MASS PI
KNOWLEDGE • EDUCATION • POLICY

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The Neuroscience of Posture

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Heron Stand

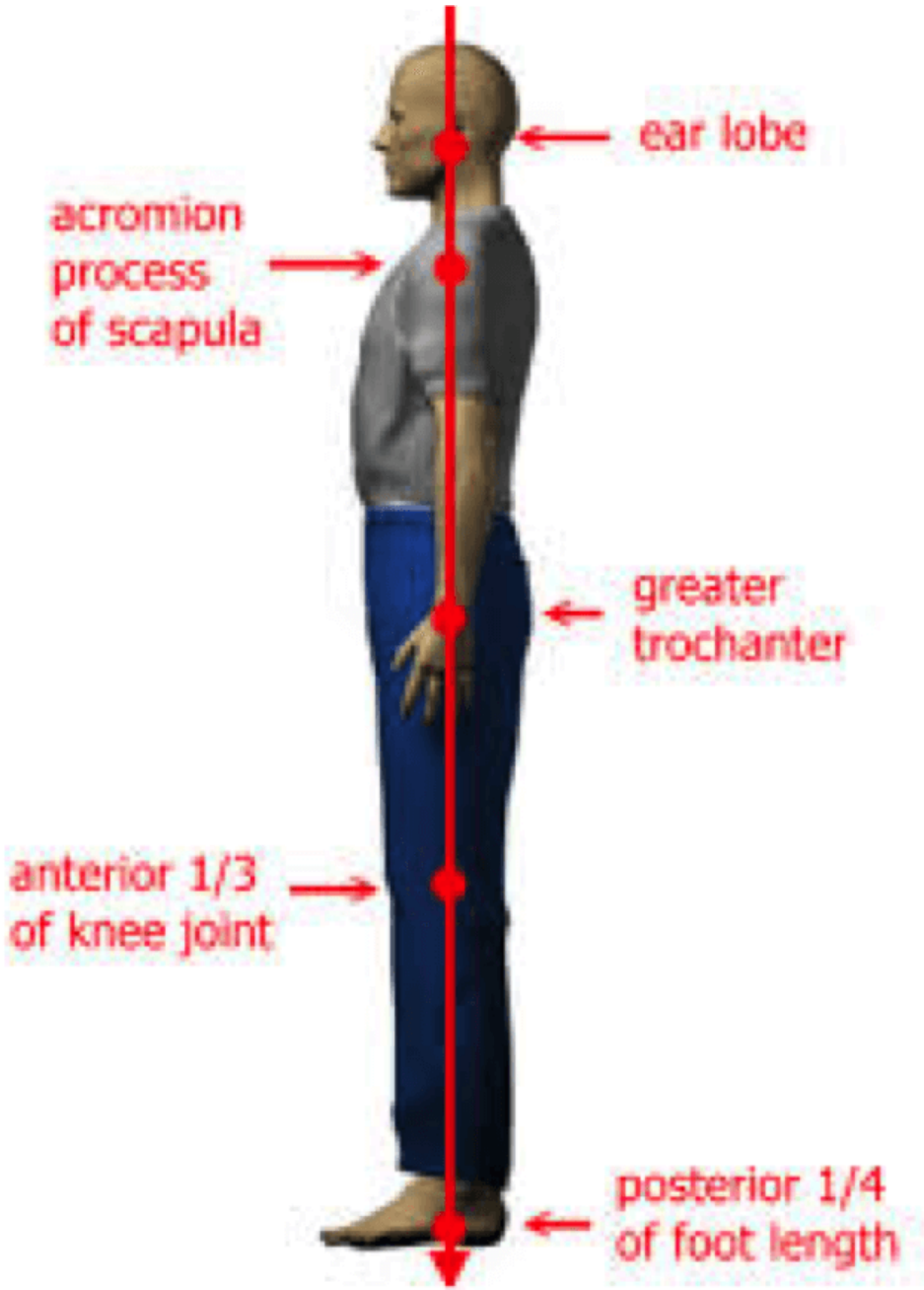
Objectives

Challenge	Challenge the notion that neck, back, and joint discomfort are just an unavoidable part of aging
Change	Change habitual behavior to prevent progression to misaligned posture
Discover	Discover that it's possible to reset your nervous system to improve posture

- Pain Specialist: Over 2 decades experience in pain management focusing on non-pharmacological management of chronic pain

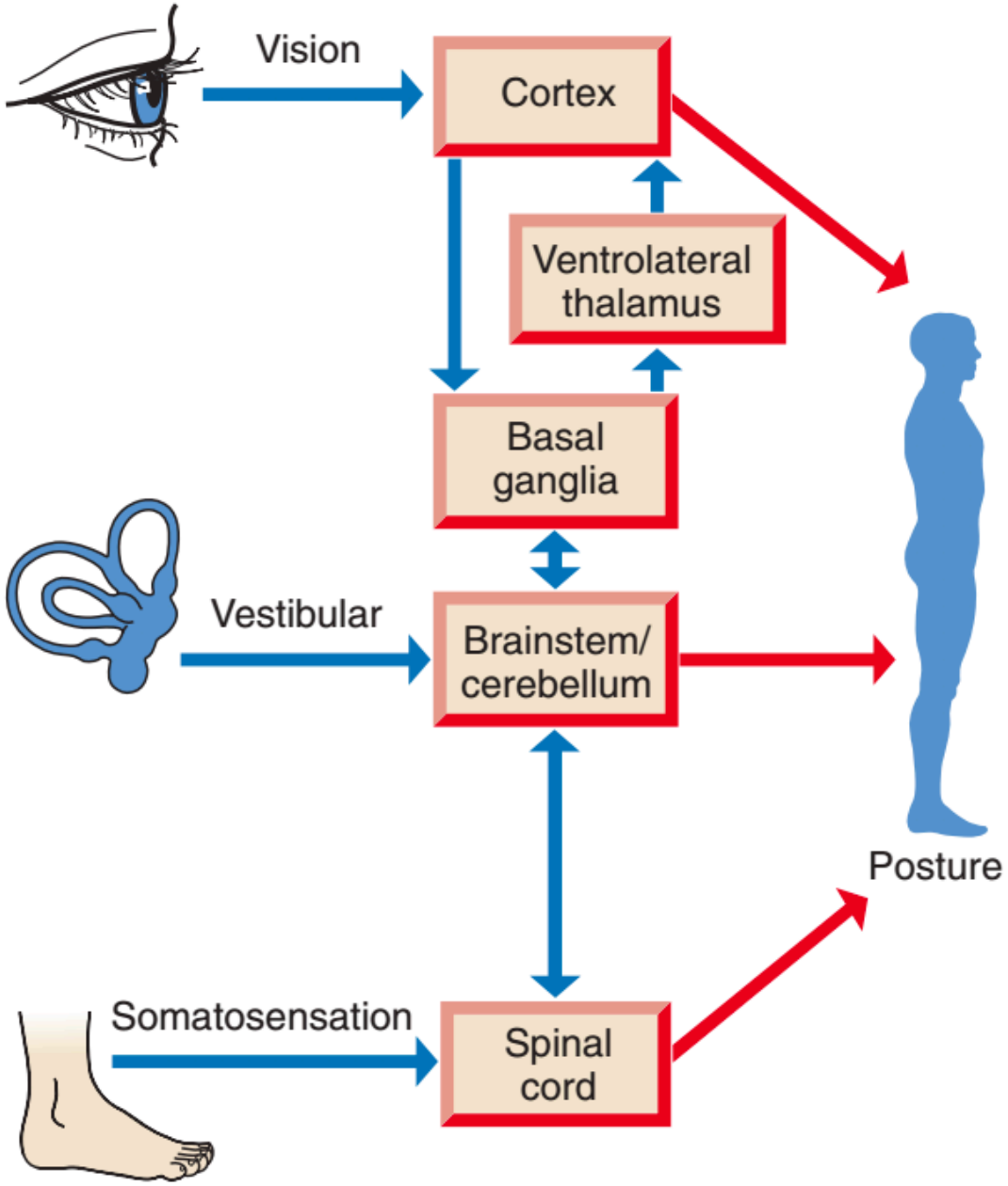
- Co-developer: Coping with Chronic Pain Workshop, a neuroscience-based pain education (brain retraining for pain) and yoga class offered as part of my practice

- Posture Educator: FitAlign breath-based neuromuscular exercise system designed to improve posture & core strength from the inside out (Michaelle Edwards)



Posture

- Posture is maintained by tonic muscle contractions acting against gravity
- Maintaining postural tone requires specialized neural circuitry
- Posture is automatic and unconscious- CNS is in control
- Misaligned posture can negatively affect health and longevity in a multitude of ways



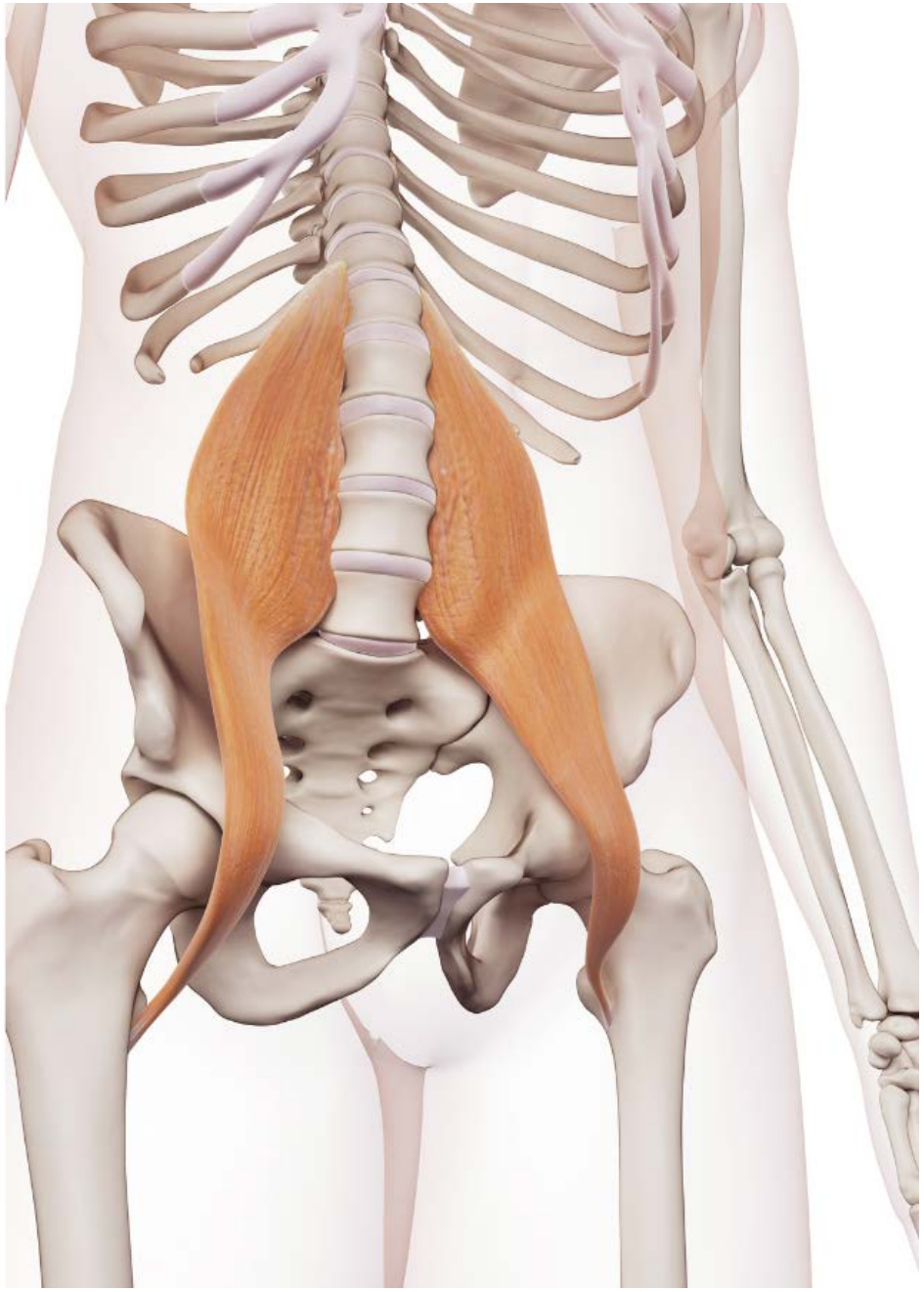
Multisensory inputs are necessary to maintain posture

- INPUT is from sensory nervous system
- OUTPUT is represented by muscle (affects/posture/balance/movement)
- Better quality INPUT=higher caliber OUTPUT (functional posture/increased agility, less pain/stiffness)

- What happens as we age?

Posture is the Result of Musculoskeletal Adaptation

- Sitting too much is not the same as exercising too little
- Prolonged sitting has a negative effect on posture

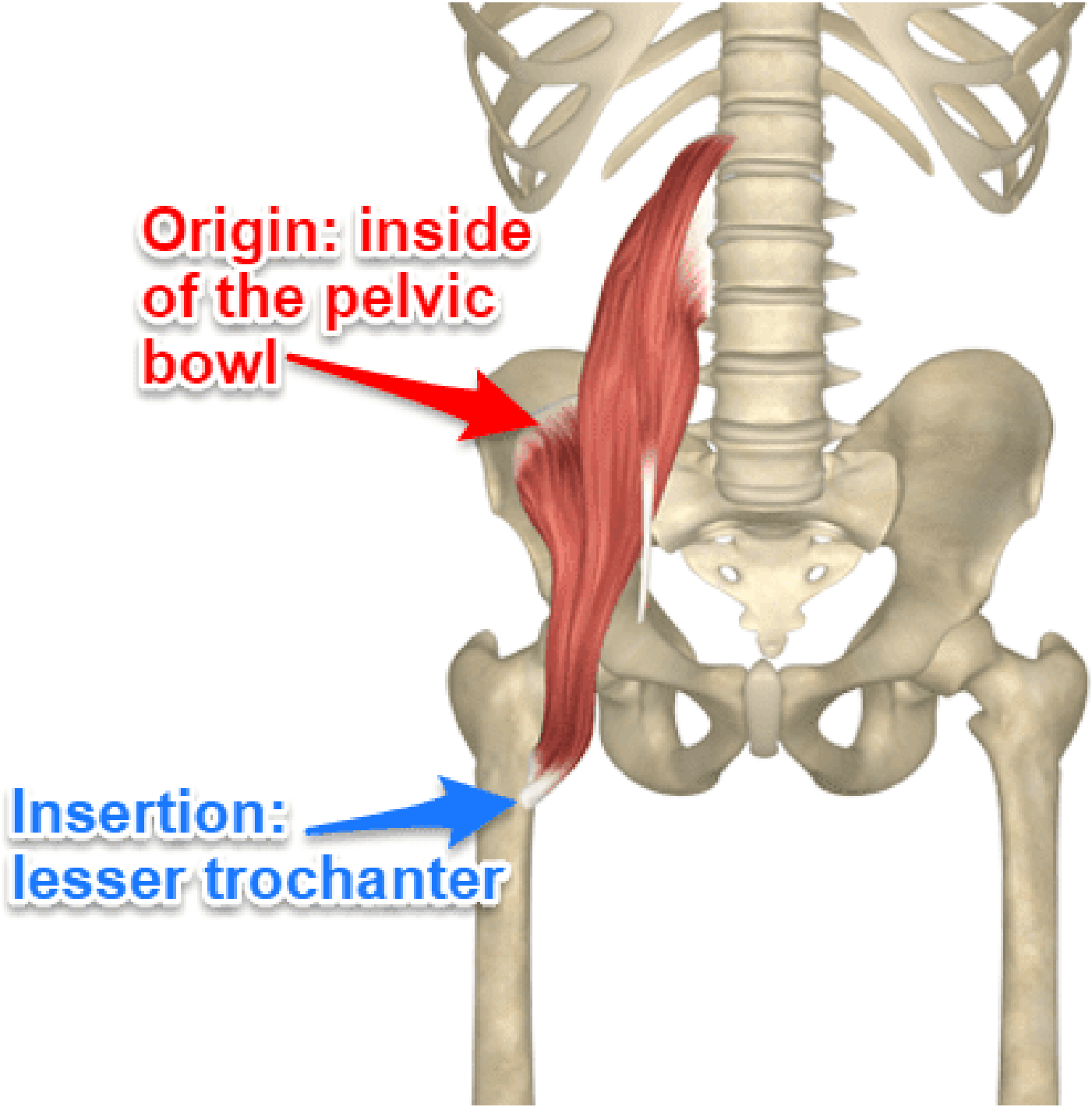


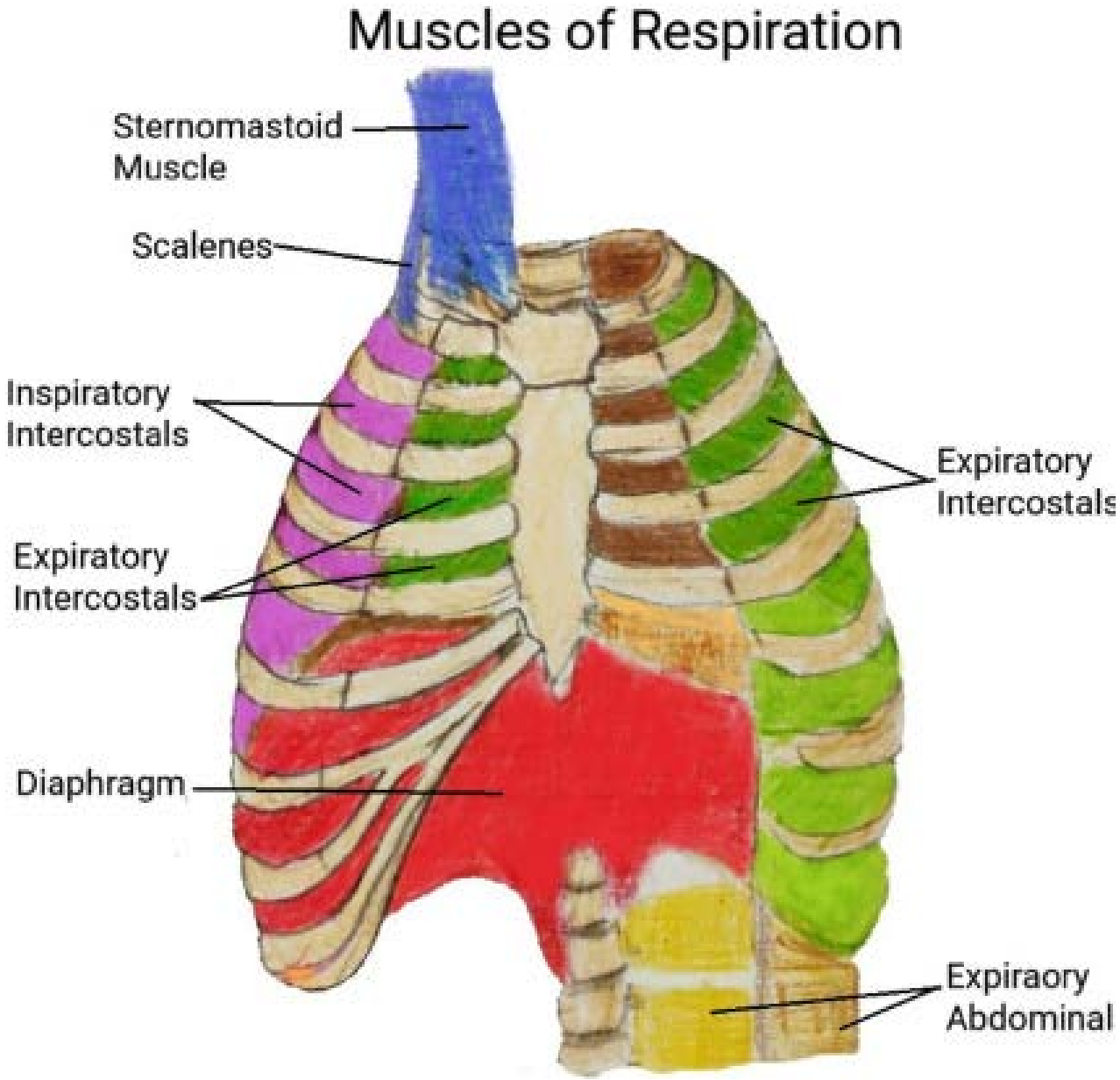
PSOAS MUSCLE

- Connects upper body to lower body
- Stabilizes posture

Iliopsoas

Iliacus plus Psoas major & minor





Posture changes from weakened breathing muscles

Intercostals: breathing/posture

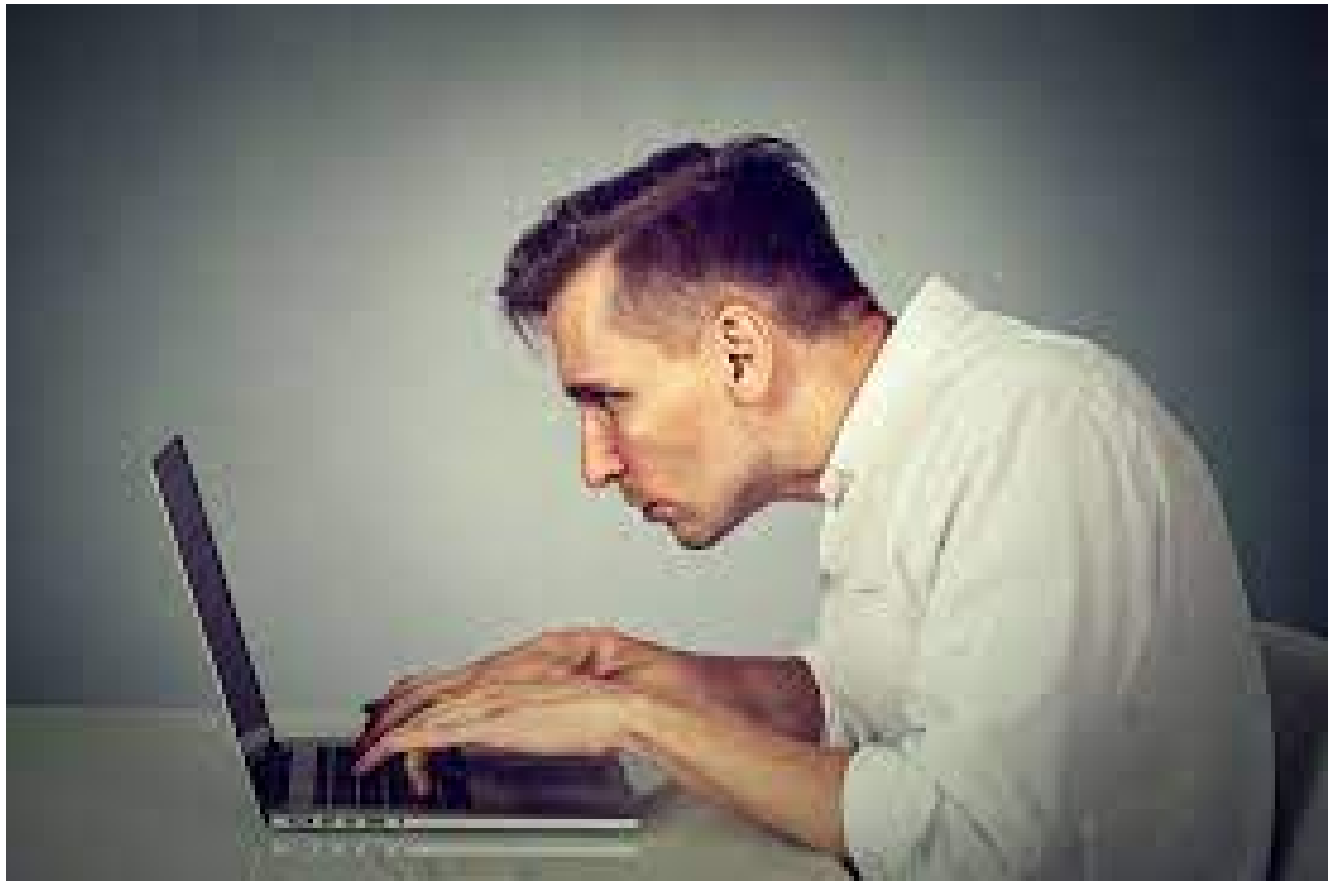
- Atrophy with Aging and Obesity
- Causes compressed abdominal cavity
- When strengthened, they help lift the rib cage and stabilize posture

Posture is an Adaptation

"The body ALWAYS adapts to exactly what it does"

Dr. Eric Cobb, Founder of Z-Health Performance Solutions

Z-Health Performance Solutions trains movement professionals in the functional neurology of pain relief and performance enhancement

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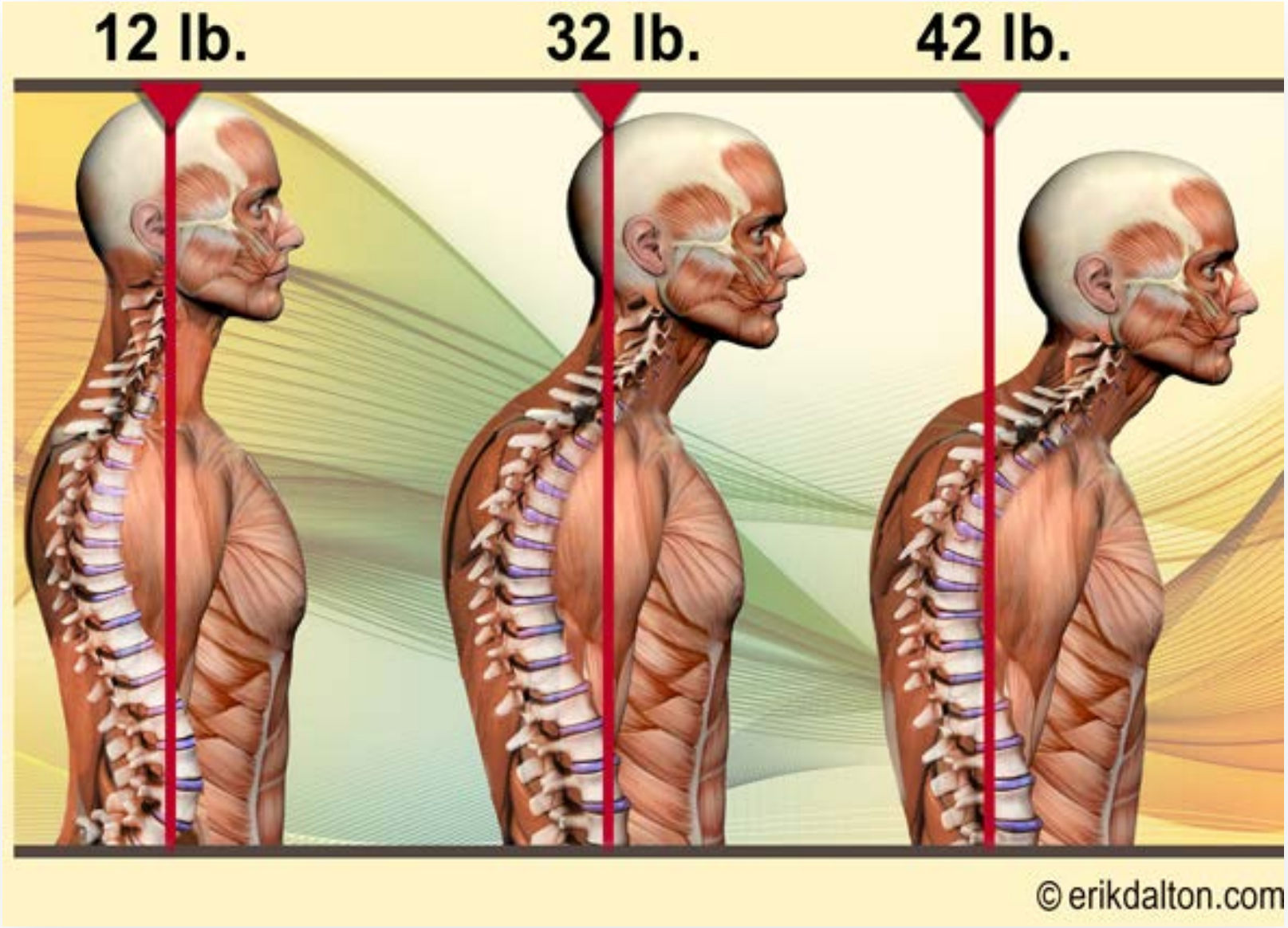
How much weight is your body trying to hold up?

- FHP increases compressive loading on tissues in the cervical spine
  - Degenerative changes
  - pain



- Causes alteration in shape of thorax
- low back pain, neck pain and related headaches
- Accelerated aging of intervertebral joints resulting in degenerative joint disease
- Cervical radiculopathy, cervicogenic headaches and cervicogenic dizziness
- Reduced diaphragmatic movement
- Decrease in Respiratory function due to mechanical factors
- Impaired balance
- Loss of sensorimotor control
- Pelvic floor weakness/ Incontinence
- Cognitive Decline
- Dysfunction in the Autonomic Nervous System (blood pressure, pulse, sluggish digestion, respiration, sexual function)
- Dysfunction in hormonal system, mood dysregulation
- Increase in stress related illness

Resources

***"Effect of forward head posture on thoracic shape and respiratory function"*, Taiichi Koseki, PT, MS, J Phys Ther Sci. 2019 Jan; 31(1): 63–68. Published online 2019 Jan 10

***"Iliopsoas muscle syndrome. Functional disorders: shortening, spasm and weakness of a structurally unchanged muscle"*,** Lijec Vjesn. 2009 Mar-Apr;131(3-4):81-6

***"Sagittal imbalance of the spine is associated with poor sitting posture among primary and secondary school students in China: a cross-sectional study"*, Chaoqun Li et al. *BMC Musculoskeletal Disorders* volume 23,** Article number: 98 (2022)

"Is forward head posture relevant to autonomic nervous system function and cervical sensorimotor control? Cross sectional study" Ibrahim M Moustafa et al, Gait Posture, 2020 Mar;77:29-35

"Postural and ventilatory functions of intercostal muscles" B Duron, Acta Neurobiol Exp (Wars), 1973;33(1):355-80.

How to do a Proper Warm up by Z Health Performance
https://www.youtube.com/watch?v=Qov0NQHVmLY

Peter O'Sullivan, Prof of musculoskeletal Physiotherapy, UK: "Back Pain, Separating Fact from Fiction"
https://www.youtube.com/watch?v=dlSQLUE4brQ