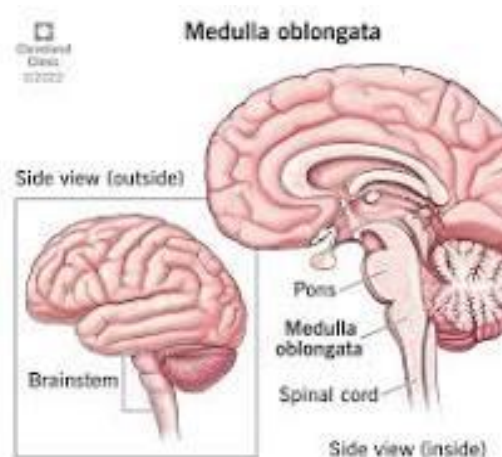


NITRIC OXIDE, BHARAMARI PRANAYAMA (BEE HUMMING BREATH CONTROL) AND HEALTH

Medulla Oblongata

Your medulla oblongata is located at the base of your brain, where the brain stem connects the brain to your spinal cord.



The Medulla Oblongata plays an essential role in passing messages between your spinal cord and brain. It's also essential for regulating your cardiovascular and respiratory systems. The medulla oblongata nerves regulate involuntary activities such as heart rate, breathing rate, saliva secretion, swallowing, taste, upper back and neck muscles, tongue movement and gut peristalsis (digestion).

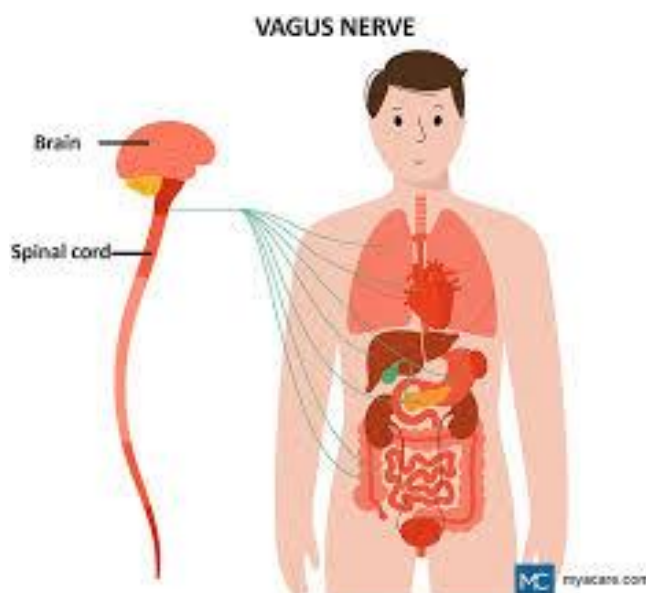
If your medulla oblongata becomes damaged, it can lead to respiratory failure, paralysis, stroke (most common Wallenberg syndrome, interruption of the blood flow to a side area of the Medulla), or loss of sensation in the limbs or torso, respiration problems or halt, tongue dysfunction, vomiting, loss of gag, loss of sneeze, loss of cough reflex, problems swallowing, loss of muscle control, balance problems, uncontrollable hiccups. Drugs and other chemicals impact the Medulla's function.

The blood supply to the medulla can divide into two groups, which are the paramedian bulbar and lateral bulbar arteries. The paramedian bulbar arteries arise from the vertebral arteries and supply the medial aspect of the medulla. At the most caudal part of the medulla, the paramedian bulbar arteries can also arise from the anterior spinal artery. The lateral bulbar branches arise from the vertebral artery or the posterior inferior cerebellar artery and supply the lateral part of the medulla.

Vagus Nerve

The Vagus nerves are the two 10th cranial nerves of the Parasympathetic Nervous System. The tenth cranial nerve contains four nuclei in the medulla.

The left Vagal nerve runs down the left side of the neck and body and the right Vagal nerve runs down the right side of the neck and body. This nerve extends all the way from your brain to the large intestines: down your neck, through your chest, around your heart, around your lungs, and through your abdomen and intestines.



Your vagal nerves are part of your body's nervous system. They play important roles in involuntary sensory and motor (movement) functions. Including: digestion, heart rate, blood pressure and respiration (breathing).

When the Vagus nerve itself gets damaged, you'll deal with some pain in your neck - but other symptoms will present themselves as well. You'll notice issues with your voice, problems with your throat, an increased heart rate, brain fog, excessively high or low blood pressure, and gut problems, difficulty swallowing, loss of gag reflex, hoarseness, wheezing, difficulty coughing, blood pressure dropping too rapidly, dizziness or fainting, ringing in ears, nausea and sweating. Often this response is triggered by stress, pain or fear.

The human Vagus nerve is supplied by a distinct vagal artery and vein. The artery, which lies on the anterior aspect of the nerve, is reinforced by many small arterioles along its course.

NITRIC OXIDE

Nitric oxide helps your blood vessels relax and widen. This improves blood flow and lowers your blood pressure refreshing the nervous system. As a neurotransmitter, nitric oxide helps send messages throughout your body.

Nitric oxide is produced naturally by the human body and is one of the most important molecules for blood vessel health. It's a vasodilator, meaning it relaxes the inner muscles of your blood vessels, causing the vessels to widen. In this way, nitric oxide increases blood flow and lowers blood pressure.

If you have a nitric oxide (NO) deficiency, you'll experience symptoms as reduced blood flow resulting in less oxygen, decreased exercise capacity, weakened immune system, slow wound healing, neurodegenerative disorders, osteoporosis, high blood pressure, fatigue, atherosclerosis, blood clots, erectile dysfunction and type 2 diabetes.

Four drinks that boost nitric oxide are beetroot juice, pomegranate juice, green tea and red spinach (amaranth). Each enhances blood flow and cardiovascular health.

Measuring nitric oxide is a simple procedure. Put a drop of saliva on the nitric oxide testing strip and instant results are available. Morning empty stomach sample is required; mouth wash and oral antibiotic are to be refrained in past 24 h which affect the accuracy of results.

BHRAMARI PRANAYAMA (Humming bree breath control)

Bhramari Pranayama, or commonly referred to as the humming bee breath, stimulates the Vagus nerve and activates the Parasympathetic Nervous System. Bhramari enhances the autonomic system, which the Medulla Oblongata is part of, remembering the Medulla Oblongata regulates involuntary activities such as heart rate, breathing rate, saliva secretion, swallowing, taste, upper back and neck muscles, tongue movement and gut peristalsis (digestion).

Of all the different breath practices it is only Bhramari Pranayama that increases nitric oxide by 15 times. In 1998, three scientists got the Nobel Physiology and Medicine prize for their discoveries on the effect of nitric acid in the body.

Deep and slow breathing activates the Vagus nerves and leads to a reduction in anxiety and stress responses. Attention can be given to this type of breath every day with as much attention as possible.

By emphasising the exhalation during Bhramari Pranayama the nitric oxide is increased. This signals an initiation of the enhancement of the autonomic nervous system which in turn initiates our parasympathetic response by slowing down the racing heart and lowering the blood pressure into a state of calm, reducing actions in the body that lead to stress and disease.

Humming increases the production of nitric oxide within the sinuses and nasal mucosa.

Sinuses are air-filled cavities that act as a resonator; high volume, low pitch 130 Hz.

Humming 60–120 times 4 times a day can clear the symptoms of congestion.

Human paranasal sinuses produce a large amount of NO continuously and humming sound vibrations create air oscillations which in turn increase the exchange of air between the sinuses and the nasal cavity. Recent findings indicate that increased nasal NO could play an important role in the prevention and management of COVID-19 since NO is anti-inflammatory and contributes to non-specific host defence against bacteria, viral, fungal, and parasite infections. There is emerging evidence that nitric oxide has a positive effect on oxygen uptake.

The above gives a very strong case to include Bhramari Pranayama into a daily routine for disease prevention and an improvement in the quality of life. Continue during the day to hum your favourite tunes as an added bonus to your practice of the humming bee breath.

Bhramari – Humming bee breath control practice

Relaxed jaws with soft lips and teeth slightly parted.

With the attention at the throat pit create a soft , slow, mellow and controlled, steady, lower sound. Awareness is with the quality of the vibration rather than the sound. Can almost have a digeridoo quality of sound.

Awareness within the head space giving concentration to the soft vibration.

Place the index fingers into the ears to create awareness fully inside the head of the self. Upper arms from the armpit to the elbow parallel to the floor if possible.

Keep the body absolutely still.

Take a slow full breath in from abdominal region to collarbone region and slowly hum on the exhalation from collarbone to abdomen. Hum is to be slow and smooth for the duration of the exhalation.

Practice up to 15 times in one sitting. Increase the number of times as the body becomes fit for this pranayama.

Caution: * If there is a lightheaded feeling stop until there is a sense of stabilisation again.
*If 15 times is too much at the start, begin with a lower count and work up to this number.

*Keep the length of exhalation comfortable, do not force length of exhalation time. Let the length arrive naturally.

*If there is a chronic infection in the ear allow this to clear before practicing Bhramari.

*Do not practice lying down as this will reduce the vibration in the head space.

For more in-depth practices for improving health and wellbeing contact a local meditation, pranayama and yoga practitioner.

<https://www.sciencedirect.com/science/article/pii/S0975947621001376>

<https://indjst.org/articles/nitric-oxide-humming-and-bhramari-pranayama>

<https://openrepository.aut.ac.nz/bitstreams/1114377f-ef49-4802-9745-a312b072dd5e/download>

<https://www.ncbi.nlm.nih.gov/books/NBK551589/#:~:text=The%20blood%20supply%20to%20the,medial%20aspect%20of%20the%20medulla.>

<https://pubmed.ncbi.nlm.nih.gov/8085656/#:~:text=The%20human%20vagus%20nerve%20is,thyroidectomy%20and%20aortic%20arch%20aneurectomy.>

<https://www.biharyoga.net/>