

Learning Sessions for Clients

Self-observation, Self-exploration, and Self-regulation

Many of us have unconsciously learned breathing behaviors that are self-defeating. Unlearning these behaviors and replacing them with new ones requires establishing a learning partnership with your body.

The first step is *self-observation*, the second step is *self-exploration*, and the third step is *self-regulation*. Practically speaking, however, all three considerations go on together throughout the learning process.

1. Self-observation is about your discovery of (1) specific breathing behaviors that your body has learned (like, aborting the exhale), (2) events that may be triggering these learned behaviors (like, certain thoughts), (3) feeling, emotions, memories, and thoughts embedded in your breathing experience (like, fear at the end of the exhale), and (4) reinforcements (payoffs) that may be sustaining and perpetuating these learned behaviors (like, sense of “being in control” while inhaling).

2. Self-exploration is about conscious and deliberate playing with your exhalation, transition time (between exhalation and inhalation), inhalation, breathing muscles (diaphragm and accessory muscles), breathing rate, breathing depth (size), nasal vs. mouth breathing, and carbon dioxide regulation. Through *negative practice*, you learn to engage undesirable breathing habits at will, at your own discretion. You become the expert at the very behaviors that are getting in your way. And, in so doing, you also learn how to disengage these behaviors and to replace them with new ones. You desensitize yourself to aspects of the above experiences of breathing that may be triggering learned emotions that motivate your self-defeating breathing habits. You learn new thinking patterns that promote adaptive breathing and that help to form new breathing habits. You discover and establish new reinforcements (payoffs) for breathing behaviors that are consistent with respiratory fitness.

3. Self-regulation is about configuring your learned behaviors as habits, as automatic new breathing behavioral patterns, as replacement behaviors unconsciously controlled by the original triggers of your bad habits. Your learning is not about eliminating or avoiding the triggers of your old habits, but rather it is about learning new responses to these same triggers. Remember that these sessions are about learning new breathing responses to your environment (external and internal), rather than about learning to control the events that trigger the undesirable responses. Making new breathing patterns automatic in the face of situations that previously triggered poor habits requires establishing a partnership with your body (physiology), where both of you learn together. Key to replacing old habits with new ones is generalizing your learning from ideal circumstances to challenging ones. The emphasis is on inside-out intuitive learning rather than on outside-in prescriptive manipulation. Implementing effective breathing interventions for restoring good respiration at times of crisis is surely useful, but ultimately is only a band aide approach, albeit a good one. The solution is highly personal, it constitutes a fundamental change in the way you breathe, when challenged and otherwise. It means doing daily homework between sessions with your practitioner.

Measurement: Collection of breathing physiology data with your CapnoTrainer rental, along with diary documentation during these recordings, is essential to sharing your progress with your practitioner. Implicit in the lesson descriptions is the assumption that you are able to observe your own live CO₂ physiology, and that it is being recorded for later review. Be sure to event marker the tasks that you have decided to undertake, like “ET” for Extended Transition time, or like “DB” for taking Deep Breaths. Be sure to keep diary information specific to each session, along with any other pertinent observations between learning sessions with your practitioner.

LESSON 1: Observe your breathing.

In this exercise, it is important that you simply observe your breathing. Please do not try to demonstrate how well you can breathe, or manipulate it in any way. Just observe it. Learn about your breathing. *Pay close attention to nuances.*

Find a comfortable position in your chair. Put one hand on your chest, one on your abdomen, immediately below the rib cage; this will allow you to observe where you breathe (the locus), that is how and where your body moves while breathing.

Objectives:

Discover what breathing patterns you have learned unconsciously, that is, what your body has learned.
Uncover any emotions, thoughts, or memories associated with your breathing.
Learn about whether or not you are allowing the brainstem reflex to operate.
Discover whether or not your learned breathing habits are getting in the way of good respiration.
Learn about how your breathing changes as a result of what you are thinking, observing, or doing.
Learn about the specific triggers of your poor breathing habits.
Learn about what breathing behaviors you might need to learn to restore good respiration.

Observe where, and how slow/fast and deep/shallow you are breathing. *Pay close attention to details.*
(Check your $ETCO_2$ levels)

Are you breathing in the diaphragm?
Is your belly moving out as you inhale, and in as you exhale?
Are you breathing in the upper body (chest)?
How much is your chest moving? Are your shoulders rising and falling?
Are you breathing through your nose, or mouth?
Does your breathing rate seem fast, normal, or slow?
How does your breathing rate, right now, make you feel?
Does your breath seem shallow, deep, or normal?
Does it seem like your breaths are too small, or too large?
Would it be easy to take deeper breaths if you wanted to?
Would you be comfortable taking smaller breaths?
Do you feel getting enough oxygen is easy, right now, or is it a struggle?
How are you feeling right now? Stressed, anxious, apprehensive, disoriented, relaxed, comfortable, good?

Observe your exhale. *Pay close attention to details.*
(Check your $ETCO_2$ levels)

Is the air going out by itself?
Does it seem like you are assisting the exhale by using muscles?
Is your belly getting smaller as you exhale?
Does the exhale slow down as it nears its end?
How do you feel as the exhale slows down, if it does?
Is there any anxiety, fear, apprehension, or anger near the end of the exhale?
Are there any thoughts or memories that arise at the end of the exhale?
How comfortable are you as the exhale draws to a close?

Observe your transition time, between the exhale and the inhale. *Pay close attention to details.*
(Check your $ETCO_2$ levels)

Is there a transition time, or is the inhale immediate?
Is there a noticeable transition time?
How long is it, short or long? How many seconds?
How do you feel during the transition time?
Is there any worry, anxiety, fear, apprehension, or anger during the transition?
What do you say to yourself during the transition time, if anything?

Observe your inhale. *Pay close attention to details.*
(Check your $ETCO_2$ levels)

How big is the inhale?
Does the inhale seem easy, or effortful?
Does it seem like you are getting enough air?
Do you feel like intervening and making the inhale larger?
What muscles do you seem to be using during the inhale?
Which hand is moving more, the one on the chest or the one the belly?
Are your shoulders moving upward as you inhale?

Does it seem like YOU have to take the breath?
Does it seem like your inhale is separate from you and automatic?
Are you assisting the inhale in any way whatever?
Is there a sense of relief when you inhale?
Does inhaling give you a sense of control?
Do you seem to be holding your breath before exhaling?
Are you inhaling through your nose, or your mouth?
Notice whether other muscles are tensing when you inhale, like your jaw.

Observe all of the above during real-life challenges.

(Check your ETCO₂ levels)

Challenge yourself and observe the changes, like a thought or a phone call.
Observe yourself immediately after being a challenging situation, like a confrontation with someone.
Try to observe yourself during a challenging life event.

LESSON 2: Using breathing muscles

(Check your ETCO₂ levels)

Objectives:

Learn to breathe with the diaphragm in variable postures, on command.
Learn to breathe with the diaphragm during various life challenges.
Learn to maintain normal ETCO₂ levels while breathing in variable ways.
Learn to make diaphragmatic breathing preferable and automatic.
Learn to make breathing easy.

If you prefer chest breathing (use of upper body accessory muscles) to diaphragmatic breathing, the following may assist you in exploring ways of reversing this preference. If your experiential preference remains in the chest, it is unlikely that diaphragmatic breathing will embed itself in any new breathing pattern you might learn.

Put one hand on your chest, one on your belly, just below the rib cage.
Where is movement occurring? In the belly? In the upper body? In both?
Can you breathe with your diaphragm, on command?
Can you breathe using upper body muscles (chest) on command?
Which way do you prefer to breathe?
What is it precisely, why you like to breathe one way, or the other?
What are your ETCO₂ levels during each kind of breathing?
Can you breathe with your diaphragm while lying down, sitting, and standing?
If you can't seem to breathe with the diaphragm, lie down.
If you are using the diaphragm now (while lying down), observe it.
What are your ETCO₂ levels while using the diaphragm, lying down?
Now, try breathing with your upper body, in your chest, as you do while sitting.
Then, alternate diaphragmatic and chest breathing. This is negative practice.
Do your ETCO₂ levels vary as a result of the kind of breathing you are doing?
Once you are able to alternate on command, sit up, and try to do the same.
If successful, stand up and repeat the process.
What are your ETCO₂ levels in the various postures?
Sit down. Lower your ETCO₂ levels by breathing in your diaphragm. Restore it.
Compare ETCO₂ regulation by using first the diaphragm, and then the chest. Which way is easier?
Repeat the above in the presence of challenges, like talking on the telephone about a difficult subject.

Lesson 3: Breathing rate and depth

(Check your ETCO₂ levels)

Objectives:

Maintain normal ETCO₂ levels while breathing at variable rates, fast or slow.
Maintain normal levels while breathing at different depths, shallow or deep.

Maintain normal levels without the assistance of the CapnoTrainer.
Eliminate fear, anxiety, apprehension, and worry triggered by different breathing rates and depths.

Follow the protocol described under "mechanics challenge" in the CapnoTrainer software.
Look at the data and see how well you did. If you did not do so well, then practice the following:

Breathe at 24 breaths per minute, for two minutes.
Track the ball on the breathing template screen
Is it easy to do, or is it difficult?
Do you like it, or dislike it?
Is your breathing shallow, or deep?
Do you feel more or less in control?
What does the experience remind you of?
Does it trigger emotions, like fear, anger, or panic?
Are you breathing in the diaphragm, or the chest?
Are your shoulders moving?
Do you feel like you are getting enough oxygen?
Are there any physical symptoms, like dizziness, numbness, loss of focus?
What are your $ETCO_2$ levels?

Adjust the depth of your breathing to lower or raise $ETCO_2$ levels.
Were you successful at restoring good $ETCO_2$ levels?
How did you feel once $ETCO_2$ levels were restored?
Did symptoms and emotions change, disappear, or appear as a result?

Repeat the above at multiple breathing rates, between 4 and 24 breaths per minute.
At what rates do you become uncomfortable, if any? What rate do you prefer, if any?
If you were able to maintain $ETCO_2$ levels, how did you do it?
If not, practice varying the depth with the rate, while maintaining normal $ETCO_2$ levels.
Notice how you do it. Focus on the feelings as a way of checking in.
Practice it with and without the CapnoTrainer.

Place yourself in challenging situations.
Notice how your breathing rates may be changing. That's OK.
Notice how breathing depth changes. That's OK.
Are your $ETCO_2$ levels remaining in the normal range? They should be.
Repeat some of the above while focusing on depth, rather than rate.

LESSON 4: Exhaling

(Check your $ETCO_2$ levels)

Objectives:

Allow the exhale to complete itself, to end on its own accord.
Allow for passive exhale, resulting from relaxing muscles used during inhalation.
Allow for transition time following the exhale.
Eliminate fear, anxiety, apprehension, and worry triggered as the exhale slows and/or ends.
Develop a sense of comfort during the ending of the exhalation.

Put one hand on your chest, one on your belly, just below the rib cage.

Is your exhale passive?
Are you allowing the exhale, or are you helping it along?
Talk, and notice the tension in your belly.
When not talking, do you feel tension in your belly when you exhale?
Assist your exhalation for a few breaths, then don't, then do, and so on.
What does each one feel like?
Which do you prefer, and why?

Are you allowing the exhale to complete?

Notice how the exhale becomes slower and slower, until it's hardly perceptible.

What emotions do you experience as the exhale slows down?

What emotions or memories emerge at the end of the exhale?

What do you say to yourself at the end of the exhale?

Do you take the breath early on, before it might otherwise end?

If so, how does taking this early breath make you feel?

Does it reduce fear? Does it provide a sense of relief, or a sense of control?

Practice aborting the breath for a minute or so.

Practice allowing the breath out completely, providing for a short transition time there following.

Alternate one minute of aborted breaths with one minute of completed breaths.

Which do you prefer, and why?

Expose yourself to completion of the breath repeatedly, until anxiety dissipates.

See if you can arrive at space where allowing the breath is more comfortable than aborting it.

Practice allowing for a dead space immediately following the exhalation.

Place yourself in challenging situations.

How do you exhale in these situations?

Are you allowing for completion of the exhalation?

How are previous triggers affecting your exhale?

What is happening to your $ETCO_2$ levels?

LESSON 5: Transition time

(Check your $ETCO_2$ levels)

Objectives:

Allow for ample transition time.

Experience the brainstem reflex response.

Eliminate fear, anxiety, apprehension, and worry triggered during the transition.

Learn to experience the transition time as a comfort zone, a meditational space.

Develop a sense of trust that breathing will occur on its own accord.

One of the key pieces of leaning to restore respiratory fitness is the experiential discovery of the fundamental brainstem respiratory reflex triggered during the transition time between exhale and inhale. Allowing the reflex feedback system to operate means that breathing becomes regulated based on pH, carbon dioxide, and oxygen rather than on factors unrelated to respiratory and acid-base requirements, e.g., the presence of an authority figure. Finding the reflex usually establishes a sense of trust in your physiology, providing for an immense sense of relief about "getting enough oxygen." The need for your personal involvement, the sense of "having to take a breath," disappears, and along with it behaviors that may be getting in the way of good respiratory fitness.

Breathe without allowing transition time between your exhalations and inhalations, for a minute or so.

Breathe while allowing short transition times, for a minute or so.

Alternate the two kinds of breathing: one minute with transitions, one minute without.

How does each kind of breathing feel?

What kinds of feelings, thoughts, and memories emerge in either case?

Do you feel a lot of air hunger? Does it give you a sense of panic?

Wait for the reflex. Can you detect it?

If not, lengthen the transition.

Practice until you think you've identified it.

Extend the transition time to longer and longer time frames (e.g., Buteyko)

How does it feel? Is it difficult?

Practice it often. Is it getting more comfortable?

How long can you wait now before taking a breath? 30 seconds should be easy.

How do you feel during the transition now?
What about emotions and thoughts during the transition, now?

Place yourself in challenging situations.
What happens to the transition times?
Are they getting smaller, or disappearing?
How are previous triggers affecting your exhale as compared to before?
What is happening to your $ETCO_2$ levels?

LESSON 6: Inhaling

(Check your $ETCO_2$ levels)

Objectives:

Learn to breathe quietly.
Allow the inhale to occur based on the reflex, on its own without your assistance.
Learn how little you need to breath and yet still have enough oxygen.
Learn to breathe through your nose.

The key to respiratory fitness is **quiet breathing**, not deep breathing, unless there is a reason for it, such as doing exercise or singing. Remember that breathing occurs automatically, even in a coma. See if you can track the reflex action. One of the keys to restoring normal $ETCO_2$ levels is making your breath as small as possible while still remaining comfortable; if you have significant air hunger, the breaths are too small.

Hold your breath before exhaling for several seconds and allow the exhale.
Do this for a minute or so. How does it make you feel?
Then breathe without holding your breath, for a minute or so.
Alternate, between the two types of breathing.
Learn to notice when you are breath holding, and when you are not.
Which do you prefer?

Observe the depth of your breathing.
Assist the inhalation, and help the body along, for a minute or so.
Then allow the inhale, without assisting it, for a minute or so.
Alternate, between the two types of inhalation.
How does each feel? Which one do you prefer?
Learn to make "allowing" preferable to "assisting."

Exhale passively.
Allow for the transition.
Locate the reflex.
Allow the inhale through the nose
After a minute or so, begin to make the inhalation a bit smaller.
See how small you can make it, over a period of minutes, and remain comfortable.
Is it easy? Do you like it?
See if this changes your opinion about breathing.
What emotions and thoughts come to you as you minimize the breath?
Learn to be comfortable taking just the air you need.

Place yourself in challenging situations.
What happens to your inhalation?
Do you take deeper breaths?
Does your breathing become a struggle?
Do you feel like you can't take a deep breath?
Do you feel like you can't get enough oxygen?
What is happening to your $ETCO_2$ levels?
With practice, how are previous triggers affecting you as compared to before?

LESSON 7: Make respiratory chemistry the axis of your breathing.

Objectives:

- Make respiratory fitness the axis of breathing mechanics.
- Learn to breathe within normal PCO_2 limits, while relaxed or challenged.
- Learn to breathe within normal PCO_2 limits, within a wide range of mechanics.
- Learn how to bring on hypocapnia, and then how to rapidly restore normal levels of PCO_2 .
- Learn how to recover from hypocapnia should you find yourself trapped.
- Learn to recognize the symptoms and deficits associated compromised respiration.
- Eliminate (extinguish) fear of entering into hypocapnia and its effects on you.
- Learn to automatically respond to these symptoms and deficits with adaptive breathing behaviors.

Learning to intentionally enter hypocapnia and then to rapidly restore normal levels of PCO_2 (within a minute or so) is central to your learning process. Negative practice is an effective way of learning to do this. In doing so, you are likely to lose your fear of slipping into hypocapnia and its effects. Next, and very importantly, you are very unlikely to be trapped in an overbreathing vicious circle that might last for hours at a time. As a result, the behaviors learned to exit hypocapnia will in most cases be likely to become part of your new breathing pattern habits. These behaviors are reinforced immediately by the removal of the symptoms and deficits triggered by hypocapnia, unless these symptoms somehow serve you otherwise; if so, your breathing problem is considerably more complex and will need to be further explored.

Learning will take time, a lot of home practice in most cases.

- Take a baseline of your breathing behavior, for one to two minutes.
- What is your $ETCO_2$ level? What is your breathing rate?
- Assuming it is within the normal range, move your level to 35 mmHg for one minute.
- Do you notice any changes in your body, or consciousness?
- Move the level back to its original level, e.g., 38 mmHg.
- How did you do this? Were the breaths slower, smaller, or both?

- Lower the level to 32 mmHg by breathing a little deeper (or faster if necessary), for two minutes.
- Do you notice any changes in your body, or consciousness?
- Take careful note of what they are?
- Do they remind you of anything in your life, past or present?
- What emotions emerge? What thoughts? What memories?
- Return to 35 mmHg.
- Could you do it? How did you do it?
- How long did recovery take?
- Return to your original baseline level, probably above 35 mmHg.

- Repeat the above steps for 28 mmHg and 25 mmHg, for at least two minutes.
- Notice any significant changes associated with each level of $ETCO_2$ mmHg.
- In each case, how long does it take you to recover to 35 mmHg?

- Raise your PCO_2 level to 40 mmHg. Can you do it?
- How did you do it? How does it feel? How long did it take?

- Desensitize yourself to the experience of different levels of $ETCO_2$.
- Learn to go in and out of hypocapnia with ease.
- Learn to identify different levels of $ETCO_2$ experientially.
- See if you can identify these levels with the CapnoTrainer.

- Once you are successful, lower your $ETCO_2$ mmHg, and see if recovery occurs on its own.
- Look for automatic recovery within a minute or so, with no special effort on your part.
- Once it is automatic, you will likely not be trapped again.

Challenge yourself repeatedly.

Look at your ETCO_2 levels immediately before, during, and immediately after challenges.

Test yourself in the presence of old triggers.

Feel respiratory chemistry as the axis of your breathing.

LESSON 8: Short-term interventions for hypocapnia

Lower your ETCO_2 levels to 25 mmHg, or to whatever level is desired. Then practice the following:

Exhale passively.

Allow for the transition.

Locate the reflex.

Allow the inhale through your nose.

Breathe quietly.

Breathe with the diaphragm.

Use ear plugs to listen to your breathing.

If necessary:

Extend the transition to much longer times, as practiced.

Use a paper bag if necessary, and repeat the above.

The varied melodies of breathing mechanics must ultimately play the music of balanced chemistry.