intercostals (all ribs)
- Transversus Thoracis Muscles (ribs 2-6 internally)
- Subclavius (ribs 1 & 2, Manubrium, Sternum)
- Scalenes (ribs 1 & 2)
- SCM (rib 1 & Manubrium)









Parasympathetic vs Sympathetic Breathing Patterns

Parasympathetic Breathing

- Easy and relaxed
- Diaphragm and external intercostals are the only muscles that need to work
- Both contract on inhalation drawing ribs upwards while pulling diaphragm downwards to pull in air
- Both relax on exhalation to allow ribs to contract and diaphragm to release upwards to let air out (no need to push air out)

Parasympathetic vs Sympathetic Breathing Patterns

Sympathetic Breathing

- Contained to hide movement from predators or prey
- Diaphragm and external intercostals work less
- ancillary muscles assist to hide rib cage movement
- Depending on how much air is needed, the body will recruit larger and larger set of ancillary muscles
- Ancillary muscles can include abdominals, pectorals, serratus muscles, SCM, scalenes, hyoids, lats, traps, iliocostalis, internal intercostals, and more (anything directly attached to ribs)
- In extreme cases, the body can recruit muscles not directly attached to ribs in order to create rib cage expansion and contraction (picture rocking motion in shock which uses legs and arms to assist breathing)

Most of us are "stuck" in a form of sympathetic breathing

- If the rib cage is not noticeably expanding and contracting, the client is recruiting ancillary breathing muscles to assist breathing
- This pattern can reinforce itself when the body recruits those muscles it signals to the brain that there is danger even when there isn't any
- Conversely, assisting the body to expand and contract the ribs when breathing will signal that danger has passed and cause the body to engage the parasympathetic nervous system and rebalance itself

The Chicken or the Egg?

- Is the habitual misaligned body position causing the body to recruit ancillary breathing muscles and stay in sympathetic mode?
- Or are our stress and perceived dangers making the body recruit ancillary breathing muscles which over time are misaligning the body position?
- Hint: It's always BOTH triggering each other in a slow downward spiral and which one came first is irrelevant

Assessing Rib Cage Misalignments - 5 Common Types

- Leans to Left or Right
- Leans to Back (or front in rarer cases)
- Twists around the centerline of gravity
- Held Compression of ribcage (doesn't inflate)
- Held Inflation of ribcage (doesn't deflate)

Example #1 - Ribcage leans to the Left

- Noticeable shift of upper chest to the left
- Head midline does not line up with sternum Or with center of pelvis
- Arms hang differently



Example #2 - Ribcage leans to the Back

- Noticeable shift of upper chest to the back
- Shoulders sit behind pelvis
- Head angles forward to balance



Example #3 - Ribcage Twists

- One shoulder noticeably more forward
- Opposite hip noticeable backwards
- Head sits over center of feet and pelvis but there is obvious asymmetry between left/right



Example #4 - Held Compression

- A sense of the ribcage pulling head and shoulders into it
- Often paired with upper cross syndrome
- A "boxy" impression or lack of 3 dimensionality



Example #5 - Held Inflation (Barrel Chest)

- Chest does not seem to deflate
- Lowest ribs poke forward but rib cage is not leaning back

Normal chest



Barrel chest



Assessing Rib Cage Misalignments: What's Holding?

- In each of the 5 examples, part or all of the ribcage is being used for postural support
- Which area of the rib cage is being used this way in each example?
- To help restore balanced posture, these areas need to have their natural inflation / deflation cycle restored
- Treatment should include direct encouragement of these "stuck" ribs to inflate and deflate
- This can include but is not limited to voiced directions, manual compression and release of ribs, stretching, and movement of arms or legs while focusing on rib cage inflation/deflation

Assessing Rib Cage Misalignments: Special Cases

- Scoliosis "S" Curve (double curve)
- Scoliosis "C" Curve (Thoracic or Thoracolumbar)
- Scoliosis "J" Curve (Lumbar)
- Pectus Excavatum (depressed sternum)
- Pectus Carinatum (protruded sternum)

These cases form either at birth or in childhood while bones are still growing. They are generally permanent and non-treatable except through surgery. The misalignments can cause difficulty breathing. Massage therapy alignment and mobilization techniques can help manage symptoms. The client will likely require regular maintenance treatment throughout their lives to keep these conditions from worsening.





Breath Holding Patterns

- Ideally, breath is regulated by the brainstem without need for conscious control
- There is no "right" way to breath...speed and/or depth should change fluidly according to the body's oxygen needs
- Breath control is used both consciously and unconsciously to regulate emotions and expression
- These control patterns can become habitual, limiting emotional expression and affecting posture and alignment

Breath Holding Patterns - Common Types

- Controlled long inhalation
- Controlled long exhalation
- Holding at the "top" of the breath (ie after inhalation)
- Holding at the "bottom" of the breath (ie after exhalation)
- Combinations of the above
- Only breathing through the nose
- Inhaling through nose exhaling through mouth

Proposed Treatment Sequence #1: Prone Techniques

- Fascial release down Spinae Erectors that takes a 90 degree turn to work sideways through QL and Obliques each side
- More direct work on QL and Obliques in Lumbar
- Fascial release up through Lats/Teres
- Rebalance and untwist relationship between ribcage and pelvis by fascially drawing spiral line from lifted hip up through opposite lower ribs while moving other QL down towards pelvis
- Fascial release of rotator cuff sequence
- Fascial release diagonally down through floating ribs
- Intercostal release between each lower thoracic rib
- Cross fiber friction on lliocostalis attachments
- Rib release with elbow following down with exhale on each lower thoracic rib

Mobilizing the Rib Cage

Day 2

- Observe and practice treatment techniques in sidelying position
- Observe and practice treatment techniques in supine position

Proposed Treatment Sequence #2: Sidebody Techniques

- Always work towards adjusting ribcage, pelvis and head position towards a better neutral that is truly perpendicular to table
- Use light pressure on lower anterior ribcage to keep the client from backbending
- Stretch arm above head as high as possible as long as they don't have to backbend to get it higher
- Fascial release strokes up ribcage through lateral edge of shoulder blade (3-4 strokes at different angles) (can use both palms one in front one in back)
- With palm lightly pressing into table, have client extend elbow up while fascially releasing teres major/minor
- Cross fiber friction on Spinae Erectors (1st and 2nd lines) Use palm on lower front ribs to keep client from backbending (or use elbow fascially up through them can allow upper body to twist forward as long as pelvis stays stabile)
- Cross fiber friction on Iliocostalis Line - Use palm on lower front ribs to keep client from backbending
- Fascial release down through QL and Obliques (can also use thumb directly straight down into QL while having client extend in both directions with arm/leg)
- Stretching hips down with palm on Illiac crest (can also sink elbow into small glutes and have client mobilize the femur in tiny movements as small glutes mobilize QL lets go)
- Last but not least use thumb strokes in between floating ribs for intercostal releases and can work up between each rib until you get to serratus anterior

Proposed Treatment Sequence #3: Supine Techniques

- "Milkshake Breath" while fascially releasing Rectus Abs
- Fascial release up through oblique attachments on low ribs towards xiphoid process
- Lower rib compression on exhale with forearm while lifting shoulder (can use fingertips between shoulder blade & spine for trigger point release of rhomboids) *** #1 best thing to takeaway from this
- Arm extension overhead while fascially tracing lliac crest
- Repeat arm extension while tracing upper oblique attachments and moving down towards pelvis
- "Arc" arm overhead while fascially pulling lower thoracic fascia from back to front of ribcage towards sternum
- Repeat arc while tracing oblique attachments under lower ribs
- Psoas release + Iliacus release
- Compressing belly to encourage ribcage expansion and contraction whole hand contact just to keep belly from rising and also more direct thumb or elbow contact 1/2way between belly button & xyphoid
- Pec Major release and gentle depression of ribs 1 and 2 and then same on sternum
- Pec minor release
- SCM & Scalenes release
- Finishing technique such as suboccipital hold or front/back hold on lumbar