

2021 NSCA PERSONAL TRAINERS VIRTUAL CONFERENCE

#NSCPT21

CONFLICT OF INTEREST STATEMENT

I have no actual or potential conflict of interest in relation to this presentation.

SPARK

What am I about?

I live to be a spark.

My mission
is to ignite in others

awareness

curiosity

strength

love

as a means of
empowerment.

as a way to make people's
lives better



My Current Universe

Toyota Performance Center

Who I train...

Young professional drivers from aspiring to become elite NASCAR drivers

- 18 yrs
- Mostly boys
- Mixture of local and remote programming
- Training age of 0 – 4ish
- Many homeschool beginning around age 15yrs
- Families able to fund an early racing career

Interactions range from:

**sponsor
meetings**

**peeps in
the shop**

**everything
in between**

Training Non Traditional Athletes

Toyota Driver Development

**Matching skills built in the weight room
to skills needed on the field of play.**

What do you do when those correlations are not straight forward?

Reveal untapped areas of growth potential

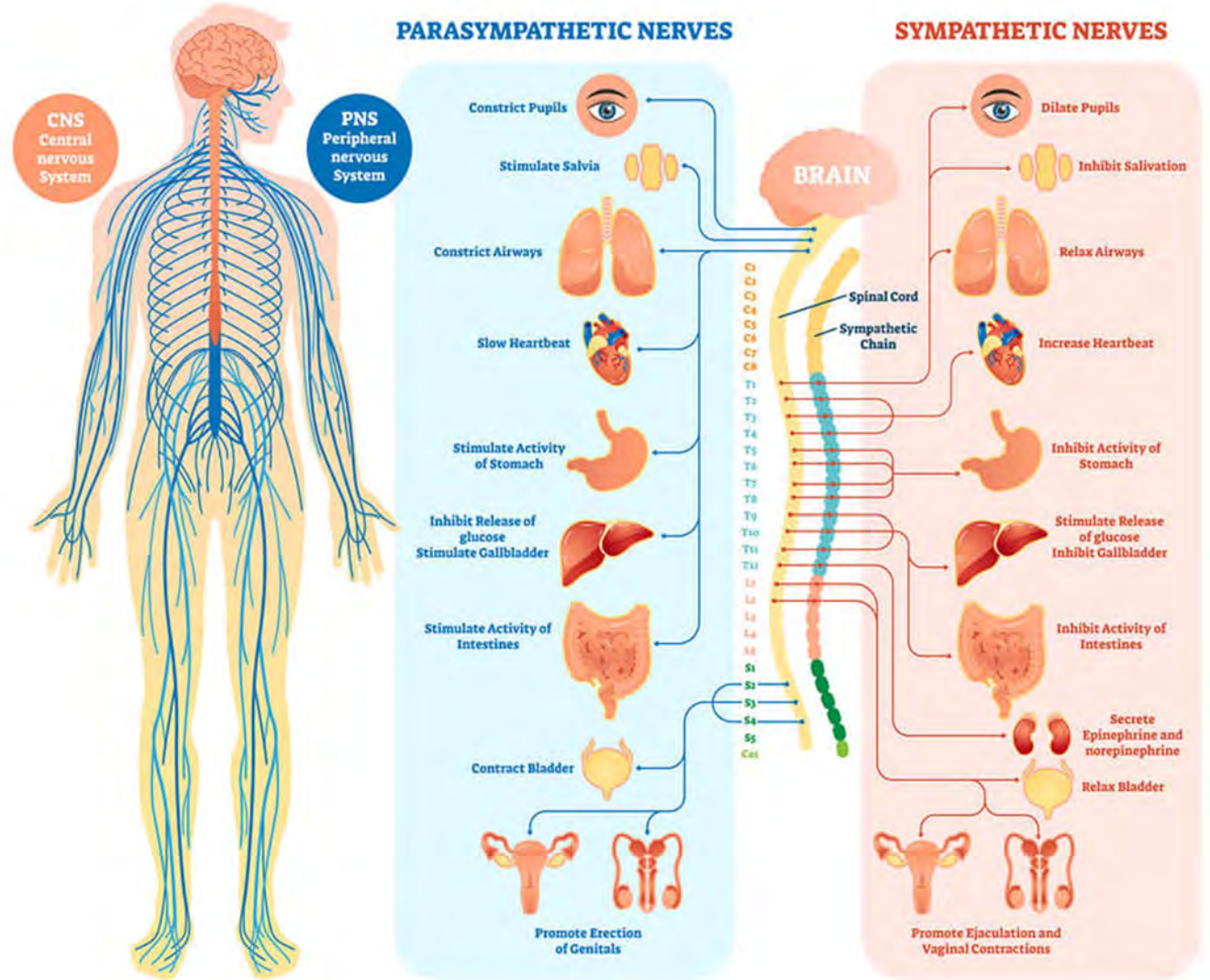
Immediate Resiliency

- Build an organism prime to withstand and thrive in the environment of a NASCAR driver from week to week
- **Help navigate day to day social stressors, developing “soft skills”**

Career Resiliency

- Build an organism with long term growth potential, able to battle the long term toll on the body due to being a NASCAR driver
- **Utilization of “soft skills” to develop meaningful personal and business relationships**

Autonomic Nervous System



* Infographic from American Addiction Centers.org

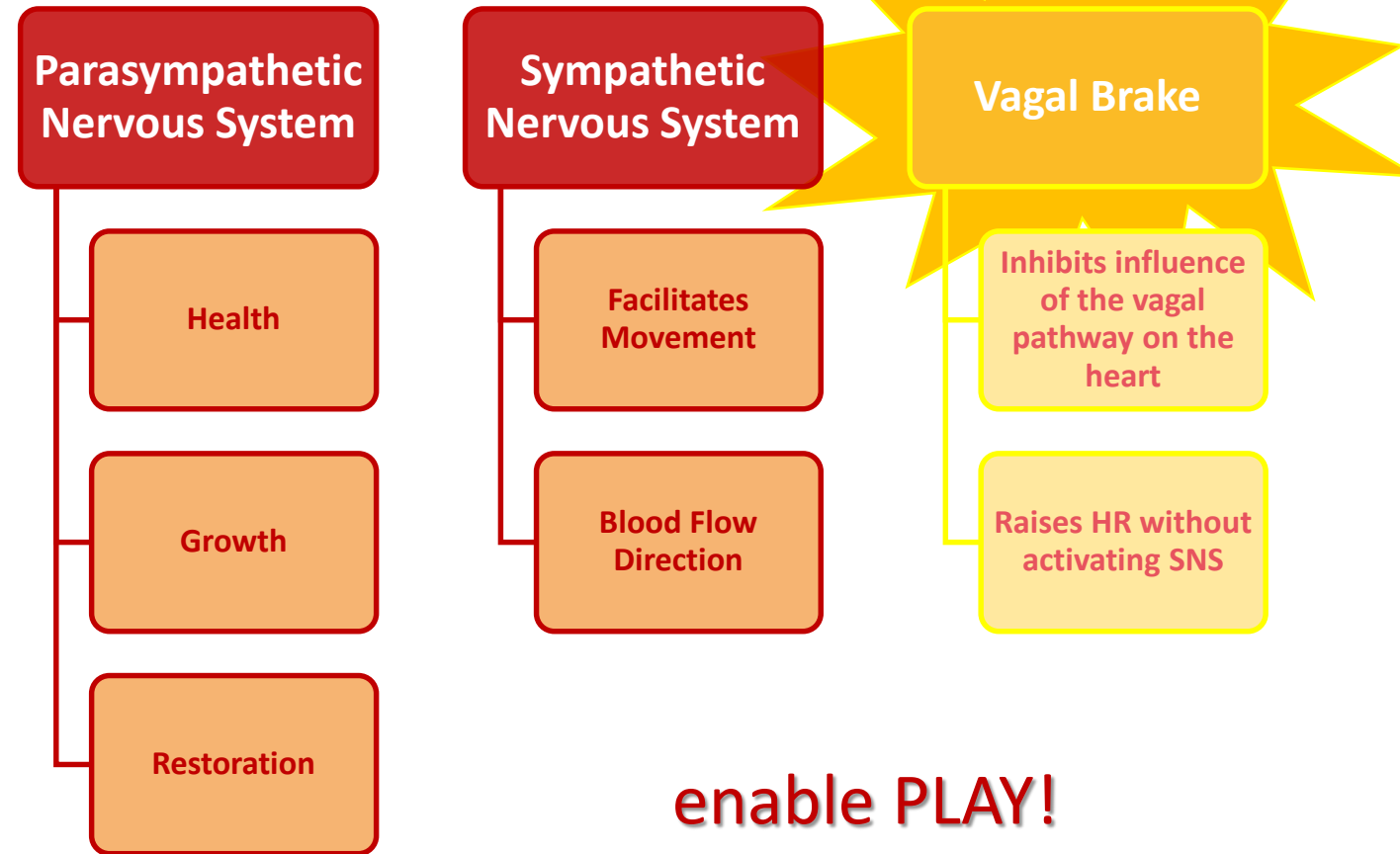
Polyvagal Theory

Introducing Stephen Porges



Polyvagal Theory

The Science of Safety



Polyvagal Theory

Introducing Stephen Porges

3 Autonomic Circuits

Fight/Flight

Play

Social
Engagement
*

Intimacy

Shutdown

SNS

Ventral
Vagal & SNS

Ventral
Vagal

Ventral
Vagal* &
Dorsal Vagal

Dorsal Vagal

Polyvagal Theory

We are in the Business of PLAY

“Interactive play as a neural exercise requires synchronous and reciprocal behaviors between individuals and necessitates an awareness of each other’s social engagement system. Access to the social engagement system insures that the sympathetic activation involved in the mobilization does not hijack the nervous system, resulting in playful movements transitioning into aggressive behavior.”

“Autonomic state can support mobilization and immobilization behaviors that are not defensive when coupled with activation of the ventral vagal circuit AND the social engagement system. Thus by coupling the social engagement system with the sympathetic nervous system there is an opportunity to mobilize without moving into defense. This is observed in PLAY in which aggressive movements are contained by social engagement behaviors.

–THE POCKET GUIDE TO THE POLYVAGAL THEORY

HRV & ANS Balance

Determining “Readiness”

HRV offers a window into the **Autonomic Nervous System**

HRV can be used to determine **Readiness**

Readiness is often defined as the state in which our system has spent enough time in PNS to balance SNS

Recovery happens with quality PNS activation often referred to as **Vagal Tone**

Active Individuals can spend a great deal of time with SNS activation, (for many reasons)

For the average human, HRV is an indicator of **Overall Health**

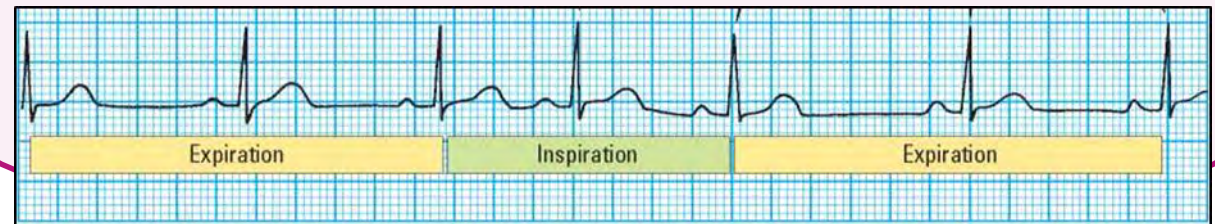
Breath, Heart Rate & HRV

HRV Biofeedback

Inhalation tied to a
Sympathetic (SNS)
response



Exhalation tied to a
Parasympathetic (PNS)
response

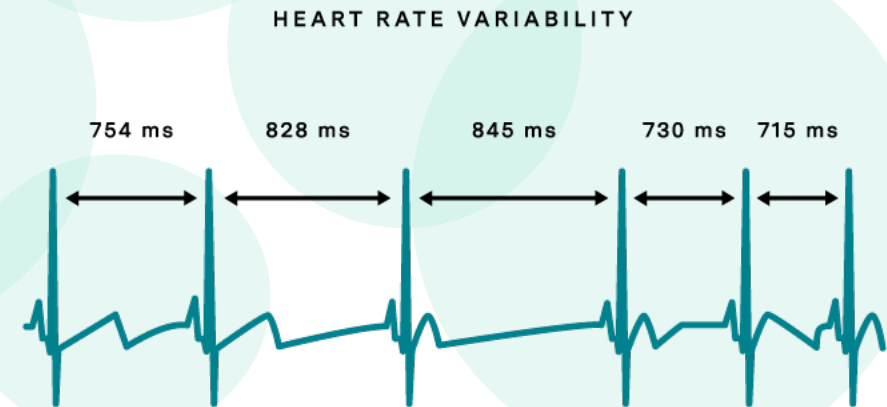


Understanding HRV

Highs and Lows

Heart Rate Variability: Constant variation of time (milliseconds) between heart beats. The time difference from one heart beat to the next.

- HRV reacts to stress and illness before resting HR
- Normal adults range from 20-200ms
- Some people HRV remains steady, other's fluctuate greatly
- Compare apples to apples
- Baseline over time



Untangling HRV

Highs and Lows

High HRV Greater Variability/Adaptability

- More room for variability between beats
- Behavioral flexibility
- Can be an indicator of good health
- Effective SNS responsiveness and PNS return

Low HRV Smaller Variability/Adaptability

- Less room for variability between beats
- “stuck” in an ANS state
- Will eventually be an indicator of poor health
- Loss of ability to navigate/regulate ANS responses

Breath, Heart Rate & HRV

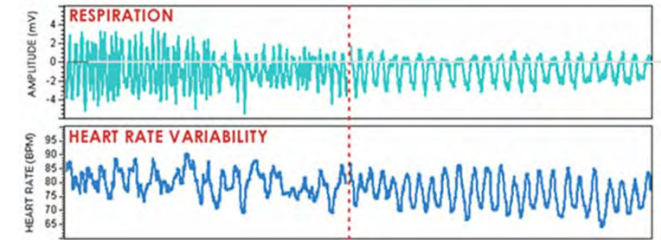
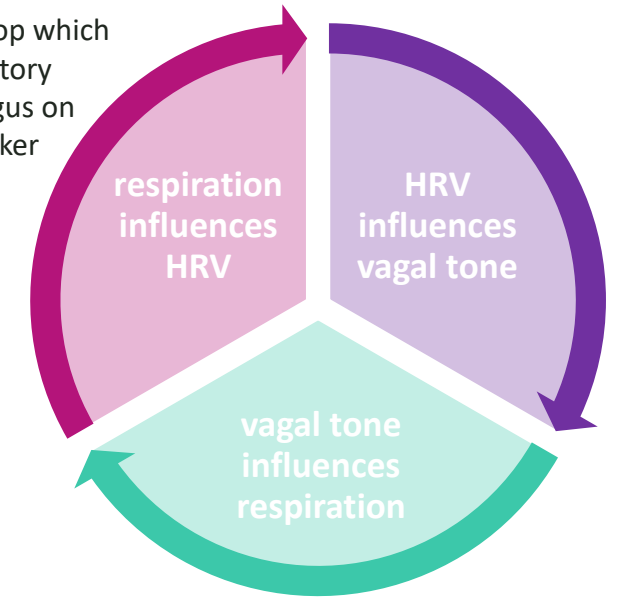
Feedback Loop

Neural feedback loop which regulates the inhibitory influence of the vagus on the heart's pacemaker

Cardiac Vagal Tone:
the contribution of the Parasympathetic Nervous System (PNS) to cardiac regulation

Respiratory sinus arrhythmia:

- Rhythmic increases and decreases in heart rate occurring at the frequency of breathing
- Functional manifestation of vagal influences on the heart.
- Serves as an accurate index of **cardiac vagal tone**



The heart sends more info to the brain,
than the brain sends to the heart.

Take a Breath

Breathing is both VOLUNTARY and INVOLUNTARY

A section of the PONS will release norepinephrine in order to override the medulla **oblongata** allowing a person control of the otherwise involuntary act of breathing (within limits).

depth of breath – how much air is coming in and going out

length of breath – the amount of time an inhale and an exhale take

muscle involvement – feel and identify which accessory muscles are assisting in the inhale and exhale

Inhibit those which prevent increased depth and length of breath

Activate those which assist increased depth and length of breath

Consistent practice overrides the current breathing habit

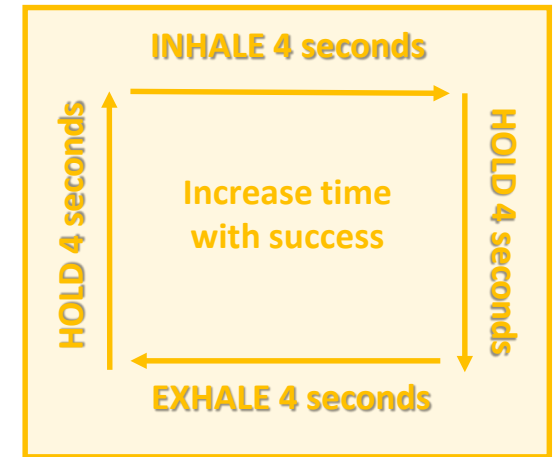
Creating one of a higher quality, breath with more depth and length)

Breath & Inhibition

Box Breathing

- **Lower Heart Rate**
 - Activation of PNS
 - Feeling of safety/calm/clarity
- **Realization**
 - voluntary breath control
- **Voluntary Control**
 - breath pace and depth
- Introduction to/ practice of **single pointed focus** or unifying attention

Hidden
Success



Breath & Inhibition

Low Back & Lat

- **Realization**

- inhibitory power of an exhale

- **Voluntary Control**

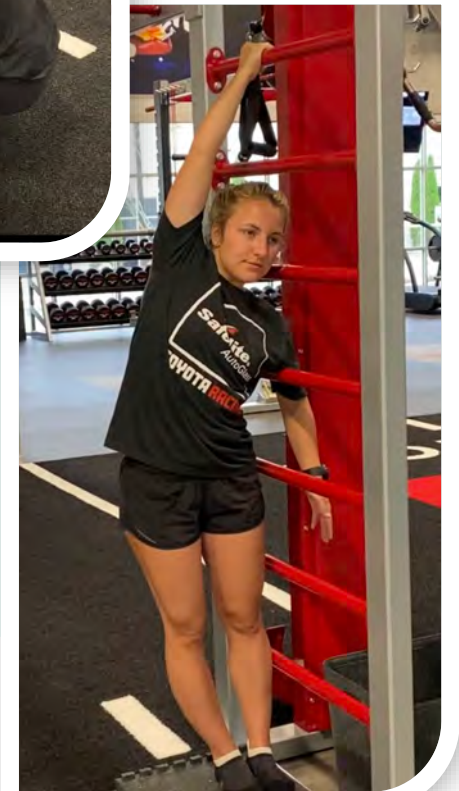
- ability to relax/inhibit a given muscle

- **Empowerment**

- Solving “tightness” and uncomfortable/bound feelings within muscles



Hidden
Success



Breath, Inhibition & Activation

90/90 Breathing



- **Utilization**
 - muscles vital for core stabilization
- **Increased potential**
 - spinal loaded movements
- **Patterning**
 - improved overall
 - fewer injuries

Hidden
Success



AND ALSO...

Opens the door for **unifying focus** on activation and inhibition of other muscles (ex, glute activation, upper trap inhibition)

Single pointed focus improves the ability to fine tune movements for **optimum movement quality**

Breath, Inhibition & Activation

Takeaways

90/90 Breathing Drill Example

Learn pelvic tilt

- notice and correct pelvic positioning

Learn IO & TA activation

- what it feels like when they're on vs not on

Learn to fine tune inhibit and activate

- Notice upper trap, neck, anterior shoulders, quads inhibiting
- Notice IO & TA, hamstrings, adductors activating
- Notice pressure through your feet, press through mid-foot and heel



Breath, Inhibition & Activation

Squatting



Same Cues, Different Lift

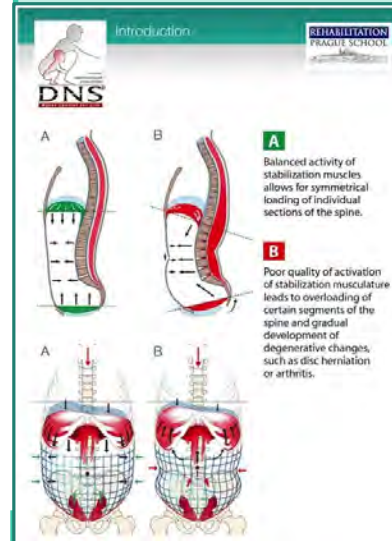
- **Pelvic positioning**
- **Stabilize** core w/ IO & TA activation tied to val salva
- Cue bodyweight over the mid-foot and heel what this does to **muscle activation**
- Utilize precise and controlled **use of breath** for different aspects of the movement

Make cuing breath, and noticing activation/inhibition a normal part of coaching technique

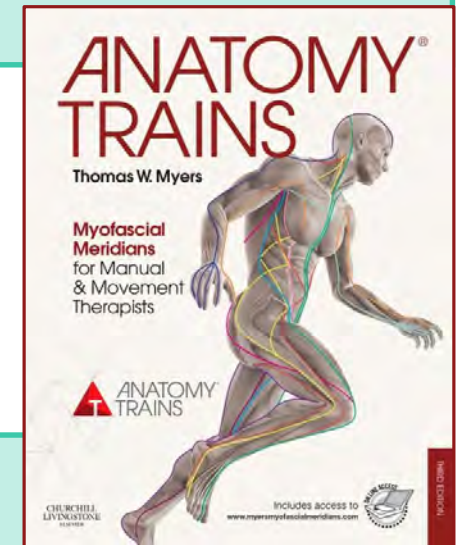
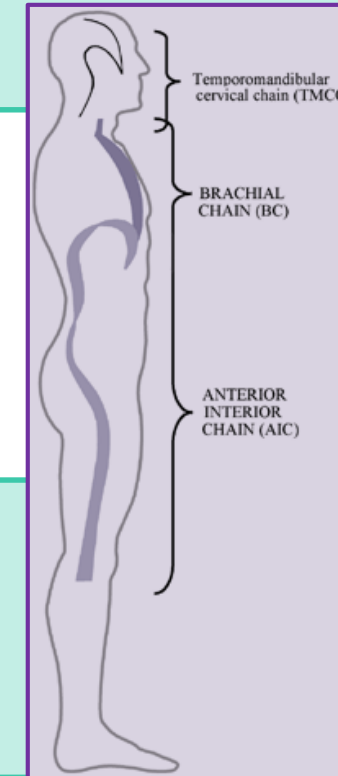
Breath & Work

Don't Take My Word for It

Postural Restoration Institute



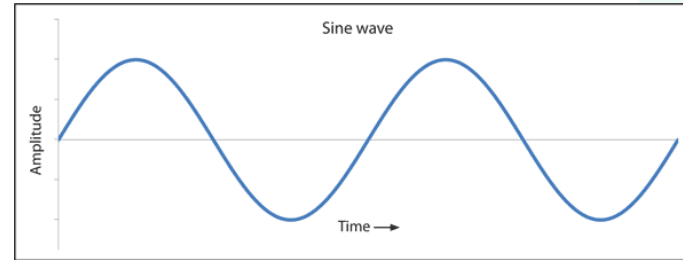
Dynamic Neuromuscular Stabilization



Anatomy Trains

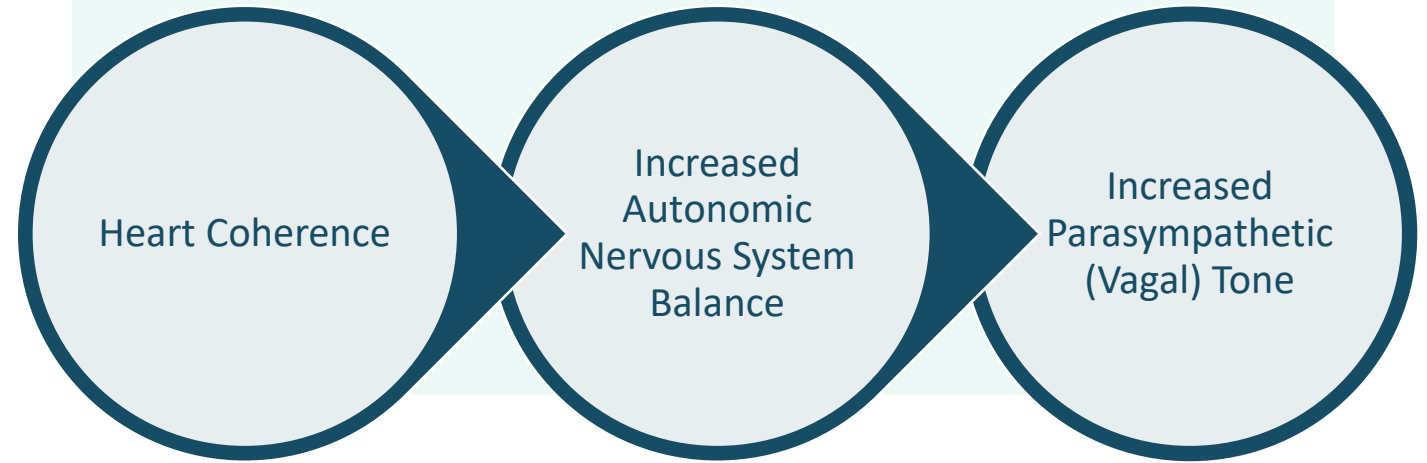
Heart Coherence

Breath, HR & Emotion



- Also referred to as cardiac coherence or resonance
- Tie between **heart rate, breath and emotion**

- Heart rhythm pattern becomes more ordered with a sine wavelike at a frequency of around 0.1 hertz (10 seconds)
- Measured by HRV analysis

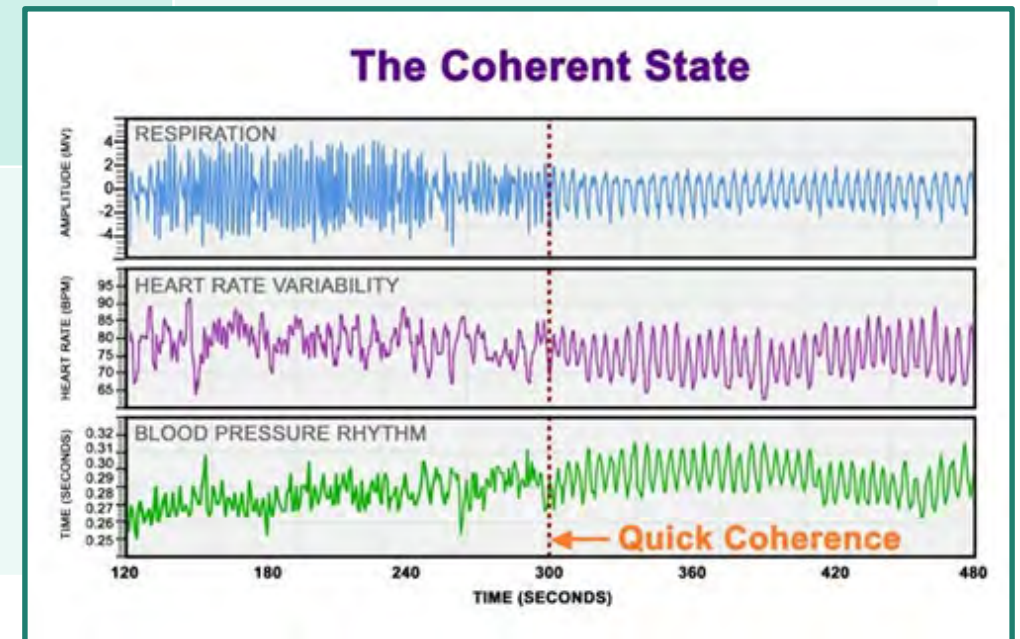


Heart Coherence

Emotions & Thoughts Influencing ANS

PERFORMANCE

The coherent state has been correlated improvements in **cognitive, social** and **physical** performance.



Influencing ANS

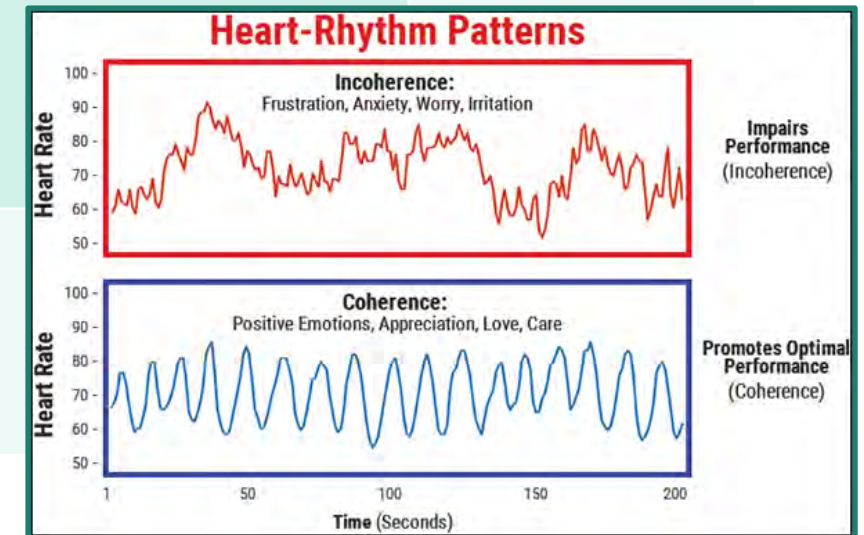
Emotions & Thoughts Influencing ANS

POSITIVE EMOTIONS

Association between **emotions** and **heart-rhythm patterns** in studies conducted in both laboratory and natural settings and for both *spontaneous and intentionally* generated emotions

ACHIEVING COHERENCE

Positive emotions not only "feel better," they actually tend to increase synchronization of the body's systems



Sweet Emotion

Positive Emotions & Coherence



“While some rhythmic-breathing methods may induce coherence for brief periods, our research indicates that people can achieve extended periods of physiological coherence by actively self-generating positive emotions.”

-Heart Math Institute

Emotions... Everyone has them whether we are good at ignoring them or feeling them

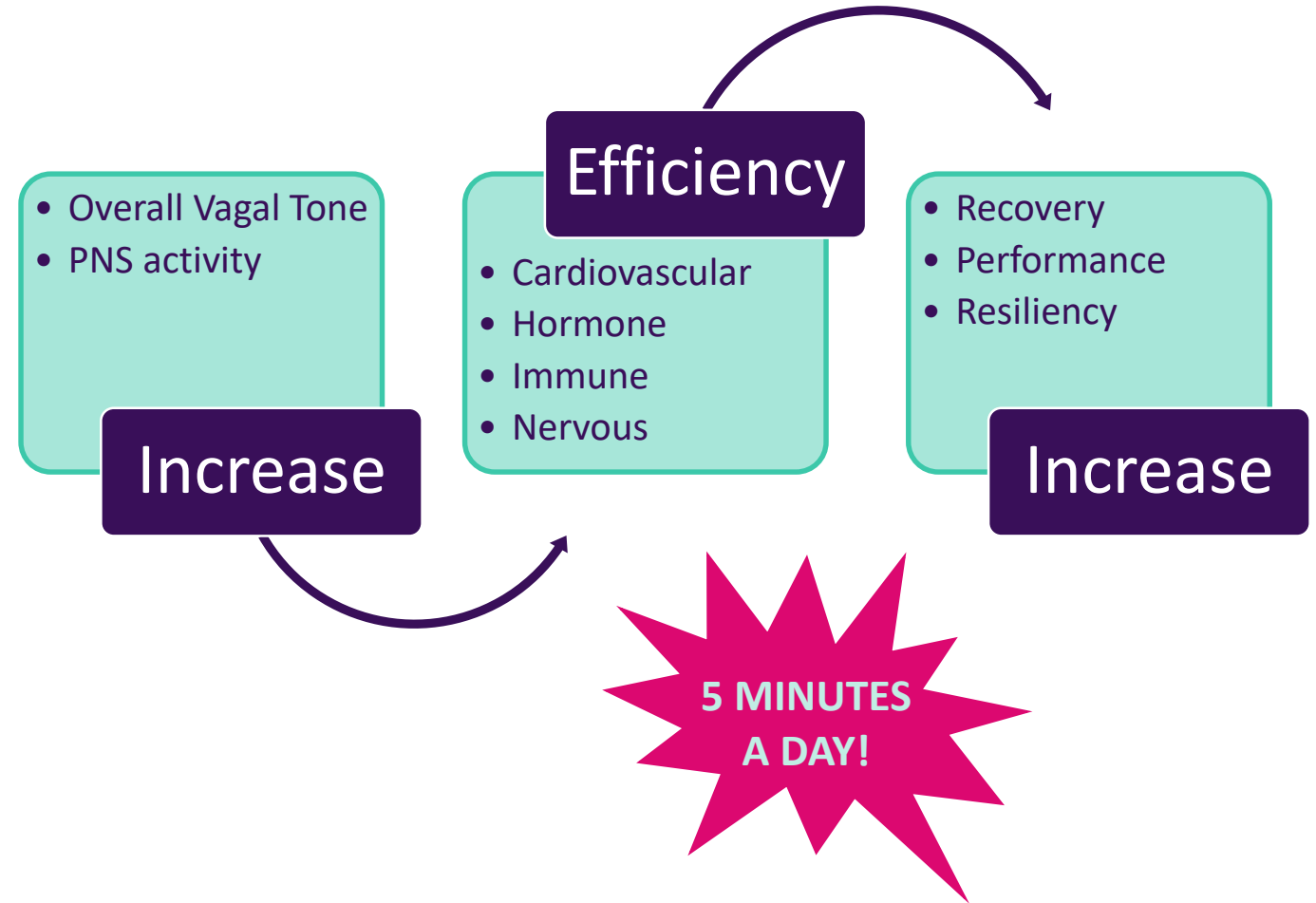
Positive emotions have been tied to the ability to return from a heightened SNS state. A return from the “unsafe”

Easier to understand the effect of *negative emotions*

Arnold & Pumping Iron

Why Develop Coherence

Starting Point for Athletes



Heart Math

Inner Balance System



- ✓ Real-time HRV feedback
 - ✓ Measures HRV and Coherence during live sessions
- ✓ Real-time coaching cues
- ✓ Breath pacer
- ✓ Track Progress
 - ✓ Progress over time
 - ✓ Notes
 - ✓ Award badges
- ✓ Individualized Goals
 - ✓ Challenge level
 - ✓ Practice plans
- ✓ One system, endless phones
 - ✓ Individual progress w/ phone app



www.heartmath.org

Breath & Coherence

Implementing Heart Math

- **Easily Practiced**

- warm up, cool down
- pre game, post game
- mobile device

- **Measured Progress**

- scalable
- visual

- **Time efficient**

- 5 minutes a day



Hidden Success



CONNECT THE DOTS

The ability to achieve coherence can be applied during “stressful” situations.

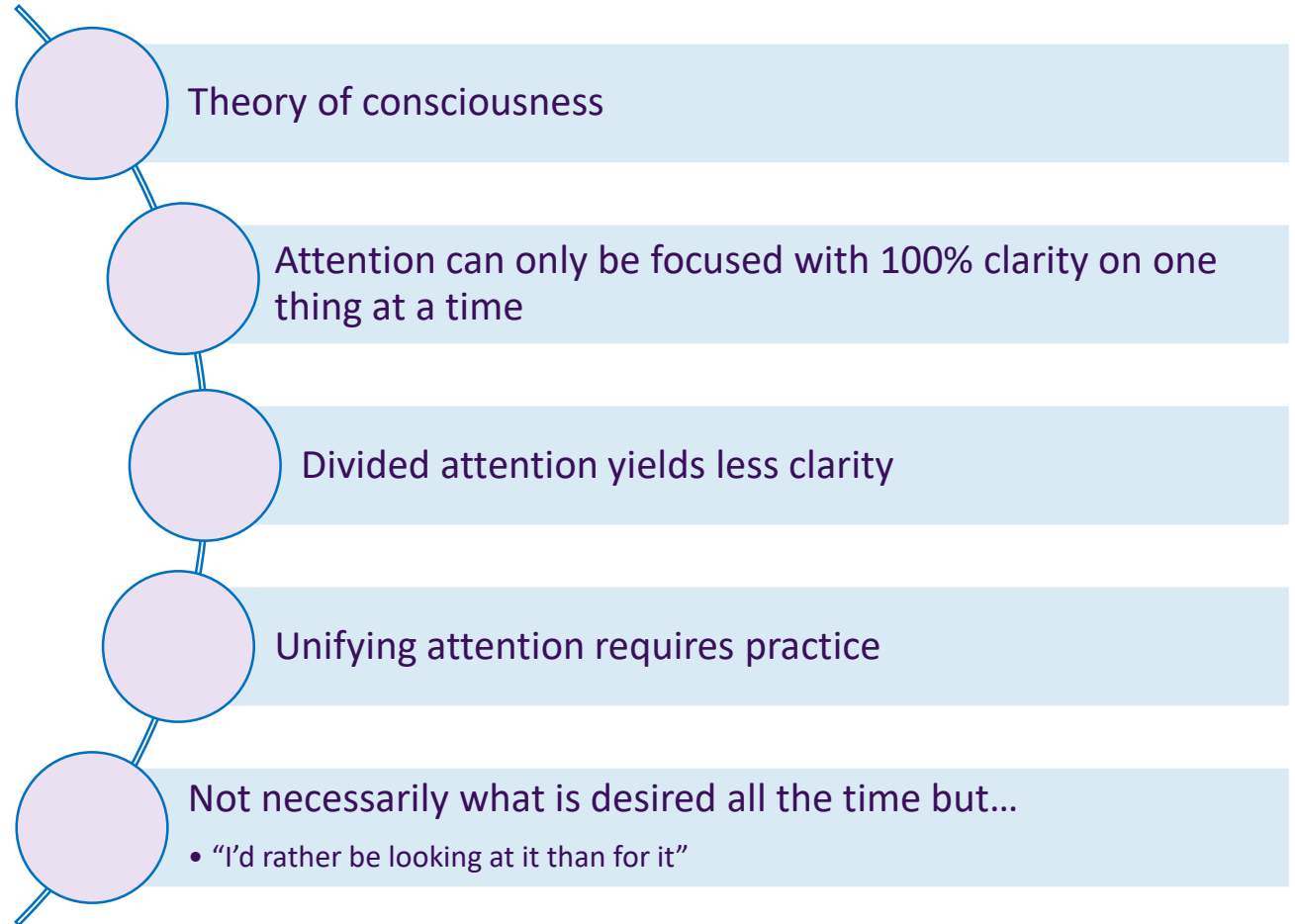
➤ Home

➤ Work

➤ World

Global Workspace Theory

Unifying Attention



Putting the Octopus to Sleep

Practicing Single Pointed Attention

1. Notice breath

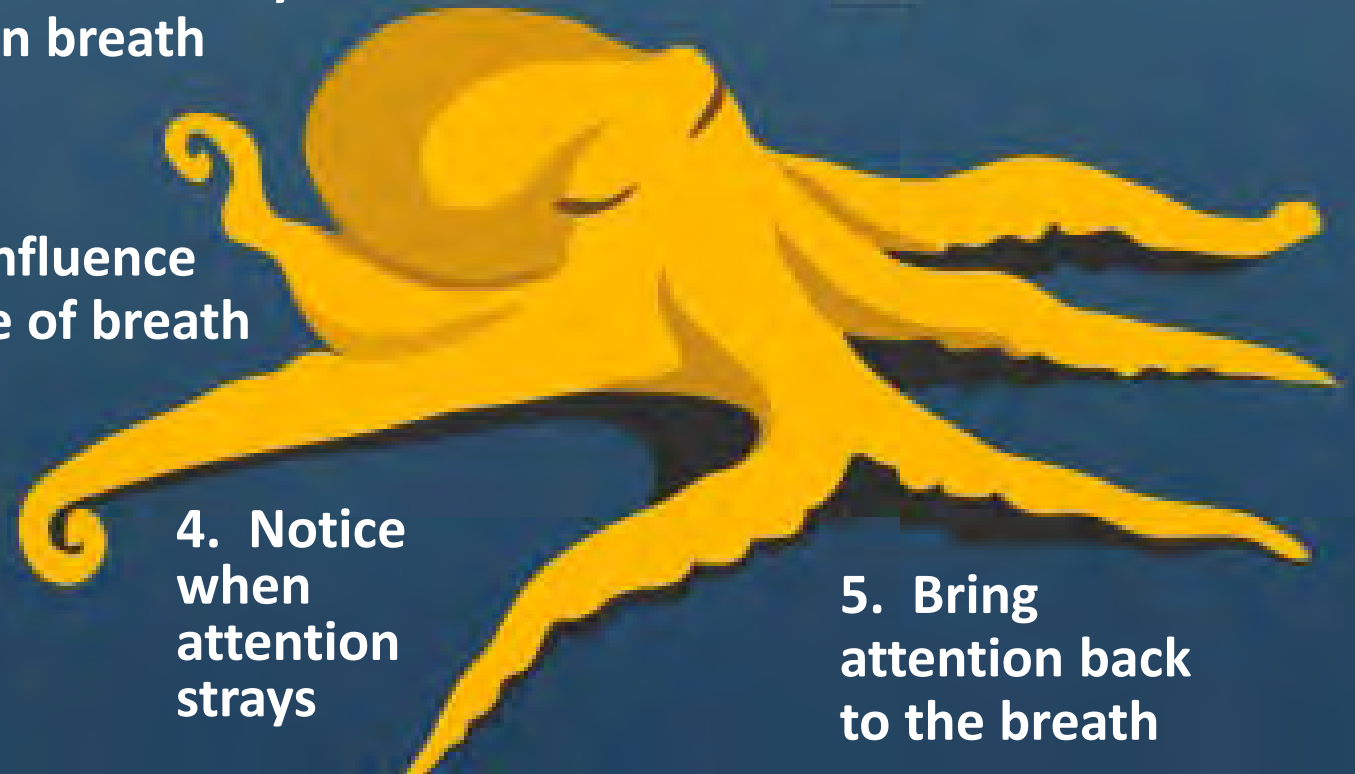
2. Focus only
on breath

3. Influence
pace of breath

4. Notice
when
attention
strays

5. Bring
attention back
to the breath

Michael Johnson
Bahkti Yoga Workshop



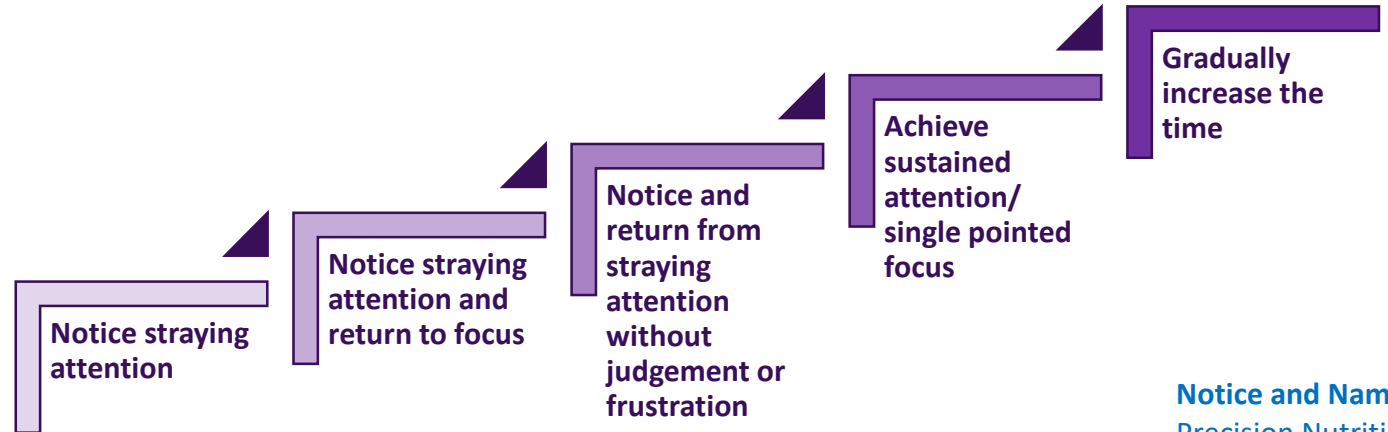
Levels of Focus

Building Tolerance for Sustained Attention

Advanced training requires **RESILIENCY**
(of body AND of mind)

The most successful *habit over-writers* are **PROCESS ORIENTED**

Eventually this practice will promote **CLARITY** of thought
(freedom from distraction)



*Outcome attachment can ruin long term training plans

Notice and Name
Precision Nutrition
staple habit change
concept

Breath & Single Pointed Focus

PNS Activation Opening the Door

- ❖ Focused breathing
- ❖ Paced breaths
- ❖ Noticing distractions
- ❖ Returning to single pointed focus (or unified focus)
- ❖ Pairing paced breath with movement

Key *initial steps* to any mindfulness meditation practice

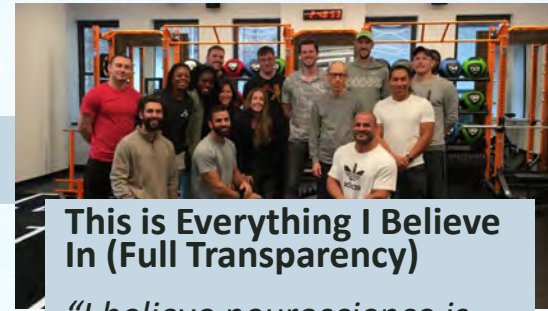
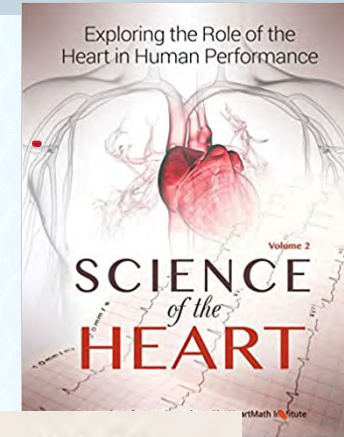
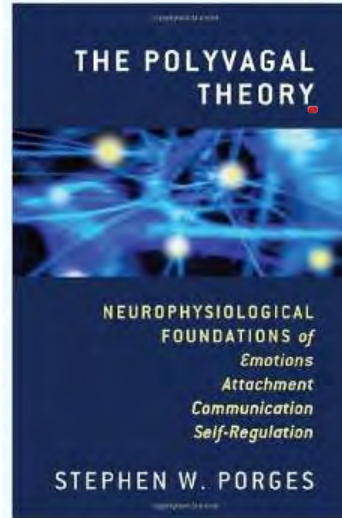
Powerful tools for increasing **Vagal Tone**

Please Note:

This is not the goal of meditation, itself but the door to further physical, cognitive and emotional benefits of mindfulness meditation

Not alone.

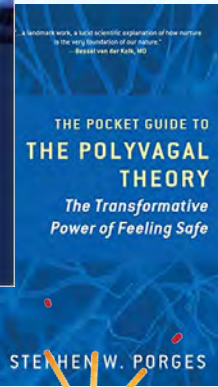
Sources of Knowledge & Inspiration



This is Everything I Believe In (Full Transparency)

"I believe neuroscience is the most important component of exercise science...I believe gratitude is the key to success...The ONLY thing you need to train is your mind."

-Sean Light



The more you slow down and pay attention:



the more you'll be able to notice what's really going on.



the more you'll be able to match what you do to what you really, truly, deeply want.



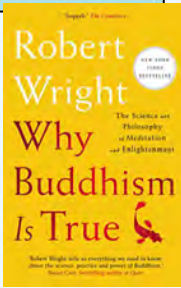
the more you'll feel in charge of your choices.



the more you'll feel like you can be wise, calm, thoughtful, and purposeful.



Precision Nutrition



Caitlin Quinn, CSCS
Training for Resiliency in the High Stress Individual

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Sources and Thank You

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Thank you Jeff Stern, intern extraordinaire