

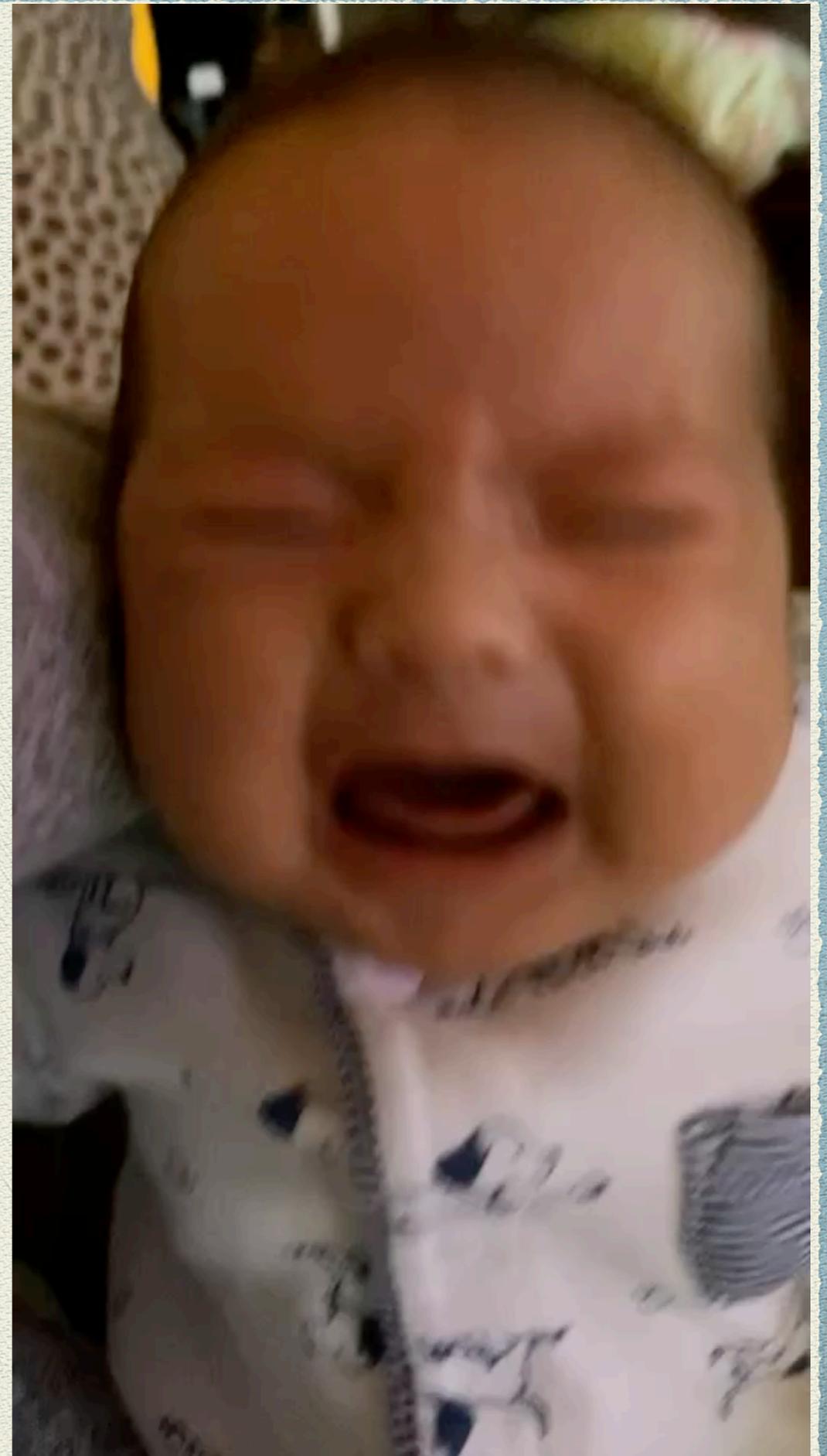
Creating A Practice  
Of Using  
Breath for  
Play and Healing

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*Our treatment of kids emerges into more total body evaluation that diagnose root issues as we embrace the research that is emerging regarding breath and core development. This course provides an exploration of play and breath through the developmental process for the basis of postural control, rhythmicity and emotional hardiness. The progression from primitive patterns to dynamic movement with adaptation will be presented through a game format for “take away” treatment ideas.*

# Breath Pattern

Many muscles used

Many ways to breathe are functional

Not a perfect breath pattern

By 6 -12 months connecting abs with chest

First organizer

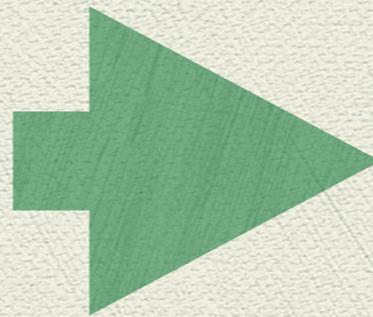
Can be first fright and set up for reflex over ride

# Pressure System

Glottal closure

Diaphragm

Pelvic floor



Dynamic control

Pressure chambers

Balance of pressure for fx

- ◆ Lab
- ◆ Ashley with shoulder blades and tape
- ◆ Blow bubble gum- Use oral / glottis / diaphragm / Pelvic floor. + change body positions while blowing

# Development of Breath and Chest

0-3m

1. 1:3 ratio chest to belly  
belly breathers, round shape, no neck, horizontal ribs



2. 3-6 months: 1:3 ratio chest to belly, anterior chest wall mm. move against gravity, can expand anterior chest wall some, mainly uses stability of horizontal ribs vs. intercostals, mostly diaphragmatic breather

ragmatic breather

Beginning sitting, log rolls



## Development of Chest

### 3. 6-12 months:

1:1 ratio of trunk to ribs

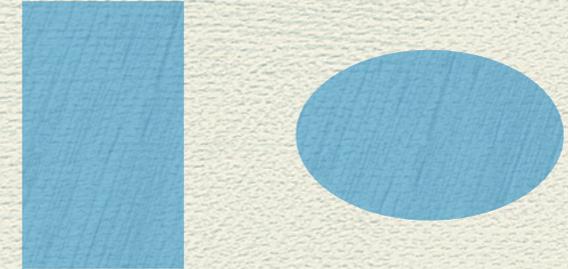
Can move trunk against gravity for all planes,

Use accessory MMs for 2 fx

**Rib cage – separation between ribs, downward rotation of ribs, trunk is 1 unit of rib cage and abdomen for postural control and breath. 3D movement, gross motor control for sitting to walking, move and breath**

### 4. 12 months plus

1:1 ratio of trunk to ribs, cervical elongation, shoulders down, scapulae are fx stabilizers, rarely breath holds



## Development of Chest

### 5. 4-5 yrs

Rib cage similar to adult except ant-post. Depth (change at puberty), rib cage more than  $\frac{1}{2}$  torso.

All respiratory mm. fx, no chest wall collapse on inhale from negative pressure.

Refined strategies to breathe

Gross motor of hopping and skipping

## Job of Breath Matches Emotion

- Oxygenation for what job description
- FRIGHT- rapid and shallow breath and breath holding
- FLIGHT- shallow breath?
- Fight- action of a strong torso
- Protection
- Calm- slow breath
- **Praxis – dynamic and adaptable breath to match the task.**

- ◆ Lab 1
- ◆ Evaluate / Treat
- ◆ Cry was high and compromised in force and volume
- ◆ Upper chest, ribs not supporting anteriorly for crawling
- ◆ Lab: Raise shoulders, extend spine, Blow balloon, Pick up paper with straw and travel.
- ◆ Flex torso and blow with diaphragm

## Anticipatory Movements

- Pelvic Floor lifts with the inhale
- Pelvic floor activity contributes to use of anticipatory movements
- Vestibulospinal and corticospinal motor tracts connect with motor neurons in spinal cord (occurs in early development- needs strong foundation many connections)
- Needs alignment of spine !!!!!!!!
- Power in the pelvis

## Developmental Delays

Anticipatory postural adjustments may be associated with movement problems in children with Development coordination disorder (DCD), and that **timing** of both proximal and distal muscles should be considered when designing intervention programs for children with DCD.

Kane K, 2013

# RULES FOR TREATMENT

- Belly breathe when using posterior pelvic tilt
- Belly breathe when flexing torso
- Chest breathe when using anterior pelvic tilt
- Chest breathe when reaching arm above 90 degrees flexion
- Chest breathe with trunk extension

## Lab

### Evaluate /TX. Pelvic floor

1. Blow paper over your head through fingers while leaning back
2. Rotate torso and repeat 1
3. Suck paper with straw with spine flexed.
4. Hold straw tightly between fingers  
Reach with spine flexed and pull with teeth.



# ADAPTATION IS THE KEY TO PRAXIS IN BREATH

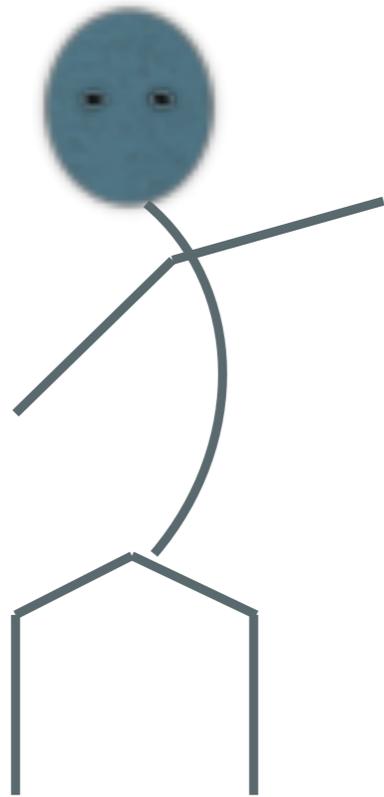
## WHAT STOPS ADAPTATION?

- Holding on to a fright
- Poor organization OF SSB
- Poor Core development

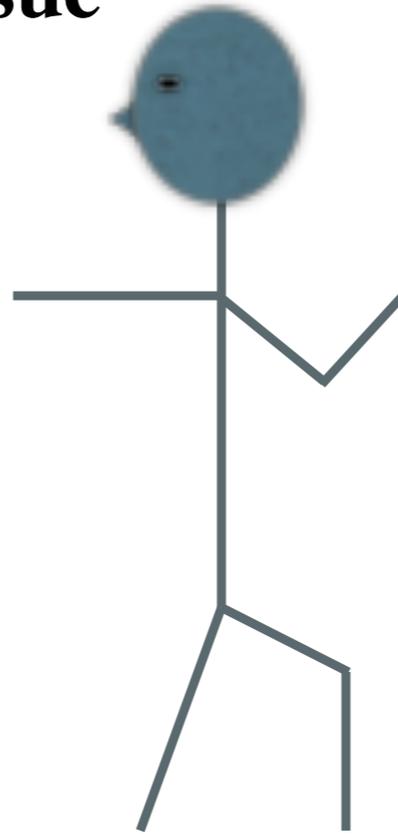


# Evaluate Emotion

In the tissue



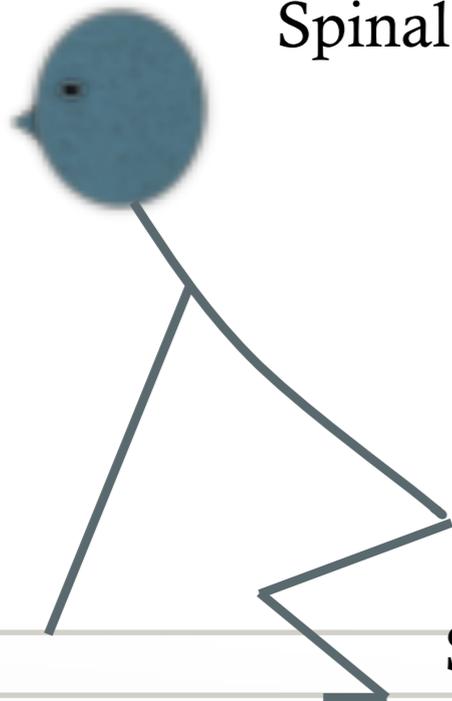
Spinal Galant



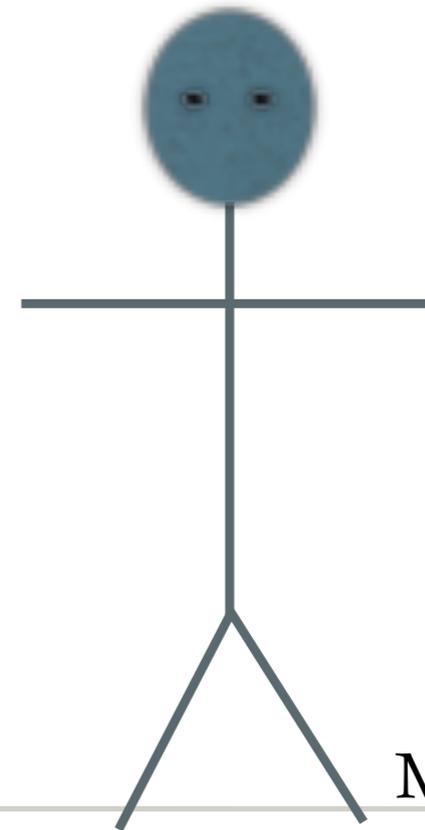
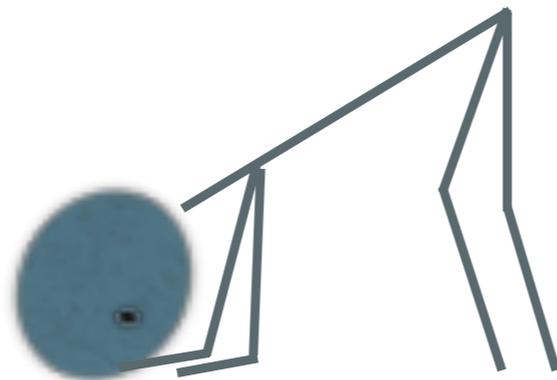
ATNR



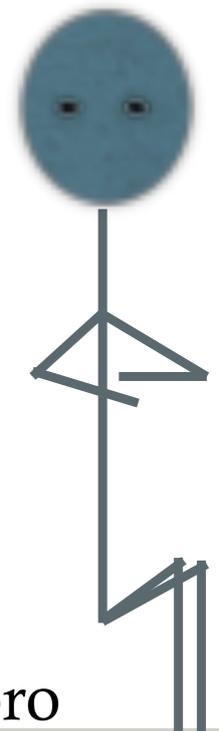
TLR



STNR



Moro

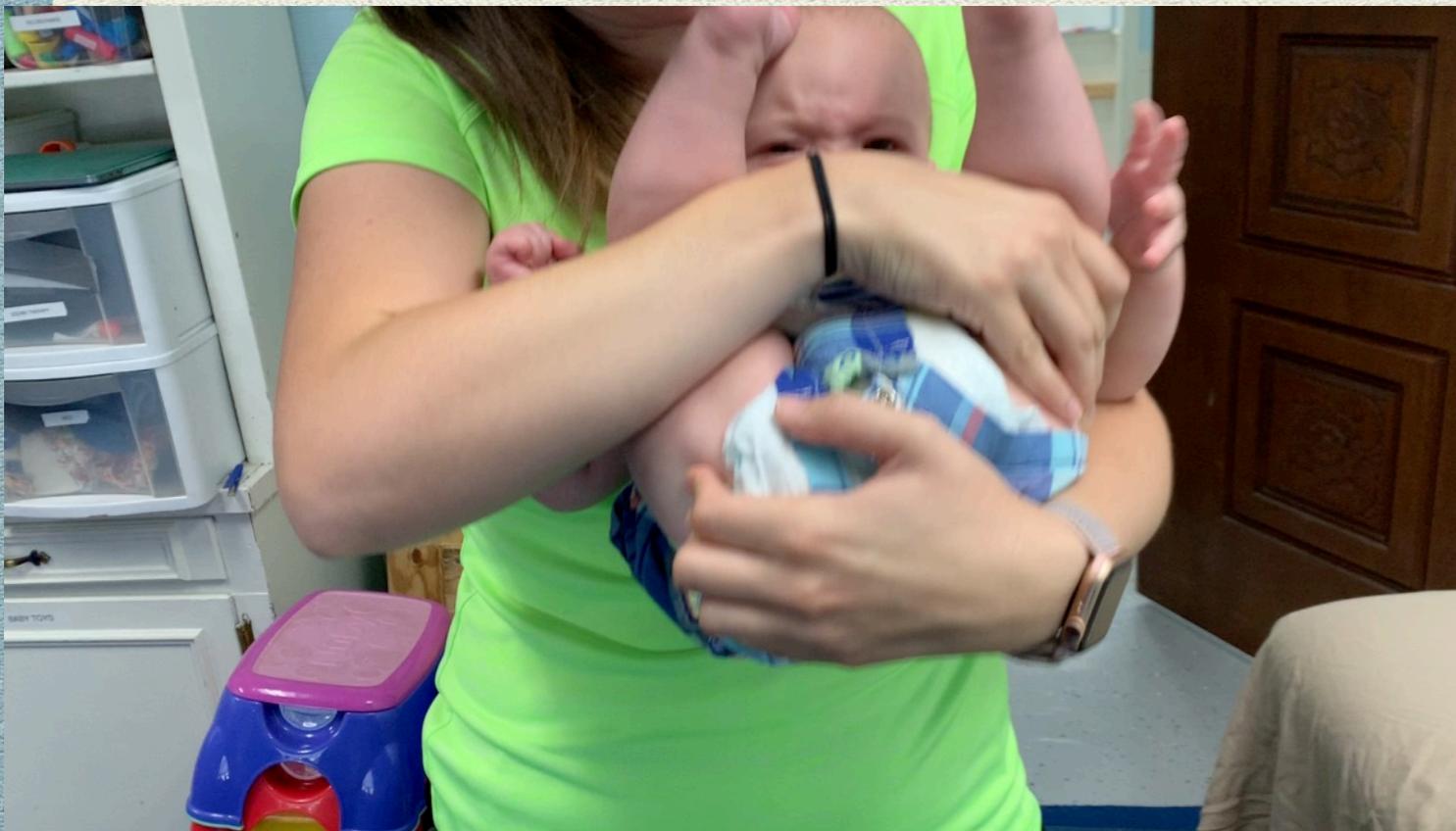


# REFLEXES WITH A BREATH COMPONENT

- Moro
- Spinal galant
- Fear paralysis- motor paralysis and respiratory arrest in expiration
- TLR
- ATNR
- STNR
- Rooting

# BODIES ARE MADE TO HEAL AND WORK IN SYNC

- Reset the system to a full breath that puts postural muscles into function of posture rather than breath.



# Layers of Healing

Genetics  
Conception  
Fetal  
development  
Birth  
1 year  
2 years  
3 years  
4 years  
5 years  
6 years  
7 years  
8 years  
9 years  
10 years  
11 years  
12 years



## Never same since:

Illness  
Shots  
Divorce  
Death  
Failure  
Cancer  
Humiliation  
Broken leg  
Fright  
Grief  
Ear infections

## Manifest as:

Avoidance – sick,  
cry, blame, lie, etc.  
Perceptions  
Anger  
Just like grandma etc.



# Trauma

Production and re-uptake of neurotransmitters change-

- less ability to inhibit incoming sensory stimuli
- stays in a heightened state of arousal- fight/flight/freeze mode
- trauma memories are stored differently- sensations in the body
- sensations are the only “memory” of the trauma
- trauma leaves “raw data“ in amygdala as somatosensory experiences

As amygdala regulates emotion, this results in increased sensitivity to even subtle sensory associations with traumatic events (Koomar, 2009)

# Trauma

May have the following issues:

- ◆ Vigilant to sensory stimuli
- ◆ Often unable to screen out background stimuli
- ◆ Overreact to stimuli in the environment
- ◆ Behavioral outbursts
- ◆ Sleep disorder
- ◆ Digestive problems
- ◆ Breath issues

## Moro

An opening the arms and legs outward followed by adduction of limbs to embrace or clasp. -Grasping with body-

Needed for survival to call for help and not experience too much input, alert etc.

Several phases with a freeze.

Hypersensitivity to all or any sense. -Hyper-reactivity- Some authors say just to head movement

Vestibular/coordination issues

Stimulus bound effect – cannot ignore peripheral stimuli to focus attention on one thing – has to pay attention to all -Poor impulse control

Insecurity/dependency, allergies, short shallow breath, oculo motor issues

Labile emotions: Emotional and social immaturity.

Anxiety – particularly anticipation anxiety- need to control



# Moro most responsive to vestibular input

## Absent moro

Many of our kids need intense vestibular input in order for them to express the Moro reflex

- Kids who don't startle, don't orient
- Kids who don't orient, don't balance

## Retained moro

Without adequate central stability, alignment = head still relatively behind ribcage

This alignment increases tendency to triggering of Moro.

- Hypersensitivity/over reactivity to sudden stimuli
- (body armoring)
- Poor balance and coordination
- Immature eye movements
- Difficulty catching a ball
- Possible photosensitivity due to pupillary dilation
- Anxiety

# Safety vs. Fear

safe

fear

postural control

calm

comfort

postural  
immaturity

compromised  
breath

reflex

anxiety



# Shift of Emotion

- Challenge to mental, emotional, physical, and sensory system
- Anxiety

Fear triggered

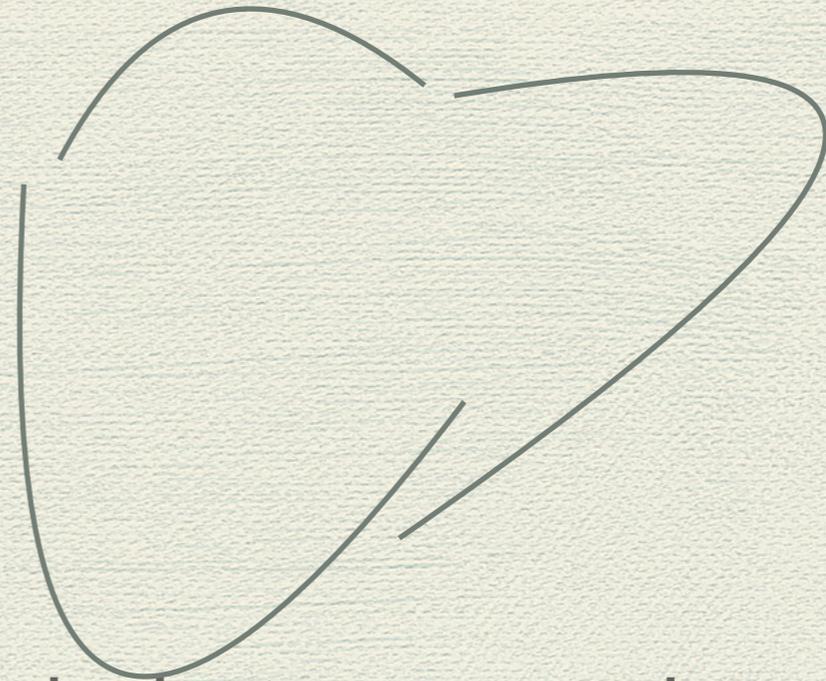
Decreased motor control

- Tightness
- Reflex pattern initiated
- Breath of anxiety

- Movement in front/ back plane
- Reduction of fear response
- Release of foot, hips, and legs
- Adaptation of Breath

Shift of emotion to safety

CPG



## Central Pattern Generators

Are neural networks that can produce rhythmic patterned outputs without rhythmic sensory or central input. (Hooper, S. 2000)

Vestibular stimulation delivered to preterm infants before scheduled feeds effectively modulates respiratory rate and resets the respiratory central pattern generator. (Zimmerman E, Barlow SM, 2012).



## Vestibular Input- Change in Chest Wall Patterning

There were significant differences in chest wall motor patterning in response to vestibular stimulus acceleration.

Modulation of sensory input and changes in task dynamics lead to dynamic reassembly of the neuronal networks that compose the CPG, thus producing new motor forms (Grillner, 1991)



## Problems with Breath

Breath holding - compensation for inefficient postural control and impairs development of mature postural control (Massery, M. 2013)

Holding on to a fright- Increased postural sway in highly anxious children (Stins, JF. 2009)

Praxis in Breath

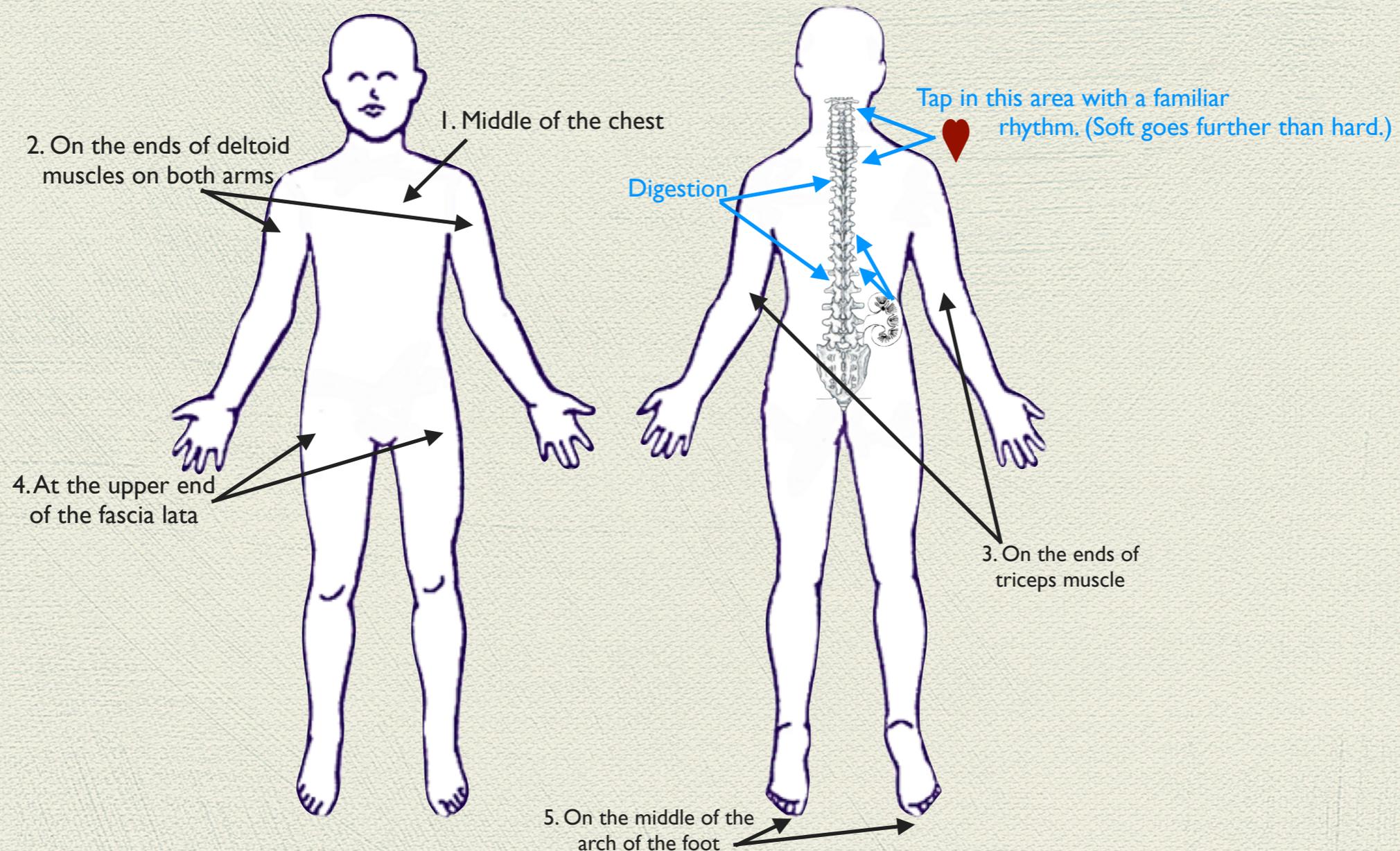
Poor organization of SSB

Poor core development

Immature Reflexes

## Connection of Moro with Fear Paralysis Reflex/Organ tapping (Rhythm tapping)

On each of the following points tap a pattern repetitively in an up and out gentle motion x 10-20 followed by firm compression 4x.  
The number varies with each patient according to sensitivity. Most tapping on chest.



Organ tapping: Beside each vertebra on the right and left are ganglia that correspond to different organs. Tapping should be performed in a way that it shakes cellular tissue. To do this, find a rhythm and pressure the child likes and gradually go to a slower softer rhythm that can go deep. You may use the rhythm of a song and continue to tap until the child calms.

# Chicken or the Egg

- ◆ Deep breathing effects regulation
- ◆ Diaphragm effects Vestibular
- ◆ Vestibular effects diaphragm
- ◆ Rhythm effects breath and regulation
- ◆ **Rhythm trumps breath**
- ◆ **Breath trumps emotion**
- ◆ **Emotion trumps reflexes**

# What Do We Use to Breathe?

Intrinsic laryngeal mm

Intercostals

Diaphragm,

abdominals,

pelvic floor mm.

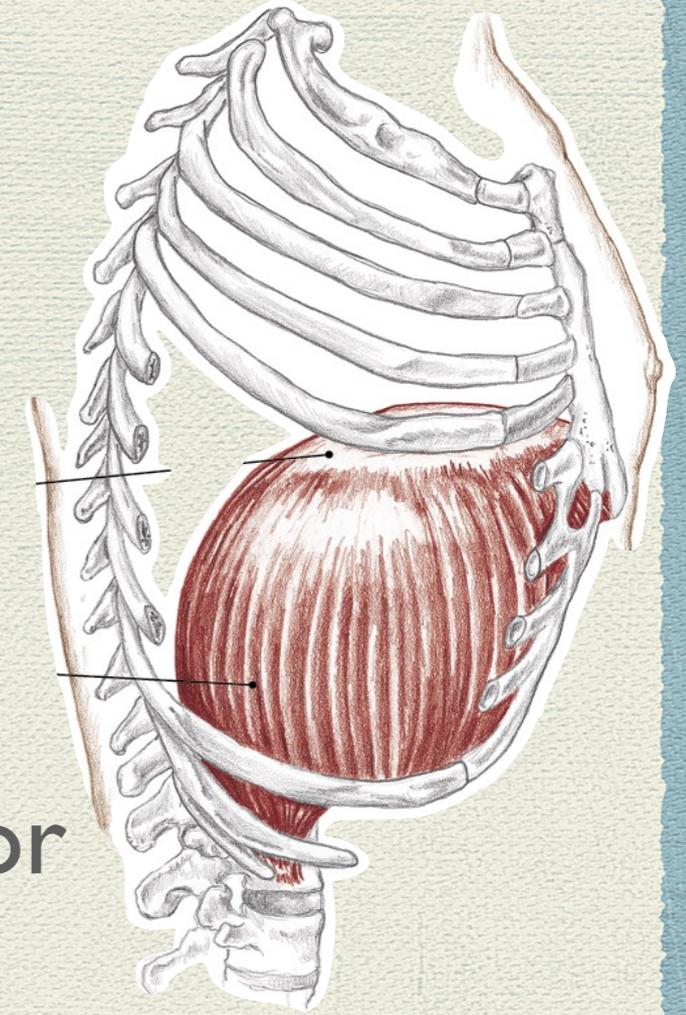
12 ribs

Sternum

Thoracic spine, posterior thoracic cage, rib articulations

Organs

# Diaphragm



- ◆ Pulling action on base of lung
- ◆ Pulling action lateral, anterior, or posterior
- ◆ Diaphragm is primary inspiration mm.
- ◆ Top-Front- Attached at xyphoid and dome at level of 4-5 rib, 7 thoracic in back
- ◆ Base- 3 lumbar via tendons- waist (7th rib)
- ◆ 1st rib rolls

# Inspiration

## 3 groups

### 1. Lifts ribs from shoulder girdle and arm

Pectoralis minor - lifts ribs forward into clavicles

Pectoralis major - (attach to clavicle, ribs 1-8, sternum) raises sternum by opening up costal angle- inhalation is lower than with Pectoralis minor

### 2. Lifts ribs from thoracic spine

Serratus anterior: lateral motion

Inserts in ribs 1-10, originates on internal scapula edge

Pulls ribs **back and outward** - serves as a base for neck. used when singing and wind instruments to control expiration

Legators Costarum:

Small but numerous and as a group form large area of contraction at back of ribs- lifts ribs away from spine in the back - Used when inhaling into front, sides and back

Used to exhale with opposite motion

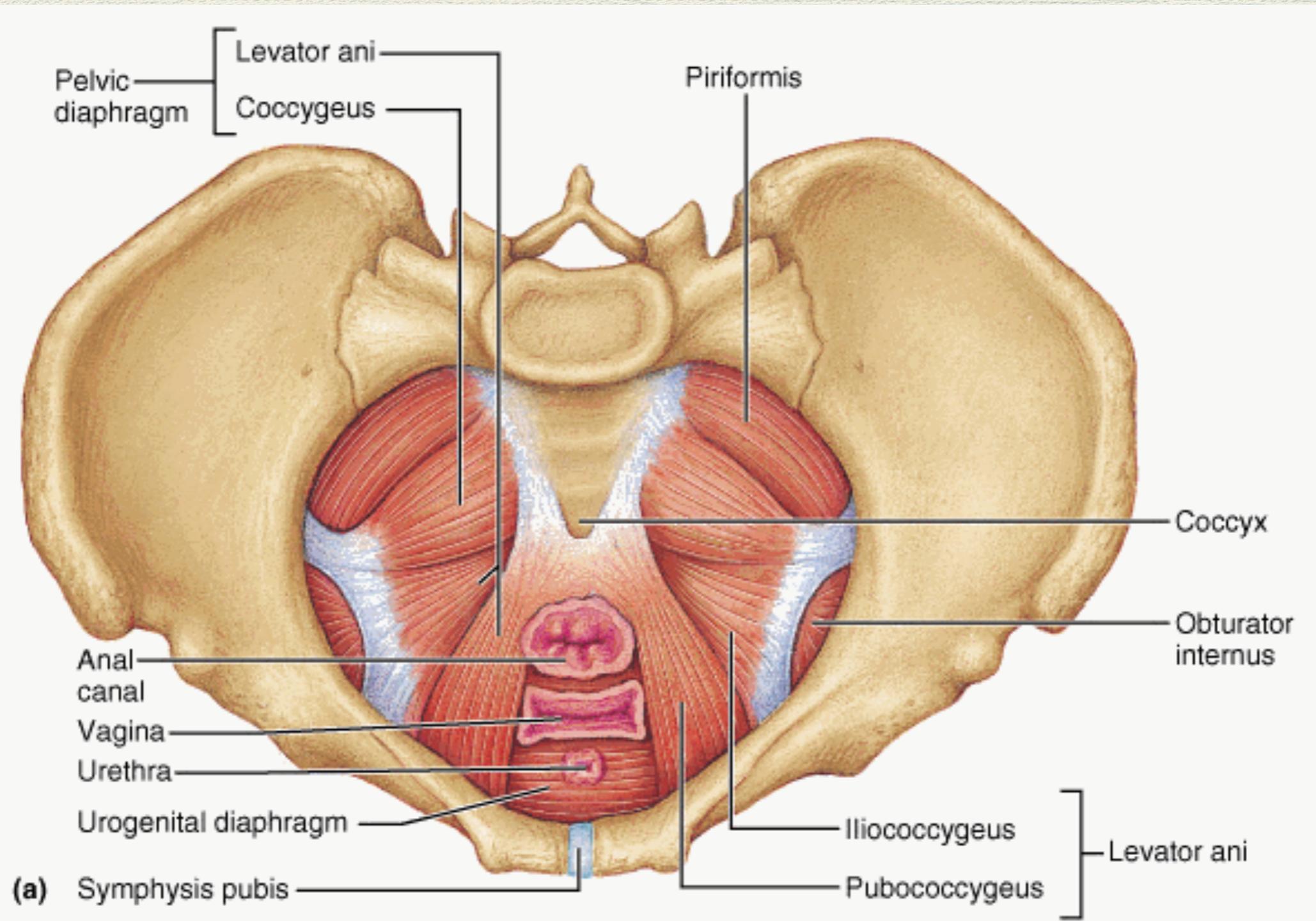
Transverse spinalis: indirect inhalation MM - extends the thoracic spine-

Serratus Posterior: origin: c7-T4; insertion on 1st 4 or 5 ribs at Post. costal angle

### 3. Lifts ribs from head and neck

Sternocleidomastoid - raises ribs by pulling it up at the sternum

Scalenes - 3 mm. (O- transverse process of cervical vertebrae: 1- rib )1 &2- pull rib 2 &3 upward, high rib breathing



# Quadratus Lumborum



*Unilaterally:*

**Laterally tilt** (elevate) the pelvis

**Laterally flex** the vertebral column to the same side

Assist to **extend** the vertebral column

*Bilaterally:*

**Fix** the last rib during forced inhalation and exhalation



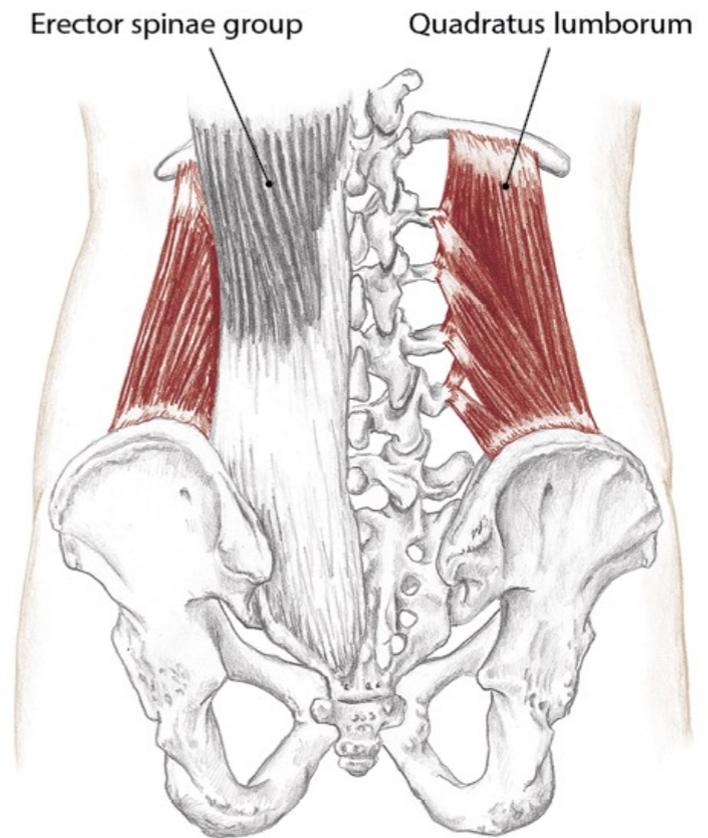
Posterior iliac crest



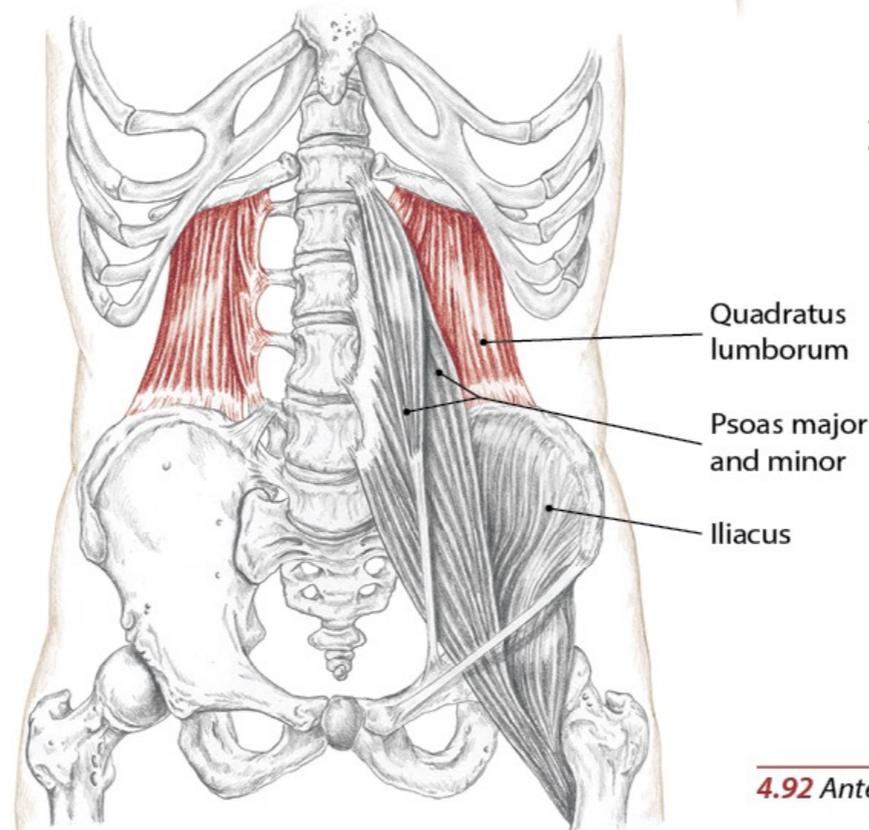
Last rib and transverse processes of first through fourth lumbar vertebrae



Lumbar plexus T12, L1, 2, 3



**4.91** Posterior view, erector spinae group removed on right side



**4.92** Anterior view

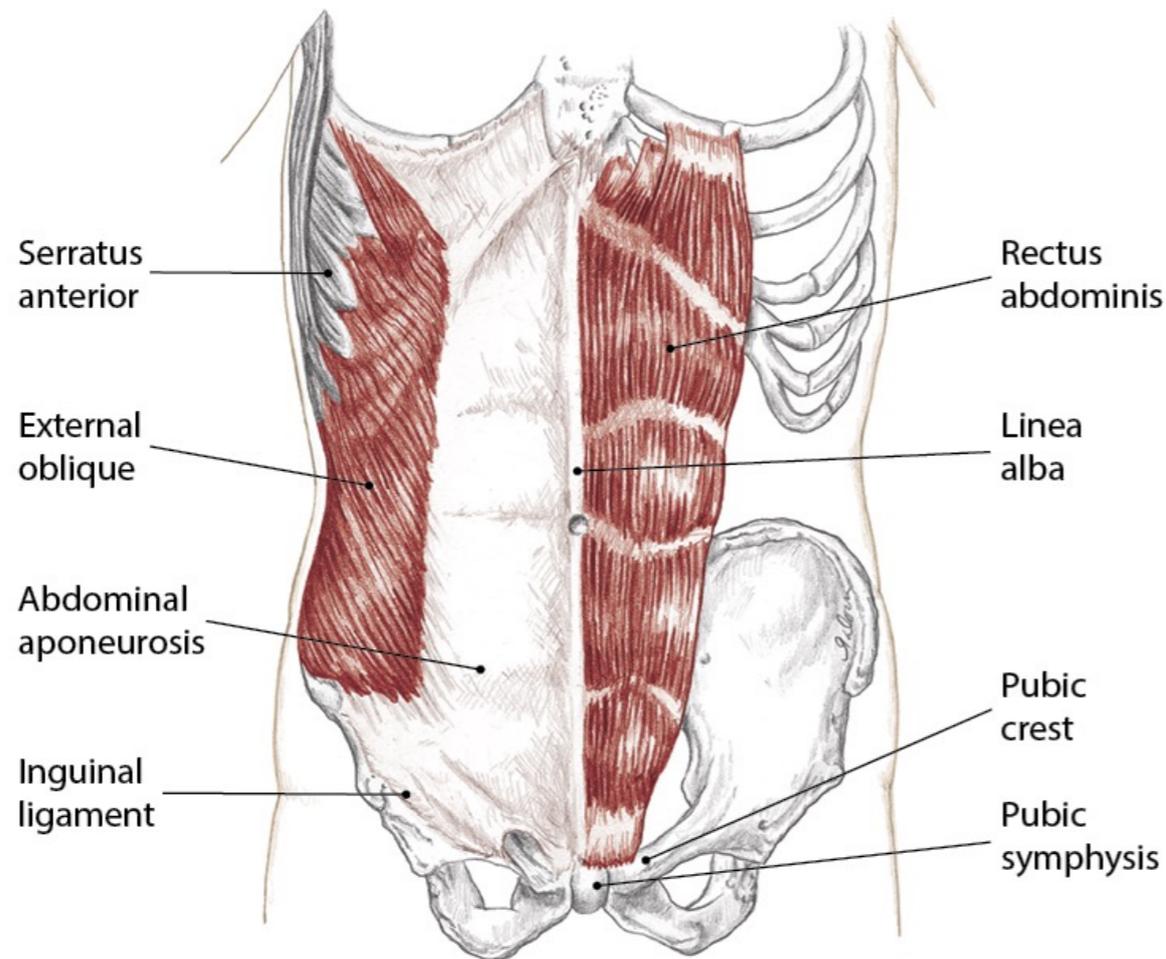
# Abdominals

*Rectus Abdominis*

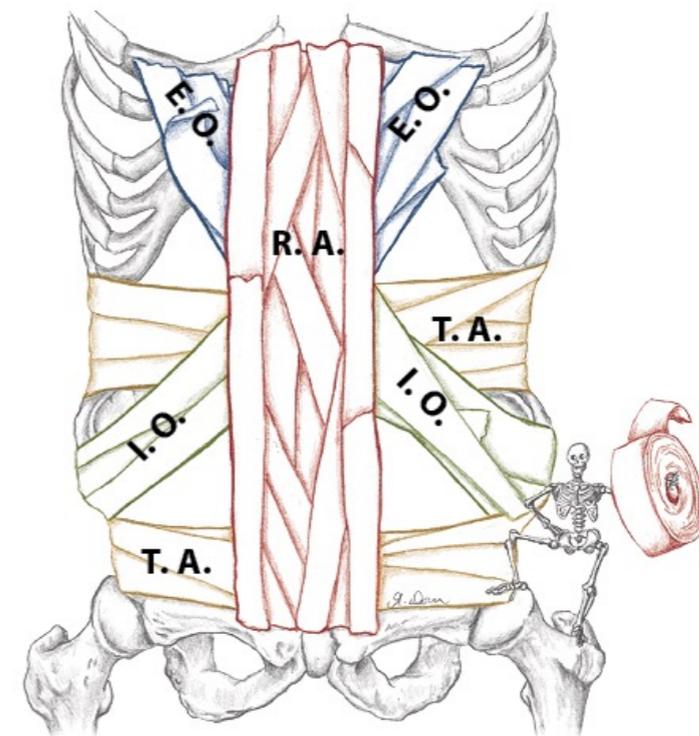
*External Oblique*

*Internal Oblique*

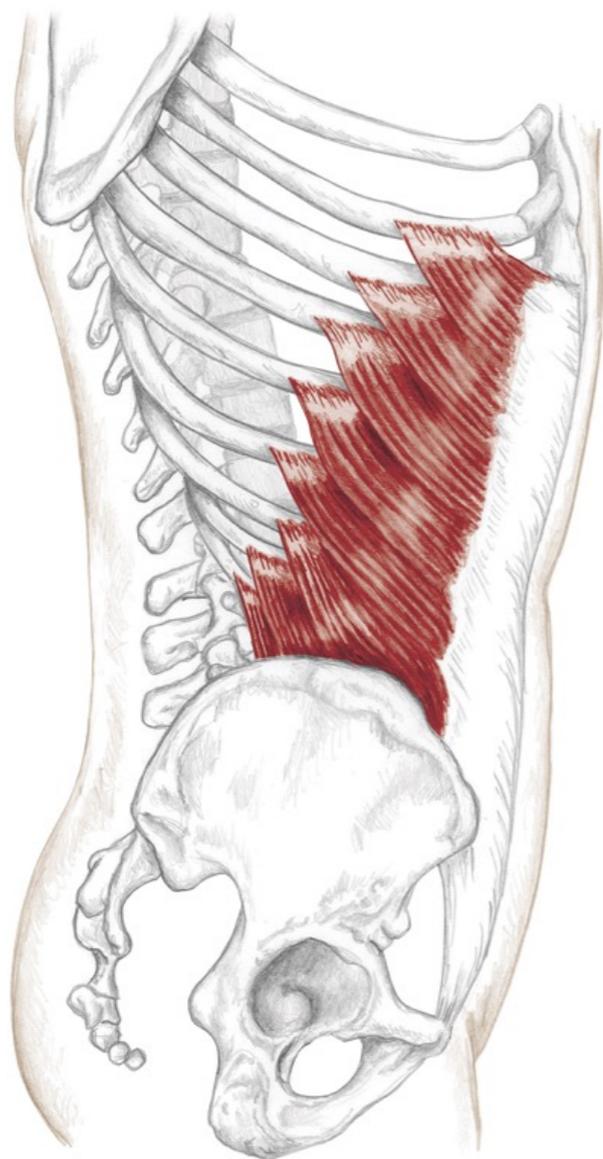
*Transverse Abdominis*



**4.97** Anterior view



# Abdominals



**4.100** Lateral view of external oblique

## External Oblique

**A** Unilaterally:  
**Laterally flex** vertebral column to the same side

**Rotate** vertebral column to the opposite side

Bilaterally:

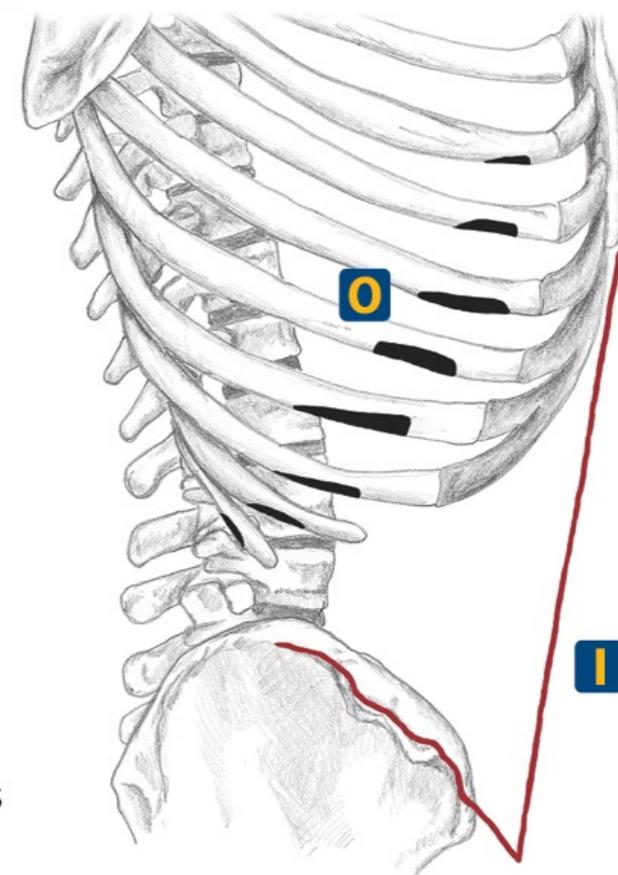
**Flex** the vertebral column

**Compress** abdominal contents

**O** External surfaces of fifth to twelfth ribs

**I** Anterior part of the iliac crest, abdominal aponeurosis to linea alba

**N** (T5, 6), T7-11, T12



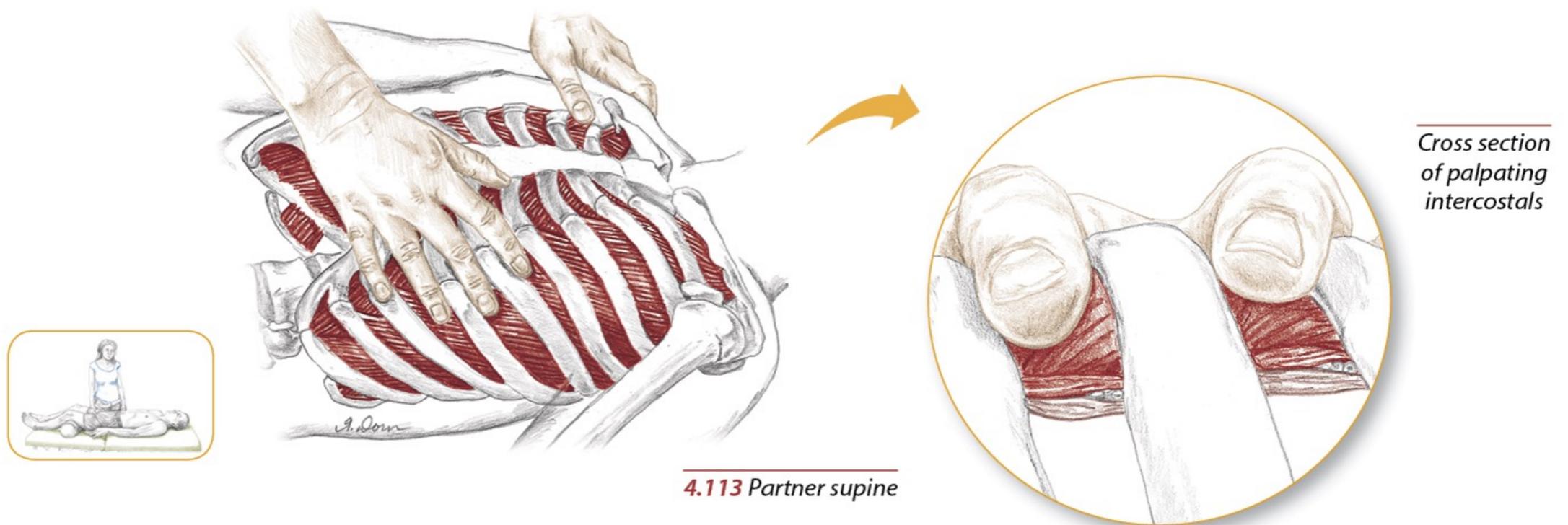
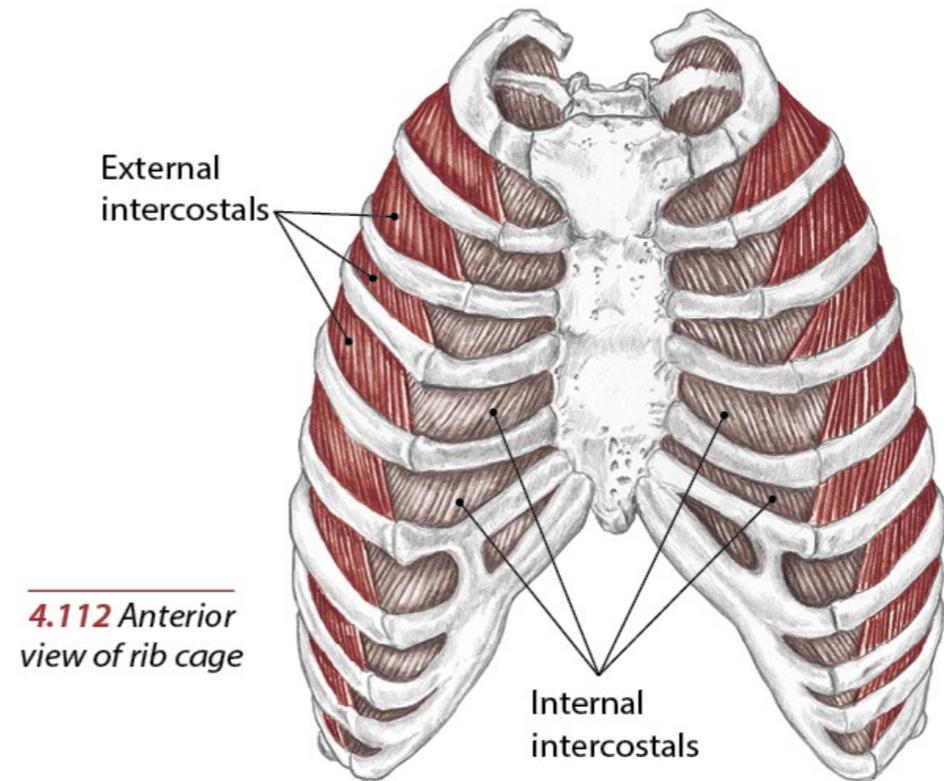
**4.101** Lateral view showing origin and insertion

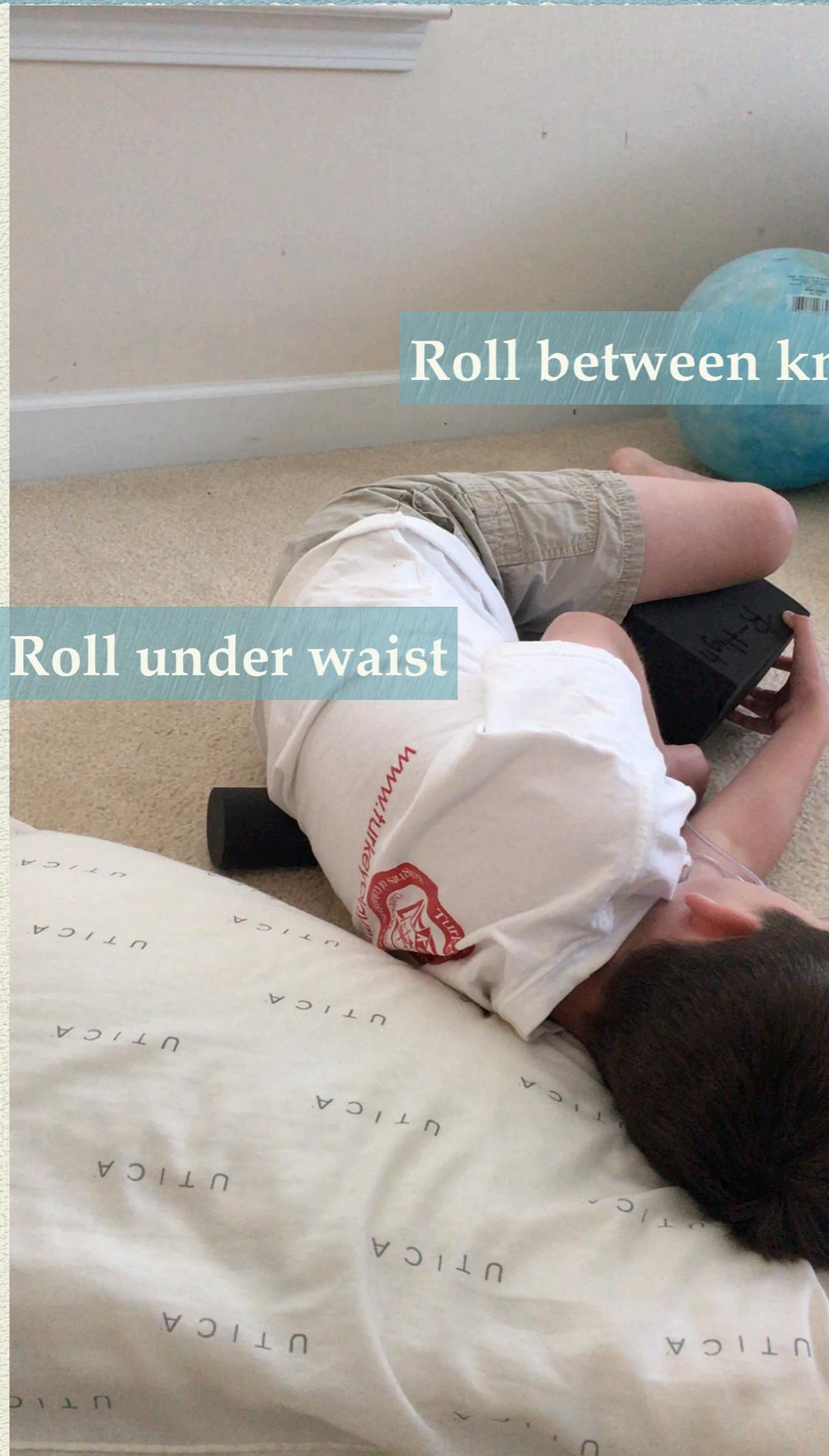
# Intercostals

**A** *External Intercostals:*  
Draw the ribs superiorly (increasing the space of the thoracic cavity) to assist with **inhalation**

*Internal Intercostals:*  
Draw the ribs inferiorly (decreasing the space of the thoracic cavity) to assist with **exhalation**

- O** Inferior border of the rib above
- I** Superior border of the rib below
- N** Thoracic





Roll between knees

Roll under waist

TX

Released liver

Perfect alignment

Resistive blowing

Encourage new places for breath

Stopped accessory breathing

Used core

# Observe

Overuse of accessory muscles - shoulders raise to breathe

Belly breathe only / change breath with task

Paradoxical Breathing-(See- saw breath)- collapse of lower rib cage with each breathe

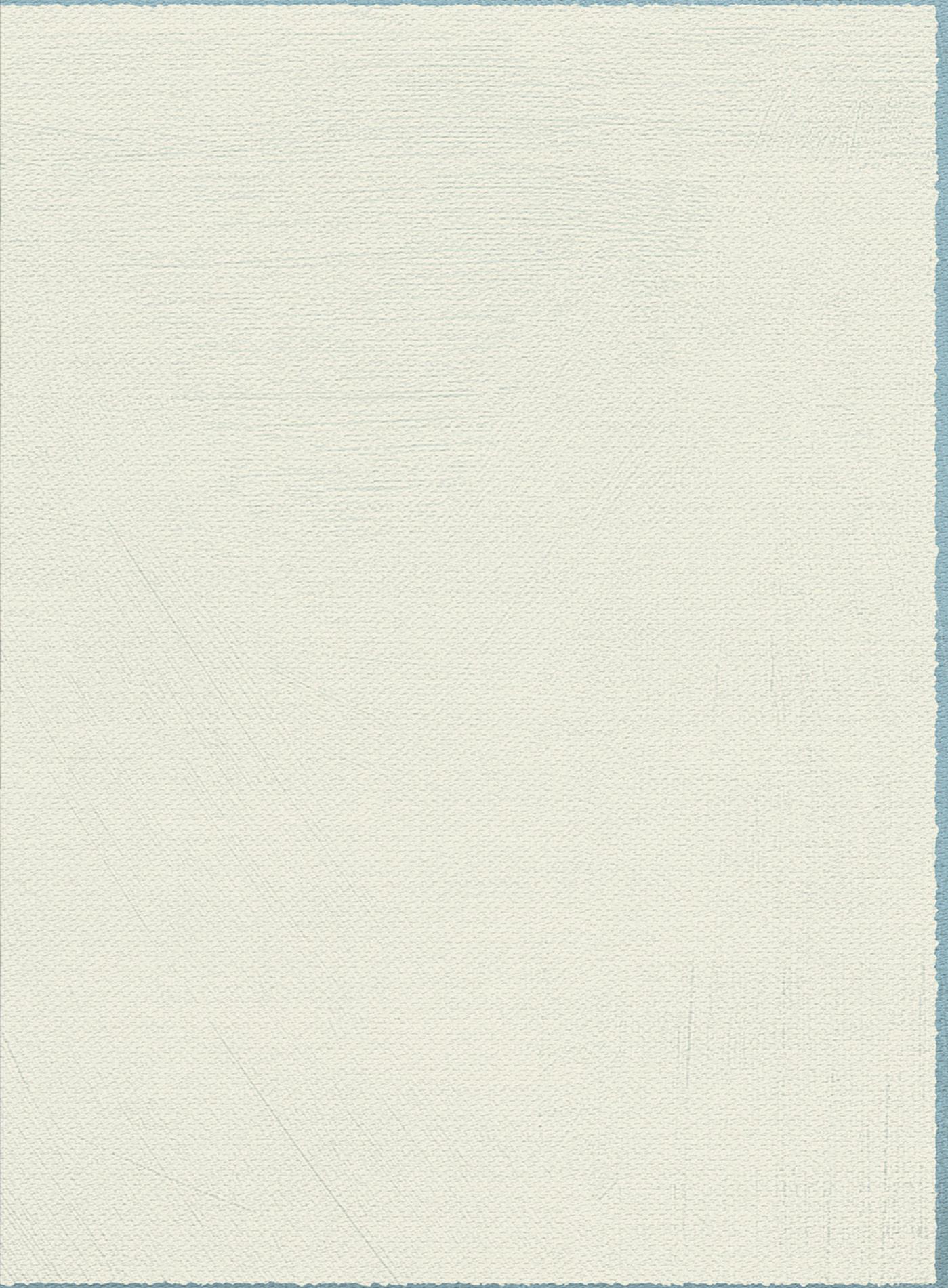
Pulling in at trachea

Can child breath when in total flexion

Suck- quality

Blow- quality

Cry



The end

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