



Hyperventilation Syndrome

What is Hyperventilation Syndrome?

Hyperventilation is “over breathing”. Too much oxygen is inhaled and too much carbon dioxide (CO₂) is exhaled because of breathing too much, too deeply, or through the mouth. This is often a pattern developed over time starting in childhood. This type of breathing is not obvious at first glance. It affects every organ and cell within the body.

Hyperventilation is a normal response to stress. It is the fight or flight response which primes us for action if we are being chased by a wild animal. Adrenaline is released which increases our heart and breathing rates, so you can either fight or run to safety. Your body should return to normal breathing and heart rate when the danger has passed.

A variety of triggers can cause hyperventilation. These triggers can include allergens, medications, environmental irritants like smoke and fumes, colds and flu, pain, too little or too much exercise, sudden temperatures, extreme emotions, perfumes, mouth breathing, etc. It is common to hyperventilate while sleeping, watching TV, eating, and talking.

At rest, adults usually breathe between 10 and 14 breaths a minute. This is about 4-6 liters of air per minute. People who hyperventilate often breathe 3-4 times that much.

When too much CO₂ is exhaled, the levels of CO₂ drop in the blood. This causes:

- 1) Hemoglobin, which carries oxygen, is dependent upon carbon dioxide levels to deliver oxygen to the tissues. When CO₂ levels are low, hemoglobin and oxygen form a stronger bond. Because of this less oxygen is released in the tissues of the body. This can lead to sore and tired muscles in addition to other symptoms.
- 2) Smooth muscles wrapped around airways and blood vessels contract and spasm causing chest tightness, wheezing, breathlessness, rapid pulse, cold hands, and numbness.
- 3) Mast cells, part of our immune system, release histamine, increasing inflammation and our allergic response. Symptoms can include itching, swelling, redness, leaky blood vessels, spasms, and mucus production.
- 4) The nervous system is agitated leading to apprehension, anxiety, poor sleep, restless legs, and irritability.
- 5) Symptoms can arise with no apparent organic origin such as trembling, palpitations, absent mindedness, light-headedness, tingling, achiness, etc.

Symptoms of Hyperventilation Syndrome:

Respiratory System: Shortness of breath or breathlessness, chest tightness, asthma, excessive sneezing, production of mucus, sinus congestion, excess yawning and sighing.



Nervous System: Headaches, light-headed, dizzy, unsteadiness, poor concentration and memory, visual disturbances, numbness, tingling, poor circulation especially in hands, fingers, and face.

Cardiovascular System: Racing, pounding, or skipped heart beats, high blood pressure, angina symptoms, cold extremities.

Psychological: Anxiety, panic attacks, tension, irritability, apprehension, fear about nothing in particular or a sense of impending doom, depression, phobias.

Digestion: Butterflies in stomach, nausea, sick to stomach, dry mouth, abdominal bloating, belching, flatulence, heartburn.

Musculoskeletal: stiff and painful neck, painful legs, all muscles more tense and tight than normal, early muscle fatigue with exercise.

General: fatigue, poor sleep patterns including insomnia, sleep apnea, nightmares, general weakness, muscle spasms or twitching, sweating profusely especially in the palms, underarms, or feet, clenched teeth, increased sensitivity to light, sounds, and pain.

Female only: All symptoms worse during the second half of the menstrual cycle from ovulation to menstruation (progesterone phase), heavy bleeding, painful periods.

Basic Breathing Exercises

Clearing the Nose: Sit on a straight-backed chair. After a normal breath out, close your mouth and softly pinch the end of your nose to seal the nostrils. Gently and slowly nod your head up and down six to eight times. Breathe softly and gently through your nose while keeping your mouth closed. If your nose is not totally clear take another two or three breaths before repeating the exercise. Repeat several times if necessary in order to completely clear your nose. It is important to always breathe through your nose.

Diaphragmatic Breathing: When doing the exercises listed below, try to focus on doing diaphragmatic breathing. To test whether or not you are breathing with your diaphragm, place your right hand on your stomach between your lower ribs and navel. Put your left hand on your breastbone, just below the collar bone and take a deep breath. If your chest rises or rises first, you are not breathing with your diaphragm. If your stomach rises then you are breathing correctly.

Pulse: Find your pulse on your wrist or temple. Count your pulse for 15 seconds and multiple the number times 4. Do this before and after each set of exercises.



Horse Rider Stance: A seated position to assist a person to reduce their breathing. Sit near the edge of your chair with knees apart and abdomen lengthened

Control Pause: Take a normal inhalation followed by a normal exhalation. Hold your breath while pinching your nose until you feel the first signs of discomfort. Take a normal breath. If you need to take a deeper breath than normal, then you have held your breath too long. Record the amount of time you are able to hold your breath before breathing again. A normal control pause is 45-60 seconds. If your control pause is less than 20 seconds, you probably have many of the symptoms listed above.

The aim of these exercises is to increase carbon dioxide levels in the body. An increase in your control pause indicates an improvement in your condition. Your control pause tells you how much you are hyperventilating right now. As you practice these exercises you will find your control pause rises.

Extended Pause: Designed to give you the maximum amount of carbon dioxide in the shortest period of time safely. It has two purposes- to overcome an asthma attack in individuals with asthma and to help your reduced breathing techniques. An extended pause of 45 seconds has the same effect as taking one puff of an asthma reliever medication.

An extended pause is done the same way as a control pause, but the breath is held longer.

If your control pause is less than 20 seconds, then add 5 seconds to that length of time.

If your control pause is between 20-30 seconds, then add 8 seconds to that length of time.

If your control pause is between 30-45 seconds, then add 12 seconds to that length of time.

If your control pause is greater than 45 seconds, then add 20 seconds to that length of time.

Use the times listed above as a limited only. Do not feel you must hold your breath for these times. The extended pause should not be attempted if you suffer from the conditions listed below. If you do, then a control pause can be done in its place during your exercises.

- ⤴ Heart problems
- ⤴ Angina
- ⤴ Diabetes or extreme hypoglycemia
- ⤴ Psychotic disorders
- ⤴ Anxiety or panic attacks
- ⤴ Extremely high blood pressure
- ⤴ Epilepsy

Reduced Breathing: Place your hand under your nose and feel the air moving across your fingers. Reduce the volume of air felt across your fingers until the air is almost unperceived. The hand may be removed once you are familiar with the reduced amount of air that you are breathing. If you feel dizzy, light-headed, or develop a headache, you need to increase the



volume of air during your inhalation. You should only feel a slight amount of air hunger. The goal of this exercise is to decrease the volume of air and to increase the carbon dioxide levels in the body. Reduced breathing should be done with the diaphragm. It should not take more than 30 seconds for your breathing to return to normal once you have stopped reduced breathing. If it does take longer, then you are doing the exercises too strenuously.

A small percentage of people feel anxious or threatened when they first start to practice reduced breathing. If this is the case for you, go very gently and do not make the exercises difficult at all. Over a period of time you will become used to the exercises and will be able to increase the level of “hunger for air”. Reduced breathing is the key exercise to treat hyperventilation syndrome.

Mini Pause: Hyperventilating can be caused by a number of behaviors that we are often unaware of, such as yawning, sighing, sneezing, and coughing. Try doing a couple of mini pauses afterward or whenever you are feeling particularly stressed, anxious, or experience chest tightness. Inhale as normal as possible through the nose. Exhale normally. Close your mouth and pinch your nose for a count of 5. Release your nose and breathe in gently through the nose. Repeat a few times or do a series of 10.

Anti-hyperventilation Exercise: Use during an asthma attack, if you feel panicked, if you are agitated or upset, or if you can't sleep.

1. Inhale/Exhale/Inhale/Exhale and hold for a count of 2. Repeat. When you are comfortable go to the next step.
2. Inhale/Exhale/Inhale/Exhale and hold for a count of 3. Repeat. When you are comfortable go to the next step.
3. Inhale/Exhale/Inhale/Exhale and hold for a count of 4. Repeat. When you are comfortable go to the next step.
4. Continue until you are uncomfortable or you reach a count of 6. Then reverse the pattern.

Sleeping: Muscles relax when you are asleep allowing the jaw to flop open, especially when you are lying on your back. This allows you to take a large amount of air in through the mouth causing you to hyperventilate. People who hyperventilate often wake repeatedly throughout the night, wake up tired, have vivid dreams, night sweats, have extra mucus in the morning, snore, developed a blocked nose because of mouth breathing, and have sleep apnea. Taping your mouth loosely with micropore tape (available at the pharmacy) when you sleep will prevent mouth breathing, which will prevent hyperventilation, and improve your control pause. It is also important to sleep on your side, instead of your back or stomach. If your control pause is lower in the morning upon waking than it is before you go to bed, then you are hyperventilating when you sleep.



Homework Exercises

Guide for exercises:

CP = control pause

P = take pulse

RB = reduced breathing

EP = extended pause

B = break of 90 seconds

The following is considered a set of exercises: P CP RB EP RB B CP P
Do not do anymore exercises than specified in the program. Record your progress on the record chart below. Only move on to the next set of exercises if you feel comfortable with the current set. Understand it is normal for your pulse and control pause to fluctuate throughout the day.

Day One

Before breakfast and before bedtime:

P CP 1 minute RB CP 1 minute RB B CP P

Remember to tape mouth when sleeping

Day Two

Before breakfast and before bedtime:

P CP 2 minutes RB CP 2 minute RB B CP P

Remember to tape mouth when sleeping

Day Three

Before breakfast and before bedtime:

P CP 3 minutes RB CP 3 minutes RB B CP P

Remember to tape mouth when sleeping

Day Four

Before breakfast and before bedtime:

P CP 4 minutes RB CP 4 minutes RB B CP P

Remember to tape mouth when sleeping

Day Five

Before breakfast and before bedtime:

P CP 5 minutes RB CP 5 minutes RB B CP P

Remember to tape mouth when sleeping



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Day Six

Before breakfast:

P CP 5 minutes RB CP 5 minutes RB B CP P

Midday:

P CP 5 minutes RB CP 5 minutes RB B CP P

Before bedtime:

P CP 5 minutes RB CP 5 minutes RB B CP P

Remember to tape mouth when sleeping

Day Seven

Before breakfast:

P CP 5 minutes RB CP 5 minutes RB B CP P

Rest five minutes and repeat entire set

Midday:

P CP 5 minutes RB CP 5 minutes RB B CP P

Before bedtime:

P CP 5 minutes RB CP 5 minutes RB B CP P

Rest five minutes and repeat entire set

Remember to tape mouth when sleeping

Day Eight, Nine, and Ten

Before breakfast:

P CP 5 minutes RB EP 5 minutes RB B CP P

Rest five minutes and repeat entire set

Midday:

P CP 5 minutes RB EP 5 minutes RB B CP P

Wait five minutes and repeat entire set

Before bedtime:

P CP 5 minutes RB EP 5 minutes RB B CP P

Rest five minutes and repeat entire set

*Do EP only if allowed (see previous info), otherwise do CP

Remember to tape mouth when sleeping

Day 11 and on...

Do nine sets a day. Remember to tape mouth when sleeping.

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Continue doing the exercises until your control pause is a comfortable 45 seconds. If you have trouble fitting in all the exercises then try the following suggestions:

Only check your control pause and pulse three times a day. Be sure to check them before breakfast.

Once you have mastered reduced breathing, do it while you are doing something else like watching television, listening to music, driving, walking, ironing, or washing the dishes.

After your control pause has been comfortable at 45 seconds before breakfast for one week, cut out the midday exercises. As long as your control pause continues to stay around 45 seconds you can slowly cut out more exercises until you are doing 1 set in the morning and 1 set at night. If at any time your control pause starts to reduce, increase the number of sets you are doing.

What do my control pause and pulse mean?

- ⤴ The first control pause is the most important, especially the first morning control pause. It is a measure of how you are doing for the day. If it is low your respiratory or immune systems may be compromised. It should be greater than or equal to the control pause of the night before.
- ⤴ The middle control pause often goes down from the first one.
- ⤴ The last control pause tells you if you are doing your reduced breathing correctly.

The table below explains what you should expect to happen with your control pause and pulse during your exercises and what abnormal value mean:

Last CP	Last P	RB Correct?
Up	Down or Equal	Yes
Down	Up	No, putting too much stress on body.
Up	Up	Maybe, but pushing control pause too much.
Down	Down	Maybe, but didn't take a long enough break.

What do you do if your control pause starts to drop? First think about what you have been doing lately:

- ⤴ Have you stopped taping your mouth at night?
- ⤴ Are you getting sick?
- ⤴ Is this traditionally a bad time of year for your asthma or allergies?
- ⤴ Have you been exercising hard?
- ⤴ Have you been drinking alcohol or strong coffee?
- ⤴ Have you been yelling at the kids, laughing loudly, crying?
- ⤴ Are you going for a job interview or worried about something?



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Factors which boost your control pause:

- ⤴ Doing your breathing exercises
- ⤴ Regular physical exercise
- ⤴ Adequate levels of protein
- ⤴ Satisfying sleep
- ⤴ Healthy lifestyle
- ⤴ Correct posture

Factors which slow your progress:

- ⤴ Stress
- ⤴ Nose continually blocking
- ⤴ Illness
- ⤴ Lack of regular exercise
- ⤴ High protein food, fast food, or junk food
- ⤴ Stimulants like coffee
- ⤴ Overeating
- ⤴ Exposure to pollutants and chemicals
- ⤴ Prolonged, excessive sleep
- ⤴ Overuse of bronchodilators
- ⤴ Smoking
- ⤴ Alcohol
- ⤴ Hot and stuffy environments
- ⤴ Excessive talking and laughing
- ⤴ Incorrect posture

It is important to adhere to the program set out above. As carbon dioxide levels change people may occasionally experience adverse reactions. These reactions are temporary. To help overcome them you can try drinking a quarter to half teaspoon of sea salt in hot water twice a day. These may include:

- ⤴ excessive tiredness
- ⤴ headaches
- ⤴ stomach upsets
- ⤴ sore back or chest muscles
- ⤴ mild depression
- ⤴ excessive mucus production
- ⤴ insomnia

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