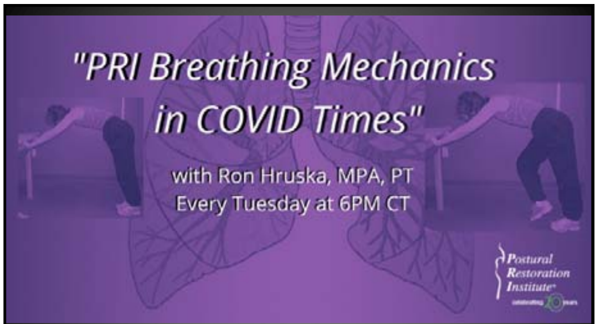

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WEEK 4: REGULATING LUNG CARBON DIOXIDE (CAPNIA) THROUGH POSTURAL END RANGE DEEP BREATHING

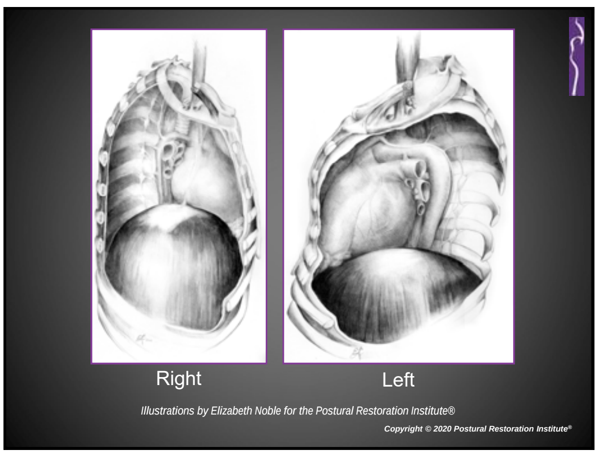
This week, I would like to talk about how our lung function can possibly contribute to our overall behavior, chest mechanics and spinal orientation.

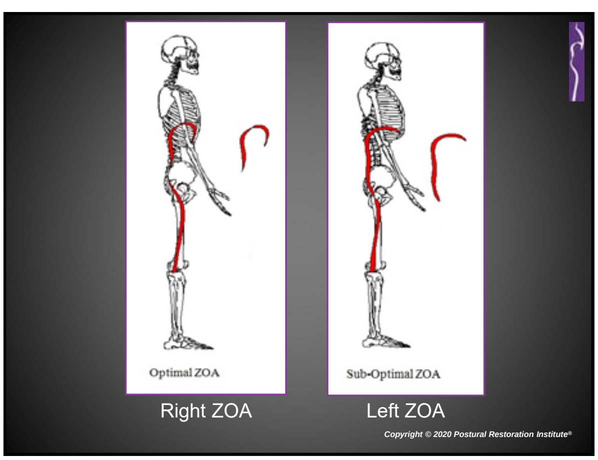
Our human body is built to naturally maintain a healthy balance of acidity and alkalinity.

If our lungs or kidneys are malfunctioning, our blood pH level can become imbalanced.

This imbalance is often seen in those with kyphoscoliosis where the right diaphragm is positioned at the end range of exhalation as a result of increased lateralized postural stabilization enhanced by a very active Zone of Apposition (ZOA) soft tissue, comparatively to the left.

The overall lung function on this side is restricted compared to that on the left.





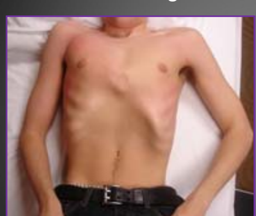
This lung imbalance, between the two sides of the body, impairs exercise tolerance and increases CO_2 retention, or hypercapnia induced by limited chest wall expansion during inhalation, usually initiated on the right side.

Our right lung lobes are more often responsible for initiating physiologic and physical behavior patterns associated with hypercapnia, than our left lung lobes.

The left lung tolerates more overall lung expansion and therefore more O_2 alveolar sac ventilation than the right lung, because of diaphragm difference in size (the left diaphragm is smaller and overall lung size on the left is smaller).

Diaphragm function and size induces more of a hypocapnia state or hypocarbia state on the left, because of this overall hyper-ventilatory function and accompanying lung size on the left.

Poor left ZOA opposition is often seen in this physiologic imbalanced divarication between the two sets of lungs.



When we take a deep breath in through our nose, hopefully the air will move into each set of lobes equally.

However, because of how we breathe, and the way we breathe, we may not be able to balance oxygen and carbon dioxide levels in the body, nor balance these levels through asymmetrical symmetry function provided by our biased diaphragms.

"Antecedent Left Hypocapnia Posture"

"Left Hypocapnia Posture"

More often than not, someone who is spending most of their upright day, with weight being placed more on their right foot, will eventually follow the body's path of least resistance and could 'fall' or rely on their joint capsular end range and soft tissue associated with this end range, for respiration, patterned from a state of postural imbalance. (L AIC / R BC)

In essence, many of us develop a compensatory pattern of respiration that results in hyperventilation (hypocapnia), which is reinforced by our left lung tendencies.

This usually occurs after moments associated with hypercapnia, which is reinforced by our right lung tendencies.

Antecedent behavior of increased hyperventilation (hypocapnia) is often hypoventilation (hypercapnia). **Shallow breathing usually precedes hyperventilation.*

HYPERCAPNIA

- Caused by hypoventilation
- Increased CO_2
- Increased respiratory acidosis
- Shallow breathing
- Diminished consciousness, confusion
- Disorientation, extreme sleepiness
- Fatigue
- Headache

HYPERCAPNIA

- Shortness of breath
- Kyphoscoliosis
- Poor right chest wall and pleura compliance
- Ensues when impairment in ventilation occurs and the removal of carbon dioxide by the respiratory system is less than the production of carbon dioxide in the alveolar walls

HYPERCAPNIA

- Conditions that contribute to Respiratory Acidosis are asthma, emphysema, severe pneumonia
- Causes could include narcotic use, sleep medication, nervous system disorders

HYPOCAPNIA

- Caused by hyperventilation and anxiety, aspirin overdose, high fever, or even pain
- Decreased CO_2 (Hypocarbia)
- Increased Respiratory Alkalosis
- Dizziness that can lead to ‘black outs’
- Bronchoconstriction

Carbon Dioxide has to be sufficiently on board in the body before Oxygen will be available.

There are two ways of balancing our sets of lungs and the body's pH, and that is through the management of carbon dioxide, through the speed of ventilation and the stance we ventilate with.

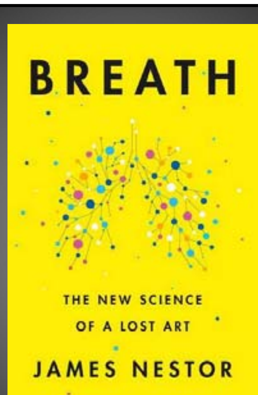
Our left lung lobes need us to be mindful of our left foot and left ground as we inhale and exhale slowly. The pH balance of our blood depends on some percent of our 25,000 inhales and exhales a day, that should be done while we are on our left leg and foot.

Otherwise in addition to feeling dizzy, lightheaded and anxious, we gain weight.

As James Nestor wrote in his latest book "*Breath*", we lose weight through exhaled breath.

For every ten pounds of fat lost in our bodies, eight and a half pounds of it comes out through the lungs; most of it is carbon dioxide mixed with water vapor.

"The lungs are the weight-regulating system of the body."



Released on May 26, 2020.
Available at Amazon, Target, and other retail locations.

Advocates of Buteyko, Tai Chi and Buddhist breathing practices will encourage us to breathe 5 to 6 times a minute to help our brain constantly monitor and maintain proper pH balance.

Breathing less has a profound dilating effect on blood vessels, and allows our lungs to 'soak up' more of the oxygen when we slowly inhale in, after we slowly exhale out.

Control of Carbon Dioxide and Maintaining Posture

An important characteristic of the human respiratory system is its ability to adjust breathing patterns to changes in both the internal milieu and the external environment.

Ventilation increases and decreases in proportion to swings in carbon dioxide production and oxygen consumption caused by changes in metabolic rate.

The respiratory system is also able to compensate for disturbances that affect the mechanics of breathing, such as the airway narrowing that occurs when one positions themselves in upright, anti-gravitational, end range positions, where they 'relax' and rely on both on joint capsular tegument and tissue for support.

An asthmatic attack can instill the same respiratory compensation.

Our breathing undergoes appropriate adjustments when the mechanical advantages of the respiratory muscles are altered by postural changes, or by movement, or by an asthmatic attack.

This flexibility of breathing patterns, largely arises from sensors distributed throughout the body that send signals to the respiratory neuronal networks in the brain.

Chemoreceptors <u>detect</u> changes in blood oxygen levels and change the acidity of the blood and brain. Mechanoreceptors <u>monitor</u> the expansion of the lung, the size of the airway, the force of respiratory muscle, and the extent of muscle shortening.

The following two PRI techniques selected for this webinar should enable one to take in account this detection and monitoring of lung dynamics.

PRI WALL SUPPORTED SQUAT WITH BALLOON

Step 5: Shift your left hip back. Your left knee will be slightly behind your right and you will feel your left outside hip (buttock) engage.

- ✓ By feeling your left outside hip or buttock engage, in this shifted state, you are positioning yourself in a 'deep end range' at the left hip, to allow you to find a 'deep end range' sense of your left abdominals to move the left ZOA or abdominal attachment site on the ribs to approximate the anterior left hip region.

Step 6: Squeeze the ball gently with your left knee and inhale through your nose. As you exhale, reach forward and across the midline of your body with your right hand.

- ✓ By inhaling with your left knee pushing into a ball that is placed between your knees, your center of mass will shift over to the lateral side of your left foot as you SLOWLY fill your left lung lobes that are positioned in a novel state. This inhalation expands posterior left lung surface and lateral anterior right lung surface thereby, offering more room for elongation of lung tissue in these areas during exhalation.

By reaching forward with your right hand across your body upon SLOW exhalation you are attempting to balance normal levels of respiratory carbon dioxide, that one would expect to find in an un-patterned set of lungs or in a person with a more neutral hemispheric rib cage. Overall bronchodilation, resulting from this sequence of respiration in this position should decrease respiratory alkalosis and increase CO_2 to normal carbia levels.

Step 7: Maintaining the above position, inhale again through your nose, this time slowly exhaling into the balloon.

- ✓ By inhaling again through your nose, you are stimulating left nasal parasympathetic activity because of the position the head (right cranial flexion/left cranial extension) is in when the left floor/foot is coming to the right hand. Your BP, temperature and anxiety all should improve, provided the nasal airways are open. Balancing CO_2 with this technique requires one to go SLOW. The word "slow" is written at least four times in these instructional steps.

Step 8: Pause 3 seconds with your tongue on the roof of your mouth to prevent airflow out of the balloon.

- ✓ By maintaining tongue contact on the roof of your mouth, you are maintaining opposition to the left diaphragm costal fibers so that appropriate CO_2/O_2 ratios can be enhanced, increased or maintained.

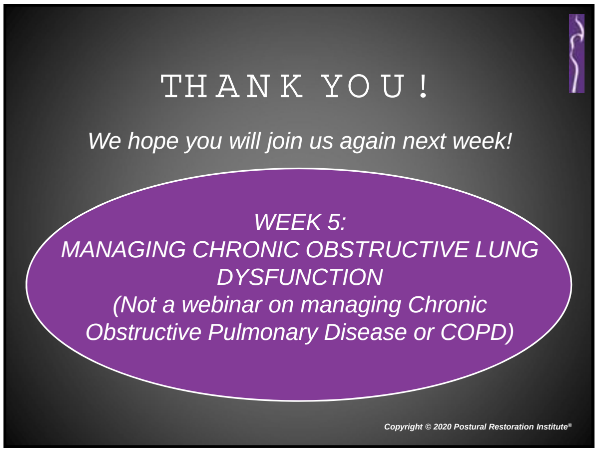
PRI WALL SUPPORTED SQUAT WITH RESPIRATORY RIGHT APICAL EXPANSION

This technique allows us to produce CO_2 with more emphasis placed on exhalation as outlined in the previous technique with one caveat; right trunk rotation to enhance the left diaphragm's central tendon to become centered over the left hip and foot with good uniform opposition offered by ALL the abdominal muscles on the left (not just the left TAs and IOs).

This technique, along with its emphasis placed on exhalation with left ground based reference during left trunk rotation and inhalation with on-going left ground based reference during right trunk rotation, prepares one for sustained normality of CO_2 during forward locomotor movement.

Inhaling without losing left ground "anchoring" promotes good exchange of CO_2 for O_2 without losing hemi-diaphragm opposition (ZOAs) and thus losing CO_2 production or amount.

This is a wonderful anti-anxiety, anti-dizzy, anti-high speed breather, anti-mouth and anti-high blood pressure technique (medication).


THANK YOU!
We hope you will join us again next week!
WEEK 5:
MANAGING CHRONIC OBSTRUCTIVE LUNG DYSFUNCTION
(Not a webinar on managing Chronic Obstructive Pulmonary Disease or COPD)
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