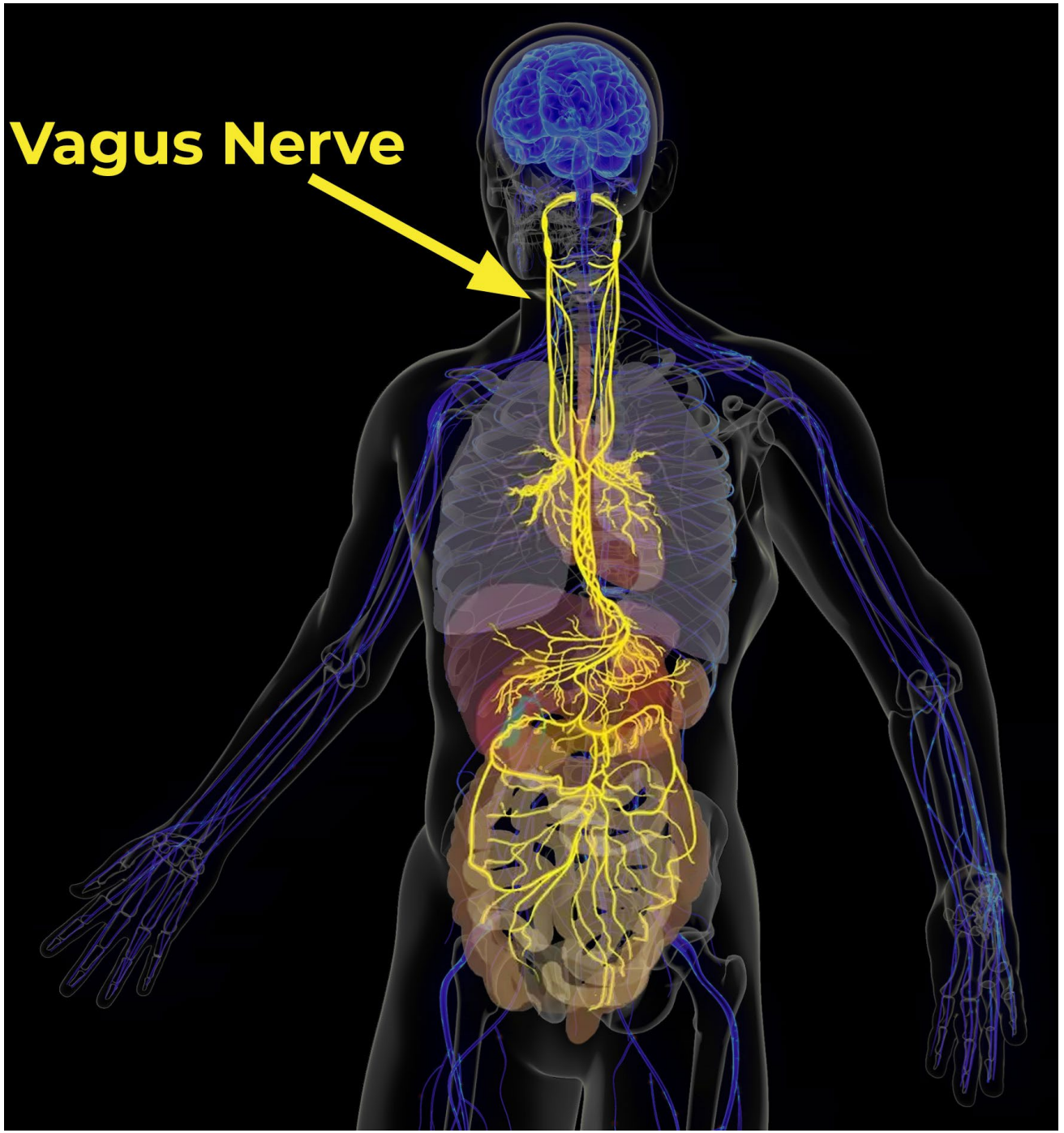
All About Your VAGUS Nerve!

DR.PRADIP JAMNADAS MD MBBS FACC FSCAI FCCP FACP

Vagus Nerve

- Rest and relaxation
- Restore and repair anti-inflammatory
- Digest
- Reproduce

- A two –way information highway to the brain instructing the biochemistry of the body in every moment
- A survival strategy--- your body cannot be in one mode all the time!
- Homeostasis depends on the vagus nerve
- Controls the inflammatory response
- Hormesis is followed by vagal activity
- Resilience depends on your vagal tone



Brain connects to:

1. Ears and eyes
2. Tongue
3. Esophagus
4. Stomach
5. Pancreas
6. Intestines
7. Liver
8. Kidney
9. Colon
10. **Lungs and Heart**

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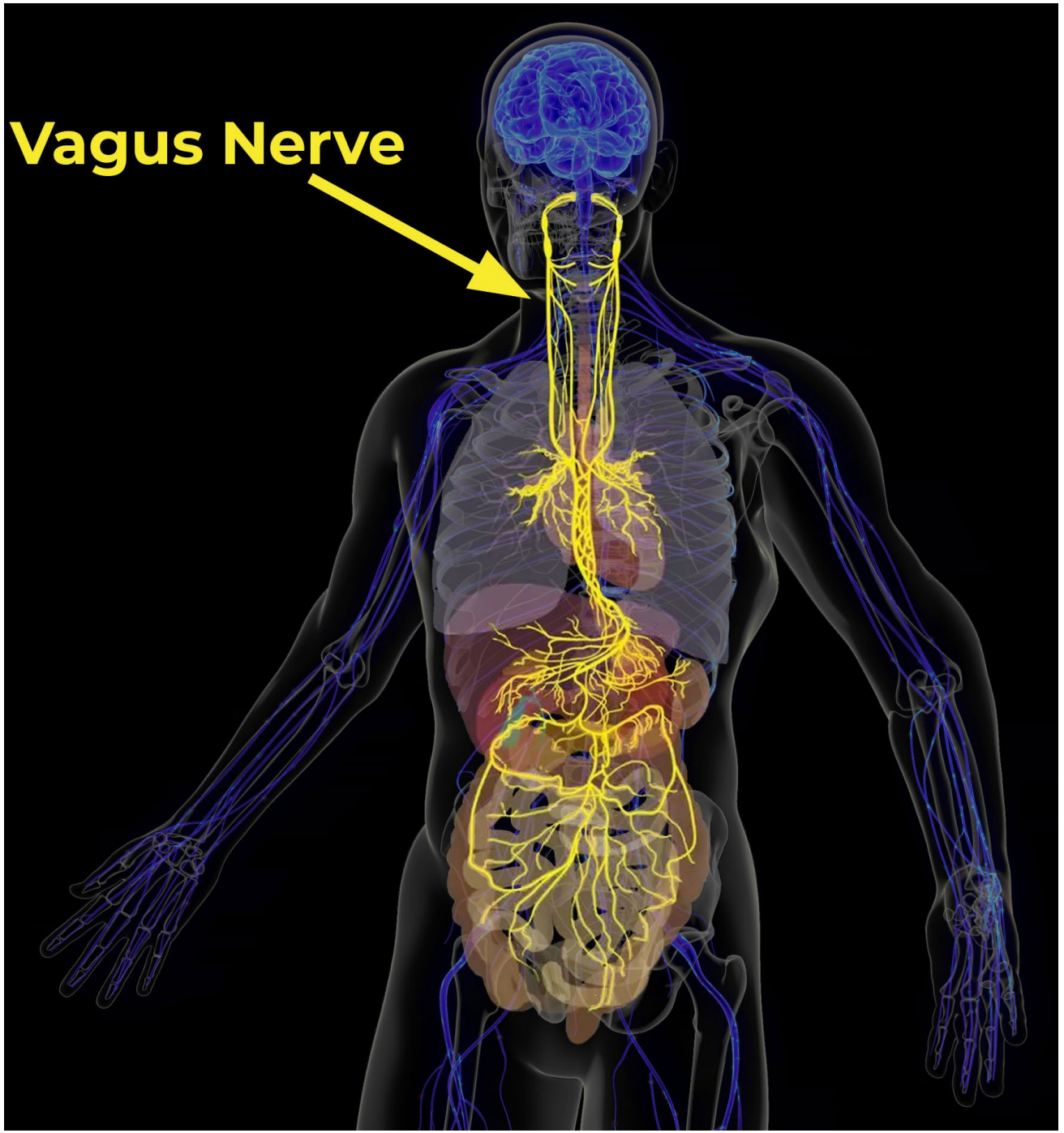

This is the software that is running your hardware of the body

Real-time micro adjustment to your biology

Vagus nerve has two-way traffic, to and from the organ

You can voluntarily HACK your vagus nerve

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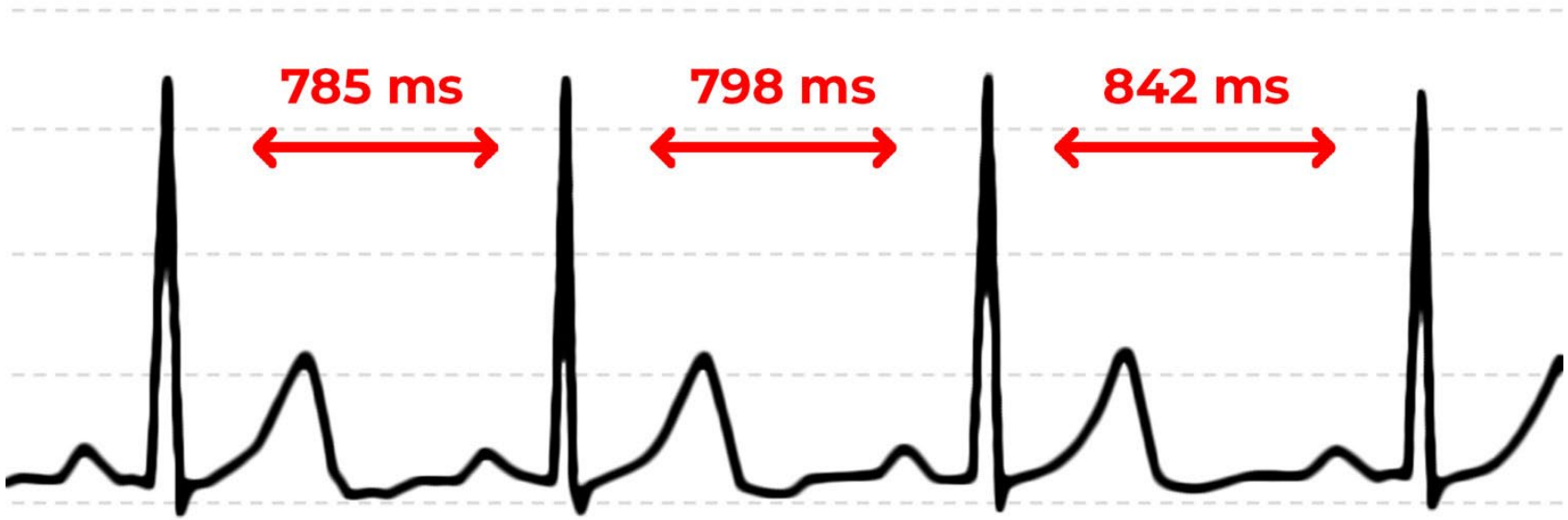
HRV

Heart Rate Variability



Long-Term Effect of Device-Guided Slow Breathing on Blood Pressure Regulation and Chronic Inflammation in Patients with Essential Hypertension Using a Wearable ECG Device

Chen-Hsu Wang [1 2], Hui-Wen Yang [3], Han-Luen Huang [1 4], Cheng-Yi Hsiao [1], Bun-Kai Jiu [1], Chen Lin [1 5], Men-Tzung Lo [1 5]

Affiliations + expand

PMID: 33716462 PMCID: PMC7953112 DOI: 10.6515/ACS.202103_37(2).20200907A

Abstract

Background: Hypertension is related to autonomic nervous system (ANS) dysfunction, atherosclerosis and chronic inflammation. The stimulation of baroreflex regulation by slow-breathing exercise may improve the interplay among these systems. The objective of this study was to investigate the effect of device-guided slow breathing on ANS, cardiovascular system and chronic inflammation in hypertensive patients.

Methods: We prospectively collected 36 essential hypertension patients who were requested to practice slow-breathing exercise 5 times per day for 3 months. The breathing exercise was guided by a cellphone app with a wearable electrocardiography device and a rhythm of 6 cycles per minute. Cardiovascular indicators including heart rate variability (HRV), blood pressure, pulse wave velocity and baroreflex indexes were sampled 3 times: at the first visit, and 1 month and 3 months after the intervention. The levels of blood inflammatory biomarkers, including tumor necrosis factor-alpha (TNF-α), interleukin-6, interleukin-1 receptor antagonist and C-reactive protein were also collected at all 3 visits. The longitudinal differences in these variables and their correlations were tested.

Results: There was a significant decrease in blood pressure after 1 month of exercise. A significantly continuous decrease in TNF-α was also observed. The baroreflex indexes were significantly increased in the acute intervention of slow-breathing but not in the longitudinal effect. The HRV variables did not show differences with time. There were positive correlations between sympathetic index and TNF-α and galectin-3.

Conclusions: The effect of slow-breathing exercise on blood pressure and chronic inflammation was significant. HRV indexes may also be used to assess chronic inflammation.

Device and non-device-guided slow breathing to reduce blood pressure: A systematic review and meta-analysis

Ashish Chaddha [1], Daniel Modaff [2], Christopher Hooper-Lane [3], David A Feldstein [2]

Affiliations + expand

PMID: 31331557 DOI: 10.1016/j.ctim.2019.03.005

Abstract

Objectives: Interest is increasing in nonpharmacological interventions to treat blood pressure in hypertensive and prehypertensive patients at low cardiac risk. This meta-analysis of randomized controlled trials assesses the impact of device-guided and non-device-guided (pranayama) slow breathing on blood pressure reduction in these patient populations.

Methods: We searched PubMed, EMBASE, CINAHL, Cochrane CENTRAL, Cochrane Database of Systematic Reviews, Web of Science, BIOSIS (Biological Abstracts) Citation Index and Alt HealthWatch for studies meeting these inclusion criteria: randomized controlled trial or first phase of a randomized cross-over study; subjects with hypertension, prehypertension or on antihypertensive medication; intervention consisting of slow breathing at ≤10 breaths/minute for ≥5 min on ≥3 days/week; total intervention duration of ≥4 weeks; follow-up for ≥4 weeks; and a control group. Data were extracted by two authors independently, the Cochrane Risk of Bias Tool assessed bias risk, and data were pooled using the DerSimonian and Laird random effects model. Main outcomes included changes in systolic (SBP) and/or diastolic blood pressure (DBP), heart rate (HR), and/or decreased antihypertensive medication.

Results: Of 103 citations eligible for full-text review, 17 studies were included in the meta-analysis. Overall, slow breathing decreased SBP by -5.62 mmHg [-7.86, -3.38] and DBP by -2.97 mmHg [-4.28, -1.66]. Heterogeneity was high for all analyses.

Conclusions: Slow breathing showed a modest reduction in blood pressure. It may be a reasonable first treatment for low-risk hypertensive and prehypertensive patients who are reluctant to start medication.

Dr. Pradip Jamnadas 08/11/2024

Low-Level Vagus Nerve Stimulation Suppresses Post-Operative Atrial Fibrillation and Inflammation: A Randomized Study

Stavros Stavrakis [1], Mary Beth Humphrey [1], Benjamin Scherlag [1], Omer Iftikhar [1], Purvi Parwani [1], Mubasher Abbas [1], Adrian Filiberti [1], Christian Fleming [1], Yanqing Hu [1], Paul Garabelli [1], Arthur McUnu [1], Marvin Peyton [1], Sunny S Po [2]

Affiliations + expand

PMID: 29759717 DOI: 10.1016/j.jacep.2017.02.019

Free article

Abstract

Objectives: This study sought to examine the efficacy of low-level vagus nerve stimulation (LLVNS) in suppressing post-operative atrial fibrillation (POAF) and inflammatory cytokines in patients undergoing cardiac surgery.

Background: POAF often complicates cardiac surgery.

Methods: Patients undergoing cardiac surgery were randomized to active or sham LLVNS. In all patients, a bipolar wire was sutured to the vagus nerve pre-ganglionic fibers alongside the lateral aspect of the superior vena cava. High-frequency (20 Hz) stimulation, 50% below the threshold for slowing the heart rate, was delivered for 72 h in the LLVNS group. The development of POAF was monitored continuously during the entire hospital stay by use of telemetry. Blood was collected on arrival in the intensive care unit and at 24 and 72 h for measurement of inflammatory cytokines. Patients were followed up within 1 month after cardiac surgery.

Results: A total of 54 patients were randomized to either active LLVNS (n = 26) or sham control (n = 28). The baseline characteristics of the patients were balanced in the 2 groups. POAF occurred in 3 patients (12%) in the LLVNS group and 10 patients (36%) in the control group (hazard ratio: 0.28; 95% confidence interval: 0.10 to 0.85; p = 0.027). None of the patients developed any complications as a result of wire placement. At 72 h, serum tumor necrosis factor-α and interleukin-6 levels were significantly lower in the LLVNS group than in the control group.

Conclusions: These data suggest that LLVNS suppresses POAF and attenuates inflammation in patients undergoing cardiac surgery. Further studies are warranted.

Exercises to improve vagal tone

1. Lateral gaze eye movements
2. Gentle eyeball massage
3. Cold water to the eyeballs
4. Ice water to the face
5. Ice pack to the neck
6. Valsalva
7. Balloon blowing
8. Prolonging expiration stimulates vagus nerve
9. Yoga postures
10. Meditation
11. Humming
12. Gargling
13. Cold shower/ immersion/ infrared sauna
14. HIIT

Enteric Nervous System of the GUT

1. Becomes dysfunctional if there is inflammation in the GUT
2. Becomes dysfunctional if there is dysbiosis
3. Becomes dysfunctional if there are food sensitivities
4. Becomes dysfunctional with SIBO
5. Becomes dysfunctional after antibiotics
6. Becomes dysfunctional with drugs that slow GUT motility
7. Becomes dysfunctional after surgery
8. Becomes dysfunctional with stress (efferent fibers)
9. Causes CNS inflammation (afferent fibers)
10. Can cause mental fog, depression, and anxiety

Dysautonomia

1. Causes POTTS
2. Inappropriate sinus tachycardia
3. Vasovagal syncope or presyncope
4. PVCs and PACs
5. Atrial fibrillation
6. Orthostatic hypotension
7. Constipation or diarrhea
8. SIBO
9. Gallbladder dysfunction


LOWER BLOOD PRESSURE
NATURALLY
ULTRA
7.8