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OBJECTIVE: PURPOSEFUL



- **DISCOVER**
 - ✓ Cause
- **DEVELOP**
 - ✓ Corrective Exercise
- **DESIGN**
 - ✓ Confidence

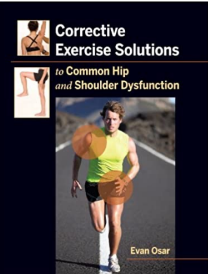
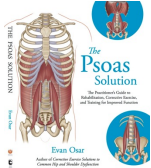


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BREATH



- Most essential function of the nervous system
- 17,000 – 30,000 breaths per day
- 6,000,000 million



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WHY FEW DOCTORS ADDRESS BREATHING



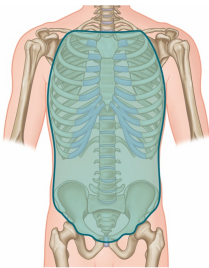
- The symptoms of suboptimal breathing are not experienced for years.
- ❖ *Subtle is not insignificant!*



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THORACOPELVIC CYLINDER



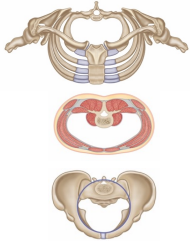
- Functional cylinder
- Thorax
- Lumbar spine
- Pelvis



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THORACOPELVIC CYLINDER

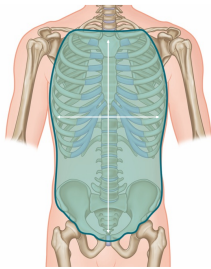


- Series of stacked rings
- Thoracic rings
- Lumbar myofascial-
osseous ring
- Pelvic ring



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THREE-DIMENSIONAL BREATHING

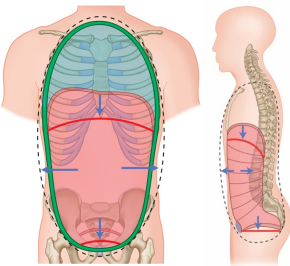


- Ability to use the entire thoracopelvic cylinder in the breathing process.
- **All breathing is diaphragmatic breathing.**
- Not all diaphragmatic breathing is optimal.
- Breath (2022 Osar)



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INSPIRATION

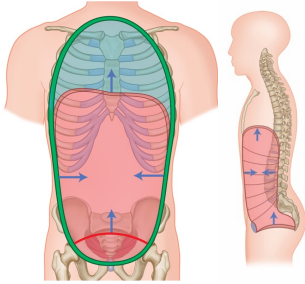


- Purpose: increase dimensions of TPC
- Quiet respiration should be relatively effortless.
- Diaphragm lowers (concentric) / Pelvic floor lowers (eccentric)



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EXPIRATION



- Purpose: decrease dimensions of TPC
- During quiet respiration, it's mostly via a passive relaxation
- Diaphragm rises (eccentric) / Pelvic floor rises (concentric)



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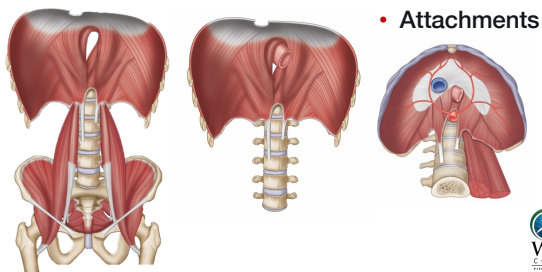
RESPIRATORY MUSCLES

- | | |
|-------------|---------------------|
| • Primary | • Accessory |
| • Diaphragm | • Neck |
| • _____ | • Thorax |
| • _____ | • Thorax to abdomen |



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DIAPHRAGM

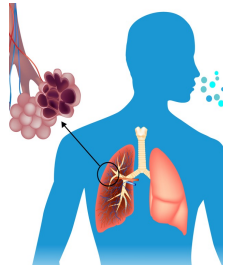


- Attachments



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FUNCTION #1. RESPIRATION

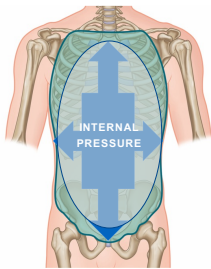


- Move air into and out of lungs

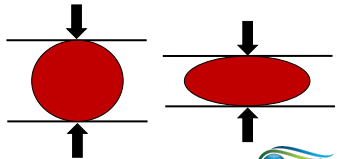


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FUNCTION #2. STABILIZATION



- Developed via internal pressure regulation



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WHAT KEEPS THEM FROM COLLAPSING?



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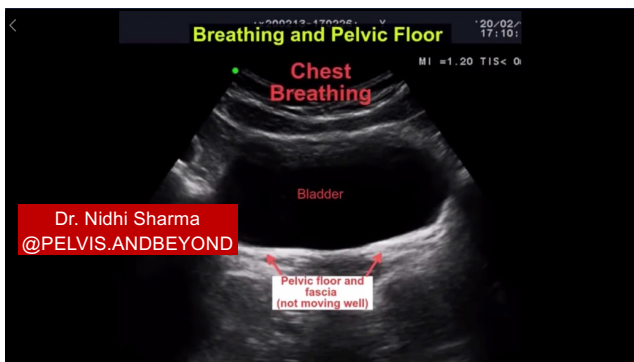
FUNCTION #3. MOBILITY

- Skeleton
- Muscles & fascia
- Organs

- Video Credit: Stockbridge Osteopathic Practice via Facebook

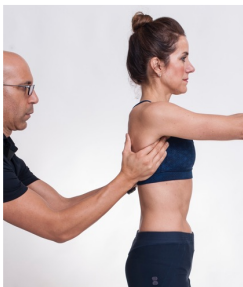


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POSTURE & BREATHING ARE LINKED

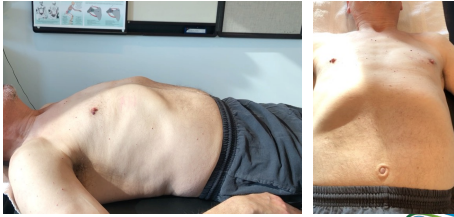


- What gets linked together gets synced together.



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POSTURE & BREATHING ARE LINKED

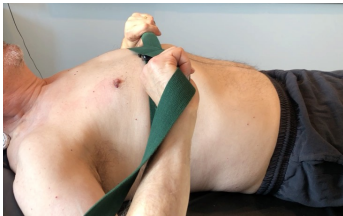


- Belly breathing is not optimal breathing!



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POSTURE & BREATHING ARE LINKED



- Three-dimensional breathing is optimal.



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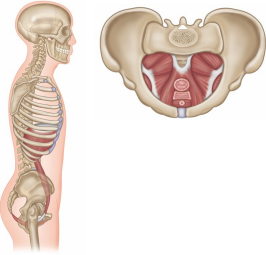
SARCOPENIA IS A MAJOR PROBLEM

- Ageing of the Diaphragm Muscle. Bordini et. al. (2020)
- ✓ Diaphragm thins and atrophies
- ✓ Becomes flatter and less elastic
- ✓ Thinning of the vagus nerve



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THE PSOAS

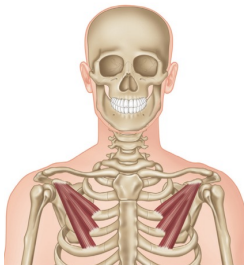


- Links the diaphragm with the pelvic floor
- Respiratory diaphragm (dome)
- Pelvic floor diaphragm (dome)



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PECTORALIS MINOR

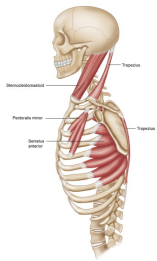


- Why does it get so tight?
- Primary role
- Secondary role



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STERNOCLEIDOMASTOID

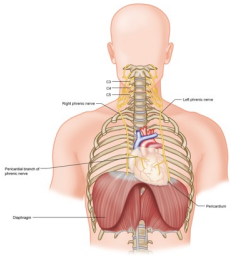


- Why does it get so tight?
- Primary role
- Secondary role



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NERVE INNERVATION

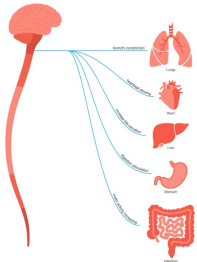


- C _____ keeps the diaphragm alive!



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NERVE INNERVATION



- Vagus nerve (CN10)
- Parasympathetic NS
- Motor and sensory



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OPTIMAL BREATHING



"Normal" = 12-20 breaths per minute



Optimal: _____ breaths per minute



breathing rate leads to hypocapnea



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HYPOCAPNEA

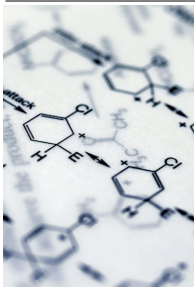


- Breathing out too much CO₂
- Symptoms include:
 - ✓ Increased BP & HR
 - ✓ Anxiety
 - ✓ Light headedness



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CARBON DIOXIDE

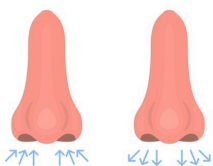


- Functions:
 - ✓ Respiratory drive / stimulates the vagus nerve
 - ✓ Regulates pH
 - ✓ Helps bind and release O₂



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ROLE OF NASAL BREATHING



- WMF
- Slows BR
- NO



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ROLE OF NASAL BREATHING



- "...nasal breathing reduces pulmonary vascular resistance and improves arterial oxygenation compared with oral breathing in subjects without lung disease."
- Source:
- Nasal nitric oxide in man (1995)



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SIGNS OF SUBOPTIMAL BREATHING



- ✓ Postural control issues
- ✓ Chronic tightness
- ✓ Chronic LBP
- ✓ Chronic painful neck, shoulders or hips
- ✓ GERD / Urinary Incontinence
- ✓ Hypertension / Anxiety
- ✓ Sleep apnea



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Mouth breathing

- Imbalances of craniosacral bones and facial musculature
- Lethargy and trouble concentrating
- Snoring and sleep apnea

Source:

- Sleep Difficulties and Symptoms of Attention-deficit Hyperactivity Disorder in Children with Mouth Breathing (2021)

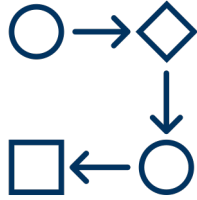
PROBLEMS WITH MOUTH BREATHING



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THE SOLUTION

- TRUST THE PROCESS!



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THE PROCESS

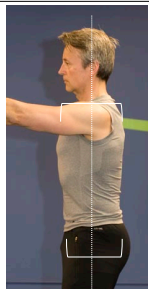


PURPOSE



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POSTURE AND BREATHING STARTS HERE

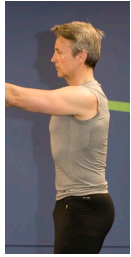


- Observe the alignment of the thoracopelvic cylinder
- Is it stacked?
- If no, what's not aligned?



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NOTICE THE ANGLE OF THE RIBS



- Higher in the back
- Lower in the front
- Intercostal spaces



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QUICK ASSESSMENT

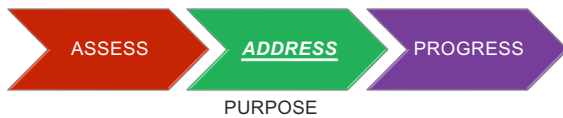


- NOTE:
 - ✓ RANGE OF MOTION
 - ✓ EASE OF MOTION
 - ✓ QUALITY OF MOTION



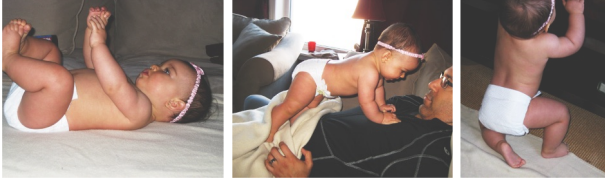
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THE PROCESS



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CORRECTIVE EXERCISE STRATEGY



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CORRECTIVE EXERCISE STRATEGY



- Strategy
 - RELEASE
 - ACTIVATE
 - EDUCATE (CUES)



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PRINCIPLES



Align



Breath



Control



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CUES



- Send your breath:
 - “into lower abdomen”
 - “side to side into ribs”
 - “across shoulder blades”



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ACTIVATE



- Purpose:
 - Develop more optimal breathing strategy
- HAPPY BABY BREATHING
 - Lower abdominal (top)
 - Rib cage (middle)
 - Upper thorax (lower)



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ACTIVATE

- Purpose:
 - For individuals with excessive thoracic extension
 - Develops spinal length
 - Improves head and neck posture and scapular stability



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ACTIVATE



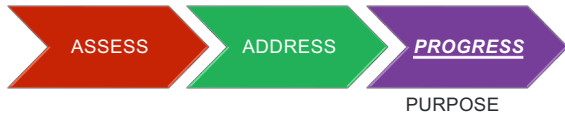
- QUADRUPED ISO HOLDS
- Sync breath and core
- Develop spinal length
- Improve head and neck posture and scapular stability



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THE PROCESS



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PROGRESS



- Purpose
- Integrate more optimal breathing into the fundamental movement patterns
- Engrains more optimal habits into the nervous system!



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HIGHER LEVEL INTEGRATION



- *“Our results indicated that the 4-week IMT training (twice a day, 5 days a week) significantly improves participants’ inspiratory muscle strength, 800-m running performance.”*
- Effects of 4-Week Inspiratory Muscle Training on Sport Performance in College 800-Meter Track Runners (2021)



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CONCLUSION



- ✓ PROBLEMS
- ✓ PROCESS
- ✓ PROGRESSIONS



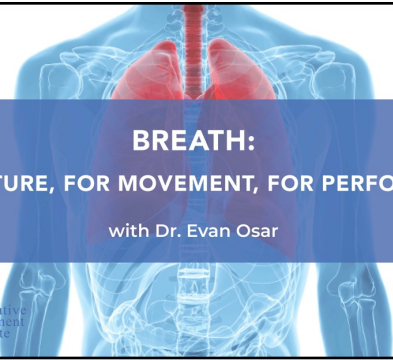
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CAN BREATHING CHANGE ONE’S LIFE?

- You’re only 5 years of age. You can’t have a headache.




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BREATH:
FOR POSTURE, FOR MOVEMENT, FOR PERFORMANCE

with Dr. Evan Osar



Integrative
Movement
Institute

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**INTEGRATIVE
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