



Hello all,

Welcome to Coherent Breathing, Volume 2, Issue 5, May 2022: *Coherent Breathing – A Haiku.*

I apologize for my long hiatus. This is the first COHERENT BREATHING piece I’ve written since August of 2020, the longest break that this publication has seen since its beginning, circa 2005. This being said, I have not been idle – in fact, just the opposite – I’ve had way too many irons in the fire, including getting some basic legs under COHERENCE, the magazine, now occupying [www.coherence.com](http://www.coherence.com).

I’m picking up where I last left off, but with an even clearer understanding of the matter at hand, this being the elimination of essential hypertension, or at least illuminating its root cause. I write this article primarily for many new subscribers that may not be familiar with my many past communiques, so long-time readers, please forgive the repetition – which I hope serves the useful purpose of “hearing it just one more time”.

There is a theory that psychological talk therapy works by helping one to elicit and verbalize one’s own understanding of things, where one may need to verbalize it multiple times for it to be heard by one’s own ears, and accepted by one’s own mind.

Of course, Maxwell Maltz (Psycho-Cybernetics, 1960) determined that the best way to establish a “new engram” is to practice a task for 20 minutes per day for 21 days in a row, where I paraphrase from memory. There is also the interesting parenting wisdom that a child needs to taste a new food 21 times to find it fully acceptable. With these hypotheses in mind, please try reading this to yourself out loud, where I hope it will trigger a wake up call to act, where I like to say that where breathing is concerned, it isn’t enough to know. One must act! Knowing without acting is like exercising in an arm chair. (But wait – one can exercise in an arm chair simply by breathing!)

Our campaign for “breathing for health, well-being, performance, and longevity” started with *The New Science of Breath* (2005), which made the argument that breathing with depth and rhythmicity at a frequency approaching that of “resonance” resulted in a re-balancing of the autonomic nervous system, heart rate variability being a key indicator of this balance. I remain confident with this basic thesis, where many readers and health professionals have embraced the theory and practice.

However, in 2007 or so, with the help of J&J Engineering, we were able to peel away another few layers of mystery regarding the mechanics of how breathing actually works. By this, I mean how “breathing well” yields the health benefits that it does. I (to my knowledge) later coined the mantra, “Breathing Is A Circulatory Function”, much of the build up to this having been documented in the 2nd book, *Coherent Breathing - The Definitive Method* (2008). I’ve had more than one M.D. from elite medical schools in the northeast U.S. tell me via phone that if this theory is correct, it amounts to the greatest medical breakthrough of a lifetime.

Here, I stand by the fundamental correctness of breathing as a circulatory function. I can say this with confidence because a uniqueness about Coherent Breathing is that it arose from the study of the human body with instrumentation, i.e. objective results from experiments/practices that can be repeated by anyone who tries it. It did not arise from, nor is it based in fanciful notions.

Since the onset of COVID, my time away from the keyboard – preparing and presenting on-line presentations

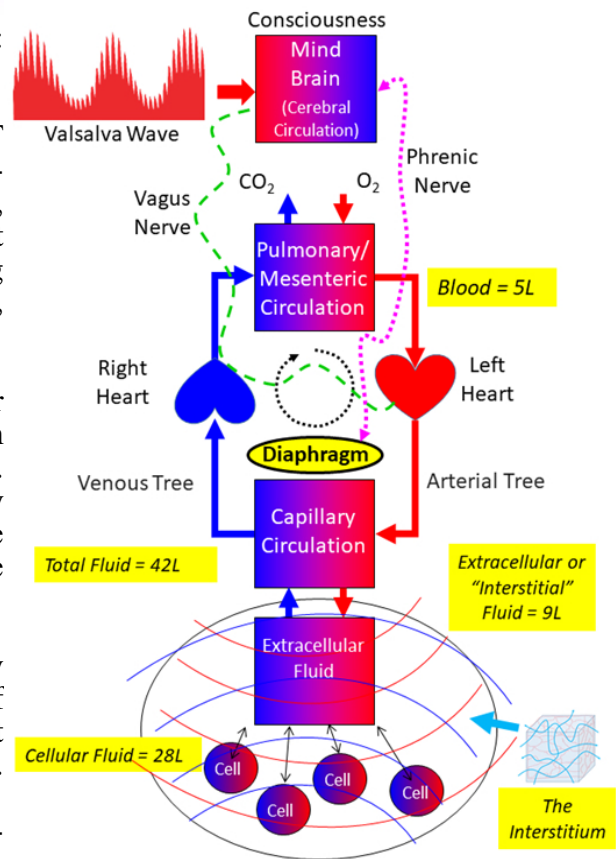


Figure 1: Coherent Breathing The Big Picture

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and Coherent Breathing certification workshops – has allowed me the opportunity to hear myself say these words over and over again, with the objective of clarifying the practice of Coherent Breathing for others. This contemplation has allowed me to arrive at this Coherent Breathing haiku:

Inhale with purpose.  
Exhale, relax, which comes first?  
Give it up to Earth.

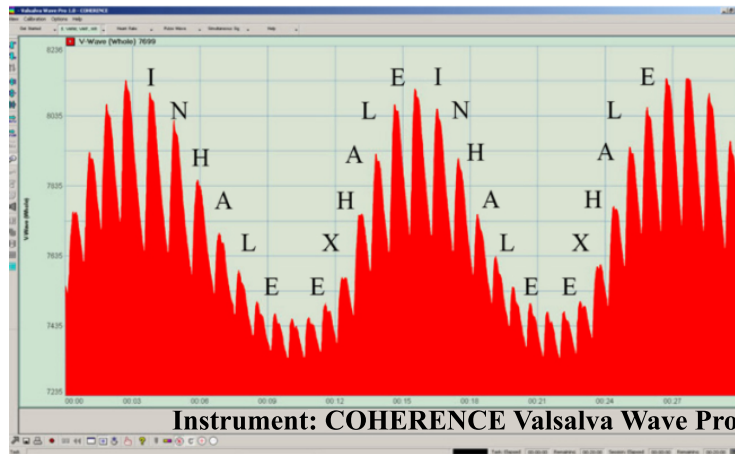


Figure 2: The Valsalva Wave Generated By Coherent Breathing

When we breathe *coherently*, upon exhalation the Valsalva Wave is maximized. This is because when we relax deeply the walls of the arterial tree relax and the arterial tree widens, accommodating the wave of blood leaving the lungs coincident with exhalation. We can literally feel a wave throughout the body. This experience is not self-evident during inhalation, only during exhalation when the amplitude of the wave with heart beat is rising.

This sensation is the body’s own biofeedback system – it is interoception. Exactly what it is that we are feeling, I cannot say for sure, but I speculate that it is baroreception responding to the Valsalva Wave propagating throughout the arterial tree, the heartbeat riding atop the respiratory component like a rooster’s comb tickling baroreceptors. Another possibility is that it is the central nervous system response to the Valsalva Wave entering the brain, bringing a wave of freshly oxygenated blood to cells and neurons, which we have confirmed “light up” when we are breathing coherently, waves as seen by EEG being ~10X the amplitude of the waves associated with functional bands. But does the brain possess the ability to “sense”? Based on what is known about the brain, that there are tens or hundreds of thousands of different types of neurons about which little is known, this is a bit like the question, “Does life exist elsewhere in the universe?”

In *Cardiovascular Physiology Concepts*, Richard Klaubunde, PhD., states that the most important arterial baroreceptors are those located in the arch of the ascending aorta (aortic arch) and those at the internal carotid artery just after branching into “external” and “internal”, the internal carotid feeding blood to the interior of the brain. He goes on to say that of the two (aortic arch vs. internal carotid artery) the baroreceptors of the internal carotid are the most important for regulating arterial pressure because their nominal pressure is that of normal mean arterial pressure  $(120 \text{ systolic} + 80 \text{ diastolic})/2 = 100\text{mmHg}$ , and they have greater sensitivity than those at the aortic arch, their role clearly being that of protecting the interior of the brain from excessive or insufficient pressure. He asserts that the *most important* function of these baroreceptors is protecting the brain from sudden *decreases* in arterial pressure, such as might occur when our posture changes from horizontal to vertical, where blood volume in the head naturally drops due to gravity.

Whatever the origin, the sensation appears to me to be pervasive throughout the body, including the brain. This is to say, that if I inhale with purpose, then exhale and let it all go, I can feel the wave in my brain and everywhere else – or so it seems.

Stephen Elliott, President, COHERENCE LLC

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