Vagus Nerve Stimulation

Excerpts from - How to Stimulate Your Vagus Nerve for Better Mental Health,
January 21, 2017 Jordan Fallis
Excerpts from - The Nerve, Michael Golman & Crystal Moon

"By developing an understanding of the workings of your vagus nerve, you may find it possible to work with your nervous system rather than feel trapped when it works against you."
— Dr. Arielle Schwartz, Clinical Psychologist

Stimulating my vagus nerve has played a key role in the management of my mental health over the years. What exactly is the vagus nerve? The vagus nerve is the longest nerve in your body. It connects your brain to many important organs throughout the body, including the gut (intestines, stomach), heart and lungs. In fact, the word "vagus" means "wanderer" in Latin, which accurately represents how the nerve wanders all over the body and reaches various organs.

The vagus nerve is also a key part of your parasympathetic "rest and digest" nervous system. It influences your breathing, digestive function and heart rate, all of which can have a huge impact on your mental health. But what you really need to pay special attention to is the "tone" of your vagus nerve. Vagal tone is an internal biological process that represents the activity of the vagus nerve. Increasing your vagal tone activates the parasympathetic nervous system, and having higher vagal tone means that your body can relax faster after stress.

In 2010, researchers discovered a positive feedback loop between high vagal tone, positive emotions, and good physical health. In other words, the more you increase your vagal tone, the more your physical and mental health will improve, and vice versa (pss.sagepub.com).

"The vagal response reduces stress. It reduces our heart rate and blood pressure. It changes the function of certain parts of the brain, stimulates digestion, all those things that happen when we are relaxed."
Dr. Mladen Golubic, MD, Medical Director of the Cleveland Clinic

What's interesting is that studies have even shown that vagal tone is passed on from mother to child. Mothers who are depressed, anxious and angry during their pregnancy have lower vagal activity. And once they give birth to their child, the newborn also has low vagal activity and low dopamine and serotonin levels (ncbi.nlm.nih.gov/12768648, 12521495, PMC2556849). Your vagal tone can be measured by tracking certain biological processes such as your heart rate, your breathing rate, and your heart rate variability (HRV).

When your heart rate variability (HRV) is high, your vagal tone is also high. They are correlated with each other (circ.ahajournals.org/0956797612470827). If you're vagal tone is low, don't worry - you can take steps to increase it by stimulating your vagus nerve. This will allow you to more effectively respond to the emotional and physiological symptoms of your brain and mental illness.

If your vagal tone is low, don't worry - you can take steps to increase it by stimulating your vagus nerve. This will allow you to more effectively respond to the emotional and physiological symptoms of your brain and mental illness.

By applying natural stimulations through everyday activities you can effectively reduce or eliminate symptoms related to the following conditions through stimulating the vagus nerve and increasing vagal tone:

- Depression
- Anxiety/PTSD
- Alzheimer's disease
- Migraines
- Fibromyalgia
- Tinnitus
- Alcohol addiction
- Autism
- Bulimia nervosa
- Personality disorders
- Heroin seeking behaviour
- Poor memory
- Mood disorders in the elderly
- Multiple sclerosis
- Obsessive compulsive disorder
- Severe mental diseases
- Traumatic brain injury
- Chronic fatigue syndrome
- Adrenal Fatigue
- Others disorders

You can enjoy the benefits of vagus nerve stimulation naturally by applying some of the methods noted below.

1. Cold Exposure

Acute cold exposure has been shown to activate the vagus nerve and activate cholinergic neurons through vagus nerve pathways (ncbi.nlm.nih.gov/11447037). Researchers have also found that exposing yourself to cold on a regular basis can lower your sympathetic "fight or flight" response and increase parasympathetic activity through the vagus nerve (ncbi.nlm.nih.gov/18785356).

- Take cold showers or go outside in cold temperatures with minimal clothing.
- Try finishing your next shower with at least 30 seconds of cold water and see how you feel. Then work your way up to longer periods of time.
- You can also ease yourself into it by simply sticking your face in ice-cold water.
- Stick your hands or head in the freezer for 30-60 seconds
- Place a bag of frozen peas, corn, etc on the back of your neck at the top of you neck for 15-20 mins

2. Deep and Slow Breathing

Deep and slow breathing is another way to stimulate your vagus nerve. It's been shown to reduce anxiety and increase the parasympathetic system by activating the vagus nerve (npr.org/131734718, hindawi.com/743504).

- Most people take about 10 to 14 breaths each minute. Taking about 6 breaths over the course of a minute is a great way to relieve stress.

You should breathe in deeply from your diaphragm. When you do this, your stomach should expand outward. Your exhale should be long and slow. This is key to stimulating the vagus nerve and reaching a state of relaxation.

Learning to correctly stimulate the vagus nerve while awake is easy but when we sleep we can easily slip back into bad patterns of breathing. The avg person needs about 7-8 hours of sleep for optimal health benefits. Which means we take an avg of 7200 breaths during the night. This means 1/3 of our breathing occurs while we are asleep so we need to train ourselves to breathe correctly while we sleep. We need to breathe properly through our nose but while asleep we can slip into patterns where we breath through our mouths or ears which can lead to lack of airflow through the nose leading to inflammation of nasal passages, post nasal drip, and heightened histamine levels which can lead to seasonal allergies (Coleman & Moon).

- Face Taping can help by covering your lips with tape while you sleep. This is effective at causing you to breathe through your nose while sleeping and effectively breathe from your diaphragm (Coleman & Moon).

4. Sleep on Your Side

Helps to improve HRV levels while sleeping on the right side has shown the best results for improving vagal tone (Coleman & Moon).

5. Reduce Blue Light Exposure and Shut Down Electronic Devices in the Evening (Coleman & Moon)

6. Make a Practice of not Eating or Drinking Within 2 Hours of Bedtime (Coleman & Moon)

7. Singing, Humming, Chanting, Gargling, & Repetitive Phrases

The vagus nerve is connected to your vocal cords and the muscles at the back of your throat. Singing, humming, chanting and gargling can activate these muscles and stimulate your vagus nerve. And this has been shown to increase heart-rate variability and vagal tone (ncbi.nlm.nih.gov/PMC3705176).

- Gargle water before swallowing it.

This is discussed more in Dr. Datis Kharrazian's book, Why Isn't My Brain Working?

8. Occasionally Activate your Gag Reflux or Practice Gargling (Coleman & Moon)

9. Listen to Soothing Music

Soothing music has been shown to relax the body and increase positive emotions. Significant improvements in Cardiac Responses, VN stimulation, and PNS function were all improved regardless of whether one has listened, sang, studied, or performed the music (Chuang et al./Coleman & Moon)

10. Probiotics

It's becoming increasingly clear to researchers that gut bacteria improve brain function by affecting the vagus nerve (ncbi.nlm.nih.gov/PMC4367209). In one study, animals were given the probiotic Lactobacillus Rhamnosus, and researchers found positive changes to the GABA receptors in their brain, a reduction in stress hormones, and less depression and anxiety-like behaviour. The researchers also concluded that these beneficial changes between the gut and the brain were facilitated by the vagus nerve. When the vagus nerve was removed in other mice, the addition of Lactobacillus Rhamnosus to their digestive systems failed to reduce anxiety, stress, and improve mood (ncbi.nlm.nih.gov/21876150)

Another study found that the probiotic Bifidobacterium Longum normalized anxiety-like behavior in mice by acting through the vagus nerve (ncbi.nlm.nih.gov/PMC3413724).

11. Eating Well and Making Positive Food Choices

Choose foods high in nutritive value such as:

- Organic, locally grown fruits and vegetables
- Meats that are free range or raised with no antibiotics
- Wild caught fish and seafood
- Organic raw nuts and seeds
- Healthy Complex Carbohydrates (brown rice, quinoa, oatmeal, kashi, whole grain or GF breads, sweet potatoes, purple/red/yellow potatoes, healthy GF baked goods, etc)
- Low, no sugar, or natural sugars
- Healthy fats & oils (olive, canola, avocado, coconut, palm, ghee, true butter, etc)
- Sea Salt, and spices free of additives or MSG
- Dairy if you can tolerate it or Nut Milks unsweetened
- Raw cheeses
- Low or no caffeine foods, beverages & alcohol

Decrease or Delete foods with negative food values such as:

- Processed foods and packaged meats
- Meats grown with antibiotics
- Farm raised fish
- Nuts processed with salts and oils
- Gluten and wheat (also minimize corn products)
- White products (rice, potatoes, sugar, etc)
- Sugary sweets and other products
- Unhealthy fats & oils (vegetable, corn, peanut, margarine, etc.)
- Processed cheese, spreads, and sauces
- High caffeine foods, beverages & alcohol

12. Meditation & Mindfulness

Meditation is my favorite relaxation technique and it can stimulate the vagus nerve and increase vagal tone. Research shows that meditation increases vagal tone and positive emotions, and promotes feelings of goodwill towards yourself (heathland.time.com, ncbi.nlm.nih.gov). Another study found that meditation reduces sympathetic "fight or flight" activity and increases vagal modulation (ncbi.nlm.nih.gov).

Mindfulness is the practice of connecting 100% to things you are doing and to the world around you. It is taking a moment to pay close attention to what is going on around you. It activates the PNS and calms the SNS. Calming the PNS helps the VN to function well. Ways to do this include:

- Doing each thing with 100% of your concentration. Multi tasking is counter productive to calming the vagus nerve
- Stop periodically and look around you and think/name the details of what you see
- Engage your senses by touching something and taking a few moments to truly reflect on what it feels like, setting aside a time where you eat in quiet enjoying each bit of your food, taking in a breath of air and thinking on what you smell and how it affects you, listen to the sounds of nature and reflect on its effect on you.

13. Omega-3 Fatty Acids

Omega-3 fatty acids are essential fats that your body cannot produce itself. They are found primarily in fish and are necessary for the normal electrical functioning of your brain and nervous system. They often appear in most of my posts because they are so critical for brain and mental health and affect so many aspects of wellness. They've been shown to help people overcome addiction, repair a "leaky brain", and even reverse cognitive decline. But researchers have also discovered that omega-3 fatty acids increase vagal tone and vagal activity (ncbi.nlm.nih.gov/PMC3217222, 16616012, 18461305, PMC3653417). Studies shown that they reduce heart rate and increase heart rate variability, which means they likely stimulate the vagus nerve (ncbi.nlm.nih.gov/ 17326331,PMC3483717,17134636). And high fish consumption is also associated with "enhanced vagal activity and parasympathetic predominance" (ncbi.nlm.nih.gov/ PMC3217222

14. Exercise

I've already discussed how exercise increases your brain's growth hormone, supports your brain's mitochondria, and helps reverse cognitive decline. But it's also been shown to stimulate the vagus nerve, which may explain its beneficial brain and mental health effects (ncbi.nlm.nih.gov/20948179). Many brain health experts recommend exercise as their number one piece of advice for optimal brain health.

This is a well rounded exercise routine:

- Lift heavy weights 1-4 times per week
- High-intensity interval sprinting 1-2 times per week
- Walking, weightlifting, sprinting, biking, swimming or other low impact cardio activity that you enjoy as do it as much as you can, ideally fo 30-60 minutes every day (Coleman & Moon)

15. Visceral Manipulation/Stretching

16. Get minimum of 30 minutes of Natural Sunlight 3-4 times/day

17. Massage

Research shows that massages can stimulate the vagus nerve, and increase vagal activity and vagal tone (ncbi.nlm.nih.gov/PMC3133856, PMC2844909). The vagus nerve can also be stimulated by massaging several specific areas of the body.

- Foot massages (reflexology) have been shown to increase vagal modulation and heart rate variability, and decrease the "fight or flight" sympathetic response (ncbi.nlm.nih.gov/22314629).
- Massaging the carotid sinus, an area located near the right side of your throat, can also stimulate the vagus nerve to reduce seizures (ncbi.nlm.nih.gov/23962632).
- Relaxation massage can help relax and stimulate all nerves of the body

18. Socializing and Laughing

I've already discussed how socializing and laughing can reduce your body's main stress hormone. And now I've now that they are likely doing this by stimulating the vagus nerve. Researchers have discovered that reflecting on positive social connections improves vagal tone and increases positive emotions (ncbi.nlm.nih.gov/23649562, journals.sagepub.com/0956797612470827).

Laughter has been shown to increase heart-rate variability and improve mood (ncbi.nlm.nih.gov/22894892). And vagus nerve stimulation often leads to laughter as a side effect, suggesting that they are connected and influence one another (ncbi.nlm.nih.gov/12959437). So my advice is to hang out and laugh with your friends as much as possible. Although I should probably be taking my own advice here, as I'm an introvert and often avoid socializing too much.

19. Intermittent Fasting

There are many health benefits to intermittent fasting. It can boost the brain's growth hormone, improve mitochondrial function, and may help some people to overcome brain fog and cognitive decline.

Research has also shown that fasting and caloric restriction increase heart rate variability, which is an indicator that it increases parasympathetic activity and vagal tone (ncbi.nlm.nih.gov/16581971).

The best way to start fasting is simply by eating dinner around 6, not eating anything after that before bed, and then eating a regular breakfast the next day. That should give you about 12-14 hours of fasting time.

20. Electrical Pulse Stimulation (Done by a doctor only)