

How To Influence Respiratory Musculature Through Massage Therapy and Applied Kinesiology

by Kate Montgomery, CMT

For the 1000's of people who are labeled Chronic Obstructive Pulmonary Disease (COPD) patients, breathing is all they think about. There are two parts to being able to breathe efficiently:

1. Correct and erect posture, and
2. The muscles that are over-worked due to the effort of each muscle that assists in the respiratory phase.

As a respiratory therapist for 12 years, most of my patients could not stand up straight, which affected their breathing capacities. Due to improper posture, structural and muscular misalignment soon became an issue. With each breath, the strain on the muscles will create fatigue, eventual trigger points and muscle spasms which leads to pain. Pain will keep a person from breathing fully. If the posture muscles that support our structure and help us to breathe are released, muscle tension and pain can be alleviated and the breathing capacity can possibly be increased. Breathing seems so easy for most of us, but for those who have asthma, bronchitis and emphysema one breath means a different quality of life.

As a respiratory therapist and massage therapist for the last 22 years, both occupations have much in common. The body is controlled by muscles to help us breathe and walk and they are all related due to where they attach on the spinal column. I have put together a combination of massage techniques and applied kinesiology to show how you can enhance the breathing of a person with chronic obstructive lung disease by releasing and balancing the posture muscles that support us. Once you have done this, teaching someone how to diaphragmatically breathe is much easier and the exercises to increase their lung capacity can now be attempted.

Part One: Assessment and Muscular Release

Prior to Muscular Release measure the vital capacity. When the equipment is not available,

a tape measure can be used to give an approximate estimation of the vital capacity. Place the tape measure around the rib cage at the level of the 6th and 7th intercostal space (under the breasts of a woman) to measure the circumference at maximum rib cage expansion, inhalation. Be sure to place the tape measure in the same location for accuracy of data notation.

Another way to test lateral expansion is to place your hands equal distance on both sides of the ribcage (check front and back) and ask the client to take a deep breath. Note if there are bilateral differences in expansion.

- After muscular release, a 5% improvement in vital capacity may be evident. For every 1 cm of increased chest expansion, there is an increase of 200 ml of vital capacity.

- Note: Most chronic obstructive pulmonary disease patients will not have strong muscles. Any muscle release that can be done, will benefit them. Several sessions may be necessary with the client to show a marked improvement. Every individuals body is different and reacts differently to body work. Be patient and encourage the person to work with you.

- Muscle Testing is the evaluation of how the nervous system controls muscle function. The terms "Strong" or "Weak" are used to describe how the nervous system functions, not the actual power the muscle is capable of producing.

- The first technique used in applied kinesiology to change muscle function was the stimulation of the origin and insertion of a muscle. If a muscle had trigger points (painful nodules with a pain referral pattern), that affected the function of the muscle. When these nodules were released, the muscle gained approximately 70 % of its function back. Research done by George Goodheart, D.C., 1964 (ref. 11).

- A note to those who have lower back pain. This technique is very useful to help alleviate muscle tension and stress on the lumbar vertebrae.

The Relationship of the Diaphragm, Intercostal and the Psoas. Other Muscles: Abdominals and Quadratus Lumborum in Respiratory Function.

Assessment:

1. Prior to muscle testing, have the patient drink a glass of water. If the patient is dehydrated, the muscles will all test weak.
2. Muscle test to determine the strength or weakness of the Diaphragm and Psoas muscles.

Muscle Testing Procedure:

First: Use the deltoid muscle for the Indicator Muscle. To ensure that the muscle is functioning, turn it off by pushing two ends of the muscle together. Test. Muscle should test weak. Then turn muscle back on. Pull the two ends apart. Test. Muscle should test strong. If weak, rub the neurolymphatic reflex point located between intercostal spaces, 3-4, 4-5 on the anterior ribcage and the massage the origin and insertion of the muscle.

Diaphragm: Place Client in a supine position. Raise the arm to a 90 degree angle. Ask the patient to resist as you place pressure at the wrist to push the arm towards the abdomen. Place your hand at the level of the diaphragm. Ask the patient to take a deep breath all the way up to the shoulders, hold the breath and push their abdomen out and make it hard. Then apply pressure at the wrist to see if the arm goes weak or "feels mushy." If it goes weak, the diaphragm is not functioning.

Psoas: Place patient in a supine position. Flex and abduct the hip at a thirty degree angle, as you have the patient externally rotate the thigh. Brace the opposite hip with your opposite hand and place your other hand at the knee. The force is

applied at the inside knee to press in the direction of extension and slight abduction. If this muscle feels mushy, it is weak.

**** DO NOT HOLD THE LEG IN THE AIR FOR LONG. IT CAN CAUSE A STRAIN IN THE GROIN AREA. HELP THE PERSON PLACE THE LEG BACK ON THE TABLE.**

3. If Strong, challenge the muscle by having the patient perform muscle activation.

- Diaphragm and Intercostal muscles: Have patient sit up and breathe 10 times.

- Psoas: In supine position, place leg in flexion and abduct the hip with external thigh rotation. Lift leg 10 times. Repeat on opposite leg.

For all the muscles refer to the muscle diagrams at the end of the paper to locate origin and insertions of the muscles. Position the client in a supine (face up) position, and repeat the origin and insertion muscle release. Use gentle pressure.

4. Retest the muscle for strength/function. If weak, perform Origin and Insertion release of the muscle fibers. This will help to return the muscle to functional integrity. Work along the origin and insertion of the muscle fibers. Instruct the client to breathe and relax as you do this. There may be painful and sore muscles due to contracture and loss of functional integrity. Be gentle but firm. Work at the clients tolerance level.

Muscle Release

- Diaphragm: In supine position, place bolster under clients knees and pillow under head. Position your fingertips at the apex of the ribcage (one fist- width moving laterally from the end of the sternum). Instruct the client to take a deep breath. On the exhale, gently but firmly press up under the ribcage and then pull down on the muscle, approximately a one-half inch. Perform this release along the entire ribcage, moving laterally to the end. Work both sides of the diaphragm.

***I avoid the center due to the location of the ziphoid process and the problems that could arise due to improper technique.

- Intercostals: Work between the ribs. Place your fingertips at the edge of the ribs where the muscles attach and pull down on the muscles. This is done very gently without a lot of pressure. Refer to diagram. Perform the ribcage release after the intercostal muscles have been released.

- Ribcage Release - Position yourself over the client. Place your hands on the side of the ribcage at the level of the nipple line. Ask the client to inhale diaphragmatically, all the way to the shoulders, hold the breathe for a second, then exhale as you gently but firmly squeeze the rib cage to the full extent of the exhale. Repeat the process as needed to obtain a fuller and deeper breath for the client. Be gentle, their ribcage is very stiff and can break easily due to the drugs they may be taking.

- Psoas: In supine position, pillow under clients head, knees bent, feet flat on table. Have client breathe shallow. Position your fingertips on the inner surface of the ilium, at the lower end toward the pubis. Move the clients leg up and down and you should feel the psoas contract under you fingertips. (Now you know you have located the muscle.) Push gently down and toward the abdomen. I sometimes move the leg up and down to distract the client due to the muscles tightness. Make sure you encourage the client to relax and breathe.

Note: Most of these muscles are not palpable. Your intent is to release them.

5. Follow up with firm and deep massage of the Chapman Reflexes, (neurolymphatic reflex points) to flush metabolic waste products, which will relax and strengthen the muscles involved. (See *Touch for Health* book, ref. 9.) Each reflex point should be massaged for 30 seconds to 5 minutes depending on the muscles response.

6. Followed by stimulation of the neurovascular reflexes. (Dr. Terence Bennett, 1930's, *Touch for Health* book, ref. 9.) Locate the reflex, apply a slight tug to the skin, hold lightly until a pulsation is felt. Change the vector until pulsation is felt. Then continue to hold for approximately twenty seconds or longer until improvement in muscle function is noted. Influence in vascularity of organs and structures.

7. Once the muscles are free of trigger points, stretch the muscles using Range of Motion stretching techniques: Proprioceptive neuro-muscular facilitation stretching or HYPERTON-X stretching. Stretch only as far as the client can stretch comfortably.

8. Retest the muscles for strength. They should be strong and lock in place without shaking. *Shaking indicates compensation. Repeat technique.

9. Recheck with the tape measure the clients vital capacity and lateral chest expansion.

Benefits:

1. Improved ventilation.
2. Improved coordination, stamina and energy.
3. Improved overall fitness.
4. Improved posture.
5. Exercises using the arms more can improve upper body strength and ventilation, such as in Qigong.
6. Able to expel mucus easier and clear the air passages.
7. Weight reduction (According to Cherniack, the oxygen cost of breathing is three times that of normal cost. Obesity can be reversed and respiratory problems improved.)
8. A better mental attitude
9. Control of the situation, being able to do something for yourself.
10. A better quality of life.

Muscle Origins and Insertions

Diaphragm:

Origin: Connected to the spine, two crura or pillars situated on the bodies of the lumbar vertebrae, L1-L3, anterior-inferior, lower six costal cartilage's and xiphoid process of the sternum.

Insertion: On the central tendon of the diaphragm (a clover leaf shaped aponeurosis). Openings for the aorta, inferior vena cava, and esophagus.

Action: Flattens the central tendon, thus increases the vertical diameter of the thoracic cavity in inspiration.

Palpation: Cannot palpate.

Intercostals: External, Internal and Innermost

Origin: Between the adjacent ribs.

Insertion: Between adjacent ribs.

Action: Elevate the ribs in inspiration and maintains intercostal spaces.

Palpation: External intercostals are barely palpable between ribs.

Psoas Major:

Origin: Anterior surface of the spine. Base and lower borders of the transverse processes and lateral vertebral bodies of L1-L5.

Insertion: the lesser trochanter of the femur.

Action: Flexion, abduction and lateral rotation of the hip.

Palpation: Cannot palpate.

Abdominals: Rectus, Transverse, External and Internal Oblique

Origin: Rectus - costal cartilage's 5, 6, & 7. Insertion - Pubis.

Action: Flexion of the trunk, compression of the abdominal contents.

Palpation: Anterior-medial surface of abdomen, on either side of umbilicus from sternum to pubis.

Origin: Transverse - Inguinal Ligament, iliac crest, thoracolumbar aponeurosis and lower margin of the rib cage.

Insertion: Abdominal aponeurosis and linea alba, pubis.

Palpation: Cannot palpate.

Origin: External Oblique - Lower 8 ribs. Insertion: Abdominal aponeurosis and iliac crest.

Action: External - bilateral flexion of the trunk, compression of the abdominal contents, unilateral-lateral flexion, rotation of the trunk to the opposite side.

Palpation: Lateral sides of abdomen.

Origin: Internal Oblique - Inguinal ligament and anterior iliac crest.

Insertion: Costal cartilage's of last 4 ribs, abdominal aponeurosis.

Action: Internal - bilateral flexion of the spine, compression of the abdominal contents, unilateral-lateral flexion, rotation of the trunk to the same side.

Palpation: Cannot palpate.

Quadratus Lumborum:

Origin: Posterior iliac crest.

Insertion: 12th rib and the transverse processes of L1-L5.

Action: Lateral flexion of the trunk or raises the hip. "Hip Hiker"

Palpation: Cannot palpate.

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Inspiration/Expiration Diagram

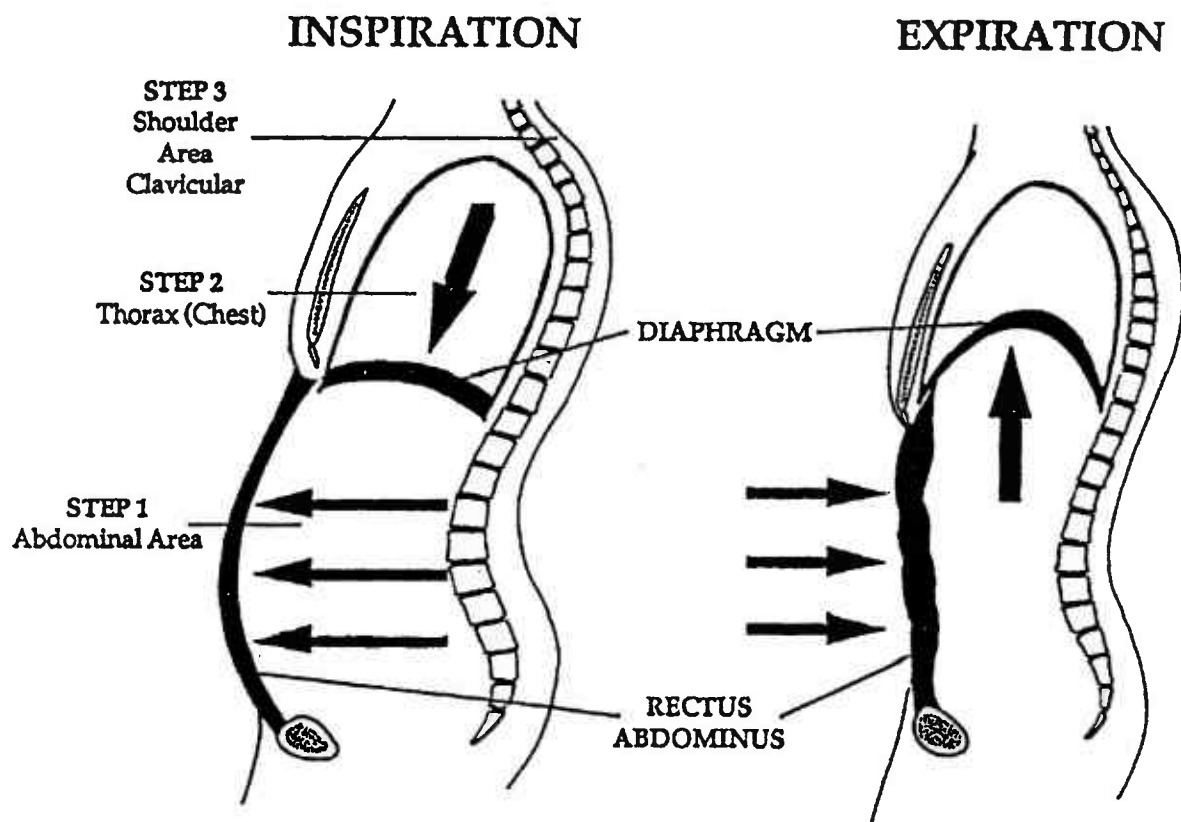
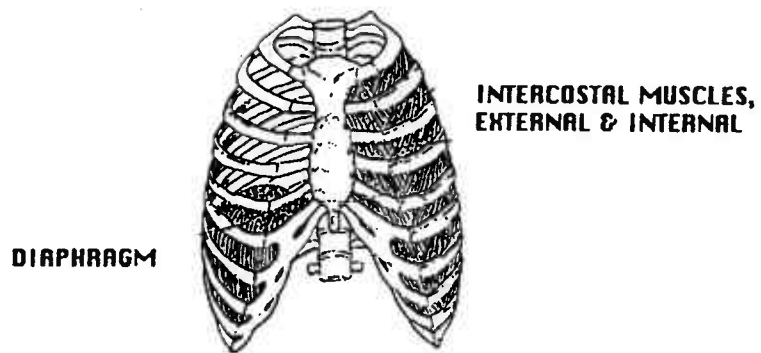
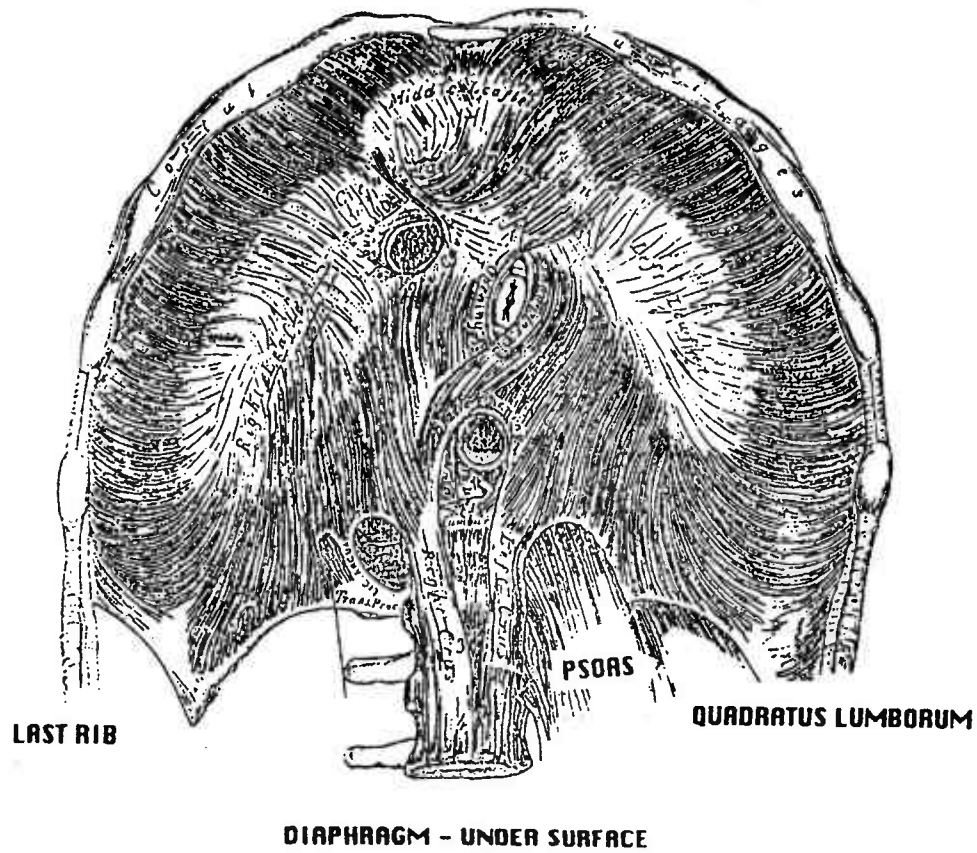
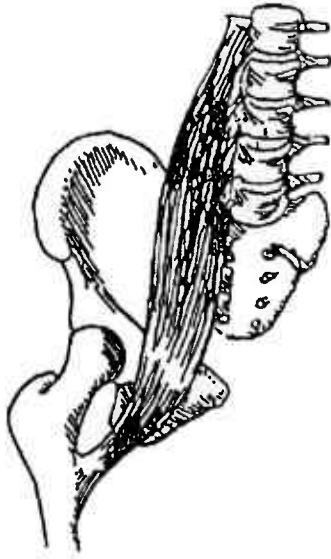


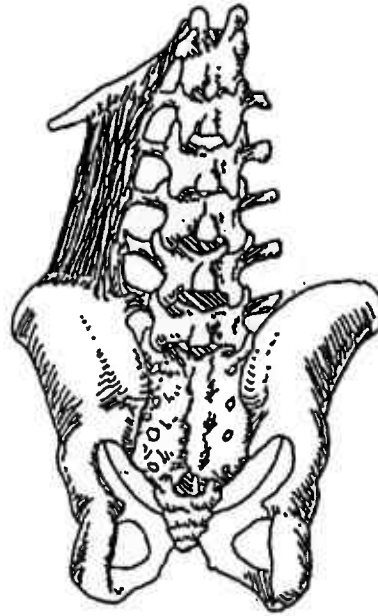
Illustration by Greg Creswell

The Diaphragm Muscle

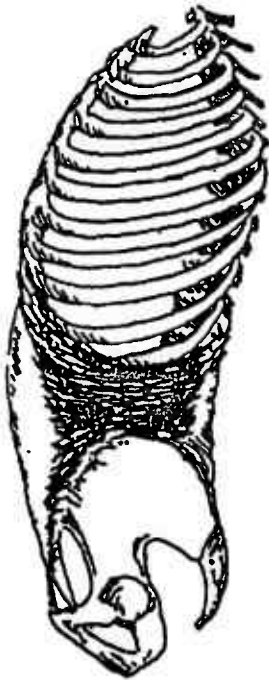




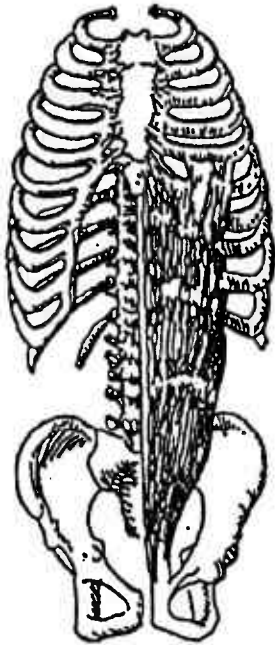
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Quadratus lumborum



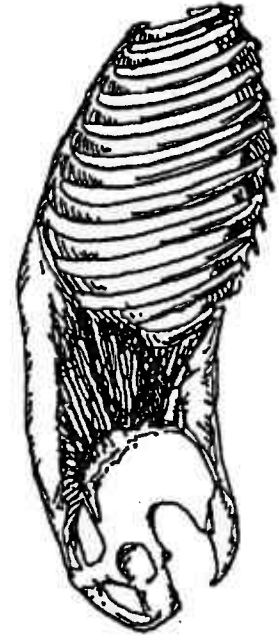
Transverse abdominal



Rectus abdominis



External oblique abdominal



Internal oblique abdominal