

Activating the Vagus Nerve

Posted November 27th, 2012 in [Brain Health](#), [Depression](#) and tagged [chanting](#), [deep breathing](#), [healing](#), [OM chanting](#), [parasympathetic nervous system](#), [relax](#), [rest](#), [vagus nerve](#), [Vagus Nerve Stimulation](#) by Rebecca Lane

For more than 15 years, stimulation of the vagus nerve has been used as a treatment for epilepsy and depression. The Canadian Health Protection Branch approved Vagus Nerve Stimulation (VNS) in March 1997, with special focus on epilepsy patients over the age of 12 whose partial onset seizures are not well controlled by medication. The U.S. Federal Drug Administration has also approved VNS for the treatment of both epilepsy and depression. It appears that depression is a condition that is common amongst people with epilepsy. The February 2000 issue of *Annals of Neurology* reported that older adults who are clinically depressed are six times as likely to have a seizure as their peers. This suggests that a common factor may be underlying both the cause of depression and seizures. (Interestingly, the 'diet to stop seizures' is the 'ketogenic diet' and this same diet seems to be implicated in treating concussion, and even serious mood disorders such as schizophrenia).

In the October 2005 issue of *Annals of Neurology*, Columbia University researchers found that depression and suicide attempts may be due to underlying neurochemical pathways common to epilepsy development.

What are the benefits of stimulating the Vagus Nerve?

As you may remember from our [previous blog post](#), the vagal nerve is the main instrument of the parasympathetic nervous system. Its branches begin in the medulla oblongata and travel deep into the body sending signals to, but mostly from the organs (especially the gut).

There are several locations where the vagal nerve comes out to accessible zones for stimulation:

- Muscle that constricts the pharynx (rami pharyngei)
- Behind the eye balls (radix oculomotoria)
- Hard and soft palate (nervus palatinus)
- In the surface of the ear canal and lobe (ramus auricularis)

Tongue (ramus lingualis)[i]

When properly stimulated the Vagal Nerve can:

Turn on neurogenesis, helping our brains sprout new brain cells.

Rapidly turn off the stress, hyper-arousal, and fight/flight via the relaxation response.

Sharpen our memories.

Fight inflammatory disease.

Help you resist high blood pressure.

Block the hormone cortisol and other oxidizing agents that age and deteriorate the brain and body

Block systemic (body-wide) inflammation – a major factor behind aging and poor health.

Help us overcome depression and anxiety.

Help us sleep better.

Raise levels of human growth hormone.

Help us overcome insulin resistance.

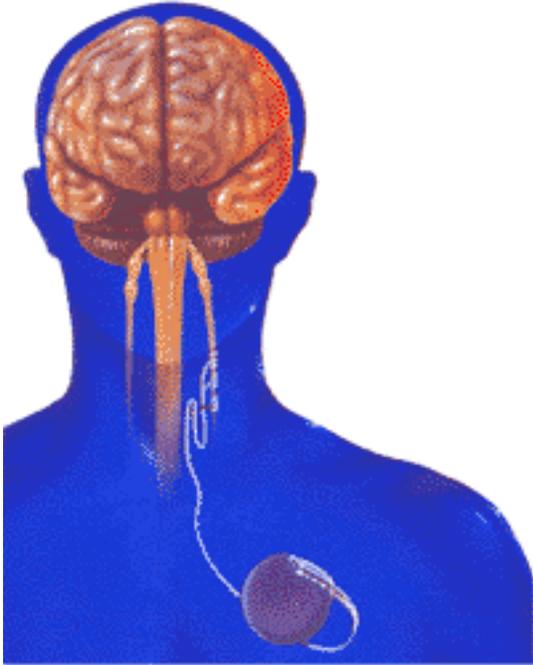
Turn down allergic responses.

Lower chances of getting stress and tension headaches.

Help spare and grow our mitochondria- this is a key to maintaining optimal energy levels and not harming our DNA and RNA.

Affect our overall ability to live longer, healthier, and more energetic lives.

Activating the Vagal Nerve with Machinery:



Vagus Nerve Stimulation – pacemaker-like neurostimulation

Vagal Nerve Stimulation involves inserting a pacemaker-like nerve stimulator in your chest connected to the left side of your vagus nerve. (See animation and more info about the procedure: <http://www.epilepsymatters.com/english/trevagus.html>).

Every two to five minutes, the vagus nerve is stimulated, causing one's diaphragm to contract. The device costs between \$15 and \$20 K, and it is not covered by the Ontario Health Insurance Plan (OHIP), however some costs may come out of a hospital's budget. There is a long waiting list to get approved for this procedure. The following centres in Ontario are able to perform the procedure: Hospital for Sick Children, St. Michael's Hospital, TorontoWesternHospital, Ottawa GeneralHospital, Ottawa Children's Hospital, Kingston General Hospital and London Health Sciences Centre-University Campus.

Activating the Vagus Nerve without Machinery

Vagus nerve stimulation can be turned on easily though a number of breathing and relaxation techniques:

- Deep/slow belly breathing.

- 'OM' Chanting

- Cold water face immersion after exercise

- Filling the mouth with saliva and submerging your tongue to trigger a hyper-relaxing vagal response.

Deep Breathing To practice deep breathing, inhale through your nose and exhale through your mouth. Remember to:

Breathe slowly.

Breathe deeply, from the belly.

Exhale longer than you inhale.

You can proceed as follows: take a deep inhalation into your belly (i.e. expanding your diaphragm) to the count of five, pause, and then exhale slowly through a small hole in your mouth. While at rest most people take about 10 to 14 breaths per minute. To get into parasympathetic/ relaxation/ healing mode it is ideal to reduce your breath to 5 to 7 times per minute. Exhaling through your mouth instead of nose makes your breathing more of a conscious process, and helps you to observe your breath more easily.^[ii]

As you reduce your breaths per minute and get into parasympathetic mode, your muscles will relax, dropping your worries and anxieties. The oxygen supply to your body's cells increases and this helps produce endorphins, the body's feel-good hormones. Tibetan monks have been practicing 'conscious breathing' for decades, but there is nothing mysterious about it. You can enhance your experience by imagining that you inhale IN love, and exhale OUT gratitude. These ancient techniques also will improve memory, fight depression, lower blood pressure, or heart rate, and boost your immune systems — and it's free!

'OM' Chanting An interesting study was performed by the International Journal of Yoga in 2011, where 'OM' chanting was compared with pronunciation of 'SSS' as well as a rest state to determine if chanting is more stimulatory to the vagus nerve. The study found that the chanting actually was more effective than either the 'sss' pronunciation or the rest state.

Effective 'OM' chanting is associated with the experience of a vibration sensation around the ears and throughout the body. It is expected that such a sensation is also transmitted through the auricular branch of the vagus nerve and will produce limbic (HPA axis) deactivation.^[iii]

How to chant? Hold the vowel (o) part of the 'OM' for 5 seconds then continue into the consonant (m) part for the next 10

seconds. Continue chanting for 10 minutes. Conclude with some deep breathing and end with gratitude.

Cold Water Physical exercise causes an increase in sympathetic activity (HPA axis – fight/flight, stress response), along with parasympathetic withdrawal (resting, digesting, healing, immune system), resulting in higher heart rates (HR). Studies have found that cold water face immersion appears to be a simple and efficient means of immediately accelerating post-exercise parasympathetic reactivation via the vagus nerve, stimulating the reduction of heart rate, motility of the intestines, and turns on the immune system. It is also effective in a non-exercise environment to activate the vagus nerve.

In cold-water face immersion, subjects remained seated and bend their head forward into a basin of cold water. The face is immersed so that the forehead, eyes, and at least two-thirds of both cheeks were submerged. Water temperature was kept at 10–12°C.[iv]

A variation on this technique, called The Dive Reflex, has been developed by Steve Mensing and many people online have found it very valuable for relieving stress and depression. Here are the details: <http://www.emoclear.com/thedivereflex.htm>.

Increased Salivation The calmer the mind and the deeper the relaxation, the easier the stimulation of salivation is. When the mouth is able to produce copious amounts of saliva, you know that the Vagus Nerve has been stimulated and your body is in the parasympathetic mode.

To stimulate salivation, try relaxing and reclining in a chair and imagine a juicy lemon. As your mouth fills with saliva, just rest your tongue in this bath (if this doesn't happen, just fill your mouth with a small amount of warm water and rest your tongue in this bath. Just the practice of relaxing will stimulate the secretion of saliva). Now relax further, and feel your hands, feet, hips, back of the neck and head all relaxing. Breathe deeply into this feeling and stay here as long as you can.

There are many other ways to stimulate the vagus nerve and transfer your body into the healing, digesting and resting phase. Start with these suggestions and you may find that it becomes much easier to rest and relax!

References

[i] <http://ayurveda.lotusguides.net/en/index.php?p=articles&id=2>

[ii] <https://site.google.com/site/stanleyguansite/health/health-tips/breathe-deeply-to-activate-vagus-nerve>

[iii] Bangalore G Kalyani, Ganesan Venkatasubramanian, Neurohemodynamic correlates of 'OM' chanting: A pilot functional magnetic resonance imaging study. Int J Yoga. 2011 Jan-Jun; 4(1):3-6.

[iv] <http://link.springer.com/article/10.1007%2Fs00421-009-1253-9>

Incoming search terms:

- See more at: <http://www.turningpointnutrition.ca/activating-the-vagus-nerve#sthash.olSLJ41c.dpuf>