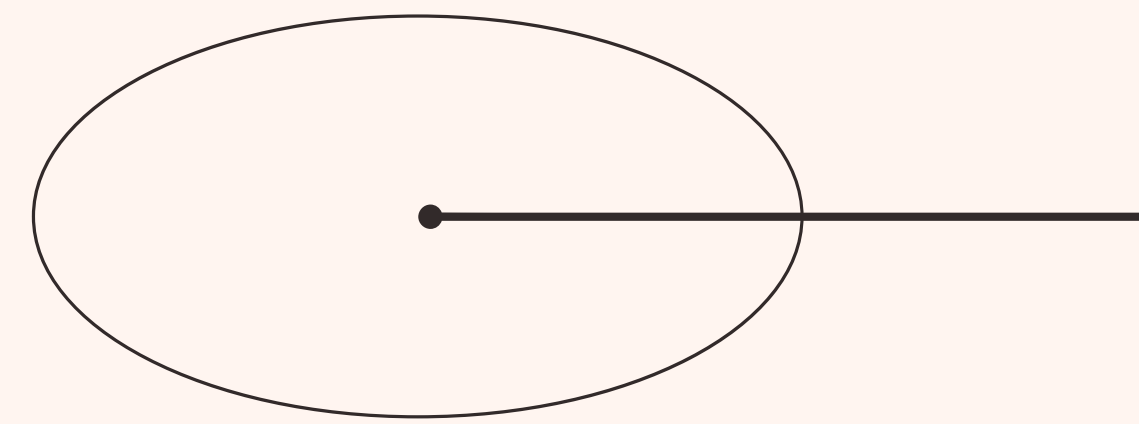


The Vagus Nerve

HOW TO MODULATE
YOUR **GUT-BRAIN AXIS**
VIA VAGUS NERVE
STIMULATION

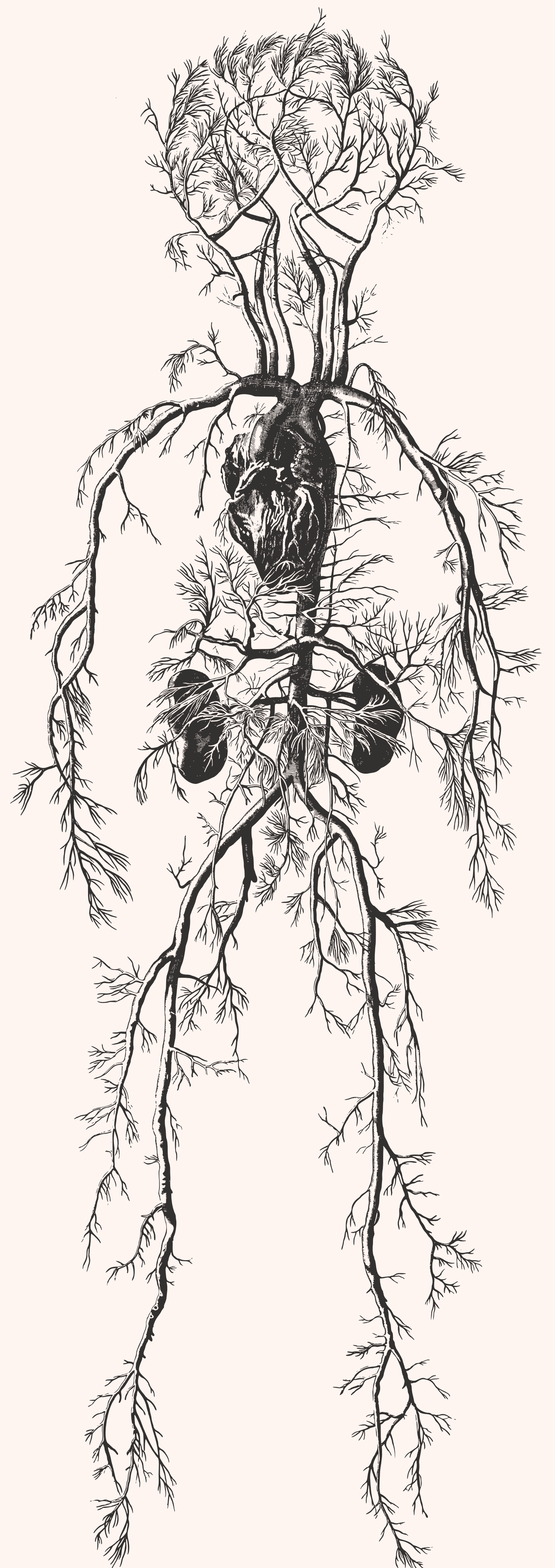
Functions of the Vagus Nerve



The primary role of the vagus nerve is to carry information of the inner organs including the liver, heart, lungs and gut up to the brain.

Some of its major functions include:

- controls anxiety and depression
- increases your stomach acidity, digestive juices secretion and gut flow
- increases the release of histamine by your stomach cells
- controls heart rate and blood pressure
- controls blood glucose
- helps release bile from your gallbladder to get rid of toxins and break down fat
- promotes kidney function by improving blood filtration and excreting minerals
- regulates appetite and controls satiety
- helps to regulate your immune system and control inflammation





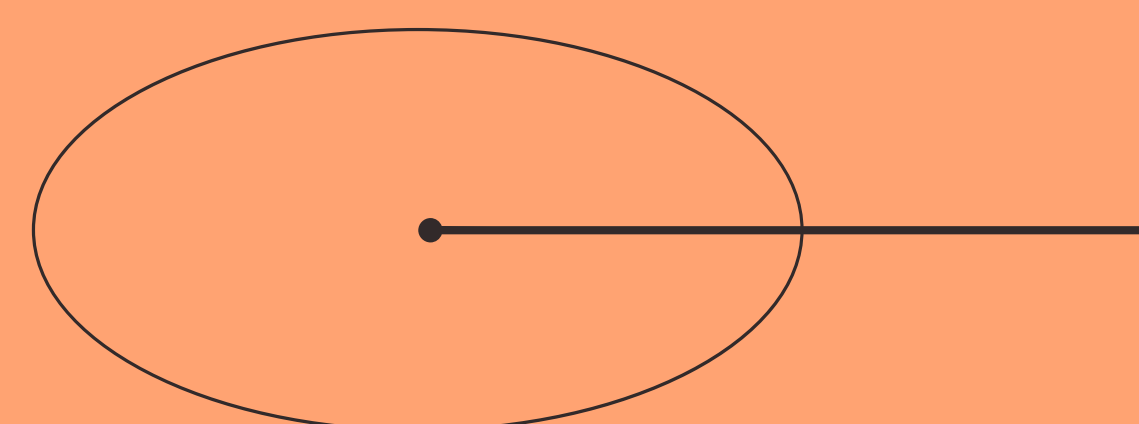
Vagus Nerve Stimulation

In recent years, the vagus nerve has taken centre stage as a potential “off switch” for diseases such as epilepsy and depression. Research has shown anti-inflammatory effects of vagal nerve stimulation (VNS) and its indication expanding beyond epilepsy to rheumatoid arthritis, chronic headaches, inflammatory bowel syndrome, sepsis and diabetes. It also shows promise to control pain in fibromyalgia and migraines.

There are several simple exercises you can use to increase your vagal stimulation and the communication between your gut and your brain:

Cold Exposure

1 Exposure to cold temperatures can activate your parasympathetic nervous system and stimulate the vagus nerve by shifting blood volume to your core. In fact, many studies have shown that immersion in cold water or even putting your face in cold water is an effective means to increase parasympathetic nervous activity.



Singing

2

Singing, humming or chanting activates the sympathetic nervous system and the vagus nerve by actuating the muscles in the hroat, neck and lungs.

Yoga and Exercise

3

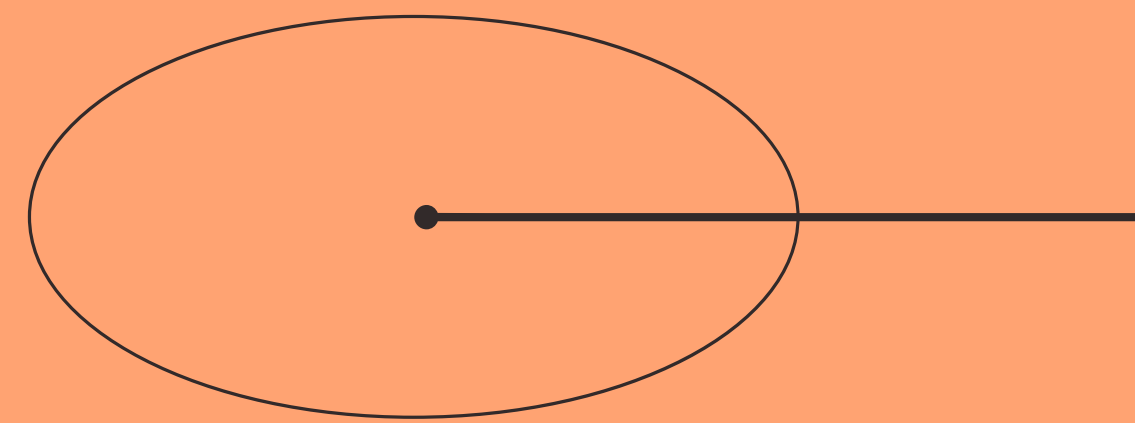
Studies have shown yoga and gentle exercise increases vagus nerve activation through the parasympathetic nervous system. One study showed that even patients who did not respond to antidepressants showed a significant reduction of depressive and anxiety symptoms compared to the control group after receiving an intervention with a particular breathing-based yoga technique for eight weeks.



Deep Breathing and Meditation

4

Studies have demonstrated that individuals suffering from depression, anxiety and chronic pain experience a remarkable improvement in symptom severity after participating in regular mindfulness meditation training as it activates the parasympathetic nervous system by stimulating the vagus nerve.



Social Connectedness

5

Studies have also shown that perceptions of social connectedness leads to increased positive emotions which in turn produces increases in vagal tone.

Probiotics

6

Research is beginning to show that the vagus nerve is highly influenced by bacteria, fungus and other microbes in our gut microbiome so having a healthy gut microbiome is essential for healthy vagus nerve functioning. There is some evidence to suggest particular probiotic strains may influence vagal nerve tone including *Bifidobacterium longum* and *Lactobacillus rhamnosus*.

Choline

7

Acetyl choline (ACh) is the main vagal neurotransmitter and assists in reducing inflammatory cytokines and improving memory and focus. Choline, an amino acid, is its precursor and is needed to make acetyl-choline. It's involved in numerous key reactions including muscle control, memory and mediation of emotion and behaviour in the brain, all due to its effects on the vagus nerve. Plant foods that are especially high in choline include tofu, soymilk, cruciferous vegetables especially broccoli, cooked dried beans, quinoa, peanuts and mushrooms.



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