Stressed Out? Try Tai Chi.

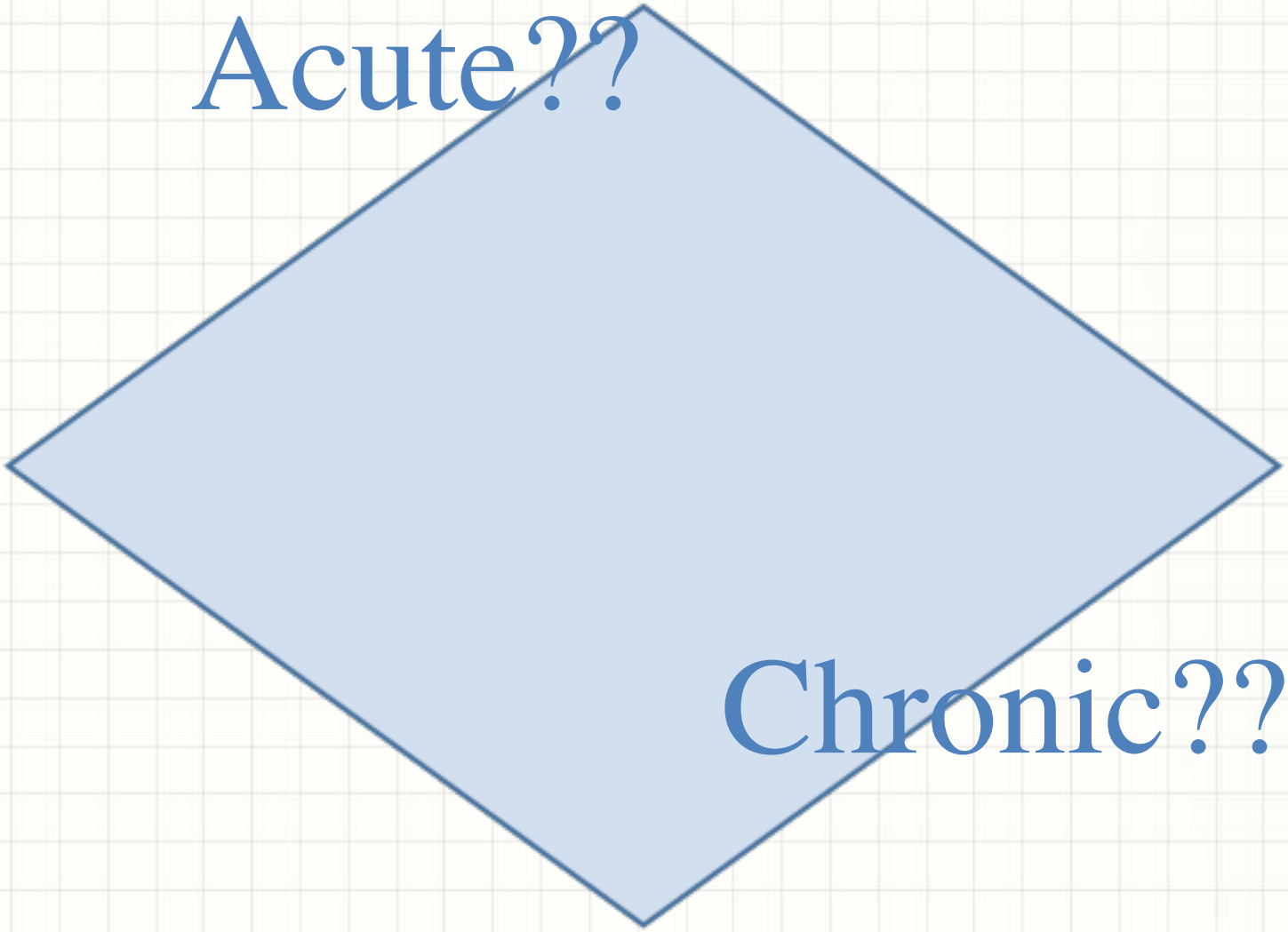
It's better than a glass of wine!

Dianne Bailey, CSCS, FAS, CTCI

What is Stress?

Definition of *stress*

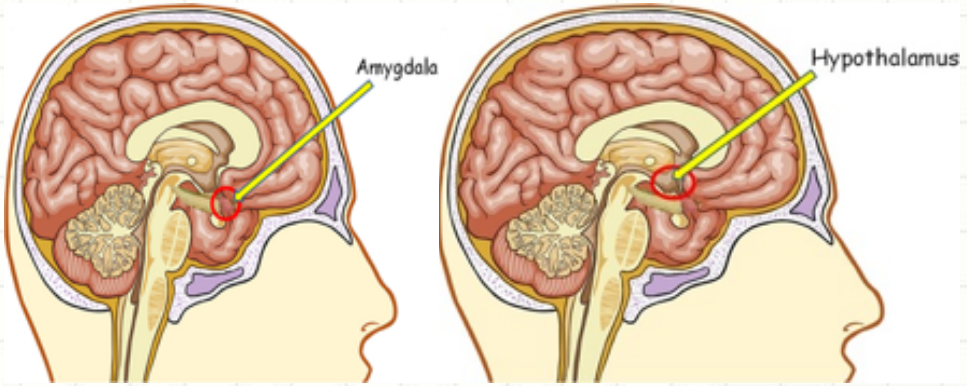
1: constraining force or influence: such as
a: a force exerted when one body or body part presses on, pulls on, pushes against, or tends to compress or twist another body or body part
especially **:** the intensity of this mutual force commonly expressed in pounds per square inch
b: the deformation caused in a body by such a force
c: a physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation
d: a state resulting from a stress
especially **:** one of bodily or mental tension resulting from factors that tend to alter an existent equilibrium job-related *stress*


Acute??
Chronic??

Lith. von J.F. Schreiber in Esslingen.

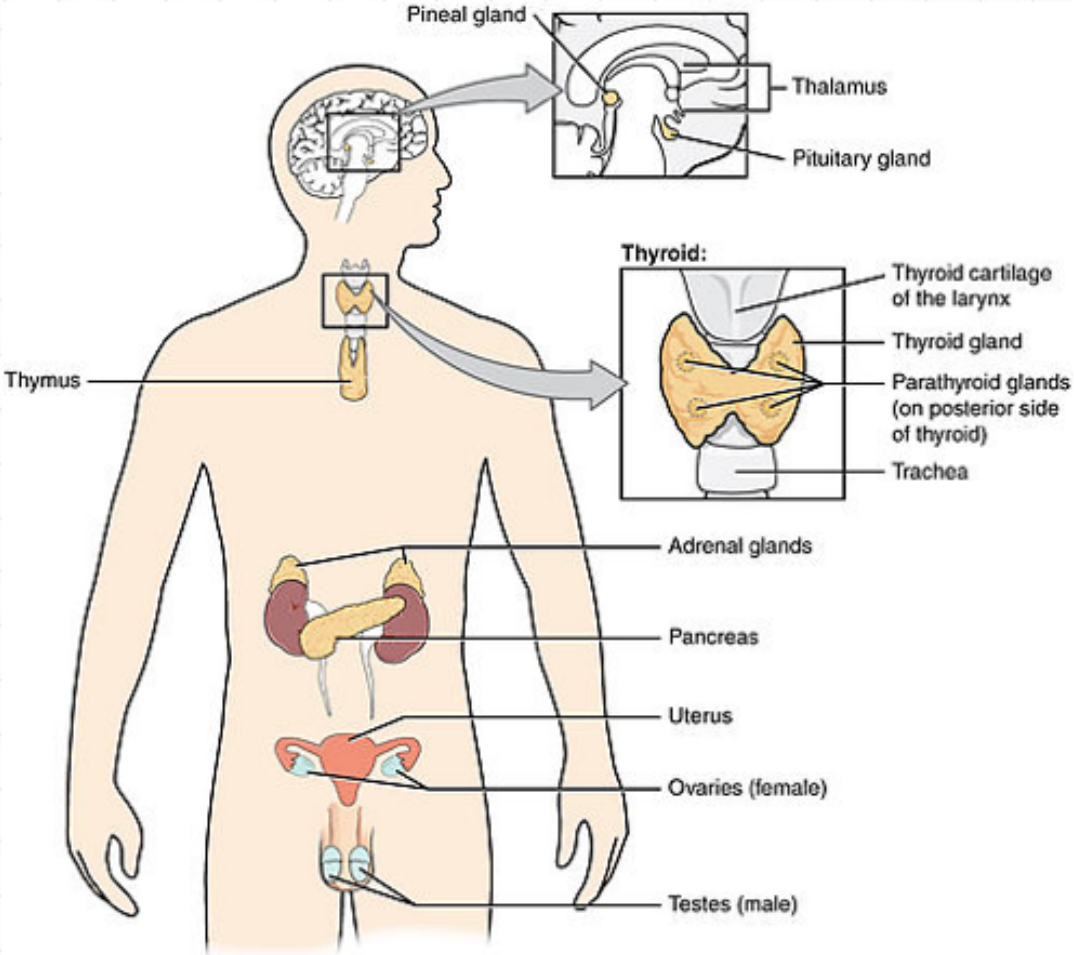
Der Mensch und die Thiere der Diluvialzeit in Mitteleuropa.

Stress 101

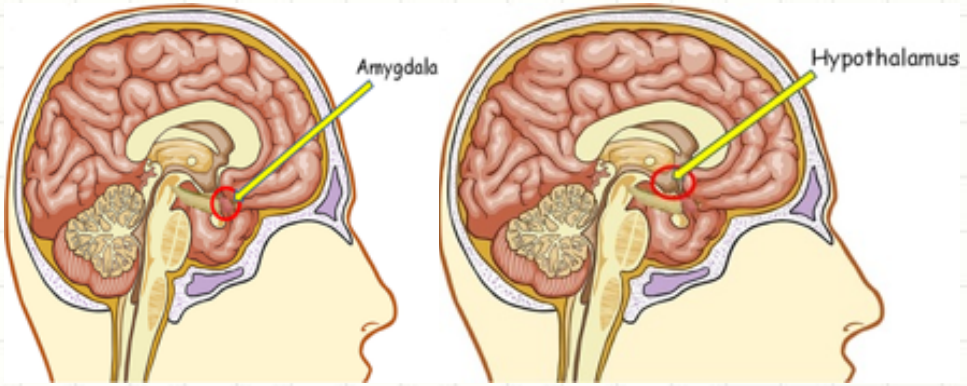


Danger - Sympathetic

- Signal sent to Amygdala – alerts the hypothalamus
- sends out epinephrine and norepinephrine
- Which immediately makes heart rate increase
- Raises blood pressure
- Dilates blood vessels in lungs
- Releases blood sugar from liver and fat



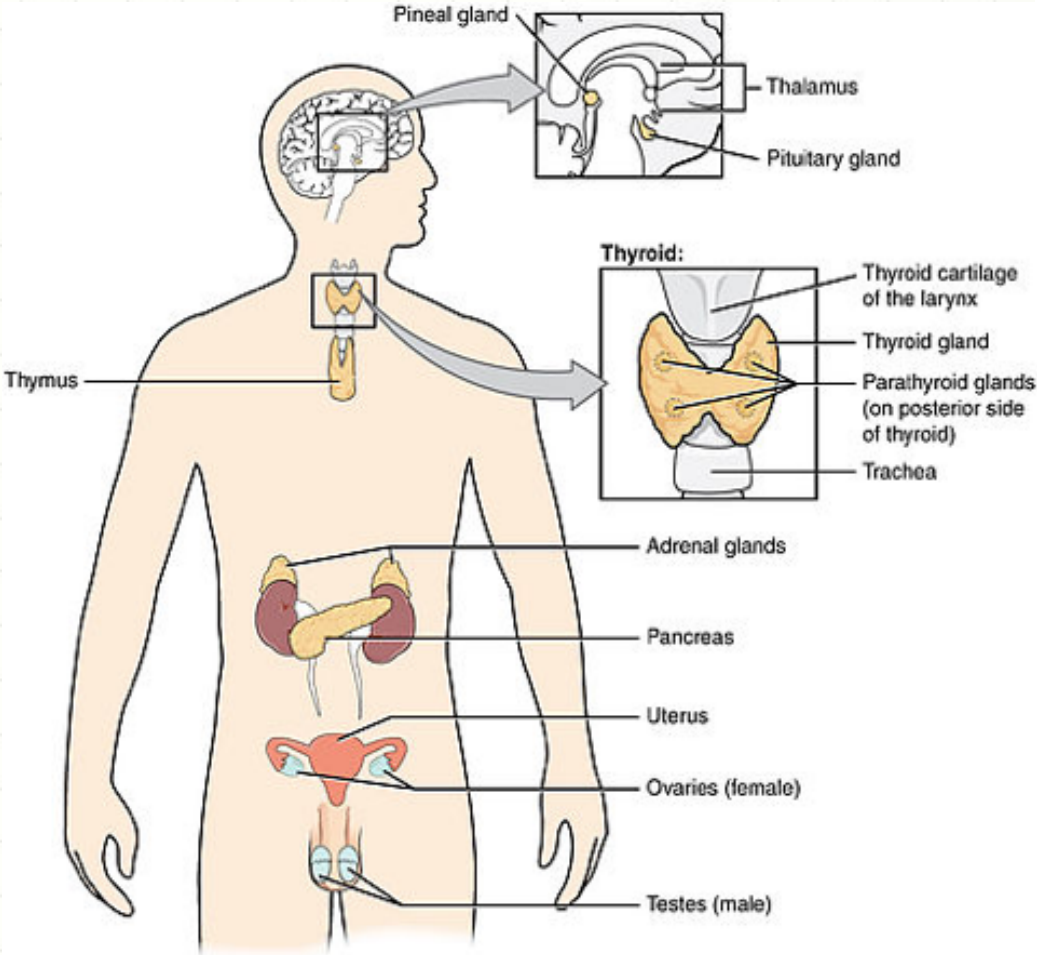
Stress 101



After initial surge

HPA axis

- Hypothalamus alerts the pituitary gland and adrenal glands
- Releases cortisol
- Makes body stay on high alert
- Increases appetite



Sympathetic System (Fight or Flight)

*Increases heart rate

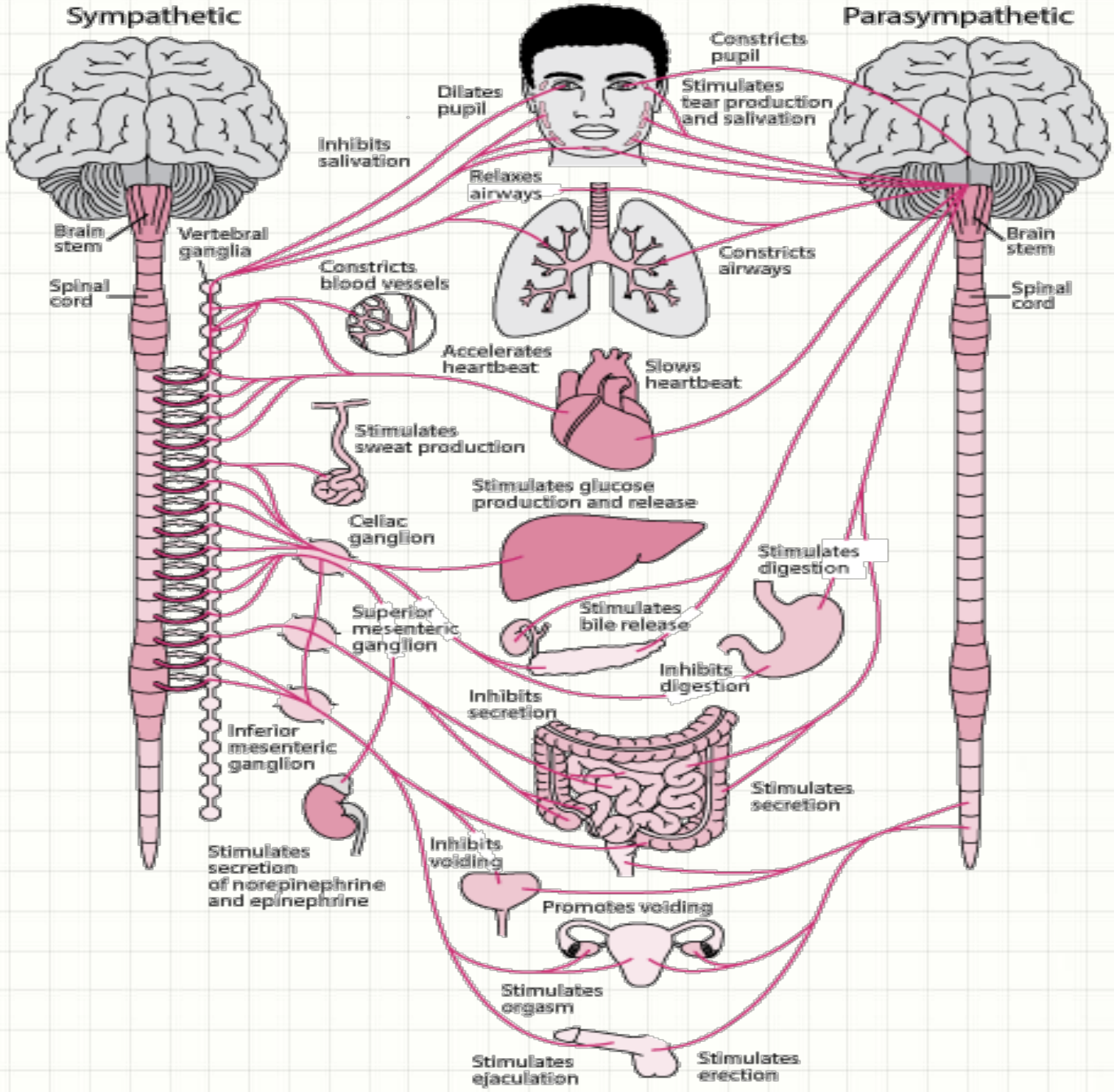
*Increase blood pressure

*Causes digestive changes

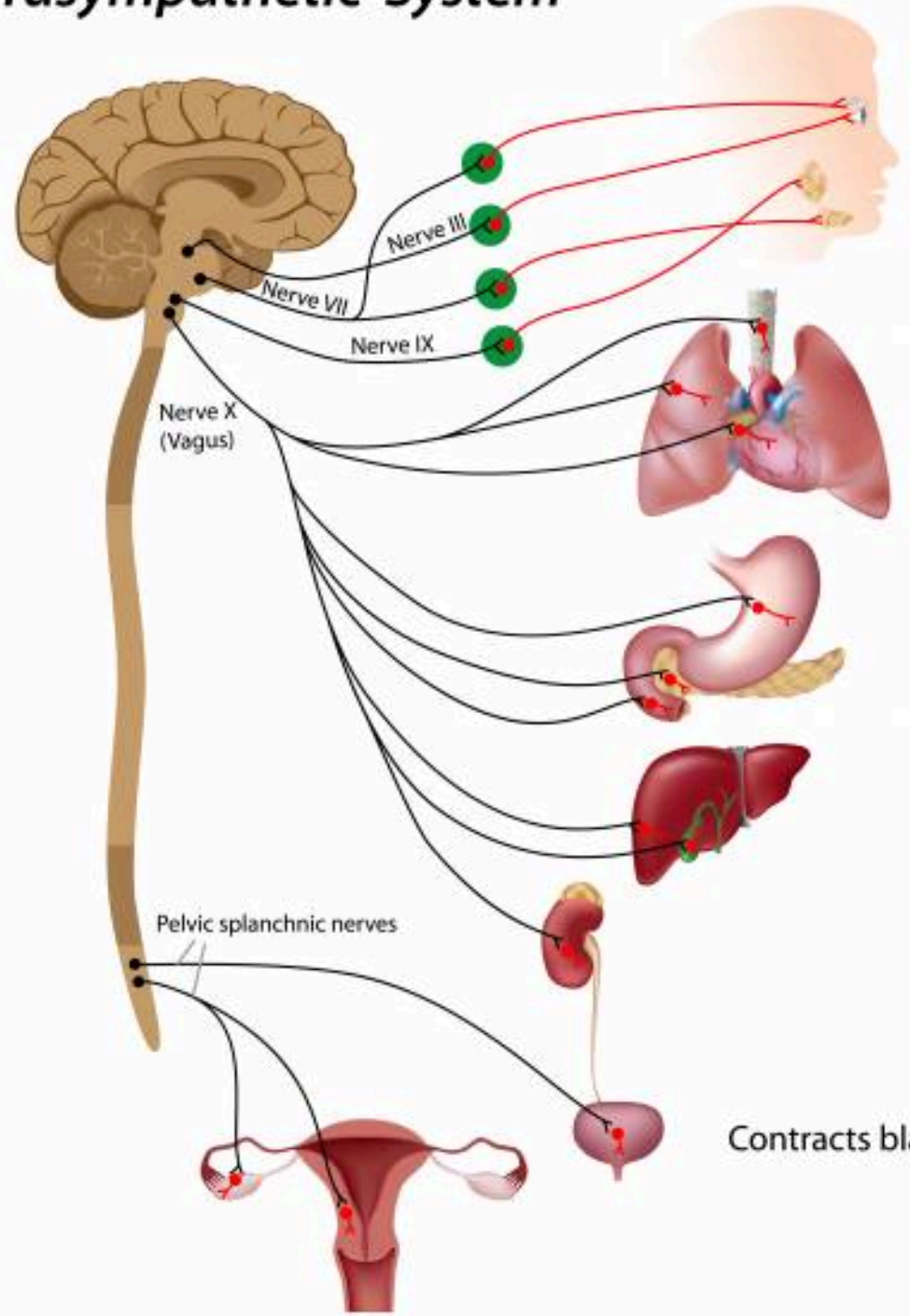
*Suppresses immune system

*High alert

When temporary, all good. When chronic, causes detrimental changes in body functioning


Sympathetic
Parasympathetic
Constricts pupil
Dilates pupil
Stimulates tear production and salivation
Inhibits salivation
Relaxes airways
Brain stem
Vertebral ganglia
Constricts airways
Brain stem
Spinal cord
Constricts blood vessels
Spinal cord
Accelerates heartbeat
Slows heartbeat
Stimulates sweat production
Stimulates glucose production and release
Celiac ganglion
Stimulates digestion
Superior mesenteric ganglion
Stimulates bile release
Inhibits digestion
Inhibits secretion
Inferior mesenteric ganglion
Stimulates secretion
Stimulates secretion of norepinephrine and epinephrine
Inhibits voiding
Promotes voiding
Stimulates orgasm
Stimulates ejaculation
Stimulates erection

Parasympathetic System



Constricts pupils

Stimulates flow of saliva

Constricts bronchi

Slows heartbeat

Stimulates peristalsis and secretion

Stimulates bile release

Contracts bladder

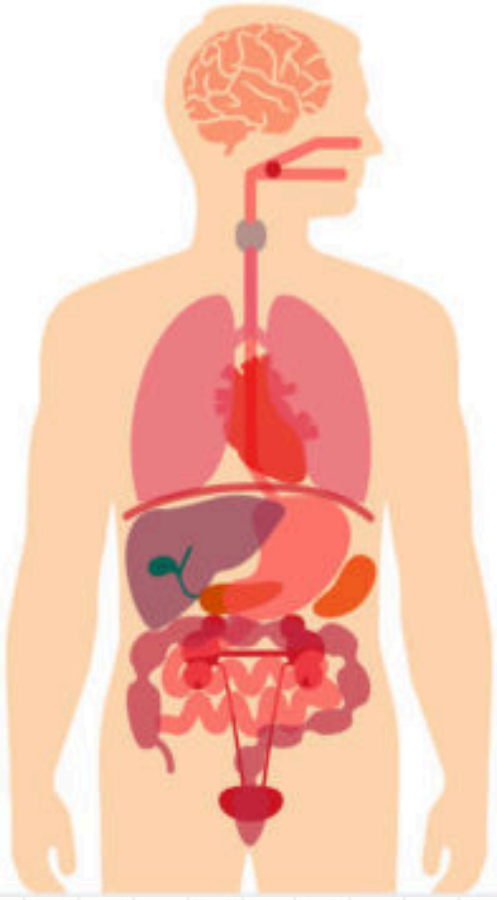
How The Vagus Nerve Affects Organ Systems

Heart
Decreases heart rate, vascular tone.

Liver
Regulates insulin secretion and glucos homeostasis in the liver.

Gut
Increases gastric juices, gut motility, stomach acidity.

Inflammation
Suppresses inflammation via the cholinergic anti-inflammatory pathway



Brain
Helps keep anxiety and depression at bay. Opposes the sympathetic response to stress.

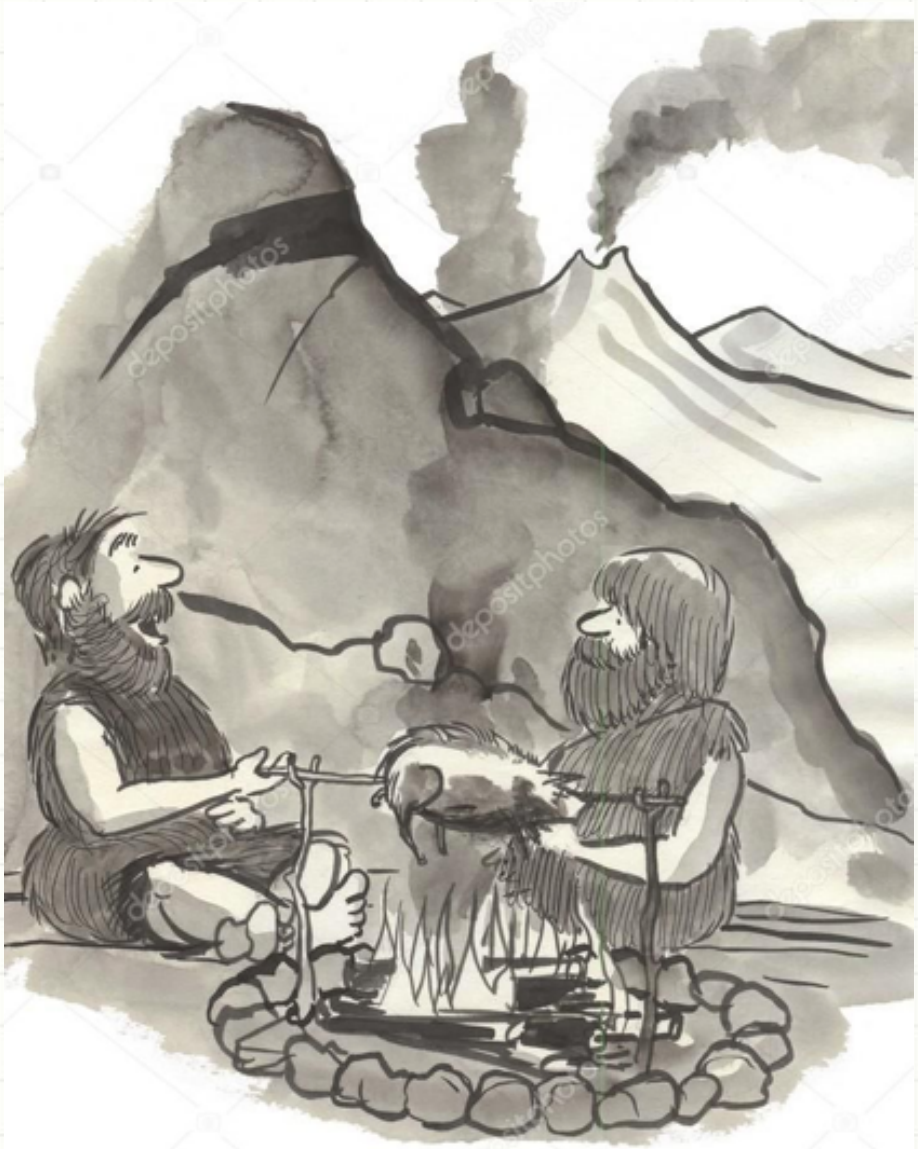
Mouth
Taste information is sent via three cranial nerves, one of which is the vagus nerve. The vagus nerve is needed for the gag reflex, swallowing, and coughing.

Blood Vessels
Decreases vascular tone, lowering blood pressure.

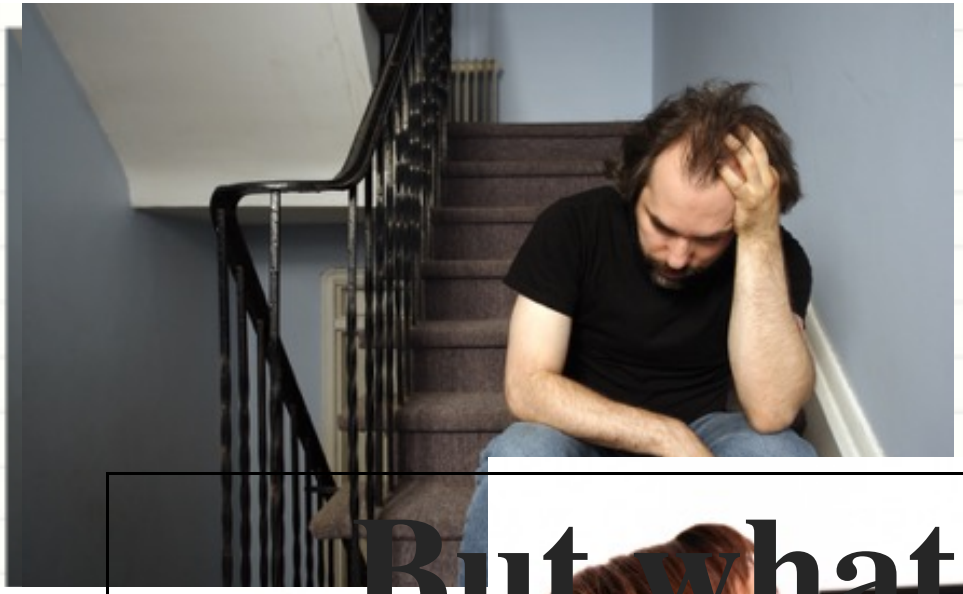
Stress 101

Resolution of threat – Parasympathetic

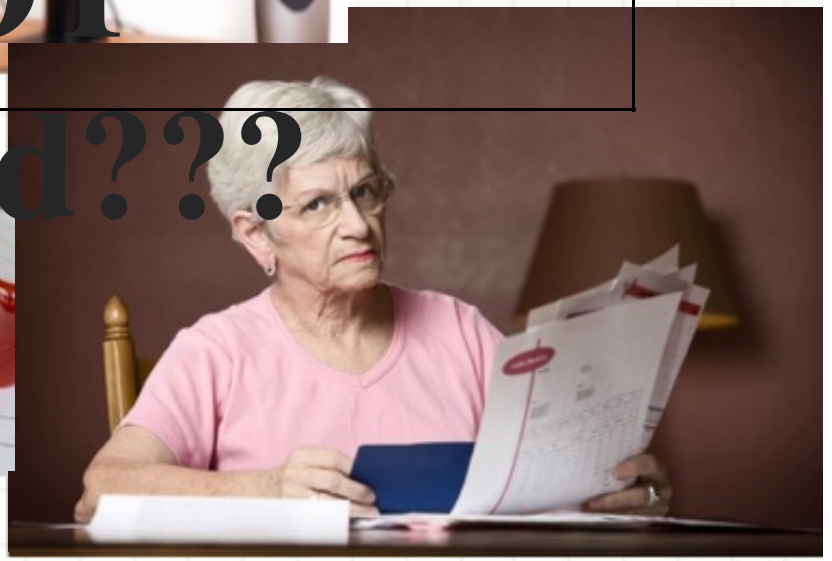
- Stimulated by the Vagus nerve, acetylcholine is released which initiates the relaxation response
- Cortisol drops
- Heart rate/Blood pressure return to normal
- Respiration slows and blood flow returns to internal organs
- Digestion can occur
- Immune system is enabled to fight bacteria and virus



"Hey, man, great teamwork today on the boar hunt."



But what if the Threat Is NOT Resolved???



Chronic Stress

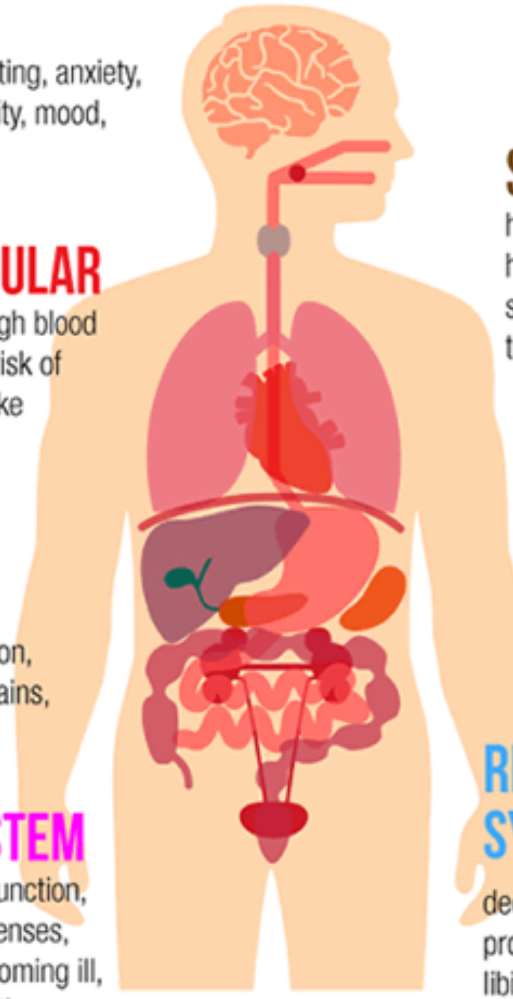
American Psychology Association:
"Glucocorticoids, including cortisol, are important for regulating the immune system and reducing inflammation. While this is valuable during stressful or threatening situations where injury might result in increased immune system activation, **chronic stress can result in impaired communication between the immune system and the HPA axis. This impaired communication has been linked to the future development of numerous physical and mental health conditions, including chronic fatigue, metabolic disorders (e.g., diabetes, obesity), depression and immune disorders."**

Many people are unable to find a way to put the brakes on stress. **Chronic low-level stress keeps the HPA axis activated**, much like a motor that is idling too high for too long. After a while, this has an effect on the body that contributes to the health problems associated with chronic stress.

Persistent epinephrine surges can **damage blood vessels and arteries, increasing blood pressure and raising risk of heart attacks or strokes**. Elevated cortisol levels create physiological changes that help to replenish the body's energy stores that are depleted during the stress response. But they inadvertently contribute to the **buildup of fat tissue and to weight gain**. For example, cortisol increases appetite, so that people will want to eat more to obtain extra energy. It also increases storage of unused nutrients as fat.

from Harvard Medical School/Harvard Health publishing

HOW STRESS & ANXIETY AFFECTS YOUR BODY



BRAIN

Difficulty concentrating, anxiety, depression, irritability, mood, mind fog

CARDIOVASCULAR

higher cholesterol, high blood pressure, increased risk of heart attack and stroke

JOINTS AND MUSCLES

increased inflammation, tension, aches and pains, muscle tightness

IMMUNE SYSTEM

decreased immune function, lowered immune defenses, increased risk of becoming ill, increase in recovery time

SKIN

hair loss, dull/brittle hair, brittle nails, dry skin, acne, delayed tissue repair

GUT

nutrient absorption, diarrhea, constipation, indigestion, bloating, pain and discomfort

REPRODUCTIVE SYSTEM

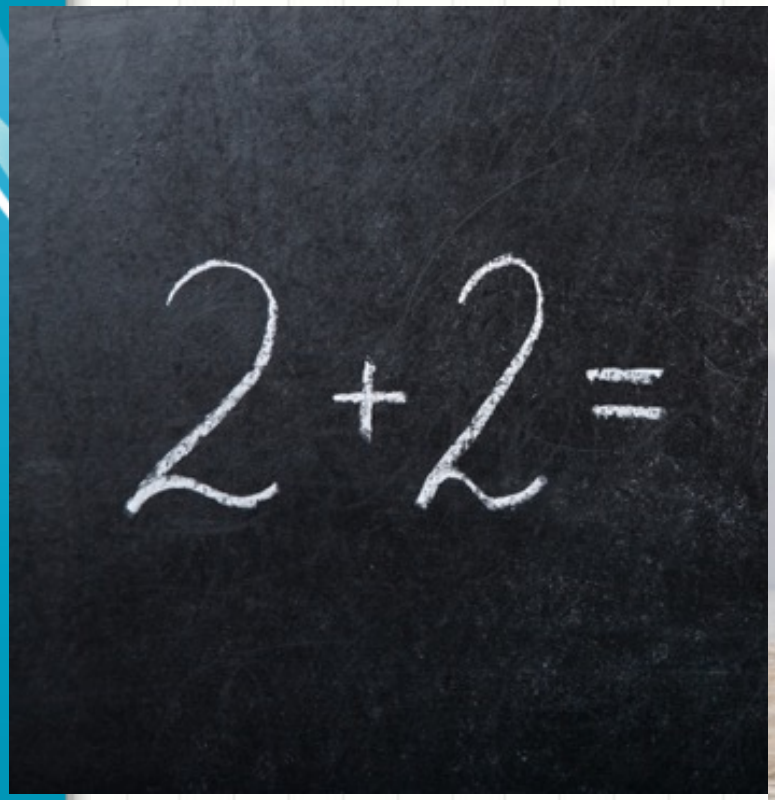
decreased hormone production, decrease in libido, increase in PMS symptoms

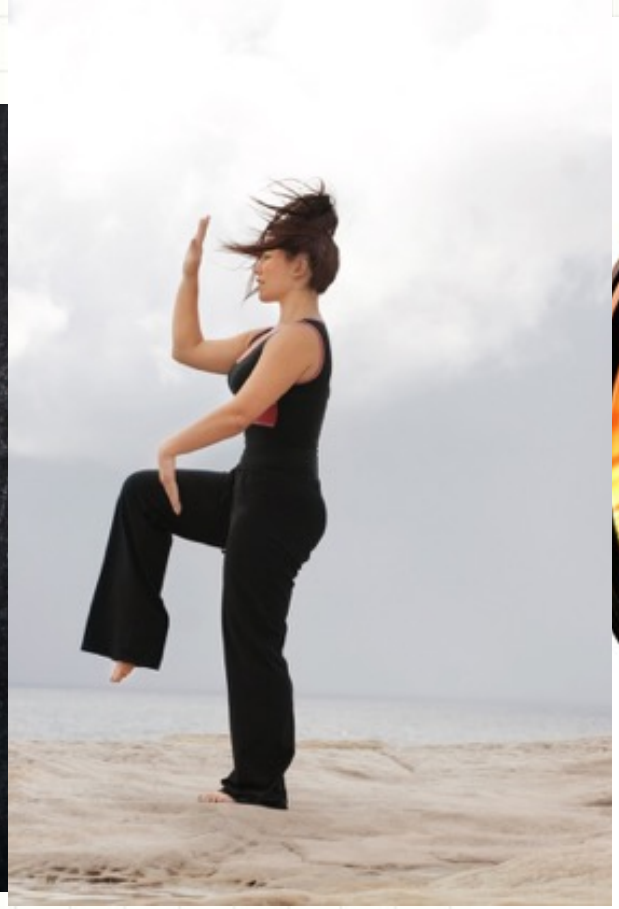
Ways to combat Stress

A Beautiful Balance

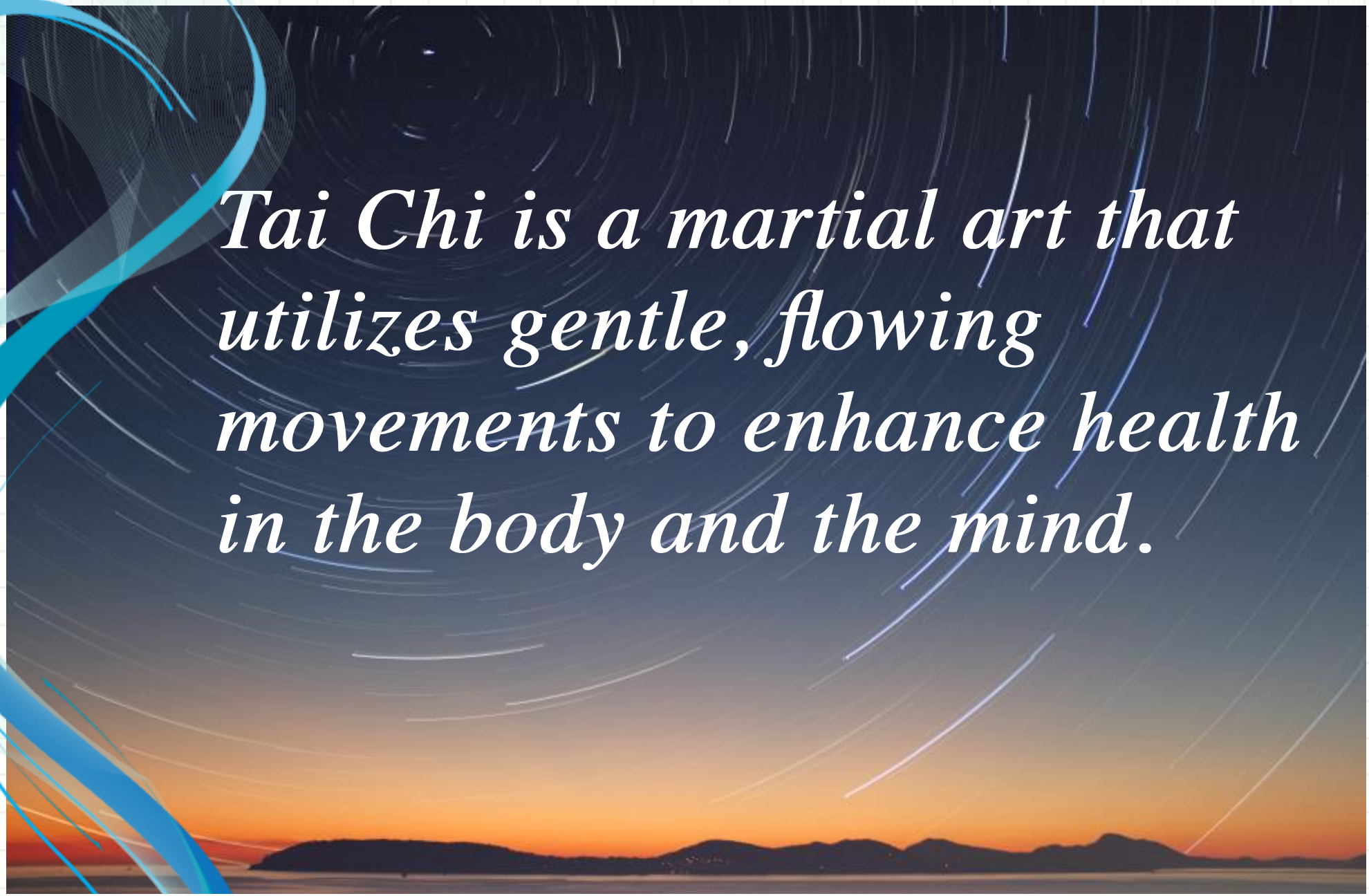
Sympathetic/Parasympathetic nervous system

Tai Chi is outstanding at improving balance





What is Tai Chi?



Tai Chi is a martial art that utilizes gentle, flowing movements to enhance health in the body and the mind.

Why Tai Chi?

Tai Chi Chuan modulates heart rate variability during abdominal breathing in elderly adults

Wei GX, Li YF, Yue XL, Ma X, Chang YK, Yi LY, Li JC, Zuo XN

Considering all of these findings, we suggest that TCC **improves vagal activity and the balance between sympathetic and parasympathetic** activity during the relaxation state. This study also provides **direct physiological evidence for the role of TCC practice in relaxation.**

Why Tai Chi?

Effect of Tai Chi Chuan on the Autonomic Nervous Modulation in Older Persons.
Lu, Wan-An & Kuo, Cheng-Deng

After TCC, the normalized high-frequency power increased significantly . . . The heart rate, systolic blood pressure, diastolic blood pressure, mean arterial blood pressure, and pulse pressure also **decreased sequentially** after TCC. The short-term effect of TCC was to **enhance the vagal modulation and tilt the sympathovagal balance toward decreased sympathetic modulation** in older persons.

Why Tai Chi?

Changes in heart rate, noradrenaline, cortisol and mood during Tai Chi.

Jin P

Relative to measures taken beforehand, practice of Tai Chi raised heart rate, **increased noradrenaline excretion in urine, and decreased salivary cortisol concentration**. Relative to baseline levels, subjects **reported less tension**, depression, anger, fatigue, confusion and state-anxiety, they **felt more vigorous**, and in general they had less total

Why Tai Chi?

Efficacy of Tai Chi, brisk walking, meditation, and reading in reducing mental and emotional stress.

Jin P

In general the **stress-reduction effect of Tai Chi characterized moderate physical exercise**. Heart rate, blood pressure, and urinary catecholamine changes for Tai Chi were found to be similar to those for walking at a speed of 6 km/hr.

Why Tai Chi?

Mindfulness meditation training changes brain structure in 8 weeks

Sara Lazar, PhD,

Comparing the participants' before and after MRI exams showed an "***increase in grey-matter density in the hippocampus, known to be important for learning and memory.***" It also showed "***decreased***

Why Tai Chi?

Benefits of a Tai Chi Workout for Aging and Stress Resiliency

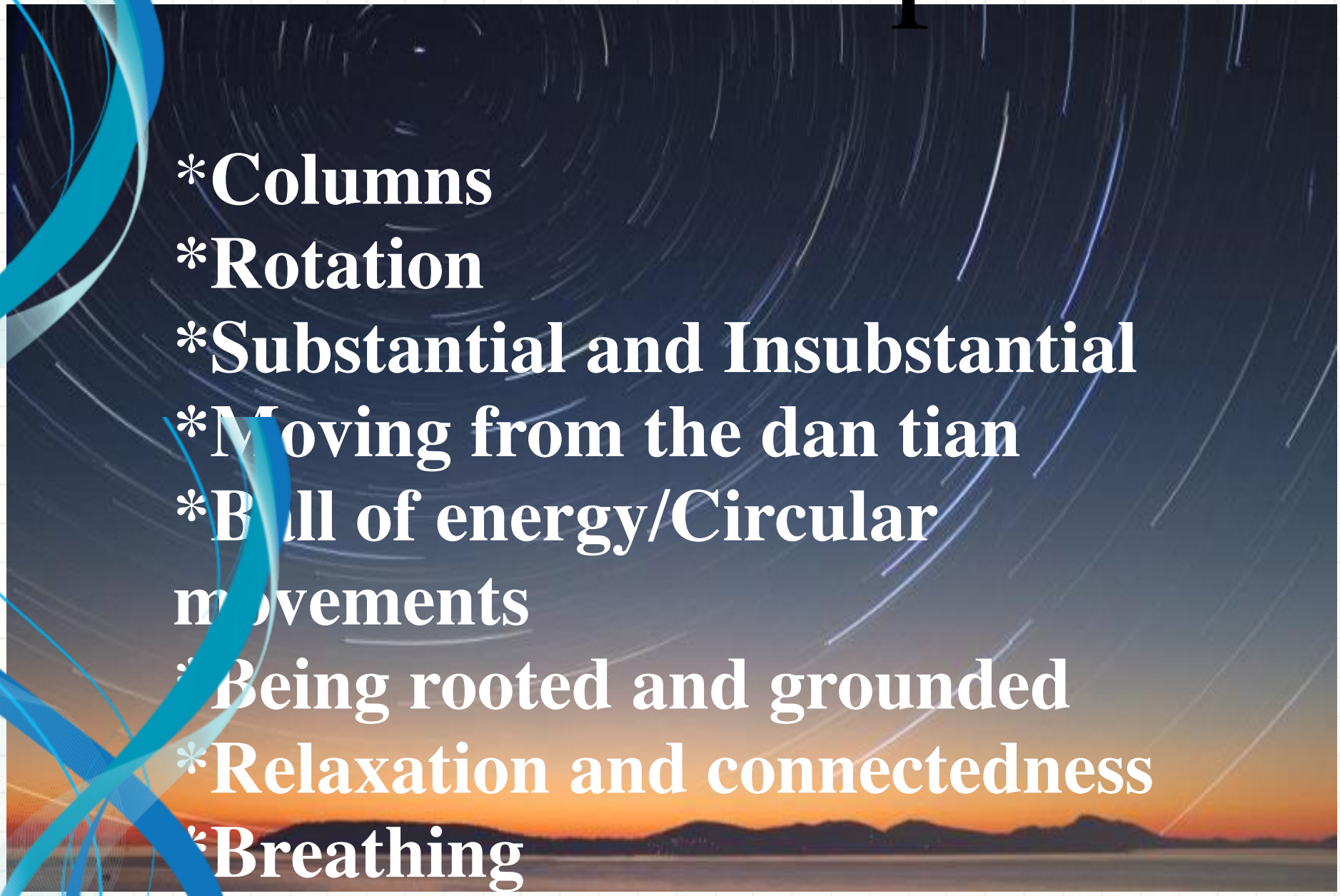
By: Michael Lam, MD, MPH; Justin Lam, ABAAHP, FMNM

Research conducted at the Center of Neuropsychiatry at China Medical University Hospital in Taiwan saw a **significant rise in the CD34+ cells of participants in the research program who engaged in Tai Chi** during the research period. … The CD34+ protein is a cluster marker for blood cells that are involved in a cell's self-renewal, differentiation, and proliferation. **The stem cells, which are 'blank cells', actually undergo a change in function in order to help repair the adrenal glands**. Because Tai Chi actively contributes towards the production of CD34+ stem cells, **the age-old Chinese martial art actively works towards renewal in the body**, as these stem cells are used in adrenal gland rejuvenation. **Tai Chi is able to help reduce SNS stimulation. Helping the SNS calm down is vital to allowing the body to relax and the adrenals to heal.**

How does Tai Chi Work?

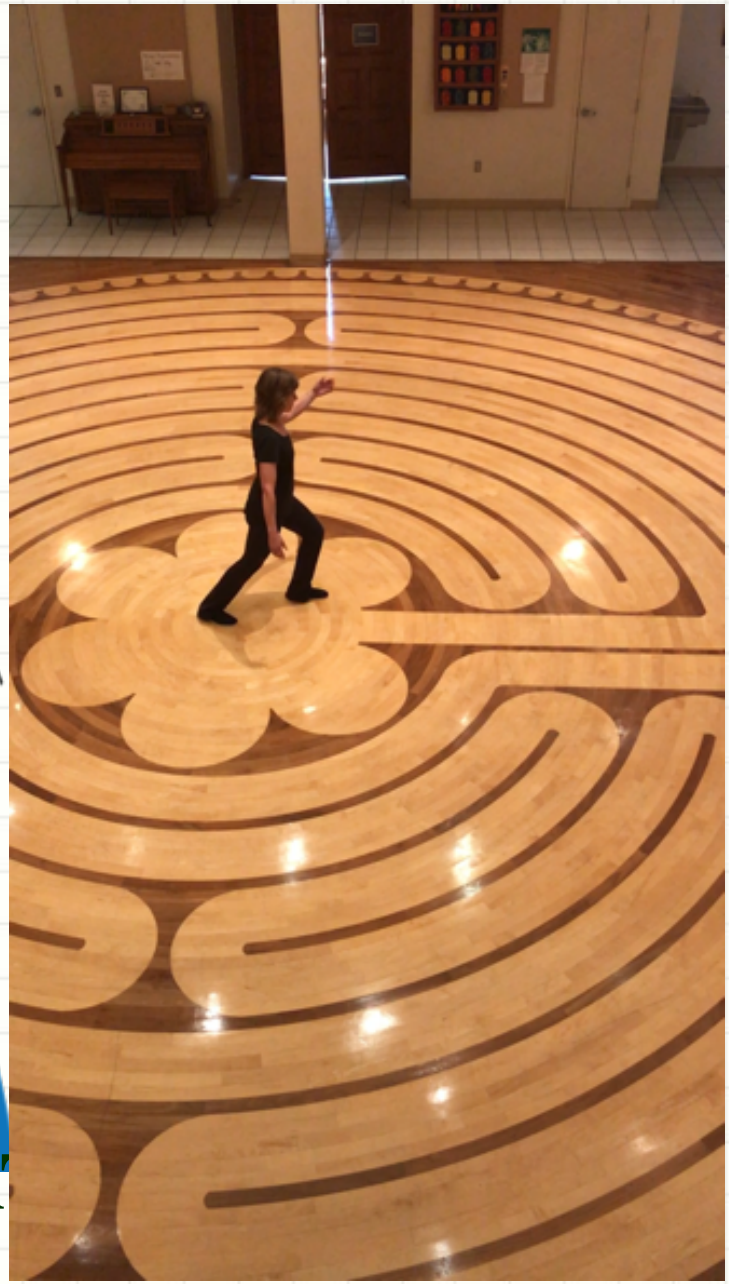
- Gentle on the joints
- Slow movements
- Equivalent to moderate exercise
- Breath control
- Being in the moment – Movement Meditation
- Understanding the

Basic Principles



*Columns
*Rotation
*Substantial and Insubstantial
*Moving from the dan tian
*Ball of energy/Circular movements
*Being rooted and grounded
*Relaxation and connectedness
*Breathing

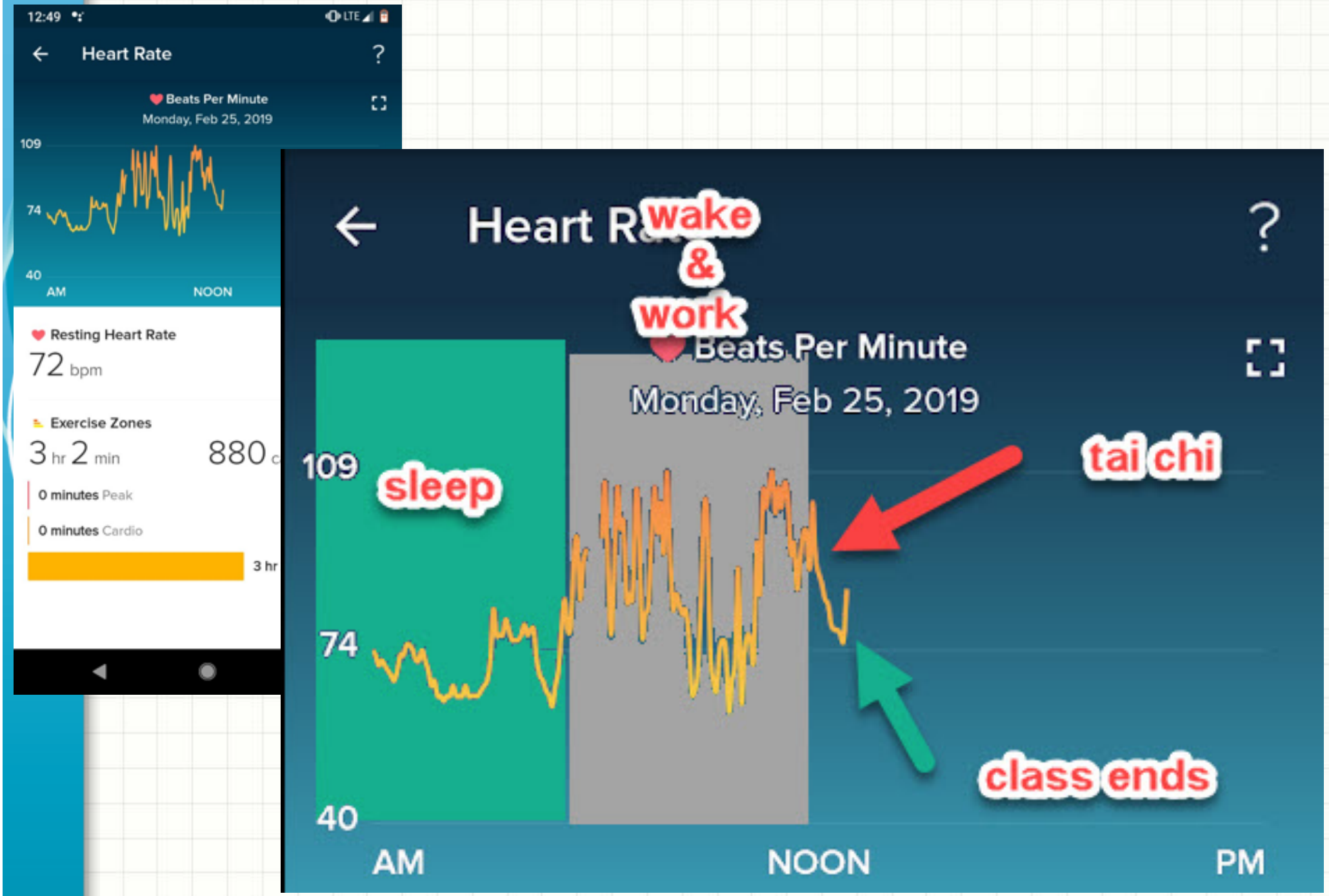
Tai Chi



Paradox:

Sense of Opponent

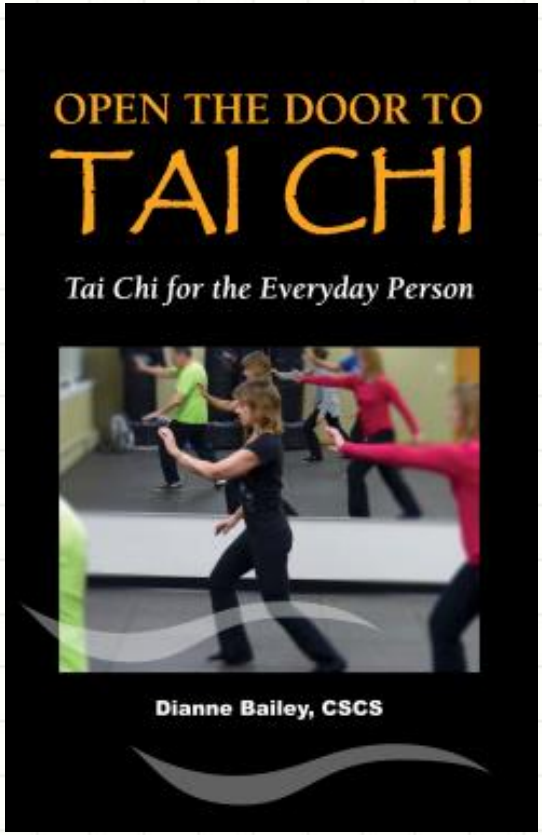
Neutralizing the Threat


12:49
Heart Rate
Beats Per Minute
Monday, Feb 25, 2019
109
74
40
AM
NOON
Resting Heart Rate
72 bpm
Exercise Zones
3 hr 2 min
880
0 minutes Peak
0 minutes Cardio
3 hr
wake & work
sleep
tai chi
class ends
PM

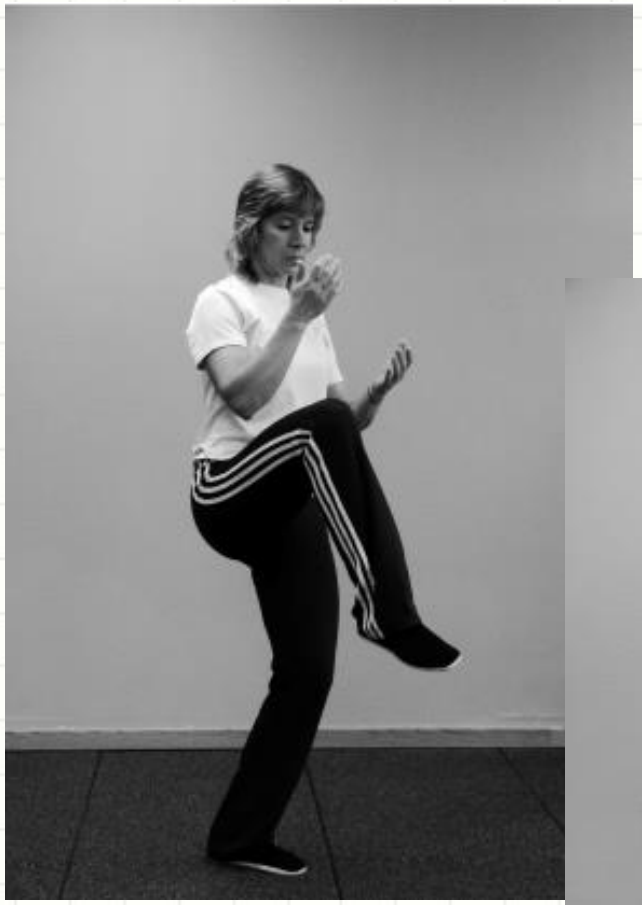
Open the Door to Tai Chi

You can learn it and teach it.

Start providing the benefits that we want to provide to our clients!



Parts 1 & 2



History,
Individual
Movements

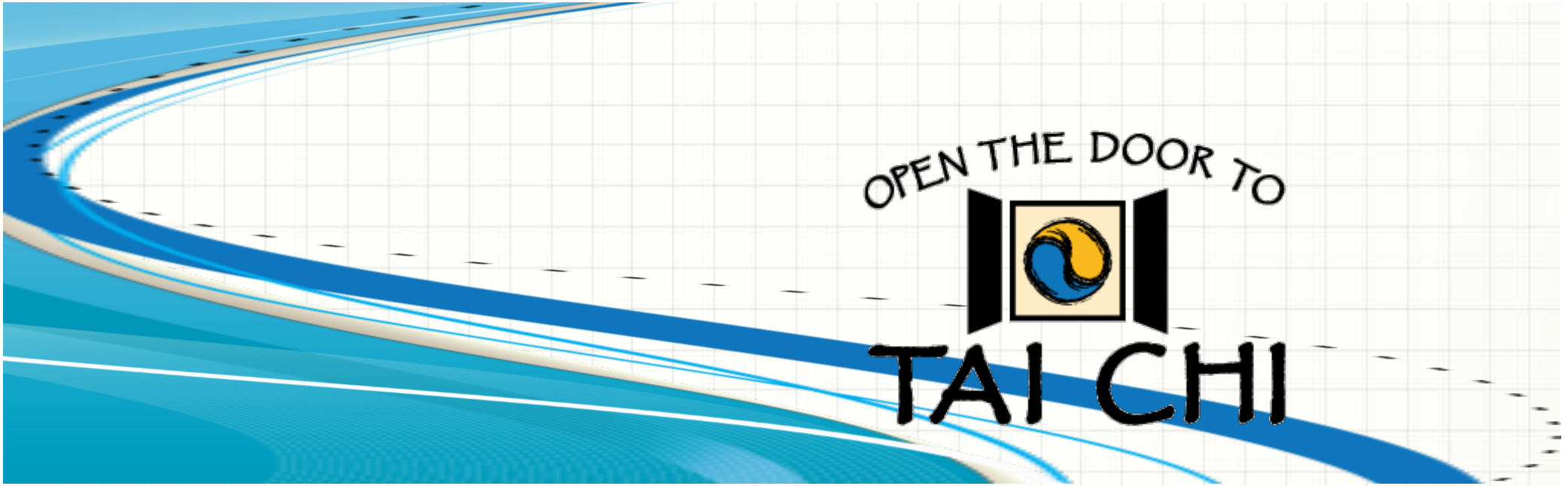
Part 3

Learning how to teach

Incorporating principles

How to organize classes

24 class plans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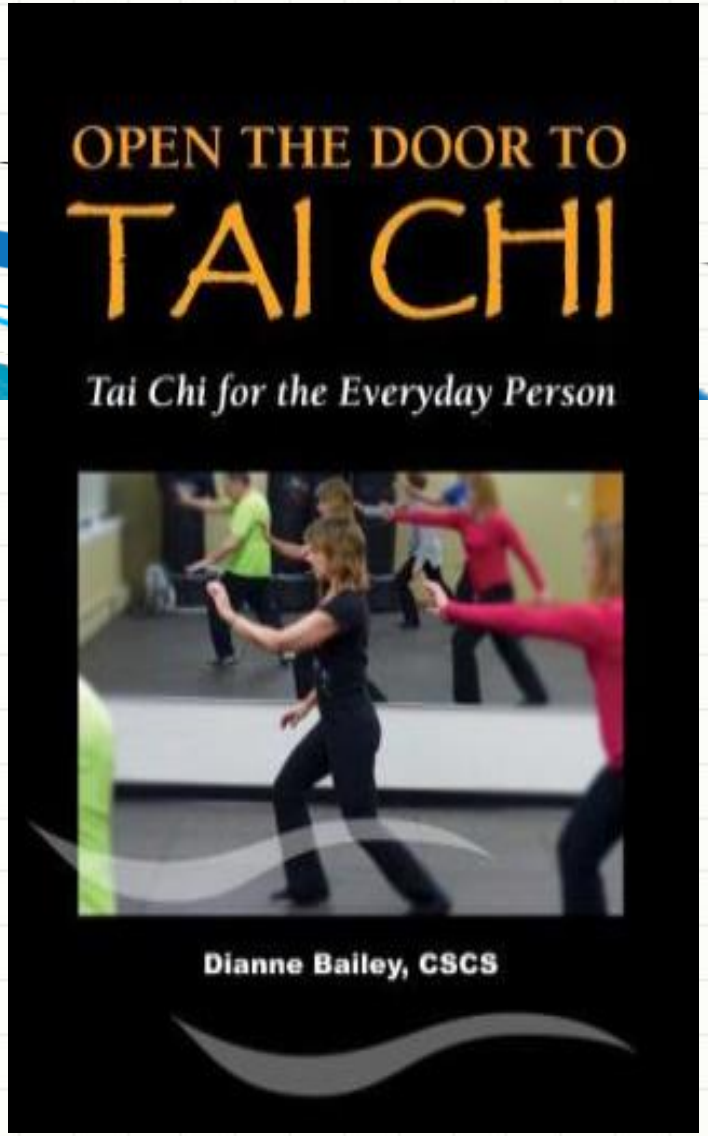

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Thank you!