Myofascial Training for the Upper Body

Dean Somerset BSc. Kinesiology, CEP, CSCS, MES

Quick Promo!!!

Check out Muscle Imbalances Revealed: Lower Body for more awesome presentations!!

For Those Who Want An Outline...

- 1. Overview of fascial anatomy & physiology
- 2. Upper Body Fascial Merdians
- 3. Posture and Fascia – How one can impact the other
- 4. Training Lines of Force
- 5. Party like rock stars!!

A little about myself...

- BSc. Kinesiology, University of Alberta
- CSCS – NSCA
- CEP – CSEP
- MES – AAHFRP
- Medical & Rehabilitation Coordinator, World Health
- Former competitive athlete, multiple injuries
- Clientele ranges from pre-post surgical, MVA, cancer, up to athletes & “weekend warriors”
- Written articles for T-Nation, ThePTDC.com, and a few others

What We THINK We Know....

- Muscles have defined and specific origins and insertions
- The muscle fibre is the only part of the motor unit that can undergo contraction
- The sensory fibres for muscles are the golgi tendon organ and the muscle spindle

WRONG!

NOPE!

THERE'S MORE!

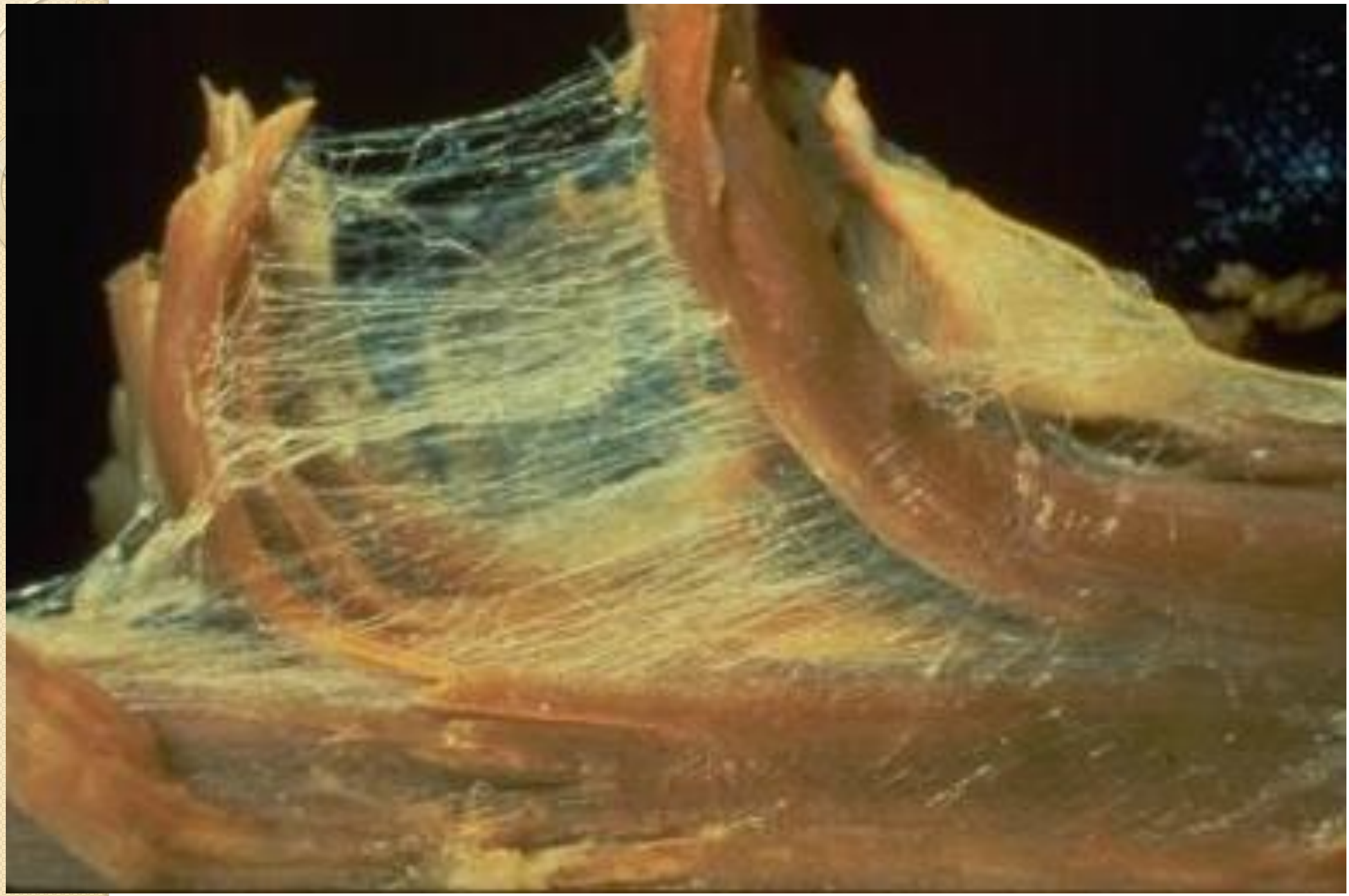

WTF?!?!

Riddle me This.

- How can tension through your neck and shoulders cause shoulder problems?
- Why do some people NEVER loosen up?
- What the hell are those foam thingies for??

What is Fascia??

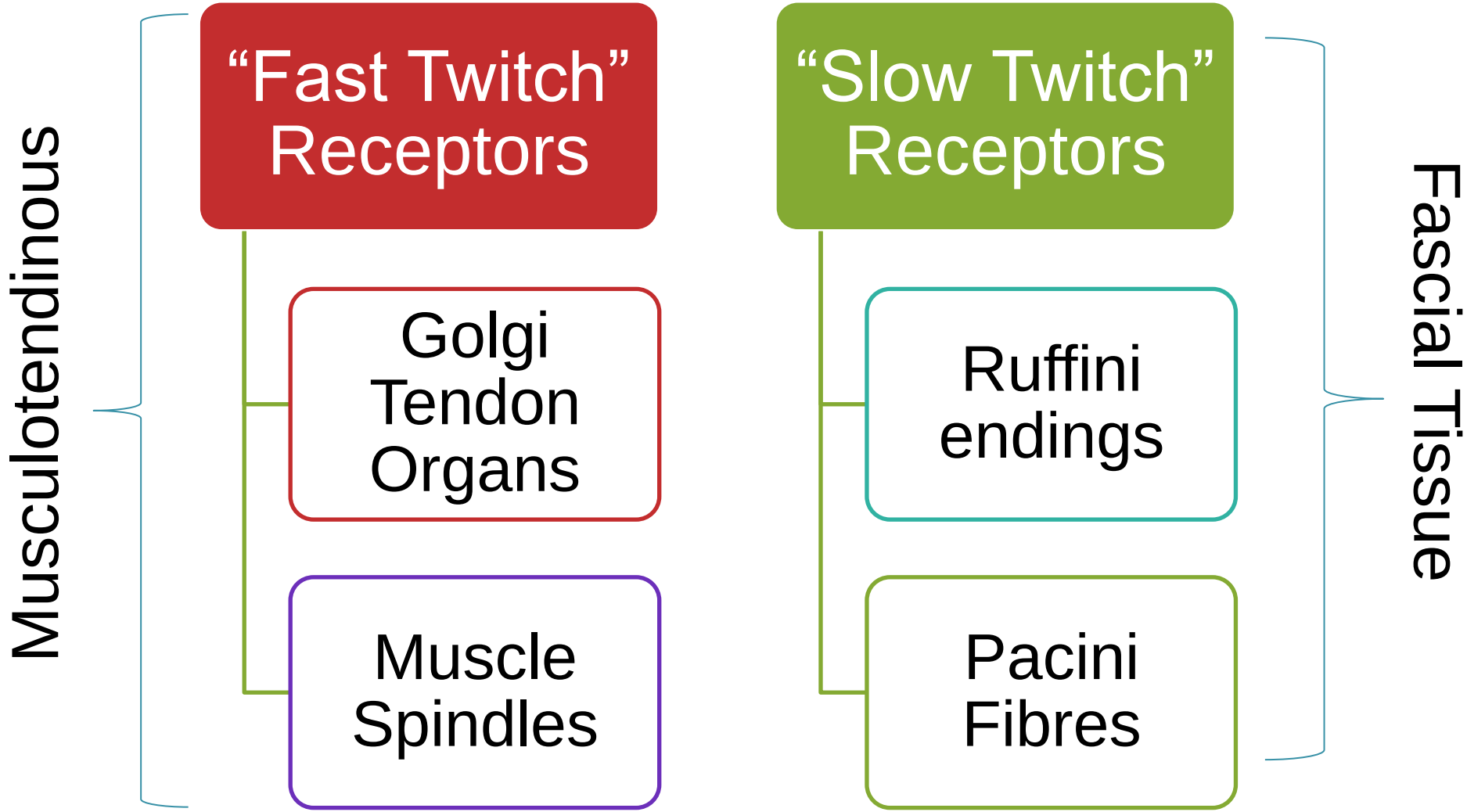
- Connective tissue made of collagen and elastin fibres
- Found between, around, and throughout muscles, blood vessels, nerves, everything!!
- Rich proprioceptive environment (specifically ruffini and pacini fibres), AND has smooth muscle cells embedded in matrix
- Contains myofibroblasts, makes its' own contractile tissues
- [highest] in thoracolumbar fascia (Klinger et al, 2007, *World Congress on Low Back & Pelvic Pain*)



What is Fascia??

- Ruffini endings – slow adapting, low threshold mechanoreceptors
- Decrease tone of tissues in presence of stretch. Tend to like direct pressure (SMR, massage, etc), inhibit sympathetic activity
- Pacini Fibres – provide proprioceptive feedback.
- Tense tissues when vibration & rapid pressure changes occur

What is Fascia??



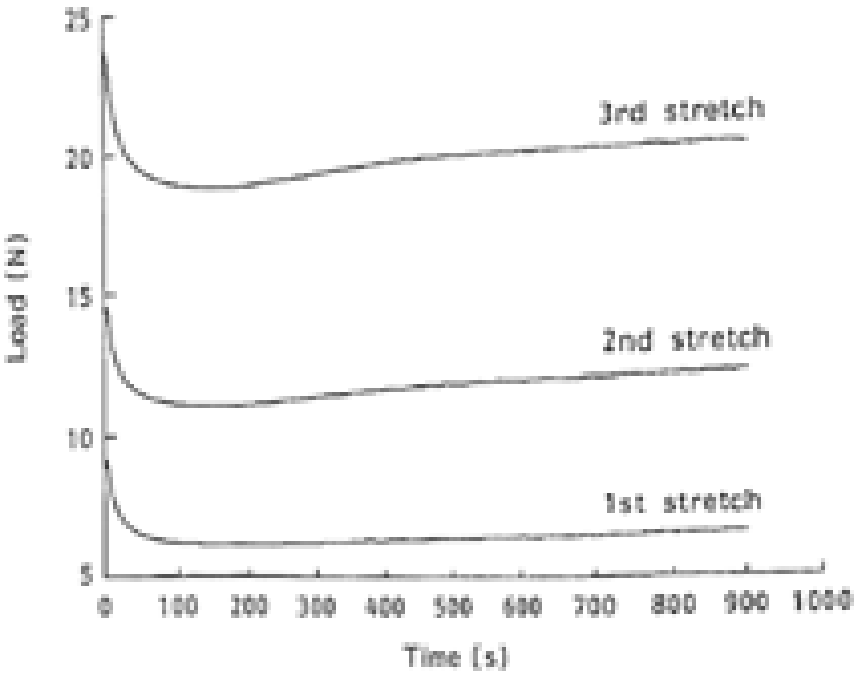
What is Fascia??

- Has contractile properties, and carries electric charge
- ↑activity → high ↑[fibroblast]
- Contractions are slow, can last for hours
- Contractions can be strong enough to influence joint stability & structure
- Schleip et al, 2006. *World Congress of Biomechanics*


Gunther von Hagens'
BODY WORLDS
The Original Exhibition of Real Human Bodies

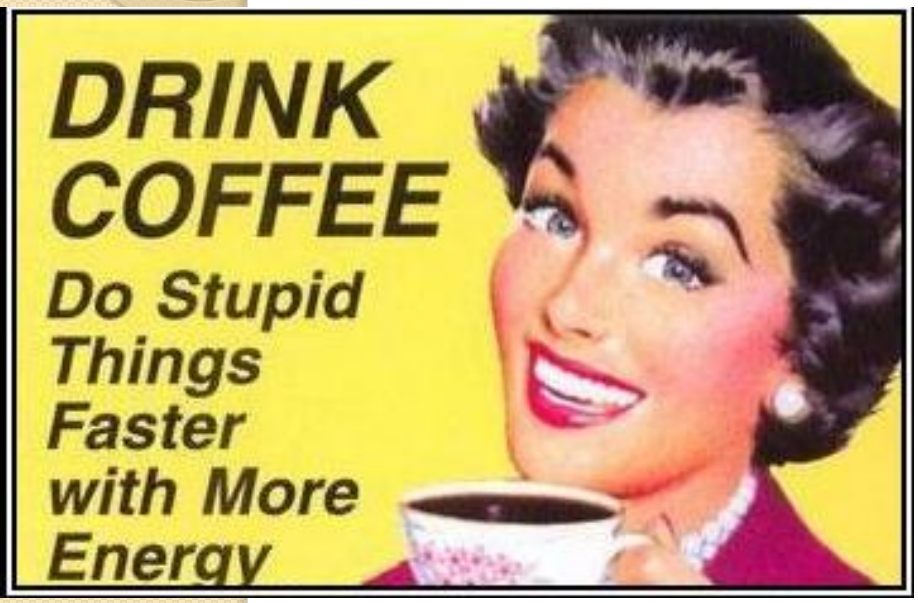
But Wait a Second!!!

Fascial Stiffness



- Stretch one: ↓ Elastic resiliency
- Stretch two: ↑ Elastic resiliency, ↑ force retention
- Stretch three: ↑ ↑ force retention
- ↑ Water content with each stretch, adding to force generation & elastic components
- Schleip et al, 2004. World Congress on Low Back & Pelvic Pain
- Multiple stretch bouts ↑ contractile capacity of tissue, which could lead to ↑ joint stability or muscle force production.
- HYDRATION IS KEY!!!!

Fascial Stiffness



- Stretch Slow or Fast??
- Ruffini fibres reduce tone in presence of low threshold, long duration stretch under direct pressure.
- Reduce sympathetic activity, resulting in neurochemical relaxation of mechanoreceptors
- → Slow stretching for fascia!!

LAW OF REPETITIVE STRAIN

$$I = \frac{N \times F}{A \times R}$$

Number of Repetitions

Force

Amplitude

Relaxation

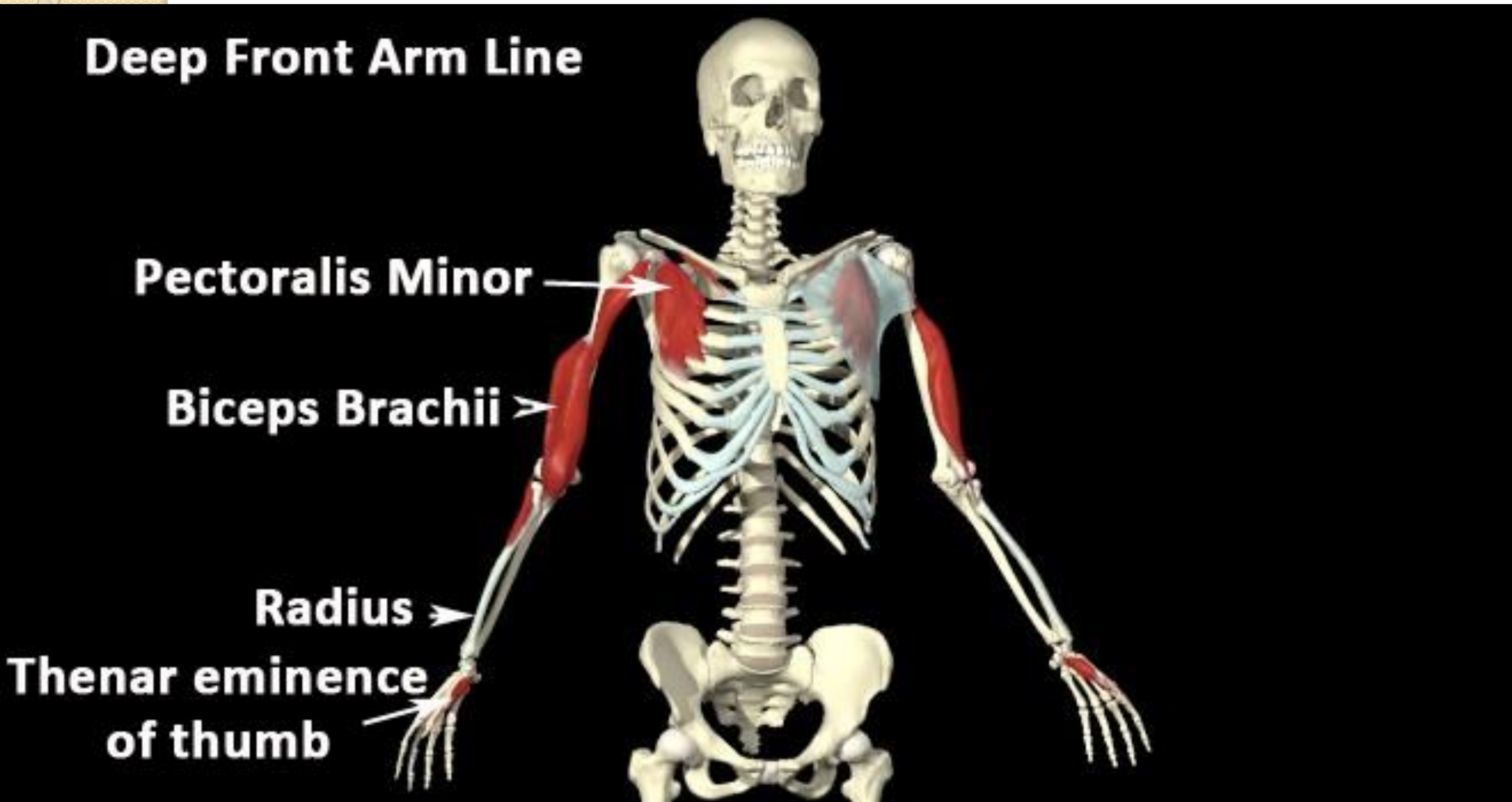
Take-Home Points

- It adapts to physical stress like muscle.
- Lays down more dense collagen in areas with more stress, can break down when stressed too much without recovery
- Deteriorates faster when dehydrated
- Takes a long time to remodel effectively (1-2 years), which explains slow healing times in certain injuries

Myofascial Anatomy Trains

- Developed by Thomas Myers, popularized in his book *Anatomy Trains*
- Systematic view of anatomy as integrated sub-structures instead of parts of a whole
- Linkages of adjacent muscles and fascial tissue that create a continuous “track” of connective tissue

Myofascial Anatomy Trains



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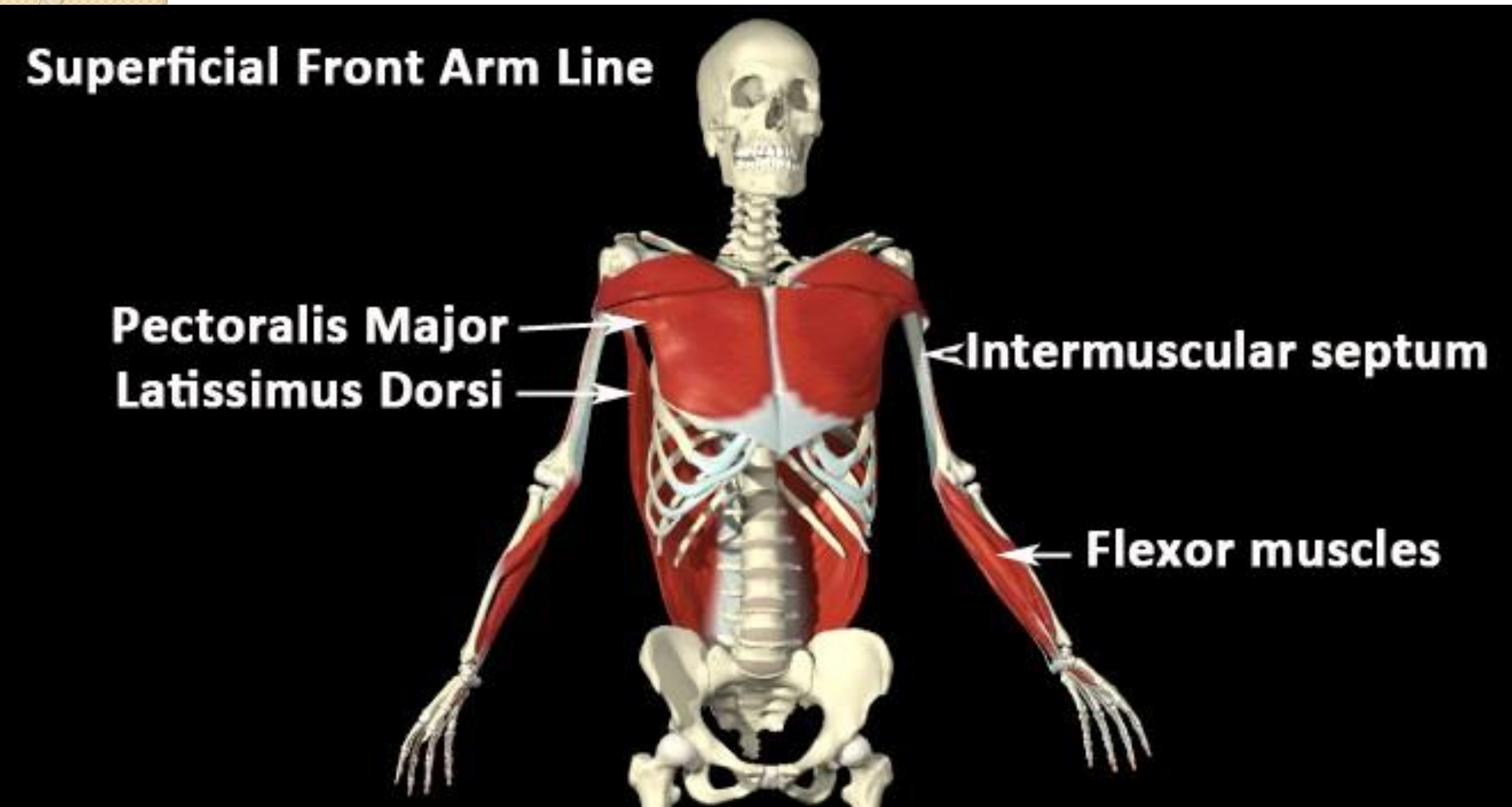


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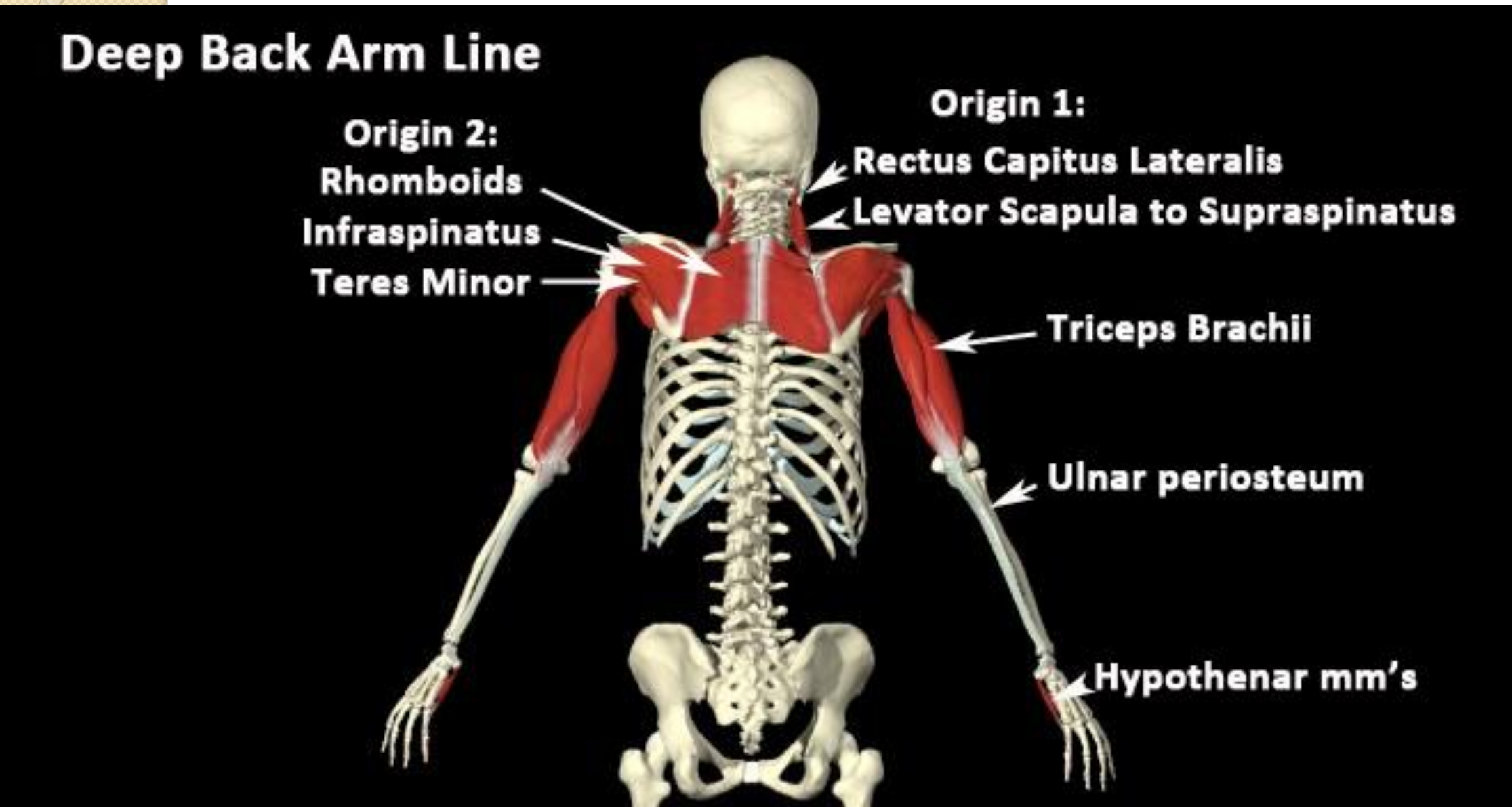
RUS

Myofascial Anatomy Trains



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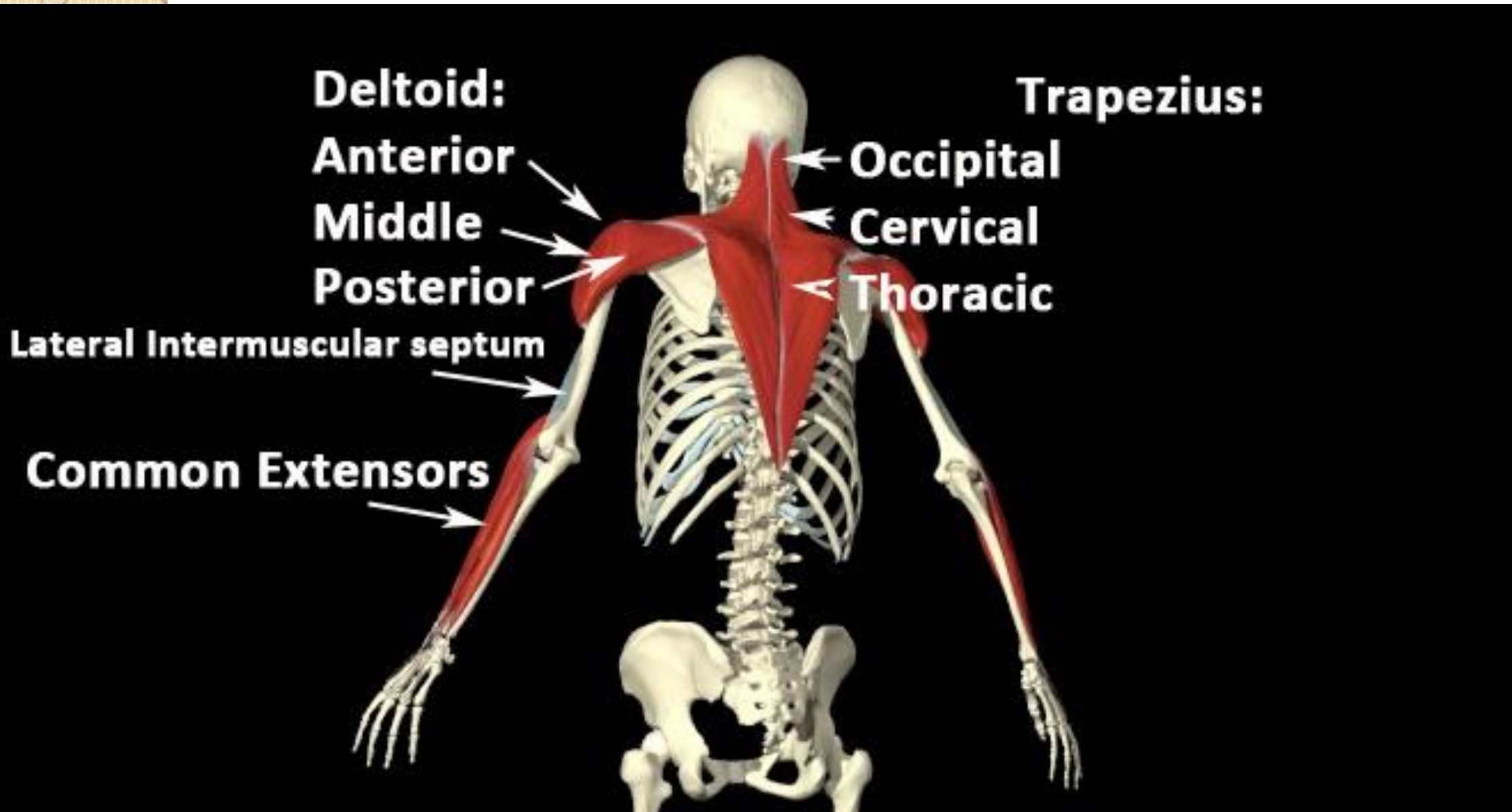


Myofascial Anatomy Trains

DEEP FRONT

Bony Attachments:
Cranium
Basal part of occiput
Hyoid bone
Posterior Sternum
Bodies of:
Cervical vertebrae
Thoracic vertebrae
Lumbar vertebrae

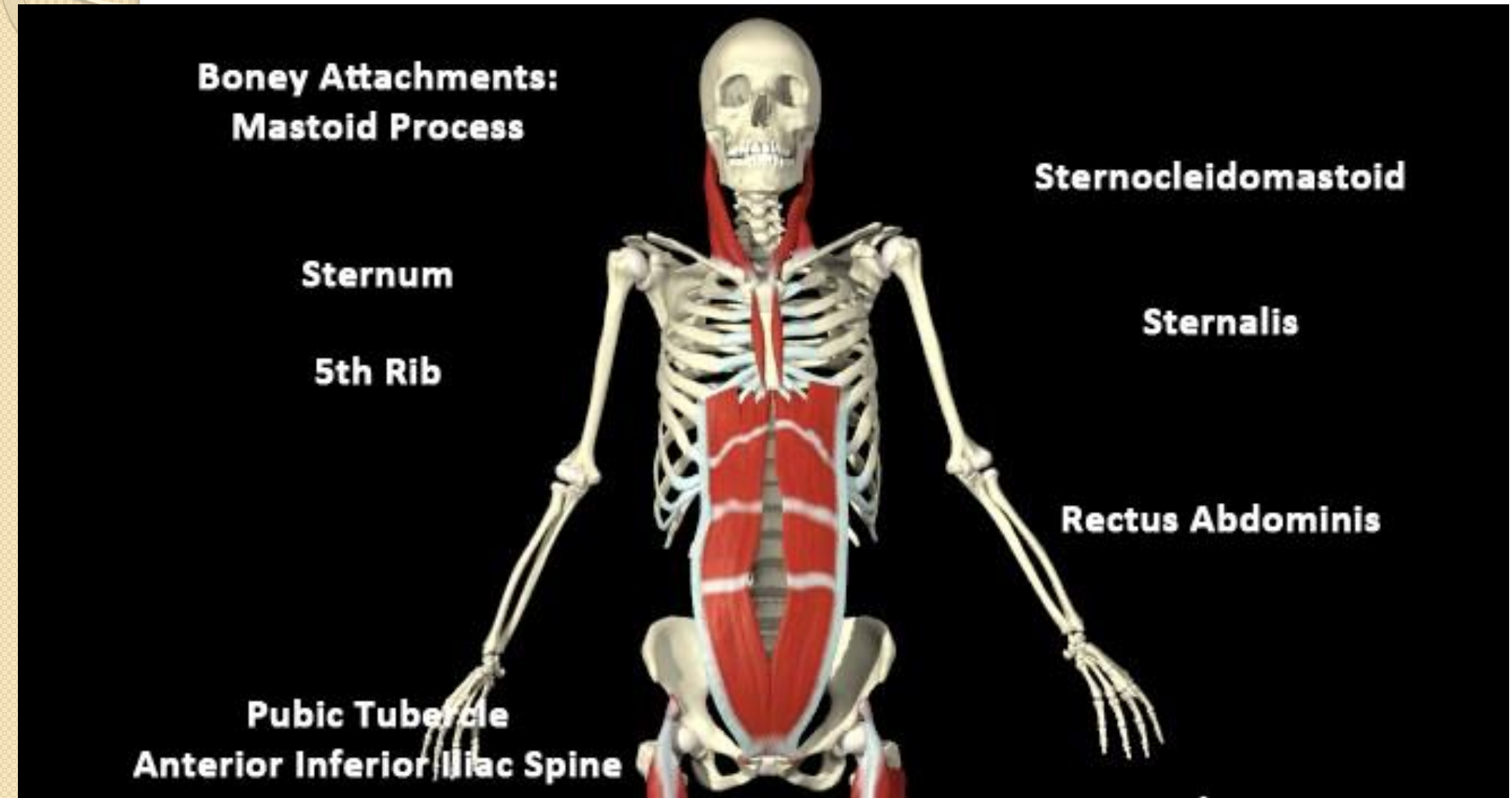
Temporalis
Masseter

Scaleni, hyoid muscles
Longus colli and capitus

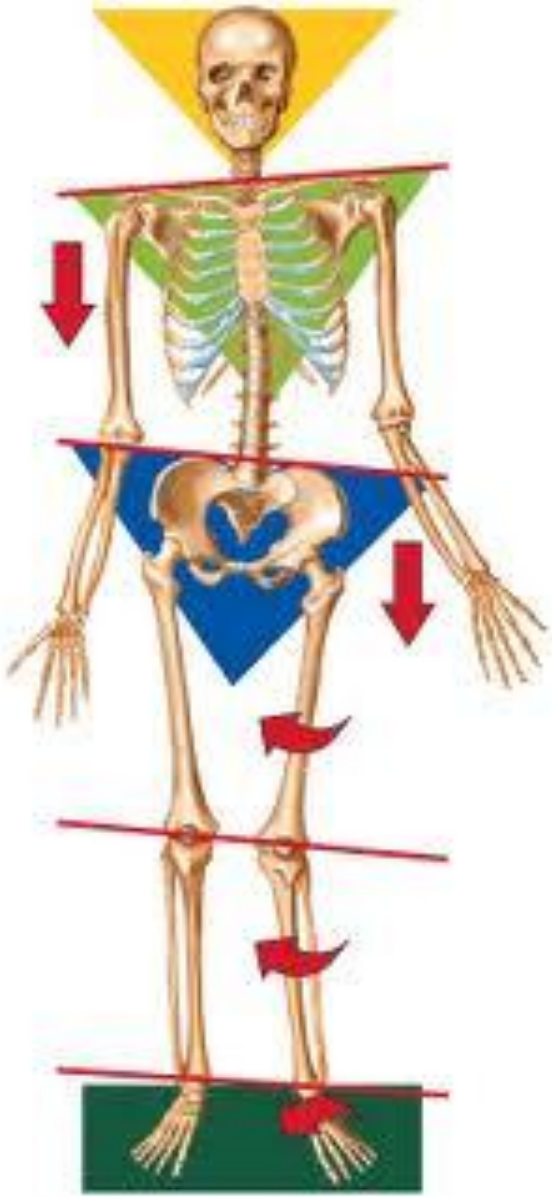
Respiratory diaphragm
Transversus Abdominis
(not shown)

Myofascial Anatomy Trains

SUPERFICIAL FRONT

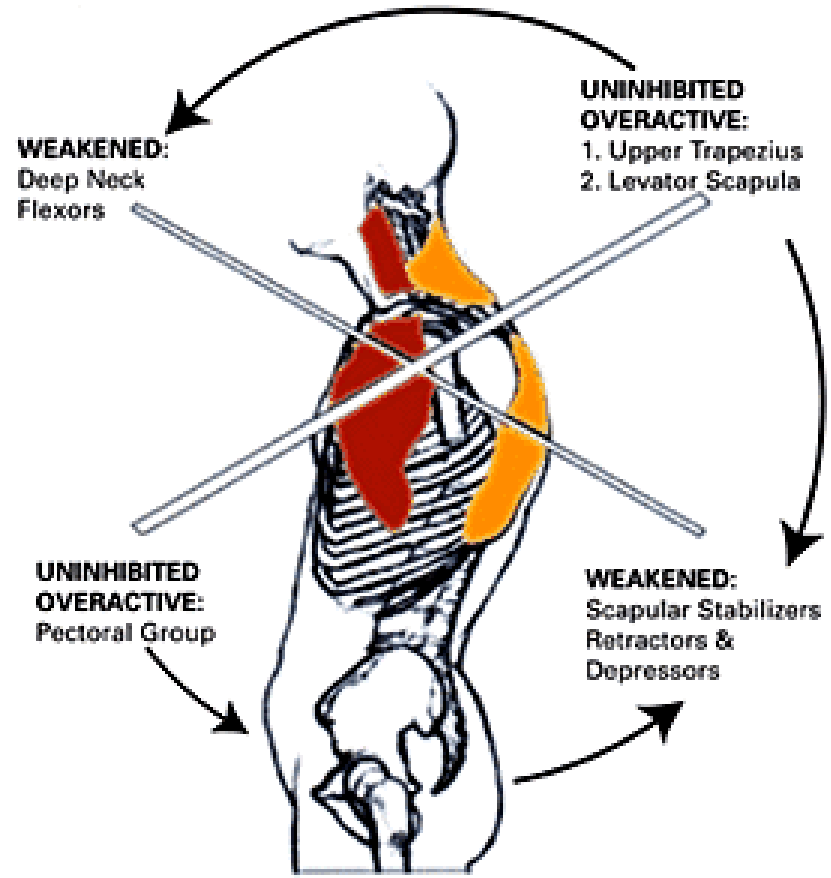


Fascial Posture



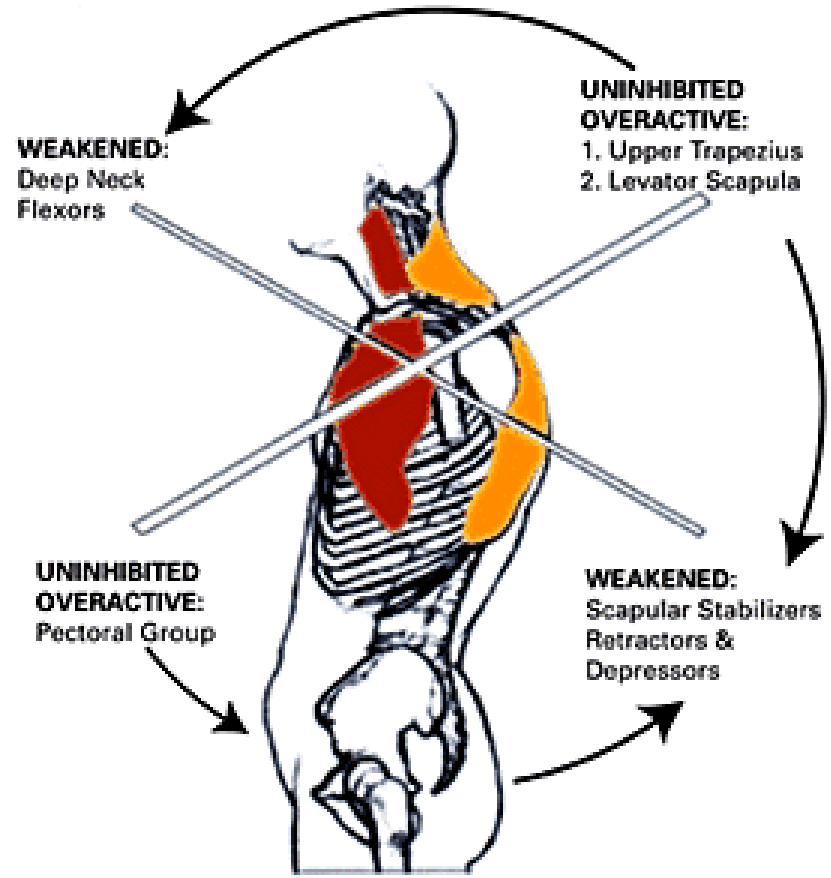
- Tension/adhesion in one area restricts mobility and function in associated areas
- Decreasing strain in area of restriction → decreased pain at area of symptom
- $Million Question: HOW THE HELL DO YOU FIND THE RESTRICTION??

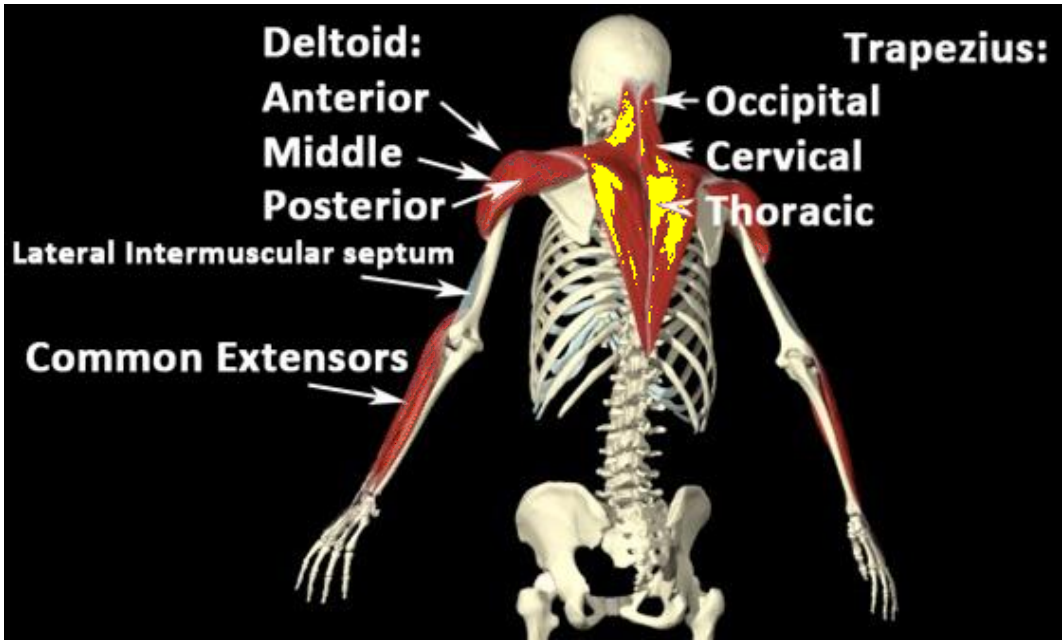
Fascial Posture

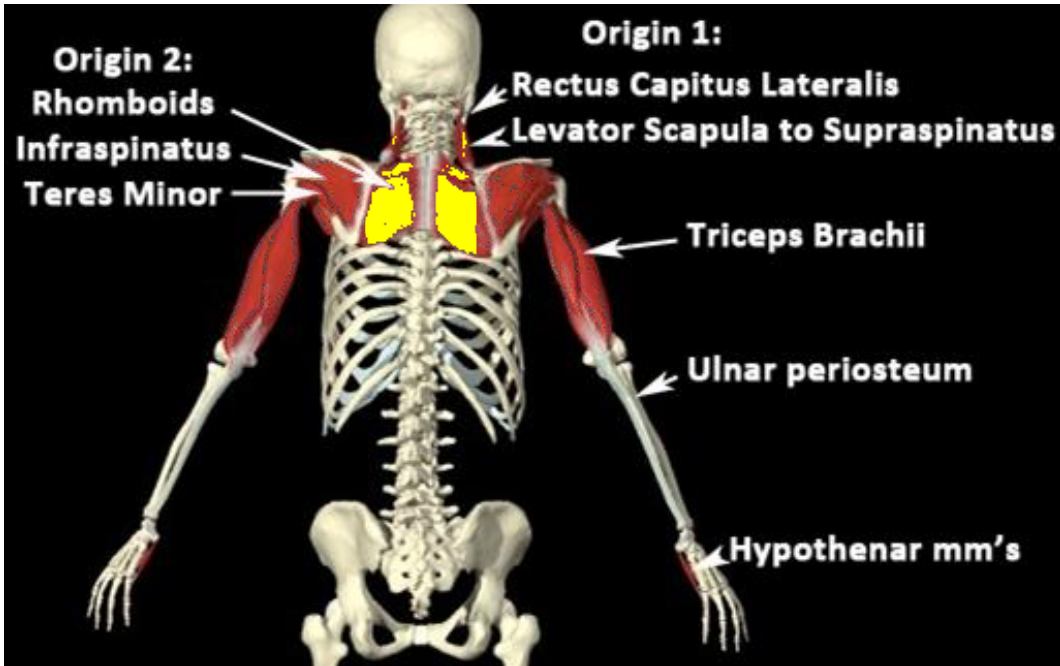


- Vladimir Janda coined the term “Upper Cross Syndrome” to decribe kyphosis and forward head posture in book *Muscle Function Testing*
- “Mr. Burn’s Syndrome”

Fascial Posture







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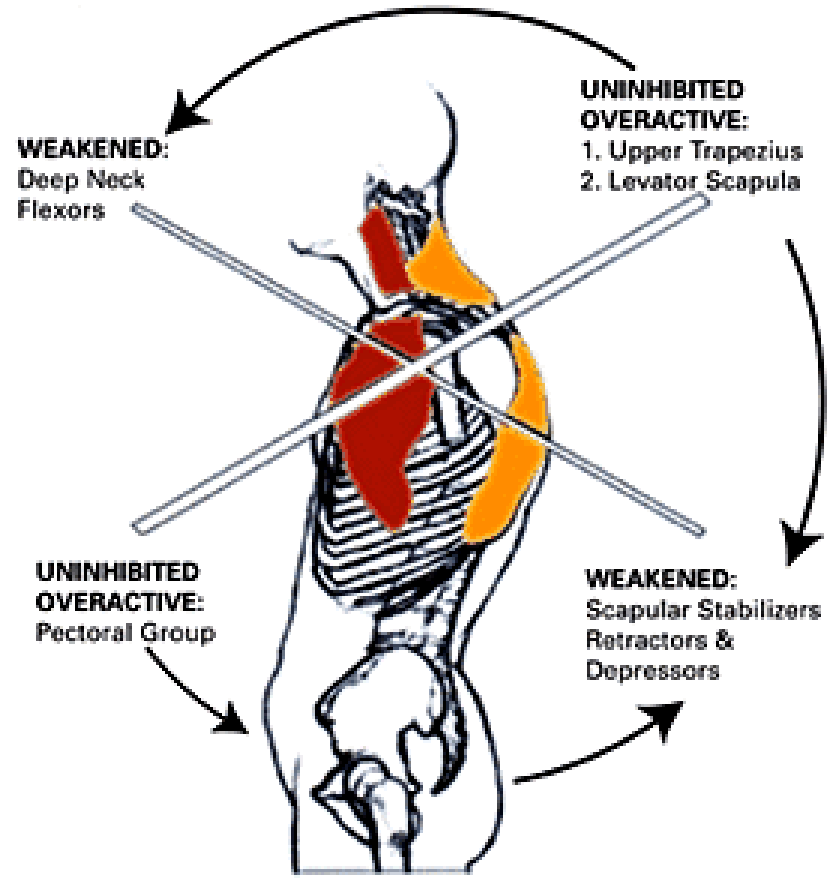
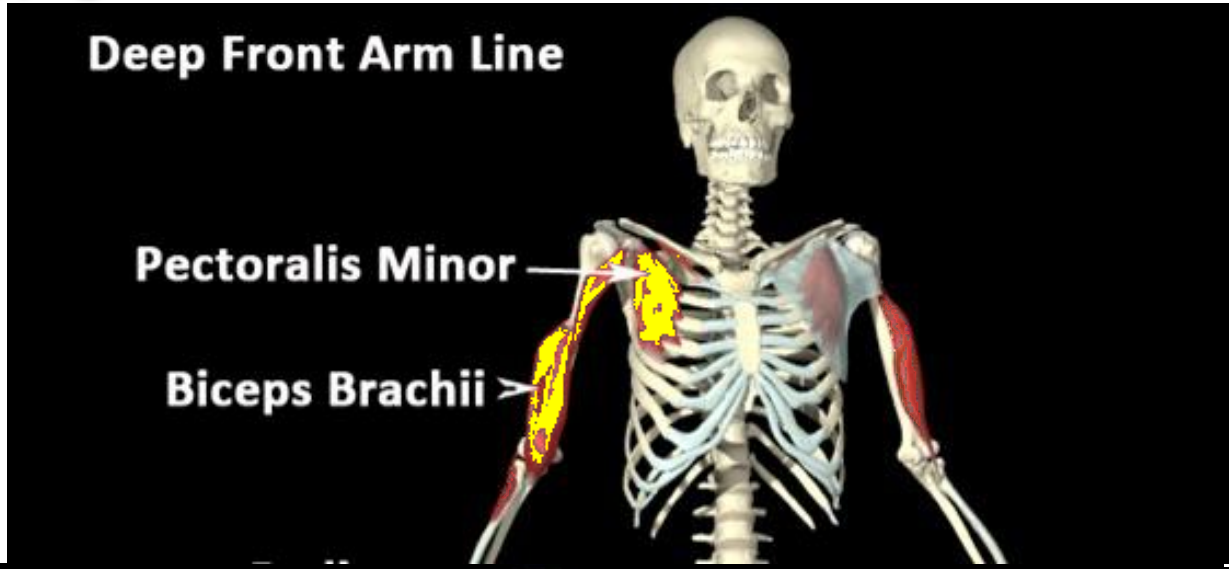
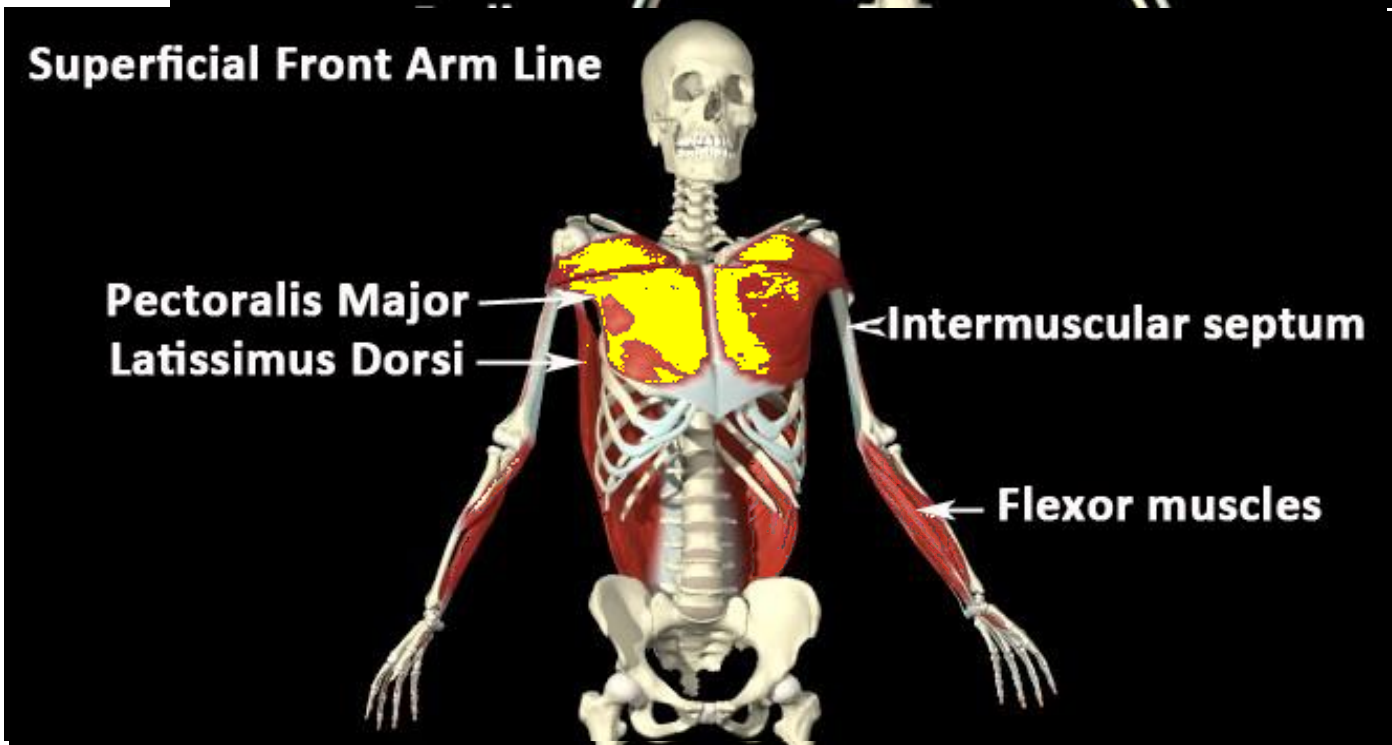






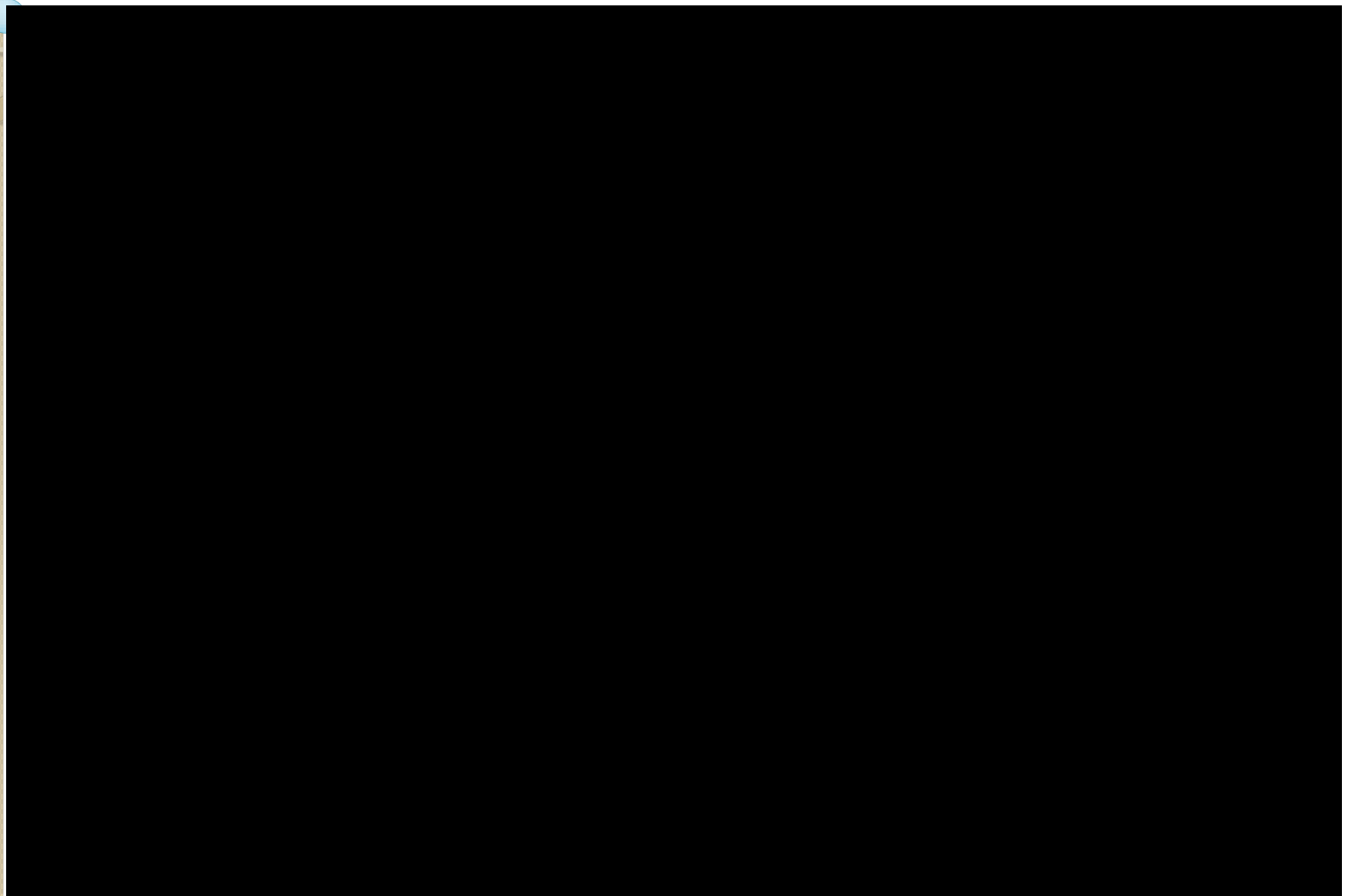
Fascial Training

The 7 means of improving “fascial fitness:”

- 1. Use whole body movements
- 2. Use long chain movements
- 3. Use dynamic pre-stretch with proximal initiation
- 4. Incorporate vector variation
- 5. Incorporate elastic rebound movts - cyclic motion
- 6. Train proprioception in 3D
- 7. Incorporate pauses/rest to optimize hydration status

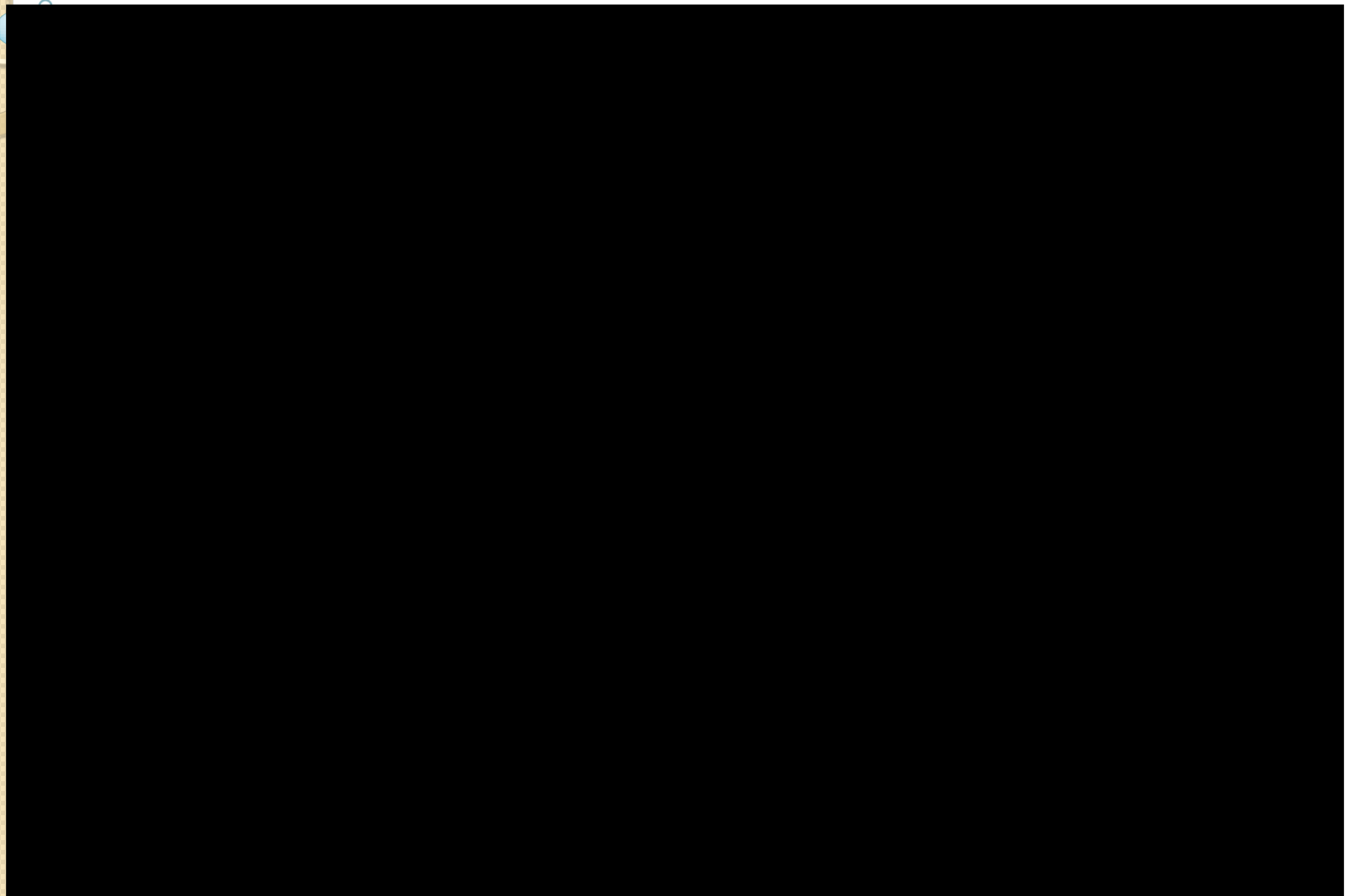
Fascial Training

1. Use whole body movements



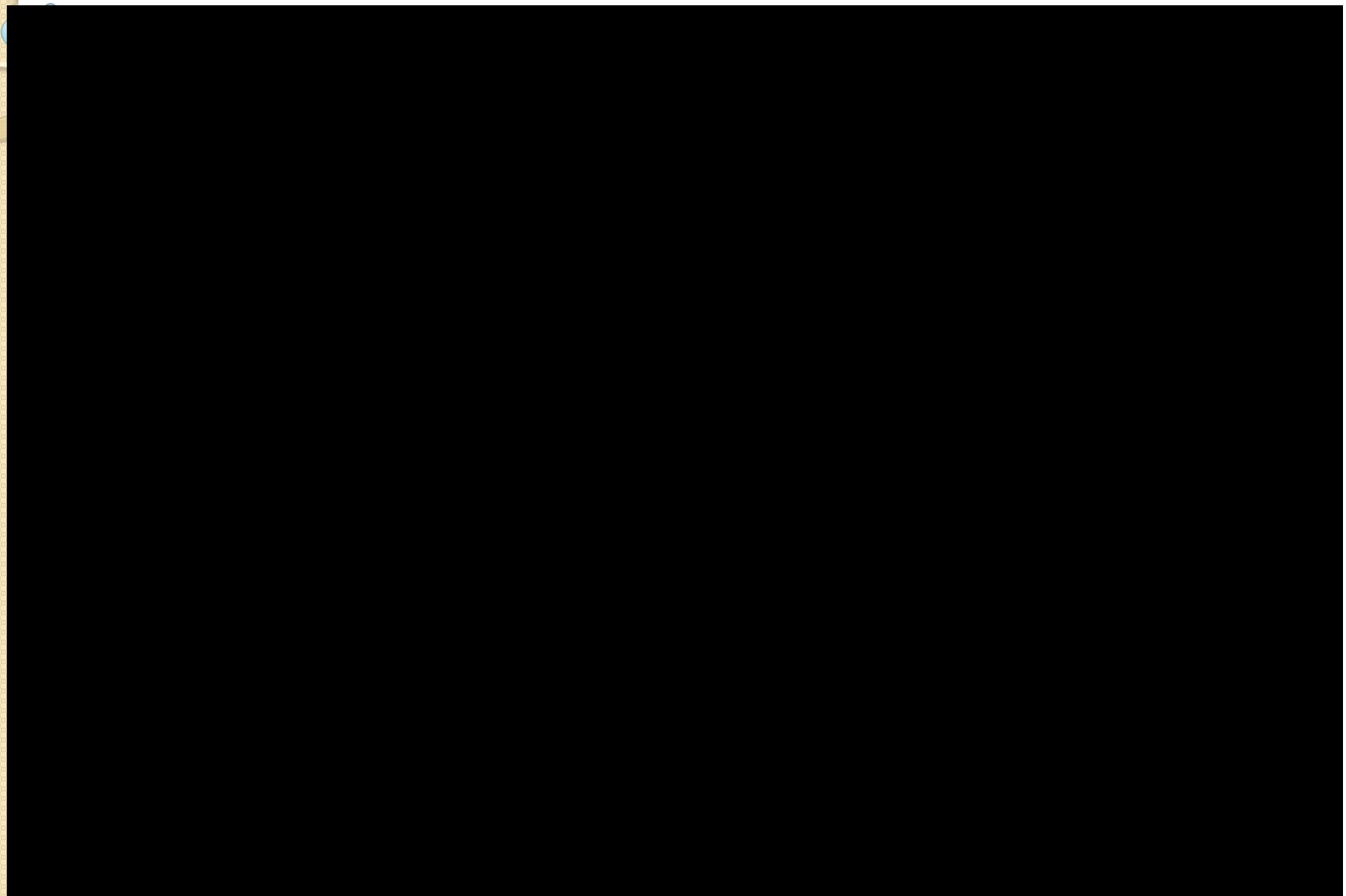
Fascial Training

2. Use long chain movements



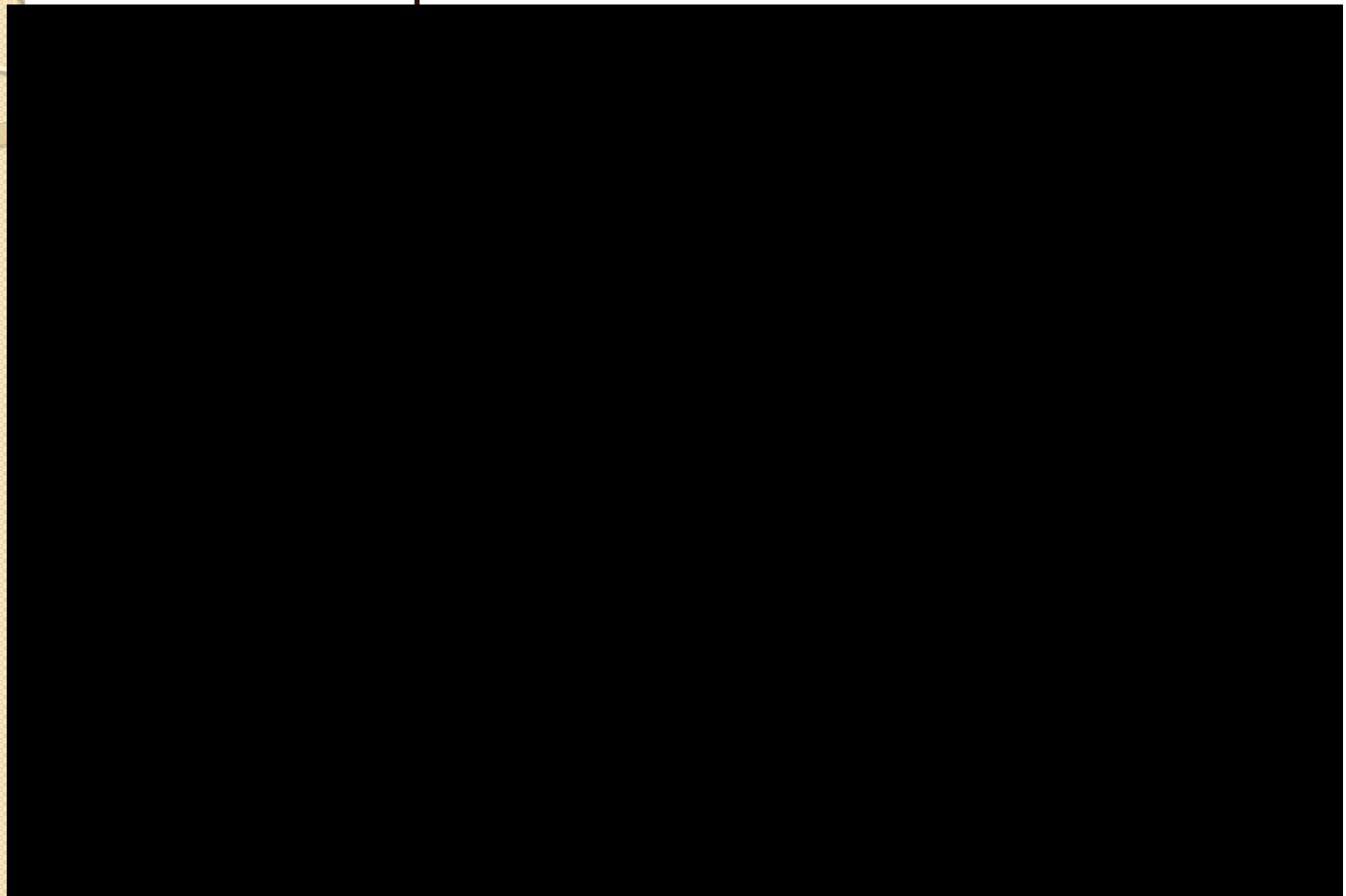
Fascial Training

3. Use a dynamic pre-stretch with proximal initiation



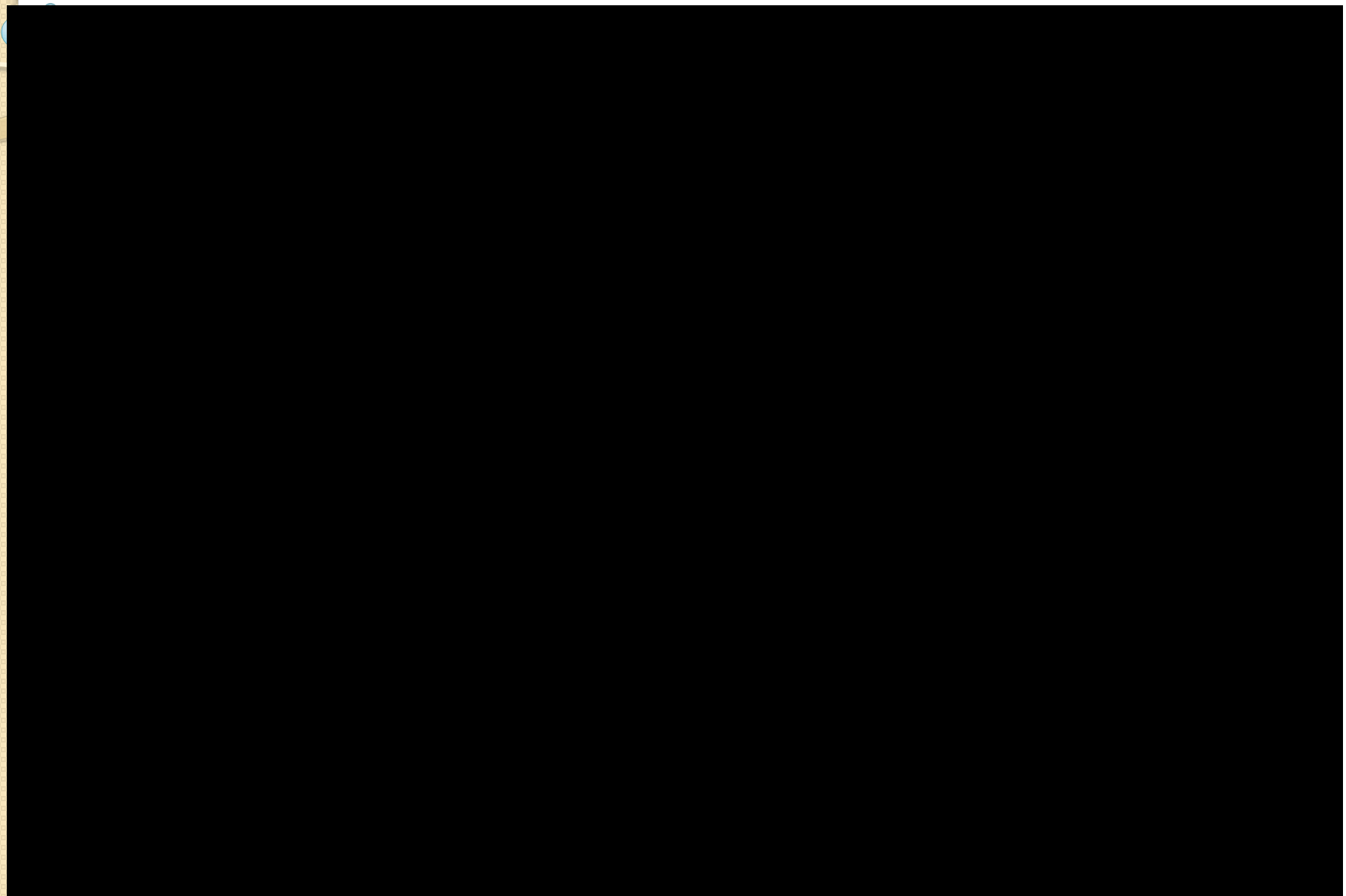
Fascial Training

4. Incorporate vector variation



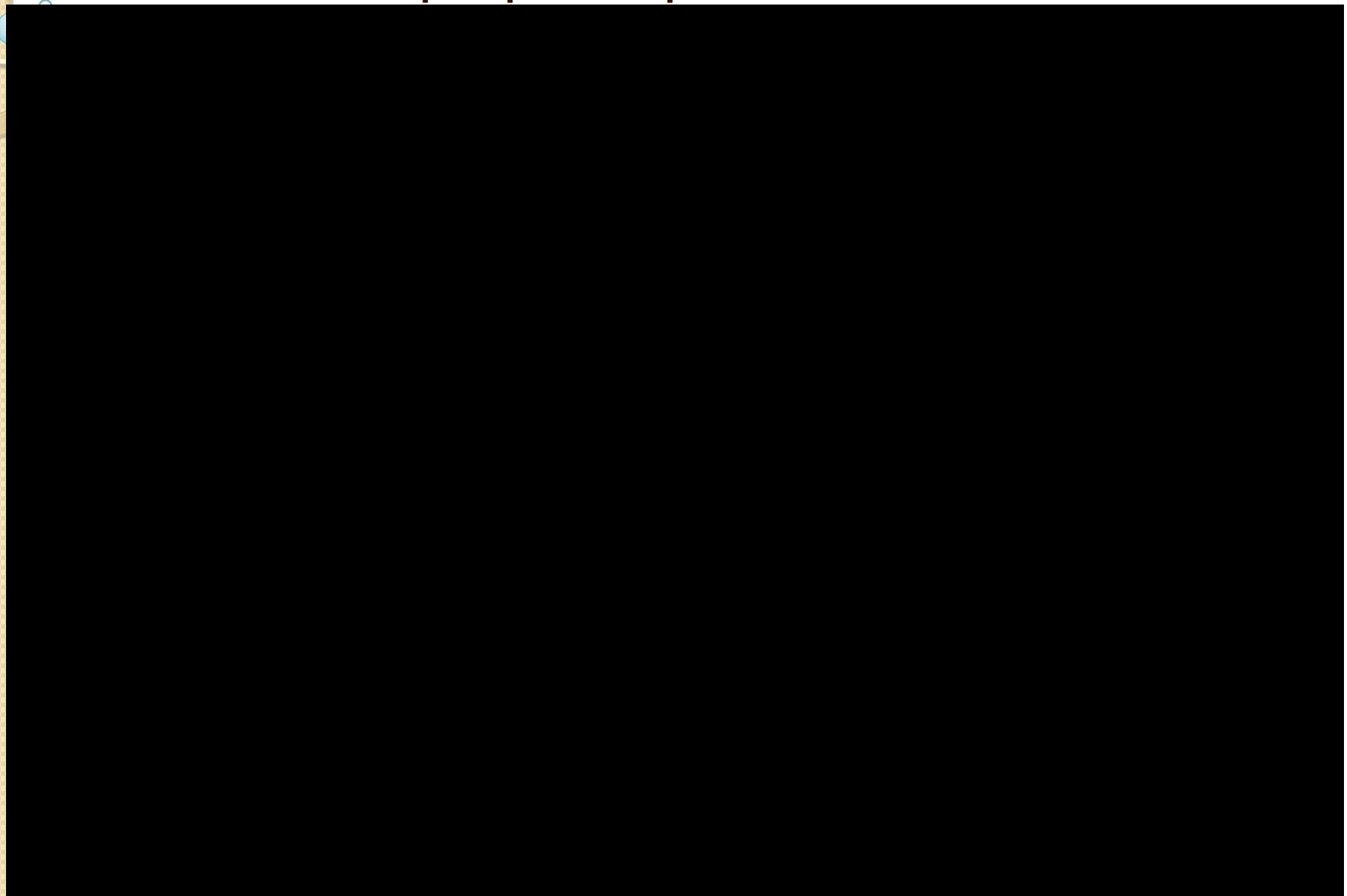
Fascial Training

5. Incorporate elastic rebound movements - cyclic motions



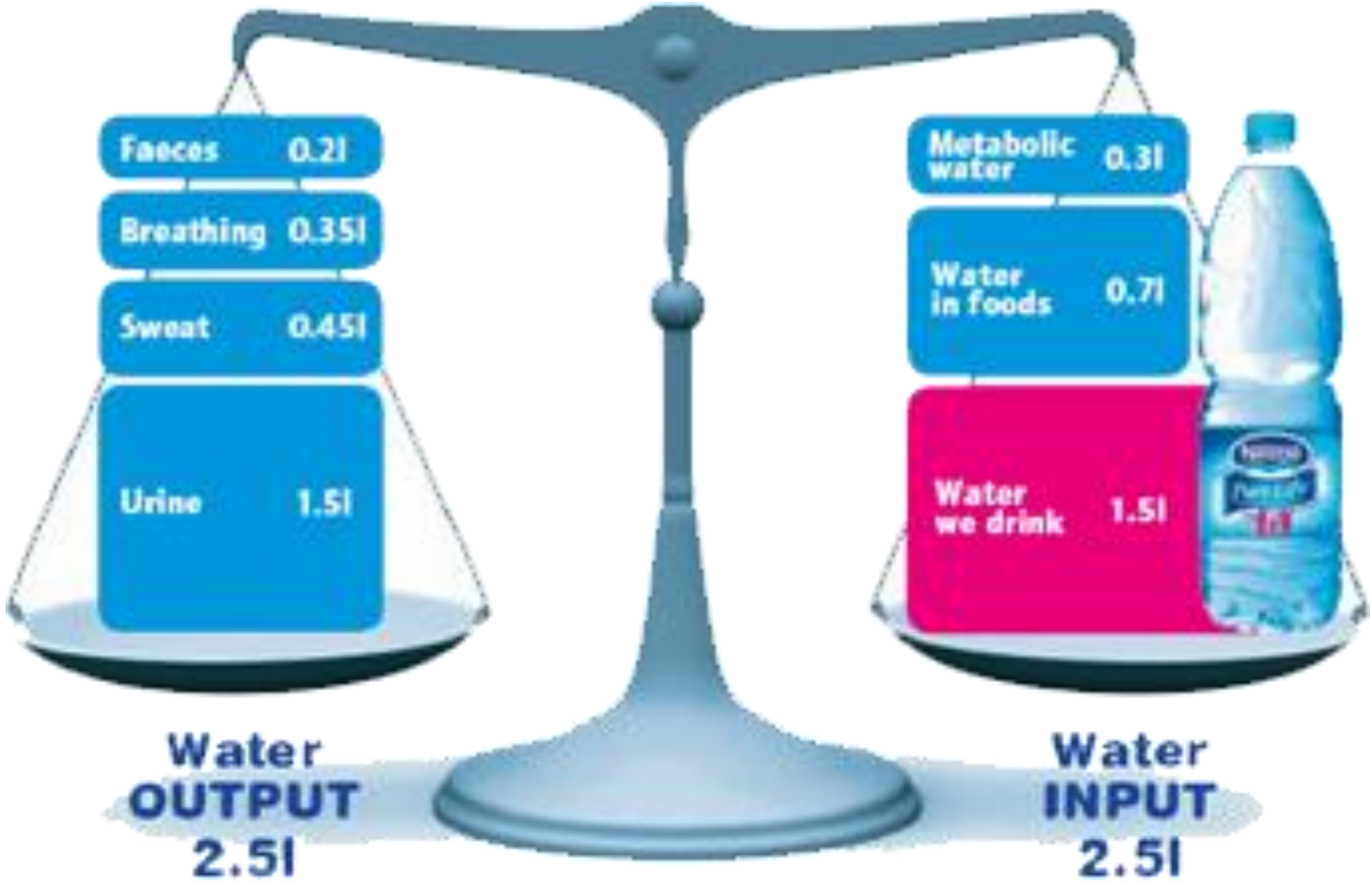
Fascial Training

6. Train proprioception in 3D



Fascial Training

7. Incorporate pauses/rest to optimize hydration status



BASIC!!! Need 3-4 litres to be optimally hydrated

In Closing...

- Myofascial training integrates anatomy for rehab and injury recovery
- Response to SMR techniques and directed strength training can reduce pain and increase function beyond static stretching and basic strengthening
- Thinking about anatomy in new ways brings new ideas for training and new performance outcomes

THANK YOU!!!! ☺

Dean Somerset

dsomerset@worldhealth.ca

www.deansomerset.com

Edmonton, Alberta, Canada