

# STIMULATING THE VAGUS NERVE IN OUR YOGA PRACTICE

The vagus nerve branches out to the inner ear, throat, diaphragm, lungs, heart and abdominal organs. We cannot consciously control our heart, kidneys or small intestine, but we can control the muscles of respiration and the muscles of the larynx (that open and close the vocal cords and control the pitch of sound). To facilitate the parasympathetic response in the body (and stimulate the vagus nerve), we would need to exert influence over those two main areas.

## WORKING WITH BREATH

**1. Deep diaphragmatic breathing.** If you take fast short shallow breaths your brain perceives it as an invitation to fight or flight; if you see the air in and let it out slowly your brain will take it as an invitation to rest and digest promoting parasympathetic activation.

*APPLICATION IN PRACTICE:* Begin each yoga practice by consciously deepening the breath. Then try to maintain that breathing pace throughout the practice. You can intentionally control your respiratory musculature and expand the chest first then the belly on the inhale, and then gradually contract the abdomen and deflate the chest on the exhale. Adding this type of directionality to your breathing patterns helps to slow down the breath and gain more control over the respiratory musculature.



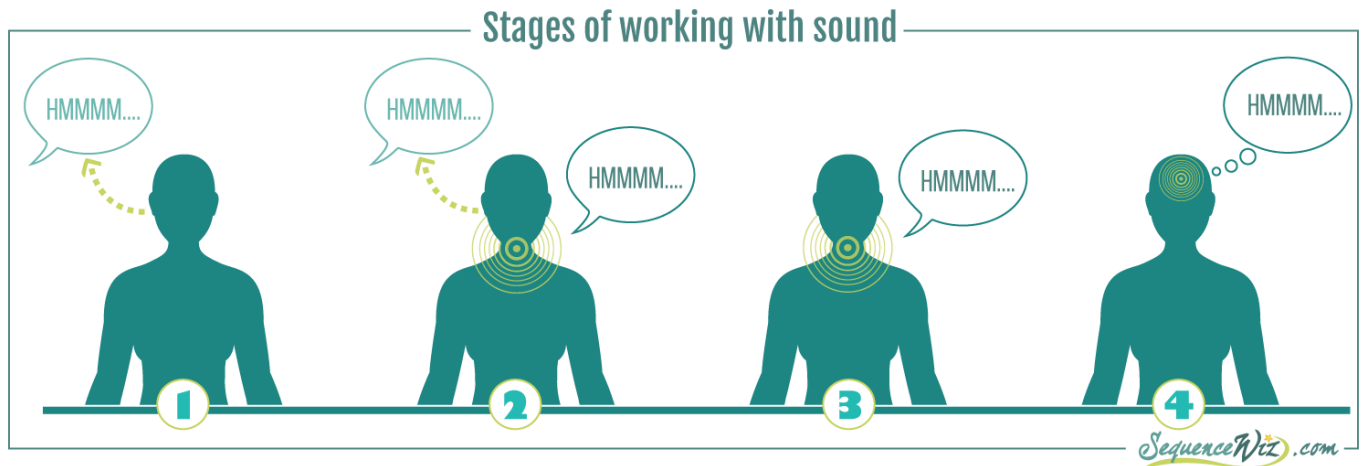
**2. Lengthening the exhalation part of the breath (exhale + hold after exhale).** Every time you inhale you activate your sympathetic response a bit (and your heart speeds up a little, vagus nerve is suppressed); if you hold the air in, that response is accentuated. Every time you exhale you activate the parasympathetic response (and the heart rate slows down a bit, vagus nerve is active); if you hold the air out for few seconds it will facilitate the parasympathetic activation. To promote parasympathetic activation and vagus nerve stimulation you would need to gradually lengthen your exhale and pause after exhale (comfortably).

In yoga we can work with breath via RATIOS. We change the relationship between four parts of the breath (inhale-hold after inhale-exhale-hold after exhale) for the purpose of sympathetic/parasympathetic management. Ratio work helps stimulate the vagus nerve short-term (during the practice) and increase vagal tone long-term (if you do it consistently). Vagal tone indicates the variability between the heart rate on the inhale and the exhale. The greater that variability is, the higher vagal tone you have, which means that your body can easily switch from the fight-or-flight to rest-and-digest mode and visa versa. Higher vagal tone is better for your health; it reflects your resilience.



*APPLICATION IN PRACTICE:* Begin with simple breath ratios, for example Inhale for 6 seconds and then exhale for 6 seconds. Then in the course of the practice you can gradually lengthen your exhalation to 8 seconds and introduce short hold after exhale. During the pranayama part of the practice you can gradually extend the ratio to inhale 6 seconds, exhale 8 seconds and hold for 4 seconds. Try to maintain the target ratio for 6 breaths (beginners) or 12 breaths (experienced practitioners) and then gradually return to the comfortable breathing pace.

## WHY DO WE WORK WITH SOUND?



**1. To move attention from external to internal** for better body awareness and better concentration. When you are listening to sound (1) the focus is more external; when you are listening and humming along (2) external focus is beginning to move inward; when you are humming to yourself (3) the focus is internalized; and when you are humming mentally and paying attention to it (4) the attention rests within.

*APPLICATION IN PRACTICE:* This is how we work with mantra. 1. Teacher chants. 2. Students chant with the teacher 3. Students chant on their own. 4. Students chant mentally to make the sound vibrate in the mind alone. At that point the sound is used to process our compulsive thinking.

**2. To use energetic charging or dis-charging power of sound.** Dr. Alfred A. Tomatis believed that once the nervous impulses generated by the cells of Corti in the inner ear reach the brain, they get distributed throughout the body “toning up the whole system and imparting greater dynamism to the human being.” This theory correlates with the Brhmana/ Langhana model in the yoga tradition.

We need to get rid of the excess and build on deficiencies.



*APPLICATION IN PRACTICE:* Lower pitch sounds have more pronounced langhana effect and higher pitch sounds have a more brhmana effect (However, if the pitch is too high or too low it will produce agitation). The stronger the sound (including volume), the more brhmana effect it will have. Softer sounds have more langhana effect.

**3. To promote limbic deactivation.** Research shows that chanting OM deactivates the limbic parts of the brain responsible for our basic emotions (fear, pleasure, anger) and drives (hunger, sex, dominance, care of offspring). Since effective OM chanting is associated with the experience of vibration sensation around the ears, the scientists suggested that this sensation is transmitted through the auricular branch of the vagus nerve. Since the vagus nerve branches out into the inner ear and larynx, controlling the opening and closing of the vocal cords and sound pitch, it sounds like it gets stimulated during vocalization of O and M sounds. In addition we always chant on the exhalation, which means that the vagus nerve is activated in its role as parasympathetic system manager, AND chanting usually facilitates lengthening of the exhalation, which further amplifies the parasympathetic effect. That is why chanting has a dis-charging effect on the brain, meaning that it discharges us from compulsive thinking, wanting and grasping.

*APPLICATION IN PRACTICE:* Chant OM, softly hum your favorite song or do Bhramari pranayama (bee breath). To practice Bhramari you lengthen the exhalation and make a long one-tone M sound, which is usually calming.