Chapter 9: Breathing, and Avoiding Hyperventilation

334 The flight-or-fight response is meant to help us avoid danger. As we discussed before, the activity of the sympathetic nervous system can be life-saving when we need extra energy to fight a predator or run from danger. Adrenaline and noradrenaline turn up our muscle tone, our heart rates, our sweating, and our rate of breathing, in preparation for extreme physical exertion. The effect of fear on breathing rates has very much to do with the subject of this chapter.

The reason for jumpy, trembly, and tight muscles, a pounding heart, sweating, and faster breathing when we are nervous is that

A. these are symptoms of a disease,
or
B. these are ways that our body prepares us to run or fight well when we perceive ourselves to be in danger?

335 When our bodies produce the flight or fight response and we don't run or fight, sometimes we get into vicious cycles that can be very unpleasant. A "panic attack" is one possible result of these vicious cycles, where activated muscles, a pounding heart, and fast breathing, as well as a feeling that something horrible is about to happen, seem to turn themselves up and up to the point of great discomfort.

This section made the point that

A. in a panic attack, vicious cycles turn up the flight-or-fight response to very unpleasant levels,
or
B. it is important to practice relaxation even when one is not feeling particularly anxious?

The vicious cycle of hyperventilation

336 There is one vicious cycle that operates in most people who have panic attacks. It often plays a role in anxiety that doesn't reach the panic attack level. Understanding it can help enormously in preventing future panic attacks. This is the vicious cycle of hyperventilation.

Hyperventilation simply means breathing too fast. The vicious cycle of hyperventilation means that for some people, breathing too fast signals our bodies to breathe even faster. The result is a very unpleasant feeling, that largely contributes to the unpleasantness of a "panic attack."

Fortunately, we can control our rate of breathing. If you can thoroughly understand how breathing influences panic and anxiety symptoms, this knowledge can help you avoid bad panic attacks for the rest of your life!

This section starts discussing the vicious cycle where

A. thoughts that something horrible is happening lead to emotions that create more evidence that something horrible is going on,
or
B. breathing too fast signals the body to breathe even faster?

337 If you have panic attacks or anxiety, and you're not sure whether you breathe very fast when episodes occur, you can watch yourself very closely the next time an episode happens. But since so many people hyperventilate without realizing it, my advice is to read this chapter carefully and to practice the exercises that it recommends, whether or not you are sure you hyperventilate. If you don't hyperventilate, none of this will do you any harm; if you do, this will help you tremendously.

The author's advice is to

A. not do any exercises until you are sure you hyperventilate,
or
B. to learn what's in this chapter and do the exercises, whether or not you're sure you hyperventilate?

CO_2 excess and CO_2 deficit

338 Let's think about the effects of breathing. We learn in science classes that as our bodies generate energy, we use oxygen to "burn" fuels that come from the food we eat. Those fuels have carbon in them, and the by-product of making energy from them is carbon dioxide. Our bodies continuously need to get the carbon dioxide out, and to get oxygen in. This is the purpose of breathing. With every breath, we take in oxygen and "blow off" carbon dioxide.

This section presents

A. the reason for panic attacks,
or
B. a summary of what happens when we breathe?

339 If we breathe too slowly or not at all, we build up *too much* carbon dioxide: we have what we will call a CO_2 excess. If we breathe too fast, we blow off too much carbon dioxide, so we are left with *too little* of it in our bodies. Hyperventilation produces a CO_2 deficit. Our bodies are built so that neither of these states feels good. We get unpleasant feelings from carbon

dioxide excesses or deficits. The purpose of those unpleasant feelings is to motivate us to get the carbon dioxide into the right range, where there is "not too much, not too little, but just right."

What's the main point of this section?

A. Both deficits and excesses of CO_2 produce unpleasant feelings, which motivate us to keep carbon dioxide in the right range?
or
B. CO_2 excesses make the blood more acidic, whereas CO_2 deficits make the blood too alkaline?

340 The unpleasant feelings of deficits and excesses of CO_2 are different from each other. Have you ever swum underwater, and experienced that increasing feeling of air hunger that makes you want to come to the surface and gasp for breath? Or have you held your breath for any other reason? The increasing unpleasant feeling you get from breath-holding is the feeling of CO_2 excess. This feeling is meant to tell our brains, "Breathe! and breathe fast!"

This section tries to communicate

A. why CO_2 excess makes the blood more acidic,
or
B. what the feeling of "CO_2 excess" is like?

341 The feeling of CO_2 deficit is different. This occurs when we breathe fast, but do not flee, fight, or produce a lot of carbon dioxide from some other form of exercise. Even ten very fast very deep breaths can produce a little of this feeling.

Some people describe the feeling as being light-headed, or dizzy. It's not a spinning type of dizziness, but a feeling that you're on your way to feeling faint. If you keep hyperventilating, there can get to be tingly or numb feelings around the mouth or in the hands and feet, and these too are unpleasant. These unpleasant feelings are trying to tell us, "You have too little carbon dioxide!" "Don't breathe so fast!"

The point of this section is that

A. breathing fast without exercising leads to the unpleasant feeling of CO_2 deficit,
or
B. the flight-or-fight response probably still helps people survive, but less frequently than long ago?

342 Probably almost all of us respond to fear by starting to breathe faster. Why would our bodies do this? Because if we are going to flee or fight a predator, we're going to be exercising strenuously, and producing lots of

carbon dioxide. Starting to blow off that carbon dioxide gives us an advantage in the fight or the flight.

However, if we don't need to exercise strenuously, normally something tells us, "You don't need to breathe so fast." Probably most people sense the feeling of CO_2 deficit and slow down their breathing some, without even thinking about what they're doing.

This section

A. describes why people get panic attacks,
or
B. describes what normally happens when we start to breathe faster when afraid, but then automatically slow down the breathing, in response to feelings of CO_2 defect?

The mistake that makes the vicious cycle of hyperventilation

343 But for those people who have a gene or something else that disposes them to panic attacks, something different happens! The bad feeling of CO_2 deficit can get misunderstood. The brain feels those unpleasant signals from too little carbon dioxide, and misinterprets them as "I'm not getting *enough* air." Thus the person breathes even faster! Some people are not even aware of doing this; others are very much aware of thinking, "I can't get enough air!"

Now a vicious cycle has begun. The faster the person breathes, the more the person feels the need to breathe fast, and the worse and worse the person feels!

The crucial thing that makes a vicious cycle happen is that

A. the person starts feeling tingling around the mouth or in the hands or feet,
or
B. the brain interprets the bad feelings of CO_2 deficit as not getting enough air?

344 Why should the body make the mistake of feeling that too much breathing is really too little? Let's think about how you would design a brain if you were focused on survival. You might think, "If the person really isn't getting enough air, but feels that he should slow down his breathing, that could kill him. On the other hand, if he really is getting enough air, and feels that he should speed up his breathing, that won't kill him. It will feel very unpleasant, but I'm interested in survival, not in preventing unpleasant feelings. Thus I'll design the brain so that if there is any doubt about whether

to breathe faster or slower, the person will breathe faster."

Centuries of evolution have designed the brain with survival in mind. For this reason, there are lots of people where breathing faster leads to breathing faster. I don't hear of those for whom breathing slower leads to breathing slower – probably because the genes for that problem have been selected out. If you have hyperventilation problems, you can attribute your problem to the fact that your body has been designed to "err on the side of caution" when it comes to deciding whether to breathe faster or to breathe more slowly.

The point of this section is to

A. give specific ways of learning to breathe more slowly,
or
B. explain how evolution probably has favored hyperventilation over breathing too slowly?

345 People have written a good bit of incorrect information about panic attacks. Many people think that the problem is that people are not breathing deeply enough, and that they are not getting enough oxygen. Others think that the main problem is that chest breathing doesn't give you as much oxygen as breathing using the abdomen. If you want to test these theories, take a pulse oximeter, that measures the oxygen in your blood, and while observing the oxygen numbers, breathe shallow, breathe deeply, breathe with your chest, breathe with your abdomen, hold your breath, breathe fast – you'll notice that the oxygen level stays high through all of this. On the other hand, there are devices that measure the carbon dioxide in the air you exhale. During panic attacks, and when you hyperventilate on purpose, carbon dioxide goes down.

The author is stating in this text unit that

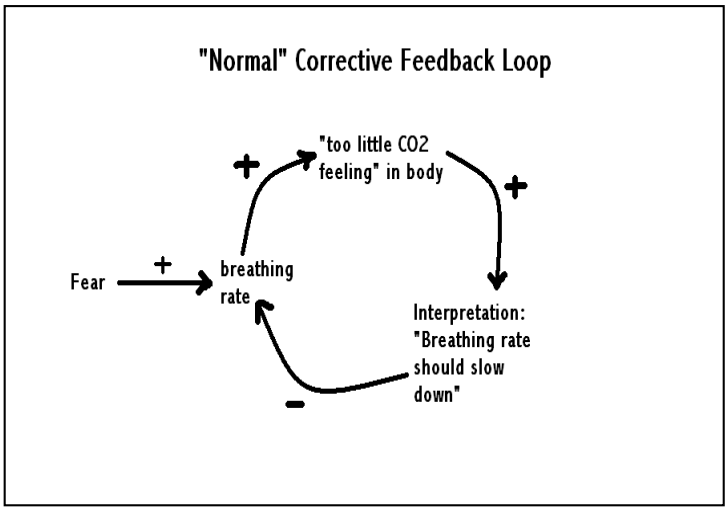
A. The important variable regarding breathing and panic attacks is the level of carbon dioxide, and not the level of oxygen.
Or
B. Singers are taught to use abdominal muscles for breathing because this allows better control.

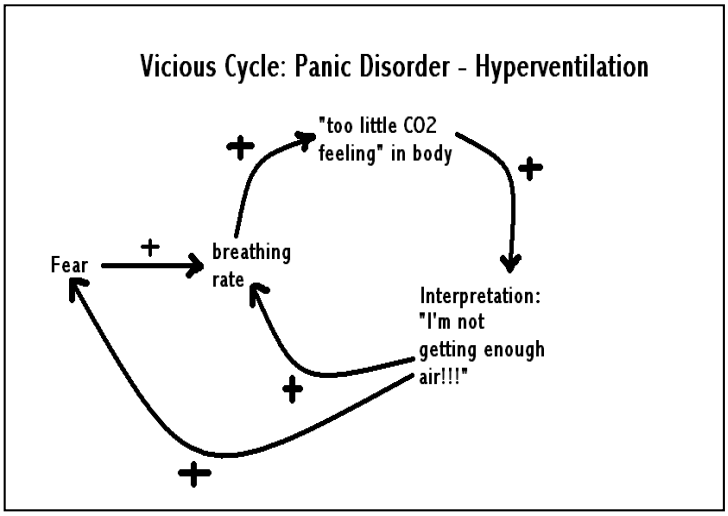
346 The amount of air that goes in and out of your lungs in one breath is called "tidal volume." The number of breaths per minute is called the "respiratory rate." The average tidal volume times the respiratory rate gives the amount of air going in and out of your lungs per minute; this is called the "minute volume." The problem in hyperventilation is that minute volume

is too high, and this results in a carbon dioxide level in the body that is too low.

The problem in hyperventilation is

A. Too high minute volume and too low carbon dioxide.
Or
B. Overly shallow breathing resulting in too little minute volume?


"Normal" Corrective Feedback Loop
"too little CO2 feeling" in body
Fear
breathing rate
Interpretation: "Breathing rate should slow down"


Vicious Cycle: Panic Disorder - Hyperventilation
"too little CO2 feeling" in body
Fear
breathing rate
Interpretation: "I'm not getting enough air!!!"

347 The diagrams on the previous page illustrate the process we've been describing. For people without hyperventilation problems, fear tends to increase the breathing rate; this causes a feeling of CO_2 deficit; the breathing slows down to correct this. But in people with hyperventilation problems, the feeling of CO_2 deficit is mistakenly interpreted as "I'm not getting enough air!" This leads to faster breathing, an even greater CO_2 deficit, more of a feeling of suffocation, and still faster breathing! (This situation has been called a "suffocation false alarm.") If you understand, either from the diagrams or from the words, that the crucial remedy for hyperventilation is breathing more slowly (and knowing when to do so), then you hold the key to eliminating hyperventilation episodes.

The diagrams referred to by this section illustrate that

A. when you get CO_2 excess, your blood gets more acidic,
or
B. when you get CO_2 deficit, the crucial thing is to realize you should breathe more slowly?

The paper bag technique, and why I don't like it

348 In the past, many emergency room physicians used the "paper bag treatment" to help people who come for help with panic episodes. (I don't recommend it, for reasons we'll discuss later. But it helps to understand what goes on with hyperventilation.) Physicians asked the person to hold a paper bag around their mouth and breathe into it. Why did this work? Because the carbon dioxide that the person breathed out stayed in the paper bag, and the person then breathed it back in again. Thus the carbon dioxide level rose in the blood, and this helped end the hyperventilation episode.

The purpose of this section was to

A. recommend that you breathe into a paper bag as a treatment for hyperventilation,
or
B. describe the paper bag treatment, to illustrate that in hyperventilation episodes, what the body needs is more carbon dioxide?

349 Why do I not recommend the paper bag treatment? If you use a bag that is too air-tight, and hold it with too good a seal around the mouth, you can use up the oxygen in the bag. You don't want to swap too little carbon dioxide for too little oxygen! But if the bag is not air-tight enough, the carbon

dioxide will escape, and the bag treatment won't work. So the paper bag treatment isn't good enough, because it creates a mixture of gases that is not controlled well enough.

In addition, when you're with people, it looks a little strange to take out a paper bag and breathe into it. Fortunately, there is a much better way to stop a hyperventilation episode: simply breathe more slowly.

This section argues that if you start to hyperventilate, you should

A. breathe into a paper bag,
or
B. breathe more slowly?

The best cure for hyperventilation: breathe more slowly!

350 Why does it work to breathe more slowly, when you're in the vicious cycle of hyperventilation, or starting to go into it? When you breathe very slowly, the CO_2 has a chance to build up, because you aren't blowing out the CO_2 so quickly. Your slow breathing cures your CO_2 deficit. Your body returns to its normal state.

The author stresses that when people, as part of a panic attack, start hyperventilating, they need

A. to let more oxygen get in,
or
B. to let more CO_2 build up?

351 Would it also work to start exercising, in order to generate more carbon dioxide? This also should work: it furnishes the exercise that the body expects to accompany the flight or fight response, and builds up carbon dioxide by generating it more rapidly. So far, we've accumulated lots less experience with how this works for ending hyperventilation episodes. (If you try it, please email me and let me know how it worked out! My address is on page 2.)

One reason we have less experience with exercise as a way of breaking the hyperventilation cycle is that often it looks strange socially to start running in place or doing jumping jacks unless we're in a gym. (Maybe some day the world will improve to the point where this is no longer true.) But breathing more slowly is a treatment or preventive for hyperventilation that you can use anywhere, in any circumstance.

Both points below are true, but what's the *main* point of this section?

A. Exercising should help relieve CO_2 deficits and thus help end hyperventilation cycles, but we know

more about the helpful effects of simply slowing breathing, partly because you can do it anywhere.
or
B. The author would love to hear the results if you experiment with exercising for breaking hyperventilation cycles.

352 When people start to get anxious, other people often tell them to "Take some deep breaths." Taking *slow* deep breaths can be helpful, but what helps is that the breaths are slow, not that they are deep. In fact, taking fast deep breaths is usually worse than taking fast shallow breaths, because fast deep breaths blow off carbon dioxide even faster. What people should say to people who are getting anxious is, "Take some *slow* breaths."

The point of this section is that

A. you should usually take deep breaths when you get anxious,
or
B. you should usually take *slow* breaths when you get anxious?

353 What do we mean by slow breaths? Some time when you are relaxed, count your breaths, or at least pay attention to the rate and rhythm. When at rest, most adults take somewhere in the neighborhood of 12 breaths a minute; children breathe a little faster. And these breaths are usually not very deep. You can notice how fast you breathe when you are not scared or exercising. When you are scared, you may need to breathe a little faster or deeper, because you are using up a little more energy with your muscles' being tight and jumpy. On the other hand, if you have already been hyperventilating, you can sometimes go for a minute or so with very little breathing until you build up more carbon dioxide. But your resting breathing rate gives you a guideline of what is meant by "breathing slowly."

Later in this chapter, I will describe an exercise for breathing 5 seconds in, and five seconds out. This gives a respiratory rate of 6 breaths per minute. It's very difficult to hyperventilate at this rate!

The point of this section is to

A. try to communicate more concretely what is meant by "breathing slowly,"
or
B. convince you to breathe with your abdominal muscles and diaphragm rather than your chest?

354 "An ounce of prevention is worth a pound of cure." If you can learn to nip hyperventilation in the bud before it turns into a panic attack, things go much easier. Thus the goal is to notice

CO_2 deficit as soon as it starts, and to breathe more slowly as soon as you feel that CO_2 deficit. You want to learn to distinguish very clearly between CO_2 excess (the feeling you get when you hold your breath) and CO_2 deficit (the feeling you get when you breathe faster than you need to). These are learnable skills, and you can get better at them with practice! And this is wonderful news for anyone with hyperventilation or panic symptoms! Exercises that follow are meant to help you learn these skills.

The goals of the exercises that will follow are to

A. slow your heart rate and make yourself sweat less,
or
B. help you tell the difference between CO_2 excess and CO_2 deficit, and slow down your breathing when you start to get a CO_2 deficit?

Exercises for avoiding hyperventilation

Breathing exercise 1: 5-in-and-5-out

355 The first exercise is called "5-in-and-5-out." This is short for "Breathe in for 5 seconds and breathe out for 5 seconds." This makes for one in-and-out cycle every 10 seconds; the resulting respiratory rate is 6 per minute. For most adults, the usual average rate is about 12 to 20 per minute, and for children 5 to 12 about 16 to 30 per minute is average. Thus a rate of 6 per minute is considerably slower than most of us breathe. But it's not hard to get enough air at that rate; we automatically tend to make up for the slower rate by breathing more deeply. (I'm assuming you're at rest while doing this rather than sprinting or doing pushups!) Here's the main point of this exercise: although I hesitate to use the word "impossible," it's VERY difficult to hyperventilate at the rate of 6 breaths per minute.

What are some points made in this text unit?

A. The first exercise involves breathing in for 5 seconds and out for 5 seconds, resulting in a rate where hyperventilation is very unlikely to occur.

B. Many teachers of meditation and relaxation advise more complicated ways of breathing and holding for certain numbers of counts.

356 I recommend looking at a watch that displays seconds while doing this. For many people, a cell phone

provides a convenient display; there is a “clock” icon and a “stopwatch” function on it. You just start the stopwatch going, and pay attention to the seconds, without worrying about the other parts of the display. Actually, you just look at the right digit of the seconds. When that comes around to 0, you start breathing in. When that comes around to 5, you start breathing out.

Why do you think the author recommends looking at a timekeeper’s display of seconds rather than advising people to count to themselves?

A. Because this is the way people have done it for centuries in yoga,
or
B. Because people can count fast or count slowly, and also it gets annoying for many people to do all that counting.

357 Here’s the way NOT to deal with this exercise. It’s to think, “OK, that makes sense, when I feel a panic attack coming on I’ll start doing that,” and then, to forget about the exercise until that time. Yes, this is the exercise of choice to do when people feel a panic attack coming on. But when panic has started, it’s hard to do anything that you don’t already have a STRONG habit of doing. For this reason, anyone with panic attacks involving hyperventilation (almost all panic attacks seem to involve it) should practice 5-in-and-5 -out at times when they do NOT feel panicked or particularly anxious. I recommend that anyone who has had hyperventilation problems do this every single day, for months or years! But the consolation is that you don’t have to do it longer than a minute or two to get very significant practice in!

The more you practice, the more you’ll get a feeling for how long the interval of 5 seconds is. You become able to do 5-in-and-5-out without having to look at a clock or watch or phone. This is an advantage when you’re in a situation where it might be rude to stare at your timekeeper.

What’s the main point the author is trying to emphasize in this text unit?

A. If you’ve had panic attacks, practice the 5-in-and-5-out exercise for a minute or two every single day; don’t wait until you start feeling panicked.
Or
B. Every day it’s good to review the fact that breathing too fast gives us too low carbon dioxide and breathing too slowly makes carbon dioxide get too high.

358 Many people find it relaxing and pleasant to do the 5-in-and-5-out exercise. It will probably be more so if you relax your muscles while doing it, as described in the chapter on relaxation methods. Or you can think about kindness to yourself while breathing in, and kindness to others while breathing out. If you can cultivate the habit of getting into a peaceful and relaxed frame of mind while practicing, that will make the experience even more beneficial.

What does the author suggest in this text unit?

A. Practicing getting a relaxed and peaceful feeling while practicing 5-in-and-5-out.
Or
B. Making sure to get enough exercise that it's pleasant to sit at rest and practice.

359 If you do feel a panic attack coming on, 5-in-and-5-out is the way to nip it in the bud. Start it as soon as you begin to feel heart pounding, trembling, lightheadedness, nausea, or any other panic symptoms, or when you notice yourself starting to breathe fast without exercising. If it's socially appropriate, look at your timekeeper; if it isn't, your practice should have prepared you to estimate 5 seconds.

The 5-in-and-5-out exercise, done at such a time, will not necessarily make you feel relaxed and peaceful, no matter how much you've practiced getting relaxed while doing it. If you're worried that something bad will happen, it will not take away that worry. It won't necessarily make you feel less scared. But what it is meant to do is to let you avoid the vicious cycle of hyperventilation, and the very unpleasant feelings that go along with hyperventilation. And that's an accomplishment worthy of huge celebration! The rest of this book has to do with reducing the other parts of anxiety. But if you can move from anxiety with panic attacks to just plain anxiety, you've accomplished a lot!

The author feels that

A. 5-in-and-5-out is a great way to get rid of all anxiety.
Or
B. 5-in-and-5-out is a great way to stop the vicious cycle of hyperventilation. Lots more is necessary to reduce unwanted anxiety.

360 If the breathing rate of 5-in-and-5-out is uncomfortable, one can always change the exercise to 4-in-and-4-out. This yields a respiratory rate of 7.5 per minute, which is still pretty incompatible with hyperventilation and too low carbon dioxide. (Plus, it

gives practice at the skill of skip counting by 4's.) But in my experience so far, most people feel just fine with 5-in-and-5-out.

The author feels that

A. The exercises must be done precisely according to the directions, without changing anything.
Or
B. The 5-in-and-5-out exercise can be modified to fit the individual who is using it.

Breathing exercise 2: Hold your breath and correct

361. Do you remember that we talked about how one of the things that goes on in the vicious cycle of hyperventilation is that the cautious brain is not sure whether the breathing rate is too fast or too slow, but decides to play it safe by guessing that breathing is too slow? The remaining two exercises are meant to teach the brain the difference between too high and too low carbon dioxide. The two states feel considerably different. If you can realize the difference between them, and have a good number of experiences of breathing faster when carbon dioxide is too high, and breathing slower when it's too low, you have another very important skill to keep you out of the vicious cycle of hyperventilation. These are the goals that the remaining two exercises are meant to accomplish.

What are the goals that the two exercises other than 5-in-and-5-out are meant to accomplish?

A. To help you tell the difference between too high and too low carbon dioxide, and strengthen the habit of breathing faster to cure the first and breathing slower to cure the second.
Or
B. To help you remember that too high carbon dioxide comes from breath-holding, and too low carbon dioxide comes from hyperventilation.

362 People have used the second and third exercises by themselves to rid themselves of hyperventilation. They are very useful exercises to do in winning a place on the "No More Hyperventilation Honor Roll." However, it's important to keep in mind that these are not the exercises to do when you feel a panic attack or hyperventilation episode coming on. The 5-in-and-5-out is the one to do in that case. The other two exercises are the ones that teach your brain to prevent these episodes.

Which exercise does the author recommend doing to stop a

hyperventilation episode that you feel starting up?

A. Any of the three,
Or
B. The 5-in-and-5-out exercise.

363 The second exercise is "hold your breath and correct." This is short for "hold your breath to create a CO_2 excess, then correct that by breathing." In this exercise, you simply stop breathing for a few seconds. You don't take a deep breath first (because if you do, you have to waste more time sitting and waiting until you get the feeling of CO_2 excess.) You gradually feel what some call "air hunger": the urge to take a breath. This is the same feeling people get when they swim under water, and need to come up and breathe. It's also the same feeling you get when you run really fast and get "out of breath." Notice what this feels like, and particularly, as you do this over time, notice how it feels *different* from the feeling of CO_2 deficit. But as soon as you feel the tiniest amount of discomfort from CO_2 excess, go ahead and breathe; you'll naturally breathe fast enough to correct the CO_2 excess. Then breathe at a normal rate again, and you're done with this exercise!

The second exercise, in a nutshell, is to

A. hold your breath a few seconds, notice the CO_2 excess feeling, and then breathe to correct that state,
or
B. hyperventilate a little, then exercise hard to make the CO_2 deficit feeling go away?

364 The point of this exercise is not to hold your breath a long time. It does no good to subject yourself to unpleasant extremes of CO_2 excess. You accomplish all you need when you feel a slight feeling of air hunger and then correct it by taking a couple of quick deep breaths.

This section told you that

A. in doing the "hold your breath and then correct the CO_2 excess" exercise, you don't need to hold your breath very long,
or
B. most of the time your breath should not command your attention, but simply go on automatically?

Breathing exercise 3: Hyperventilate and correct

365 The third exercise is called "hyperventilate and correct." This is short for "hyperventilate to create a CO_2 deficit, then correct that by

breathing very slowly." In this exercise you purposely blow off carbon dioxide, feel the CO_2 deficit feeling, and then make that feeling go away by breathing slowly.

This section

A. gives a very brief summary of what the "hyperventilate and correct" exercise is,
or
B. explains how hyperventilation affects how tightly your blood cells hold on to oxygen?

366 Here's how you do "hyperventilate and correct," in detail. You breathe as fast and deeply as you can, for somewhere between 5 and 15 fast deep breaths. You want to hyperventilate on purpose, just enough that you get a tiny bit of the "weird feeling in the head" that comes from hyperventilation, but not enough of it to be very unpleasant or uncomfortable. For some people, 5 deep breaths will be enough for this; if it isn't, you can gradually increase the number of breaths until there are enough of them to give you a slight lightheaded feeling.

Then you sit and notice what CO_2 deficit feels like. Notice how it feels *different* from CO_2 excess! Meanwhile, to correct that lightheaded feeling, you breathe very slowly. If you go for several seconds without even feeling the urge to take a breath, don't worry – this is natural. Breathe very slowly until the tiny bit of lightheadedness goes away, and then breath naturally. You have now corrected the CO_2 deficit by breathing slowly, and you have done one repetition of the exercise!

A summary of the "hyperventilate and correct" exercise is to

A. hyperventilate just enough to feel a little different, and then breathe slowly to make that feeling pass,
or
B. breathe at whatever rate is natural, and relax some group of muscles each time you exhale?

367 What does it mean to "breathe very slowly" when you're correcting the carbon dioxide deficit after hyperventilating in this exercise? I find that about one very low inhalation and one very slow exhalation over the course of about 30 to 40 seconds is what corrects the low carbon dioxide. What is meant by breathing very slowly can vary from one person to the next. If you overshoot a little bit with the slow breathing and start to feel the high carbon dioxide feeling, that's no problem; just start breathing normally. And at some point, if you're

not sure whether to breathe faster or slower, just go into 5-in-and-5-out.

What does the author mean by breathing very slowly when doing the "hyperventilate and correct" exercise?

A. In the region of one slow breath in and out over 30 to 40 seconds; this varies from person to person.
Or
B. In for the count of 4, hold for the count of 5, out for the count of 7.

368 You can combine both of these exercises if you want. Here's the way you do that: you some deep and fast breaths, just enough to feel the CO_2 deficit. Then you stop breathing, or breathe very slowly; notice the CO_2 deficit feeling go away; notice a little feeling of CO_2 excess start. As soon as it starts, breathe enough to make this feeling go away, and you're done.

In this combining of the two exercises, you

A. first feel CO_2 deficit, and then a little CO_2 excess, and then correct?
or
B. first feel CO_2 excess, and then make that feeling go away without ever feeling a CO_2 deficit?

369 None of these exercises should be unpleasant. For the second and third exercises, you want to produce just the tiniest bit of CO_2 deficit or excess, and then correct these conditions by breathing slower or faster. These exercises are meant to prepare you for what you need to do in real life: to notice when you start to get CO_2 deficit or excess, to tell the difference between these, and to correct either condition as soon as it occurs.

Why do I advise you to produce just a tiny amount of carbon dioxide deficit or excess? It's not that you will harm your body or do something dangerous if you go beyond the tiniest amount. It's just that if you make these exercises unpleasant by hyperventilating too much or holding your breath too long, you won't want to do them. If you stop hyperventilating or holding your breath very early in the process, the exercises will be tolerable enough that you will do them. Also, you want to practice nipping carbon dioxide deficit or excess in the bud, not waiting until later.

The purpose of this section is to

A. explain why you stop hyperventilating or holding your breath sooner rather than later,
or
B. to explain why "no pain, no gain" is the motto for these exercises?

370 If you have had panic attacks with hyperventilation, you don't need me to tell you that the experience is very unpleasant! But as far as I know, there is not permanent damage to any organs. Unless the person already has a seizure disorder or a serious heart condition, there is much more discomfort than there is physical danger.

The purpose of this section is to communicate that

A. hyperventilation, though very unpleasant, is not very dangerous,
or
B. biofeedback devices that measure exhaled CO_2 have been used to help people with hyperventilation?

371 If you keep in mind that the flight or fight response, even with hyperventilation, is unpleasant but not dangerous, you can interrupt another vicious cycle that often occurs in panic attacks. People often think, "I wouldn't be feeling so bad if something horrible were not happening to my body! Something terrible and unknown is going on, that I have no control over!" These, of course, are very scary thoughts, that only increase panic. When people understand the principles of this chapter, they can say to themselves very different sentences. They can say, "I am feeling some discomfort from the flight or fight response. I may be getting a carbon dioxide deficit. This is something I can control. By breathing more slowly and relaxing, I may be able to make it go away sooner. Even if I'm not skilled enough to control it this time, I'm facing something that is unpleasant but not very dangerous, something that will go away eventually." These thoughts are MUCH less fear-inducing, and the good thing is, they are true.

The point of this section is that

A. you are now able to prevent every panic attack for the rest of your life,
or
B. with an understanding of the principles, you can have thoughts about flight-or-fight responses you feel that are much less scary?

372 There are some therapists or gurus who feel that most people do not breathe "correctly" and that people should work a lot on "proper breathing techniques." I am, so far,somewhat skeptical about these claims. As long as we are getting air in and out of our lungs fast enough but not too fast, we are doing a perfectly fine job of breathing. Breathing mostly occurs automatically, without our paying attention to it, and that's the way it should be! We have lots of other

things to attend to in life without worrying about the correctness of every breath we take!

The major time we need to pay attention to breathing is when we start hyperventilating; at that time, it's very important to think, "I recognize that feeling! Time to breathe more slowly!" Otherwise, my recommendation is to enjoy the fact that we don't have to think very much about breathing.

In this section the author expresses an attitude toward many teachings about right and wrong ways of breathing that is

A. enthusiastic,
or
B. doubtful and skeptical?

373 Some people have been able to permanently get rid of bad panic attacks just by using the principles described in this chapter. When you combine these principles of breathing with lots of practice in turning down your own level of arousal through relaxation exercises, lots of practice in taking control of your own thoughts and imagery, lots of fantasy rehearsal of handling unrealistically feared situations bravely and calmly, lots of prolonged exposure to and practice with the unrealistically feared situations, lots of skill-building in whatever it takes to be successful in the scary choice points, and a few other techniques, the chances of success become quite high. Knowledge and work provide power, if you know why and how to do the work you need to do.

The main point of this section is that

A. evidence that genes contribute to anxiety comes from studies of twins and adopted people,
or
B. the principles of this chapter, especially when combined with others, really can be effective against panic and anxiety?