

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.

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, "feeling in control" while inhaling).

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 & 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 the experiences of breathing in different ways (the mechanics) 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.

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.

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 aid approach, albeit a good one. The solution is 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 below, is the assumption that you are able to observe your own live CO₂ physiology, and that you are recording it for later review. Using the "event marker" icon will assist you in keeping track of changes that occur in your physiology as you complete homework exercises; entering short two-letter codes seem to work best (such as ST for stress). Be sure to keep diary information specific to each session, along with any other pertinent self-observations between learning sessions.

LESSONS: The following are eight homework lessons designed to assist you in your own self-exploration of breathing. The lessons are designed to be playful. The overall objectives include (1) becoming aware of how you breathe now and how it effects on you, (2) developing an awareness of how you could breathe and how it changes the way you feel, and (3) learning to disengage dysfunctional habits and replace them with new adaptive ones.

LESSON 1: Observe your breathing.

In this exercise, it is important that you **simply observe** your breathing. Don't try to demonstrate how well you can breathe, or manipulate it in any conscious way. Just observe it. Learn about how you are breathing now. *Pay close attention to nuances; these details often reveal the basis of a dysfunctional habit.*

Find a comfortable position in your chair. Put one hand on your chest, and the other hand on your abdomen about an inch below the rib cage; this will allow you to visually observe where and how you breathe (chest or diaphragm).

Objectives:

- Discover what breathing patterns you have learned unconsciously. What has your body learned to do?
- Uncover emotions, thoughts, or memories that may be connected to, or embedded in, your breathing.
- Find motivations, like fear, that might be the basis for the way you've learned to breathe.
- Identify the inspiratory respiratory reflexes that appear between the transition time between exhalation and inhalation.
- Discover whether or not breathing habits are compromising respiration (by observing your CO₂ levels).
- Learn about how your breathing changes as a result of thoughts, memories, and imagination.
- Learn about the triggers of dysfunctional habits. Observe your breathing under different circumstances and times.
- Learn about what breathing behaviors you might need to learn, or to restore, that support good respiration.

Observe your breathing mechanics: where and when. *Check your ETCO₂ 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, back, neck)?

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 is your breathing rate making you feel right now?

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 like getting enough oxygen is easy, or is it a struggle right now?

How are you feeling right now? Relaxed or stressed, comfortable or anxious, present or disoriented?

Observe your exhale (expiration). *Check your ETCO₂ levels.*

Is the air going out by itself?

Is exhaling effortful for you?

Does it seem like you are assisting the exhale by using muscles?

If so, why do you think you do this?

Is there relief associated with it? What is it?

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 apprehension, anxiety, worry, or anger near or at the end of the exhale?

Are there any thoughts or memories that arise near or at the end of the exhale?

Do you feel like you need to "take" a breath at the end of the exhale?

Do you abort the exhale, that is, take a breath before the exhale is finished?

If so, why do you think you do this?

Is there relief associated with it? What is it?

What do you think a normal exhale should be?

Do you think you should be exhaling differently? If so, how?

Observe your transition time (between exhale and the inhale). *Check your ETCO₂ levels.*

Is there a transition time between the exhale and the inhale, or is the inhale immediate?

If so, how long is the transition time? A half second? Less? More?

How do you feel during the transition time? Comfortable or uncomfortable? Patient or impatient?

Is there any apprehension, worry, anxiety, or anger during the transition?

Are there any thoughts or memories that emerge when looking into the transition?

Do you feel an urgency to "take a breath?" Do you feel like you need to take action?

By just observing, does "getting a breath" worry you?

Observe your inhale (inspiration). *Check your ETCO₂ 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.*

Present yourself simple challenges, like a thought, and observe the changes in your breathing.

Observe your breathing immediately after challenging situations, like a confrontation on the telephone.

Observe your breathing in multiple environments, such as at work, at a social gathering, or in the gym.

LESSON 2: Make diaphragmatic breathing dominant *(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.
- Become an expert at engaging different muscle groups while breathing.
- Learn to maintain normal ETCO₂ levels while breathing in variable ways.
- Learn to make diaphragmatic breathing preferable to chest breathing.
- Learn to make diaphragmatic breathing automatic.
- Learn to breathe diaphragmatically while feeling stressed or anxious.
- Learn to make breathing gentle and 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 want to learn.

Put one hand on your chest, on 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?

Can you breathe with your diaphragm while lying down, sitting, and standing?

What are your ETCO₂ levels during each kind of breathing?

Which way do you prefer to breathe, diaphragmatically or with the chest?
Why do you prefer to breathe one way, or the other?

If you can't seem to breathe with the diaphragm, lie down.
If you are using the diaphragm now (while lying down), observe it.
How does it feel using the diaphragm while lying down? Do you like it?
What are your $ETCO_2$ levels while lying down?

Try breathing with your upper body, in your chest, while lying down.
Alternate diaphragmatic and chest breathing. This is negative practice.
Can you switch to chest breathing easily? If not, practice switching.
Do your $ETCO_2$ 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 $ETCO_2$ levels in the various postures?

Sit down. Lower your $ETCO_2$ levels by breathing in your diaphragm. Restore it to normal.
Lower your $ETCO_2$ regulation by chest breathing. Restore it to normal.
Which way is easier, and why? Notice how you do it in each case.

Present yourself simple challenges, like a thought, and observe the muscles you use for breathing.
Where do you breathe during and challenging situations, like a confrontation on the telephone.
Where do you breathe in different contexts, such as at work, at a social gathering, or in the gym.
Do you find yourself switching from the diaphragm to the chest, or not?
Can you successfully implement diaphragmatic breathing while stressed or anxious?

LESSON 3: Link breathing rate with depth. *Check your $ETCO_2$ levels.*

Objectives:

- Maintain normal $ETCO_2$ 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?

Did $ETCO_2$ levels drop?
If so, adjust the depth of your breathing to regulate $ETCO_2$, while maintaining the same rate.
Were you successful at restoring good $ETCO_2$ levels while breathing at this rate?
If $ETCO_2$ were low, 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 at the different rates, how did you do it?
If not, practice varying the depth while breathing at the same rate, while keeping $ETCO_2$ at normal levels.
Focus on what it feels like when $ETCO_2$ levels are normal, and when they are not.
Practice maintaining normal levels without the CapnoTrainer. Can you do it?

Place yourself in challenging situations.

Notice how your breathing rates may be changing. That's OK.

Notice how breathing depth changes. That's OK.

BUT, are your $ETCO_2$ levels remaining in the normal range? They should be.

LESSON 4: Allow your exhale. *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?

Do you seem to be pushing the air out?

Is the exhale effortful?

Talk, and notice the tension in your belly while taking. This is normal.

When not talking, do you feel tension in your belly when you exhale? If so, this is a problem.

Assist your exhalation for a few breaths, then don't, then do, and so on.

What does each kind of exhaling feel like?

Which do you prefer, forcing or allowing the exhale, and why?

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

What emotions do you experience as the exhale slows down? Anxiety, apprehension, anger, worry?

What thoughts and/or memories emerge at the end of the exhale?

Are you allowing the exhale to complete?

Do you take the breath early, before it might otherwise end (aborting the exhale)?

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

The, practice aborting the breath for a minute or so.

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.

Present yourself simple challenges, like a thought, and observe the changes in your exhalation.

Observe your exhalation after challenging situations, like a confrontation on the telephone.

Observe your exhalation in multiple environments, such as at work, at a social gathering, or in the gym.

What happens to your $ETCO_2$ levels?

LESSON 5: Make transition time a space for solitude; find the reflex. *Check your ETCO₂ levels.*

Objectives:

- Allow for transition time between exhale and inhale..
- Experience the inhalation reflex response, identify it, feel it however you can.
- 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.

Many people “take breaths” rather than allowing the reflex to do its work. 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 “having to take a breath,” disappears, and along with it behaviors that may be getting in the way of good respiratory fitness.

Observe your transition time between exhale and inhale.

If there is none, **allow for short transition times** (about one second).

Then, breathe **without** allowing transition time, 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?

Which one do you prefer, and why?

What emotions emerge during the transition time, if any? Apprehension, anxiety, fear, anger, worry?

What thoughts and memories emerge, if any? “I need to breathe.” “I need air.” “I don’t like this.”

Do you feel a lot of air hunger? Is there a sense of panic?

Wait for the reflex. Can you detect it? A jerk? A sense of urgency? A desire? A thought? A visual message?

If not, lengthen the transition time. Wait for it. See what it feels like.

Practice until you think you’ve identified it. How do you know?

Monitor your ETCO₂ levels? How do they change?

Desensitize yourself to the transition time.

Learn to be at peace during the transition time.

Extend the transition time to 2 seconds, then 5 seconds, and then 10 seconds.

How does each feel? Is it difficult?

Practice it often. Is it getting easier, more comfortable?

Keep practicing until you can do it for 30 seconds.

How do you feel during the transition time now?

Have previous emotions and thoughts dropped out?

What is your ETCO₂ level?

Challenge yourself. What happens to the transition times?

How are previous triggers and situations affecting transition time, as compared to before?

How have your ETCO₂ levels changed?

How does your breathing feel now? Is it easier? Is it quieter?

LESSON 6: Learn to breathe quietly. *Check your ETCO₂ 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 breathe 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 ETCO₂ levels is making your breath as small as possible while still remaining comfortable; if you have significant air hunger, be patient.

Breathholding: negative practice

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? And, why?

Depth of the breath (how big or small, that is): negative practice

Observe the depth of your breathing without "trying" to breathe.

How does it feel? Do it seem like you are getting enough air?

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."

Take smaller breaths.

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.

As you minimize the breath what emotions and thoughts appear?

Learn to be comfortable taking just the air you need.

Breathe through your nose: negative practice

Do you frequently find yourself inhaling through the mouth?

Right now, are you breathing through your nose or your mouth?

Alternate between mouth and nose, a minute at a time.

Which do you prefer, and why?

Repeat the "small breath" exercise above, breathing only through the nose.

Has your experience of nose breathing changed?

Challenge yourself.

Present yourself simple challenges, like a thought or a phone call.

Do you breathe more shallowly or deeply?

Do you hold your breath? Do you breathe through your mouth?

Observe your inhalation immediately after challenging situations, like a confrontation on the telephone.

Observe your inhalation in places such as at work, at a social gathering, or in the gym.

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 happens to your ETCO_2 levels as your breath becomes shallower or deeper?
With practice, how are previous triggers affecting you as compared to before?

LESSON 7: Make good respiration the axis of your breathing.

Objectives:

- Make good respiration 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 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 otherwise last for many 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 more complex and will need to be further explored.

Learning will take time, doing a lot of 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.

How did you do this? Make a note.

Did you notice any changes in your body sensations, emotions, thoughts, or consciousness?

Move the level back to its original level, e.g., 38 mmHg.

How did you get back to the original level? 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.

What body sensations emerge? What emotions? What thoughts? What memories?

Take careful note of what they are?

Do they remind you of anything in your life, past or present?

How has your consciousness changed?

Return to 35 mmHg.

Could you do it? How did you do it?

How long did recovery take?

Return to your original baseline level (starting level).

Repeat the above steps for 28 mmHg and 25 mmHg, for at least two minutes.

Notice any significant differences between the various levels of ETCO_2 .

In each case, how long does it take you to recover to 35 mmHg?

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 **without 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.

Raise your ETCO₂ level to 40 mmHg or above. Can you do it?
How did you do it? How does it feel? How long did it take?
Does it enhance your consciousness? If so, how?

Present yourself simple challenges, like a thought, and observe the changes in ETCO₂ levels.
Observe your breathing immediately after challenging situations, like a confrontation on the telephone.
Observe your ETCO₂ levels under diverse circumstances, such as at work, at a social gathering, or in the car.
Look at your ETCO₂ levels immediately BEFORE, DURING, and AFTER challenges.
Test yourself in the presence of habit old triggers.

LESSON 8: Learn self-interventions for challenging times. *Check your ETCO₂ levels.*

Objectives:

- Find out which self-interventions are most effective for you
- Learn to implement self-interventions quickly and easily
- Effectively implement self-interventions during times of challenge

Lower your ETCO₂ levels to 25 mmHg, or to whatever level is desired for two to five minutes. Then explore the following techniques and/or practice the following:

- Observe your breath, watch it, but don't manipulate it.
 - Exhale completely, but not forcibly.
 - Extend the transition times from exhale to inhale,
 - Breathe with your diaphragm, if possible.
 - Breathe slowly, but NOT deeply.
 - Breathe through your nose.
 - Breathe gently and as quietly as possible.
 - Stop negative thoughts about your breathing.
 - Think embracing thoughts about people, circumstances, and events.
 - Translate anxiety into excitement
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- Use earplugs, and listen to your breathing. Make it as quiet as possible.
 - Extend the transition to longer and longer times: 2, 4, 8 seconds.
 - Take smaller breaths, and don't worry about how fast or slow.
 - Hold your breath, letting CO₂ accumulate.
 - Use a paper bag if necessary, and repeat the above.

REMEMBER:

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