

Breathing Disorders and Yoga: A Brief Review of the Literature

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Introduction

I am hardly an experienced yoga instructor, yet already I have taught students with various limitations. This is an awesome and daunting responsibility, and one which I take most seriously. My students reasonably expect that I am able to help them become stronger and more confident in their bodies, and they don't always tell me when they have a limitation, which I find more than a little daunting.

I undertook this brief review of the literature of Yoga and Breath in an attempt to greater understand how I might better assist a particular student that only recently revealed to me that she has emphysema, "a long term, progressive disease of the lungs that primarily causes shortness of breath." (Wikipedia article, "Emphysema") What I learned will not only help me in this particular situation, but also with students who have any of the many forms of COPD. What I found fascinated me, and greatly increased my love of and respect for yoga and those that have developed these amazing practices over the centuries.

Leslie Kaminoff quotes the Oxford American Dictionary when defining breathing.

"Breathing is the process of taking air into and expelling it from the lungs."

There are many factors that affect how a person should breathe, each as unique as the individual.

"Since individual intentions, as well as body type, shape, and orientation (how the body is held in space) all create different conditions for breathing, it's clear that no one pattern could suffice to deal with all of them...there is no one right way to breathe that will work under all conditions."

(Kaminoff, p. 68) In other words, every individual's body is different and should be approached as such; with proper respect for each individual's needs.

According to Kaminoff, the human torso is divided into two cavities, the thoracic and the abdominal. Both contain vital organs, and both are bounded by the spine. Both open at one end to the external environment, the thoracic at the top and the abdominal at the bottom. The two structures share the diaphragm, which defines the roof of the abdominal cavity and the floor of the thoracic. The diaphragm is the principal muscle of breathing, and causes the abdomen and thoracic regions to flex as necessary. (Kaminoff, p. 69)

Immediately obvious to even the casual yogi is how asana and pranayama might be useful in strengthening these physical units. "Flexion of the spine is the shape change that reduces thoracic volume (exhale) and spinal extension is the shape change that increases thoracic volume (inhale)." (Kaminoff, p. 70)

It is our job as yoga teachers to help our students to understand how they can consciously affect their breath using asana and pranayama as primary tools. According to the article, "Asthma" in WebMD, asthma "is an inflammation of the air passages that results in a temporary narrowing of the airways that carry oxygen to the lungs. The airway narrowing is reversible, a feature that distinguishes asthma from other lung diseases such as bronchitis or emphysema."

Deborah Morse, a Registered Yoga Teacher and Nurse Practitioner with the Duke Medical Center Department of Anesthesia, and the Yoga Practice Center in Durham North Carolina, did research into asthma and yoga revealing, "...breathing and posture training, including yoga methods, provide an opportunity to increase awareness and create healthier breathing patterns."(Morse, p. 81) Two studies found that "training in a combination of yoga poses, breath slowing techniques, and meditation reduced the number of asthma attacks per week, the use of asthmatic medication, and improved peak expiratory flow rate." (Morse, p. 82)

The final result of Morse's research was the development of a set of basic principles a teacher can follow when approaching instruction of a student with breathing problems, including specific asana and pranayama practices. It was her goal to "teach the student new methods of engaging the breath." (Morse, p. 82) This goal is most certainly aligned with Pantajali's original observation of pranayama as "that calm retained by the controlled exhalation or retention of the breath." (Yoga Sutras of Patanjali, 1:34) With practice, the student will gain experience recognizing an impending asthma attack and be familiar with practical techniques for minimizing or averting it altogether.

Morse's method begins with an initial assessment. The student should be asked to self assess the ease of their breathing on a scale of 1 to 10, 10 representing total ease and 1 meaning extreme discomfort. Obviously, according to both Morse and Kaminoff, different practices are appropriate for different situations, therefore the student's responses will inform the teacher's approach.

Next, the teacher should

...observe the student for signs of respiratory difficulty. Some signs are:

- rapid respiratory rate
- strained facial expression
- breathing through pursed lips
- lifting the shoulders toward the ears during inhalation
- muscular tension around the neck and clavicles
- wheezing or cough
- Breath strain during or following activities such as walking a short distance across the room or moving in and out of poses

(Morse, p. 82)

If the student does not obtain comfort from an inhaler or other prescribed medication in such a situation, he or she will need clearance from their physician to continue practice. As the instructor, observation of ahimsa to all our students is of primary concern.

Safety when serving students with challenges in their breath is extremely important. Research has been done recently that addresses these very issues when practicing pranayama. Dr. Vijai P. Sharma, of the Behavioral Medicine Center in Cleveland Tennessee, says that the "ability to establish a normal breathing pattern with efficient use of the diaphragm, the ability to consciously control the process of breathing without strain or undue tension, and learning basic pranayama techniques before advanced techniques, and preparation of the body through yoga postures"(Sharma, p. 75) are all elements that need to be taken into consideration when learning pranayama.

Noted and respected yogi B.K.S. Iyengar disagrees, in that he believes that beginning yoga students should not embark on a pranayama practice until they are seasoned yogis. He says in *Light on Yoga* that, “Just as post-graduate training depends upon the ability and discipline acquired in mastering the subject in which one graduated, so pranayama training demands mastery of asanas and the strength and discipline arising therefrom.” (Iyengar, p.431) He also says “...pneumatic tools can cut through the hardest rock. In pranayama the yogi uses his lungs as pneumatic tools. If they are not used properly they destroy both the tool and the person using it. The same is true of pranayama.” (Iyengar, p.431) Clearly, caution is in order, and there is disagreement among experts as to which direction to take. T.K.V. Desikachar disagrees with Iyengar, in that he believes pranayama practice should be introduced in the very beginning of a student’s exploration of yoga (Desikachar, p. 59). In my opinion, this will vary greatly student by student, and will require vigilance on the part of the teacher to ensure the safety and well-being of the pupil at hand. Each student is different, and training approaches will vary. Perhaps this explains why for so many years the yogic tradition was passed directly from teacher to student, rather than teacher to immense studio or gym class.

That being said, Morse does indeed have a plan in place for teaching asanas safely to the pulmonologically challenged. Her theory is that a good teacher knows how to use asana to educate the student about links between breath and physical posture. This is pure viniyoga at its finest.

Training often begins with breath awareness in a deceptively simple way. The student changes posture when inhaling or exhaling, thus establishing a link in the student’s mind and body that movement and breath should work together. For example, Morse has the student inhale in *tadasana* with hands and arms folded forward in prayer pose. Then they move, arms coming out to the side, “spontaneous further inhalation” (Morse, 84) occurs. The student pauses briefly, noticing

changes in the body, then exhales with wide arms, drawing them back to prayer pose. More exhalation comes, the student notices, and learning begins. This method is called “mild resistive technique, and can be applied to any of the traditional asanas. Provide mild resistance at first to the inhalation or exhalation by beginning in a pose that opposes the complete inhalation or exhalation. Then have the student move to a pose that opens the breath or completes the exhalation.” (Morse, p. 84) This learning is extremely important, for as Desikachar says in his classic *The Heart of Yoga*, “problems can arise when we alter the breath and do not recognize or attend to a negative bodily reaction. If someone is laboring to breathe deeply and evenly, it will immediately become apparent...” These brief pauses at the end of some asanas give the student a chance to feel the subtle changes brought about by the physical practice, and the teacher an opportunity to observe and watch for any sign of distress.

A gentle and progressive asana practice will allow the student to increase lung capacity and strengthen “muscles of the ribs, back, and diaphragm” (Desikachar, p. 59) in preparation for pranayama.

Morse has identified several yoga poses that promote healthy breathing on the part of asthma patients. Morse indicates that these poses can be practiced in any order. NOTE: Illustrations of these poses are located in Appendix A.

- ***Cakravasana***--Starts on hands and knees in table pose. From table pose, expand the chest up and away from the belly in dog tilt (sometimes called cow) on inhale, and then contract the belly, round the low back (cat tilt), then lower chest to thighs on exhale in child’s pose. Inhale to return up to table and repeat five times. This sequence promotes thoraco-diaphragmatic breathing and strengthens the abdominal muscles. (photos 1-3)
- ***Cobra***--This pose promotes thoraco-diaphragmatic breathing, stretches the chest, strengthens the upper back and shoulders, and diminishes kyphosis (a curving of the spine that causes a

- bowing or rounding of the back) The resistive technique may be introduced here by having the student begin in full prone position with forehead resting on floor, taking an inhalation before lifting to full effort, then lifting up smoothly into cobra and noticing how the inhalation can open further. Reverse by exhaling to full effort in the uplift of cobra, and then allow the torso to come back down to the floor and notice the ability to exhale even further. (Photos 4-5)
- ***Sage Twist***--Strengthens the diaphragm, intercostals, and abdominal oblique muscles when it is practiced in an upright position with an engaged core. The spine lengthens and lifts with the inhalation and the twist deepens on the exhalation. External oblique intercostal muscles (spaces between ribs) are strengthened here due to the mild resistance to inhalation the twist produces, and the paraspinal (muscles next to spine) and shoulder muscles are given a good stretch, releasing the ribs to expand and contact more freely. Priority should be given to lifting the spine fully rather than the degree of twist obtained.(Photo 6)
 - ***Mountain Pose***--with back to wall: Special attention is given here to maintaining or recovering normal spinal curvature. This pose opens the ribcage, strengthens the back, improves spinal alignment, and strengthens the diaphragm via thoraco-diaphragmatic breathing. (Photos 7-8)
 - ***Downward Facing Dog on the Wall***--This pose diminishes kyphosis and opens the shoulder girdle. (Photo 9)
 - ***Pyramid Pose***--Begin upright while catching elbows or strap behind the body, and move toward a gentle backbend to increase lung space. The move forward with the spine fully extended, not collapsing lung space. The forward fold will assist in full exhalation. (Photos 10-11)
 - ***Side Angle Pose***--This pose promotes thoraco-diaphragmatic breathing, stretches intercostals (spaces between ribs), strengthens paraspinals(muscles next to spine), and can reverse scoliosis (a curving of the spine. The spine curves away from the middle or sideways) with attention to stretching the contracted side of the spine. Use resistive technique here by coming into the pose with the upper arm resting along the side and hip. Inhale to full effort, then reach that arm overhead to further open the inhalation. Work in reverse by beginning the exhalation with the arm extended, then sweep the arm back to the side and notice the exhale deepen. Keep

- transitions fluid. (Photos 12-13)
- ***Fish Pose***--This pose opens the rib cage, deepens the breath, and reverses kyphosis. An alternative to this is supported fish(using blankets or bolsters to support the basic shape of the pose) if a more restorative and passive pose is needed. (Photo 14)
 - ***Sitting Forward Fold***--Allow the pelvis to hinge forward away from the top of the femur bone to prevent moving into cat tilt and collapsing the anterior torso. Keep the upper shoulders and neck area relaxed, and use gravity to release outward and forward to calm and soothe the nervous system. ((Photo 15)
 - ***Savasana***--Elevate the torso on a bolster or blankets with additional support for arms and legs to the student's comfort. The anterior muscles and lung space can stretch and expand passively in this position. (no photograph)

Morse (pp 84-85)

Once pranayama is appropriate for the student, practices that slow and deepen the breath assist those with asthma. Slowing breath insures that the amount of inspired and expired air is maximal and reduces symptoms of stress and anxiety (Morse, p. 83).

Morse suggests using ujayyi, viloma, extended exhalations, and alternate nostril breathing. Ujayyi can "be helpful in training the mind to follow the flow of the exhalation to completion. The sound gently directs the attention back to breath through distraction, anxiety, or pain." (Morse, p. 83)

Viloma may prove helpful during an asthma episode if done with very brief kumbhakas during inhalation, to "encourage maximal entry of oxygen, and long, slow, uninterrupted exhalation." (Morse, p. 83) That being the case, prior training in the technique is essential to success, as the student needs comfort with the exercise in order to use it effectively during a crisis. Extended exhalations begin with inhalations and exhalations of equal lengths, proceeding eventually to a 1:2 ratio of inhalation to exhalation. Engaging mula bandha and uddiyana bandha will "teach the student how to exhale fully by supporting supporting diaphragmatic movement." (Morse, p. 83)

Alternate nostril breathing can slow the breath, and "its calming effect balances the nervous system's sympathetic and parasympathetic activation." (Morse, p. 83)

According to Sharma's research, "slow breathing pranayama...pose relatively low health risks as long as the practitioner employs steady attention, patience, discipline, and, above all, does not exceed his or her comfortable capacity." (Sharma, p. 76) Again, caution is in order, so it becomes the responsibility of the individual instructor to determine just how far to go with the student. Sharma has developed some simple breathing guidelines for teachers to follow:

- The exhalation should be at least equal to inhalation in volume and duration
- A rate of 20 or more breaths a minute indicates possible hyperventilation
- Some vigorous pranayama techniques can exacerbate hyperventilation, and any tendency toward this should be eliminated prior to practice

The following are signs of hyperventilation

- complaints of dizziness or lightheadedness
- complaints of breathing discomfort, shortness of breath
- frequent involuntary sighs or sighing before speaking
- Prominent chest breathing

- Minimal movement of the abdomen during breathing
 - Marked forward and upward movement of the breastbone during inhalation, but little movement in the lower ribs
 - rate of breathing significantly higher than the normal rate of 12-15 breaths per minute
- (Sharma, p. 77)

In conclusion, I believe that there are several general rules of thumb when approaching practice with a breathing challenged student:

- First, do no harm. Ahimsa, ahimsa, ahimsa
- Remember that all bodies move and breathe differently, and must be approached as such.
- Asana and pranayama can be useful tools in strengthening breathing capacity, if properly approached.
- It is our job as yoga teachers to help our students understand how they can consciously affect their breath using yogic tools.
- Assessment in all situations is key.
- Always watch the student for any sign of respiratory difficulty, and do not hesitate to refer them to their physician if you have concerns.
- There are significant links between breath and physical posture.
- Gentle and progressive asana practice will allow the student to increase lung capacity and strengthen muscles used in the breath.
- Vigorous practices, such as kapalabhati, should probably be avoided with these students.
- Bear in mind that there is a lack of consensus among experts regarding pranayama, so it should be approached cautiously with a breathing challenged student.