

20 NSCA 22 *NATIONAL* CONFERENCE

July 6-9, 2022 | New Orleans & Online
#NSCACon22

› *KNOWLEDGE*
› *ADVANCEMENT*
› *COMMUNITY*

CONFLICT OF INTEREST STATEMENT

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



How to Improve Mobility



What Causes Tightness?

Dystonia





Fascia

Injury

Posture

Joints



Guarding

Infections

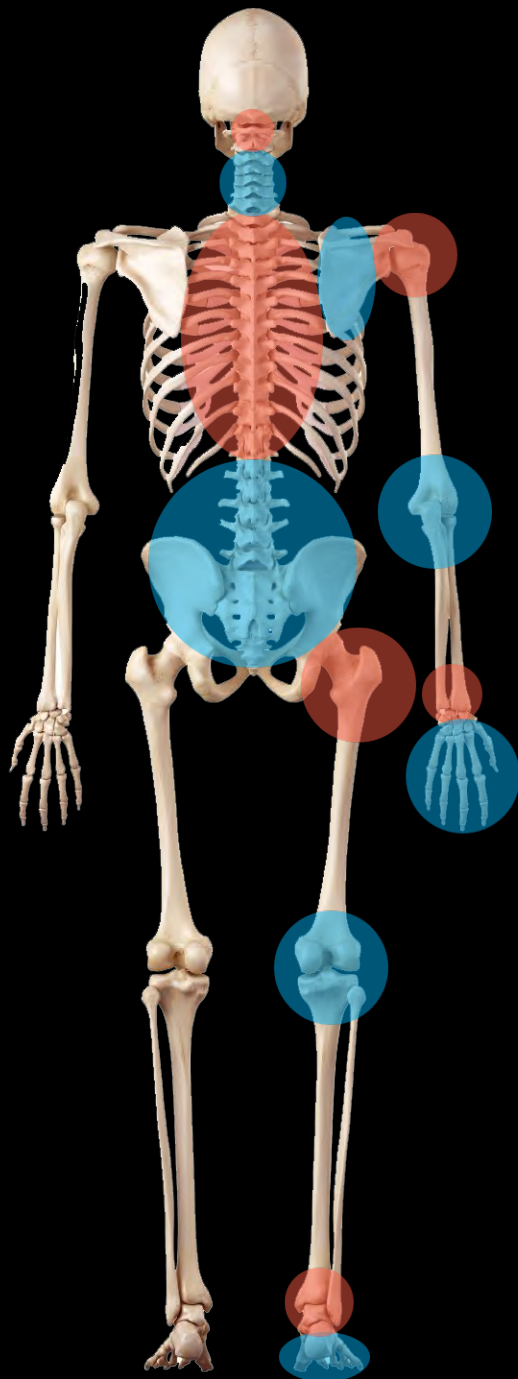
Inflammaging

Ischemia

Growth Spurt

Do You Have The Right Mobility Tools?

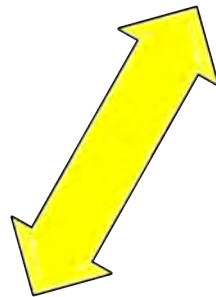




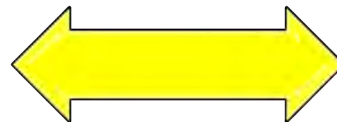
STABILITY

MOBILITY

Neurological



Chemical



Mechanical

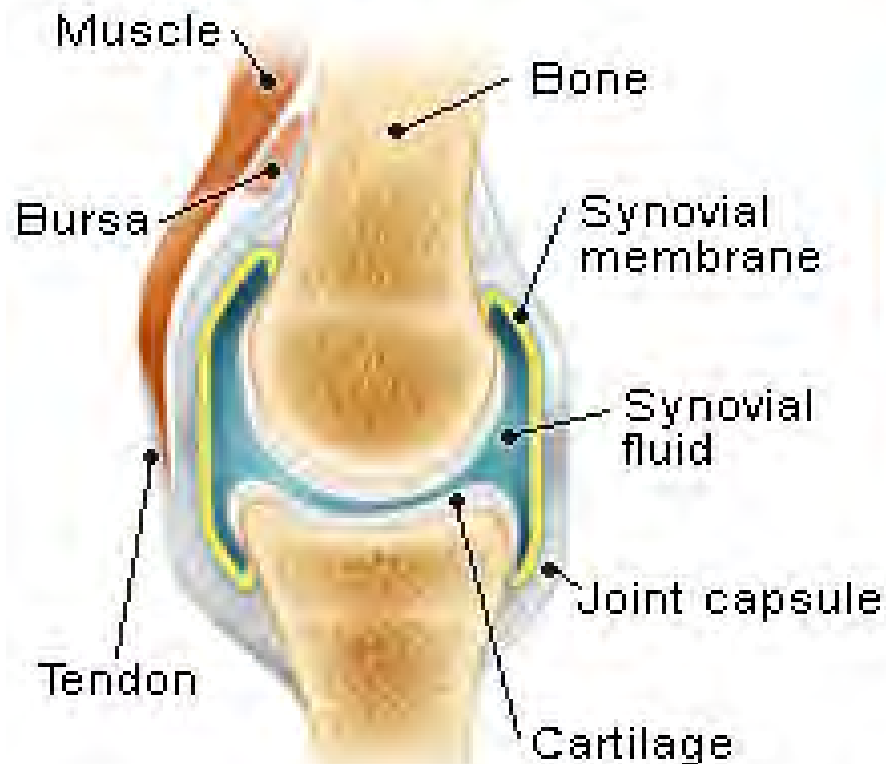


1) Mechanical Causes



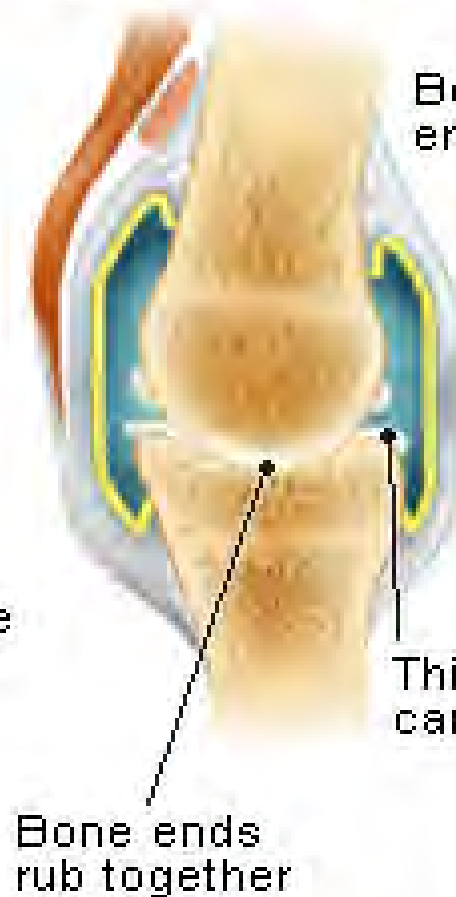
Joint Restrictions

Normal Joint



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Osteoarthritis

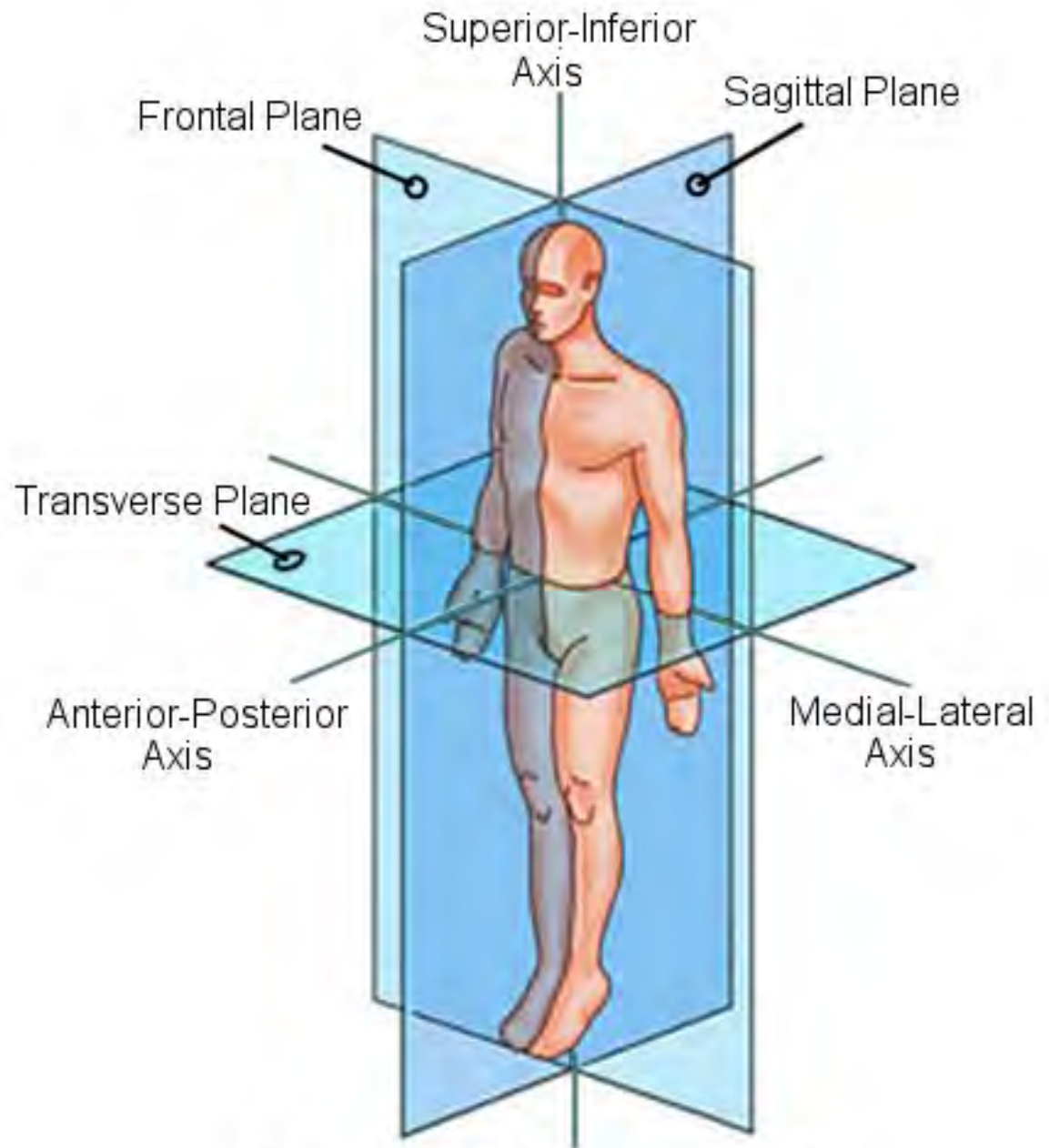


Rheumatoid Arthritis



Normal and Arthritic Joints

Multiple vs. Single Planes



Anatomical Planes and Axes

**Contractile Side
or the
Elongating Side**

DISTRACTION

Joint Restrictions

- **DISTRACTION**
 - Respiration
 - Hanging
 - Inversion
 - ELDOA
- **COMPRESSION**
 - Overhead Carry
 - Kneeling Holds



Breathing

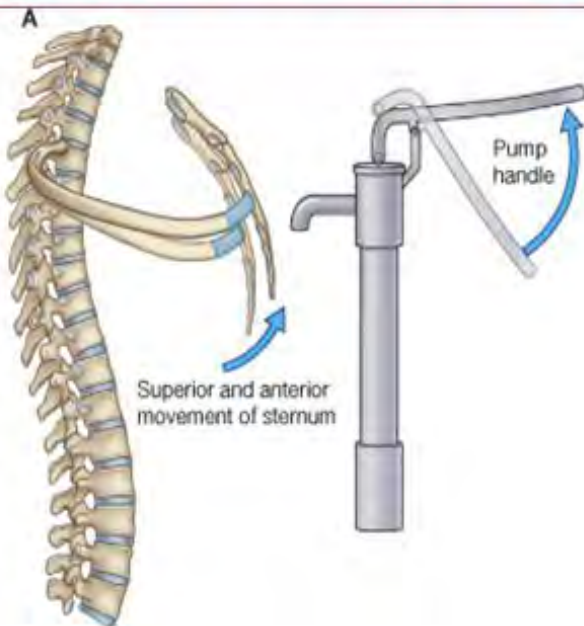


PUMP HANDLE MOVEMENT

Elevation of ribs



Increase in antero-posterior diameter of thoracic cavity

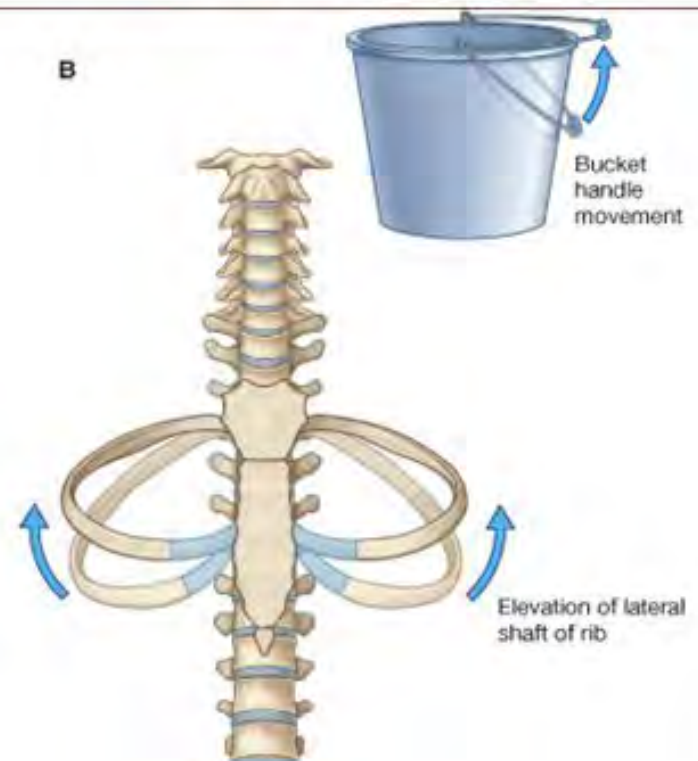


BUCKET HANDLE MOVEMENT

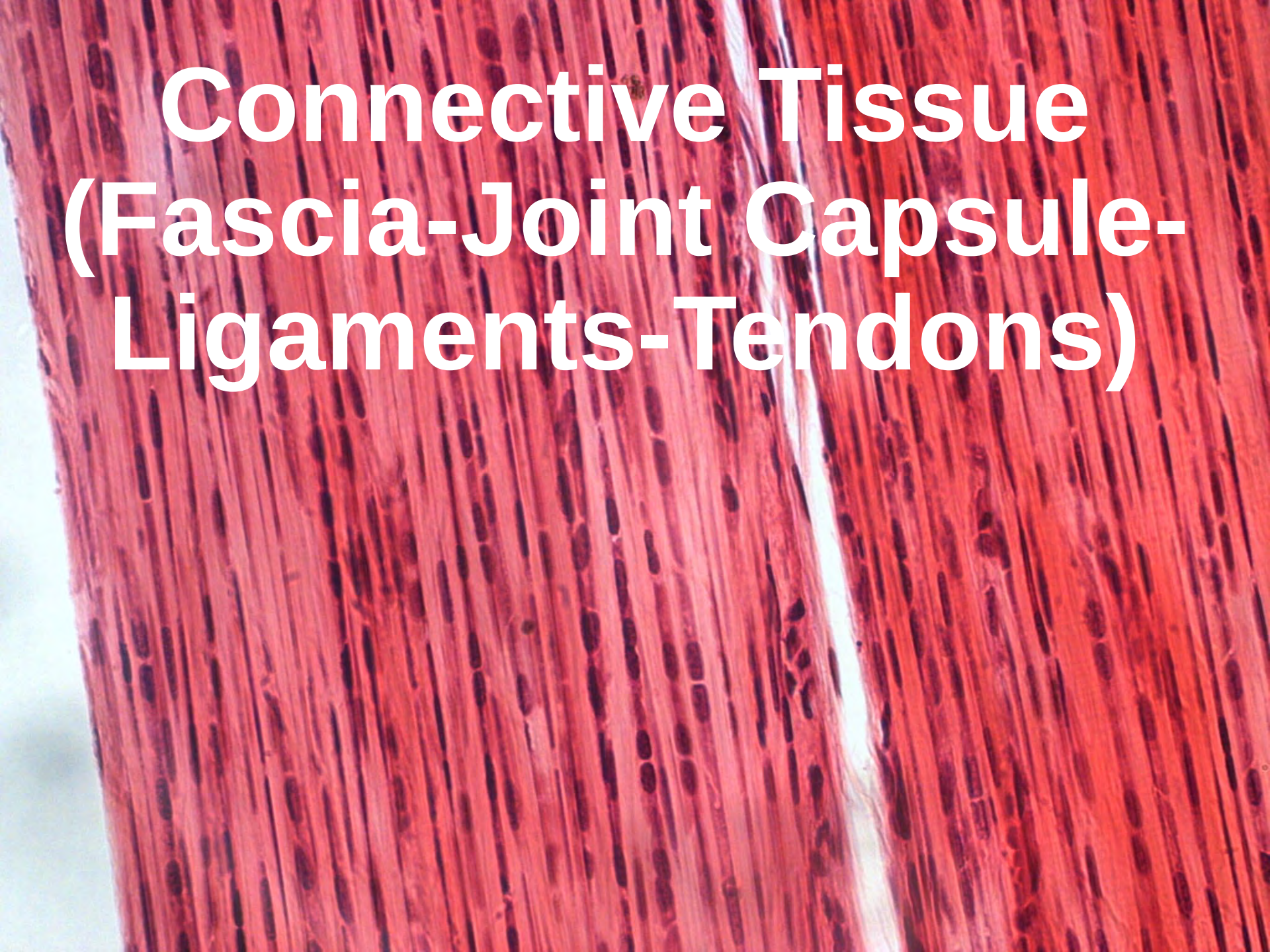
Elevation of ribs



Increase in lateral diameter of thoracic cavity



Connective Tissue (Fascia-Joint Capsule- Ligaments-Tendons)

A microscopic view of connective tissue, showing a dense network of collagen fibers (stained red) and fibroblasts (stained dark purple). The fibers are arranged in a somewhat parallel, wavy pattern, characteristic of dense connective tissue found in tendons and ligaments. The overall texture is fibrous and highly organized.

Ligaments / Tendons



Stretching Ligaments & Tendons



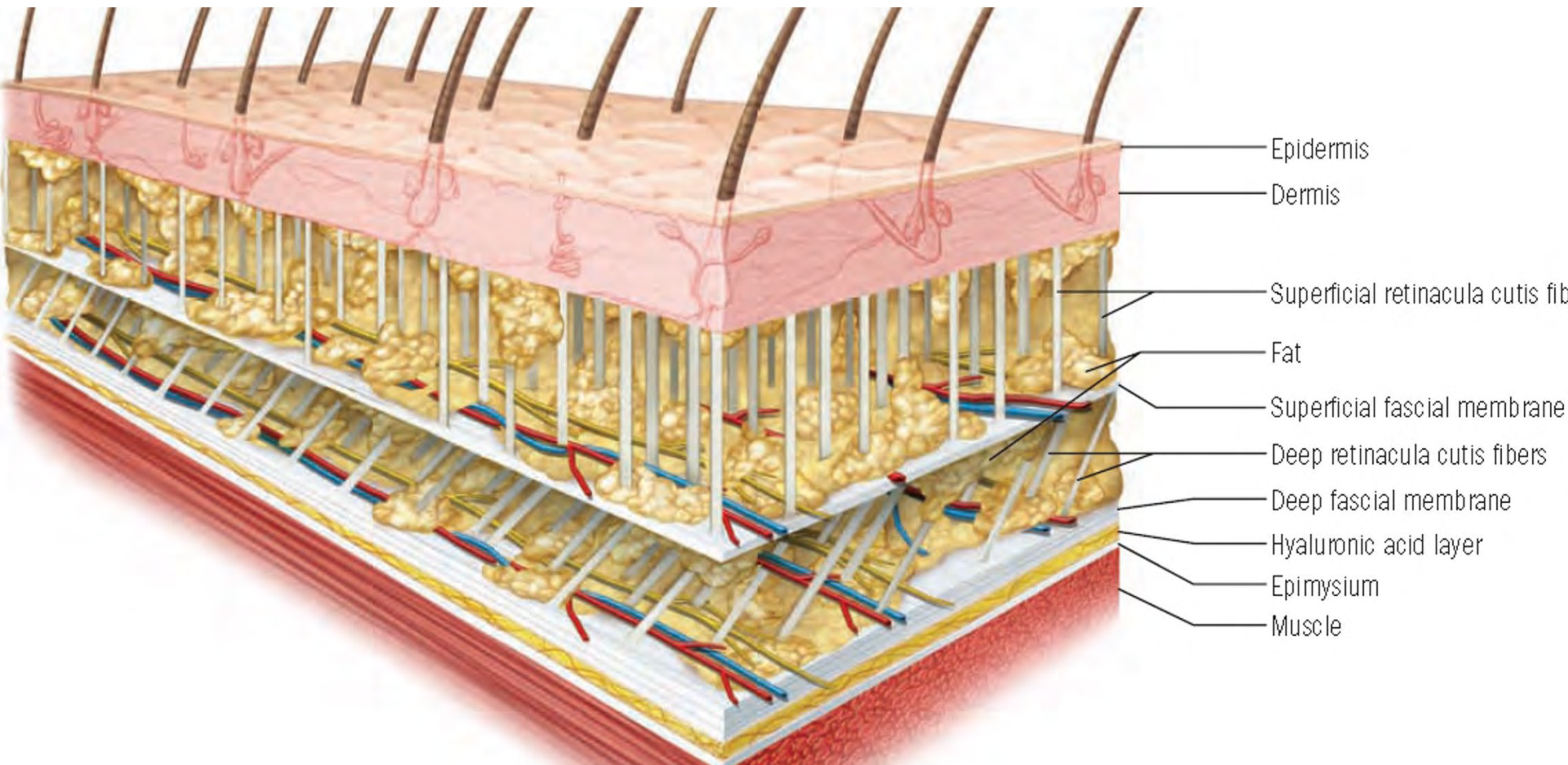
**Slow vs.
Fast**



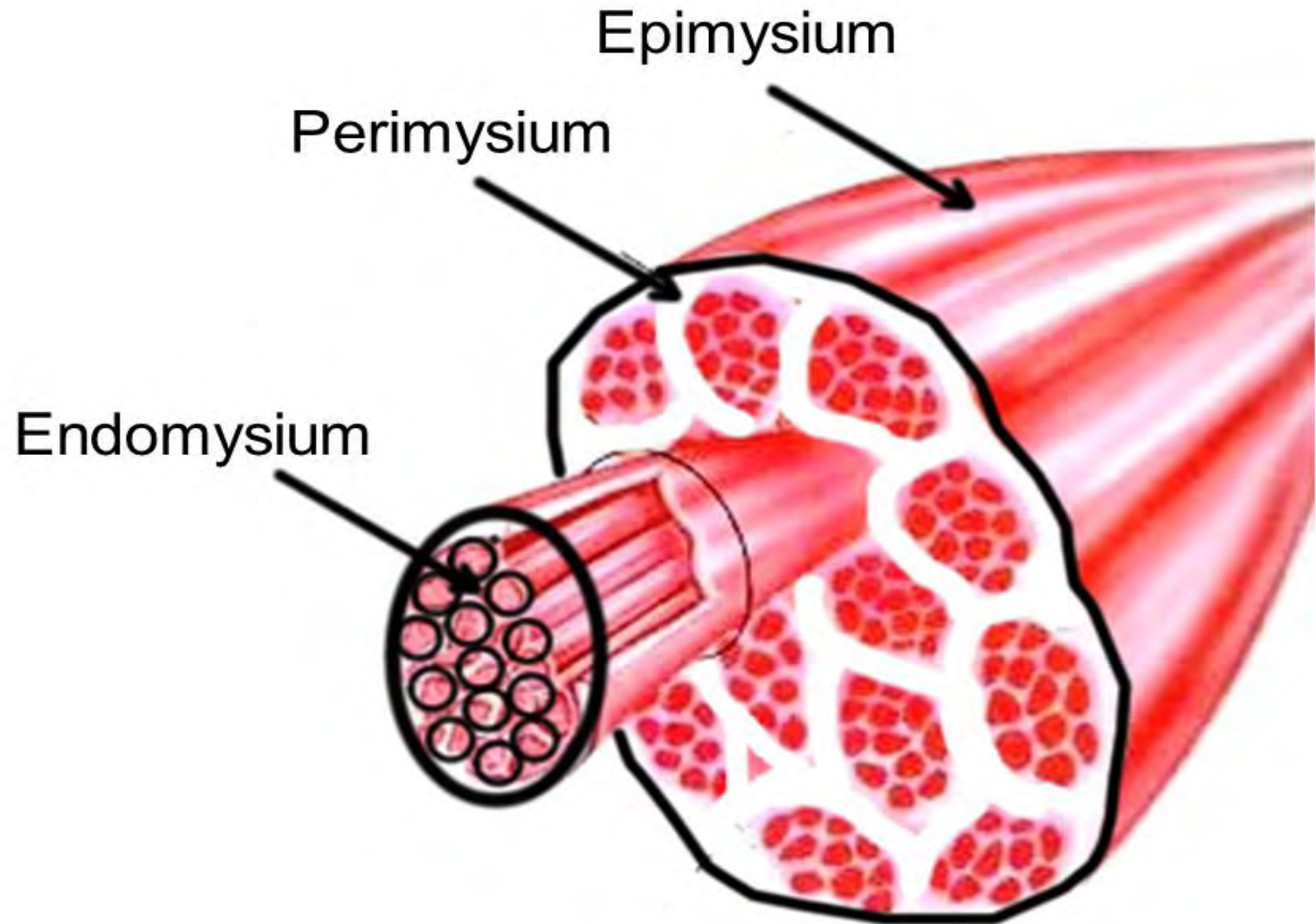


Static vs. Dynamic

Fascial Restrictions



Fascia



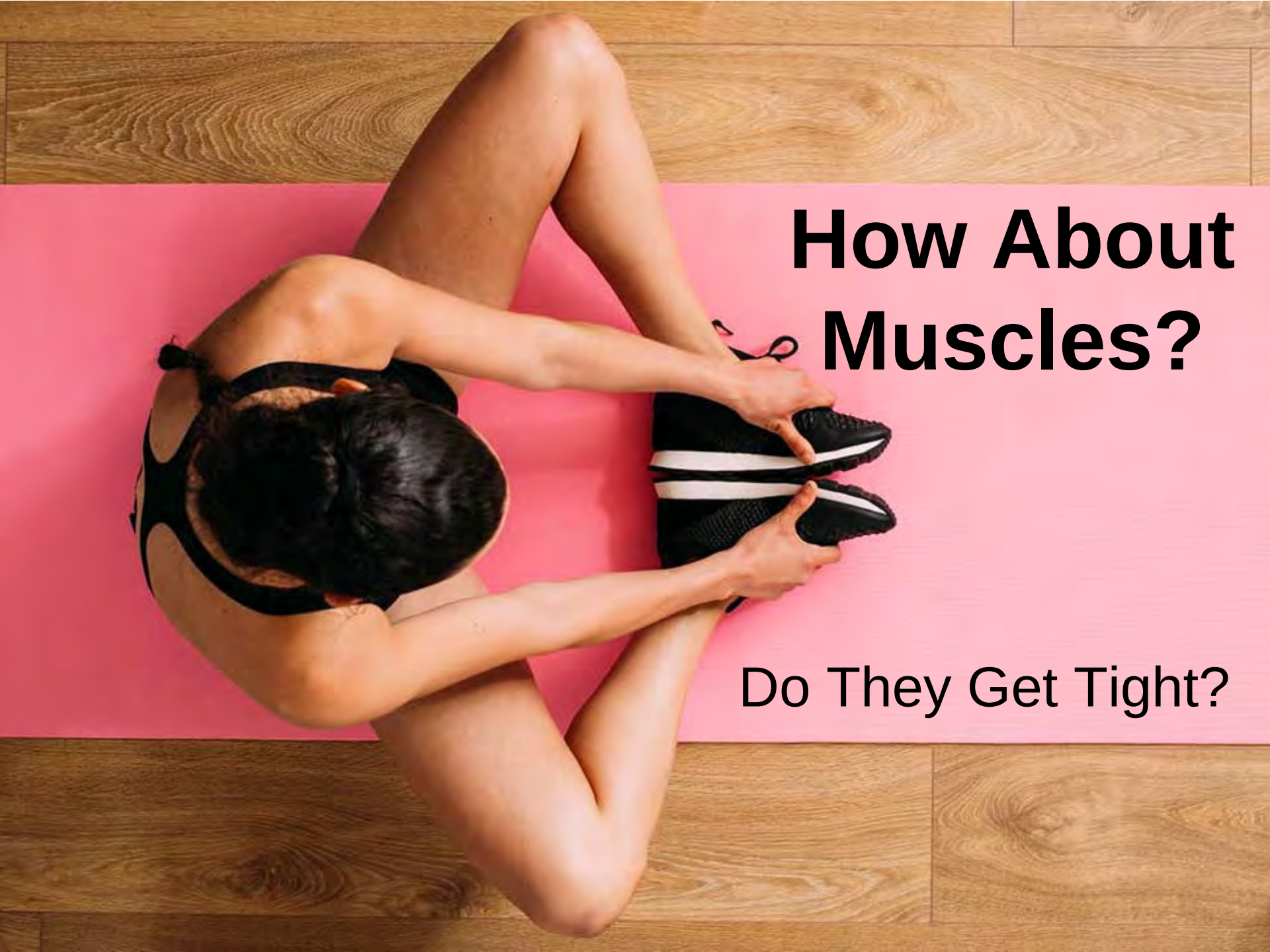
Visceral Fascia



**Contractile Side
or the
Elongating Side**

Fascial Stretching

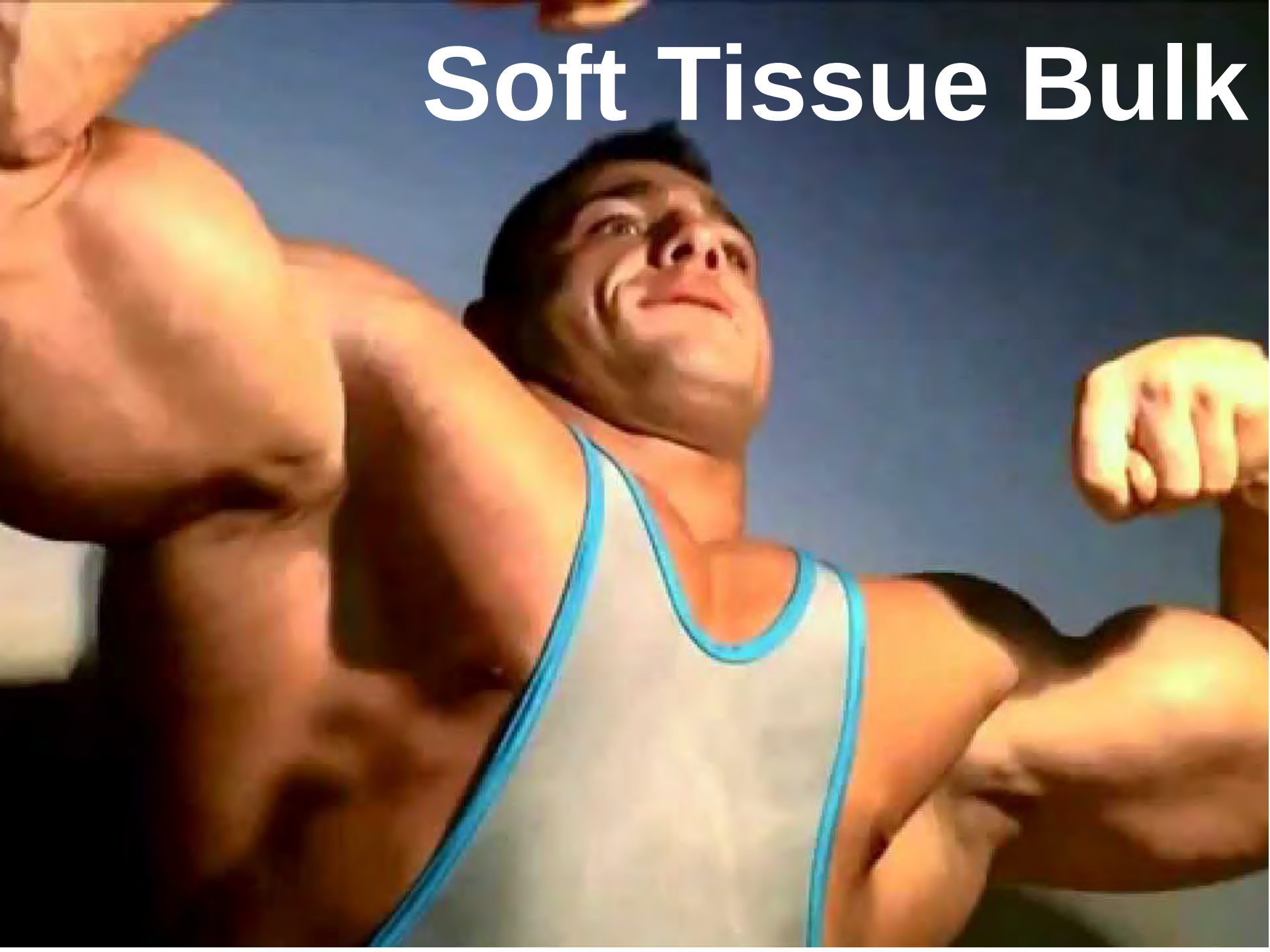


A woman with dark hair tied back, wearing a black sports top, is performing a butterfly stretch on a pink mat. She is lying on her back with her knees pulled up towards her chest and her feet together. Her hands are holding her feet, and she is leaning forward. The mat is placed on a light-colored wooden floor.

How About Muscles?

Do They Get Tight?

Soft Tissue Bulk





Trigger Points

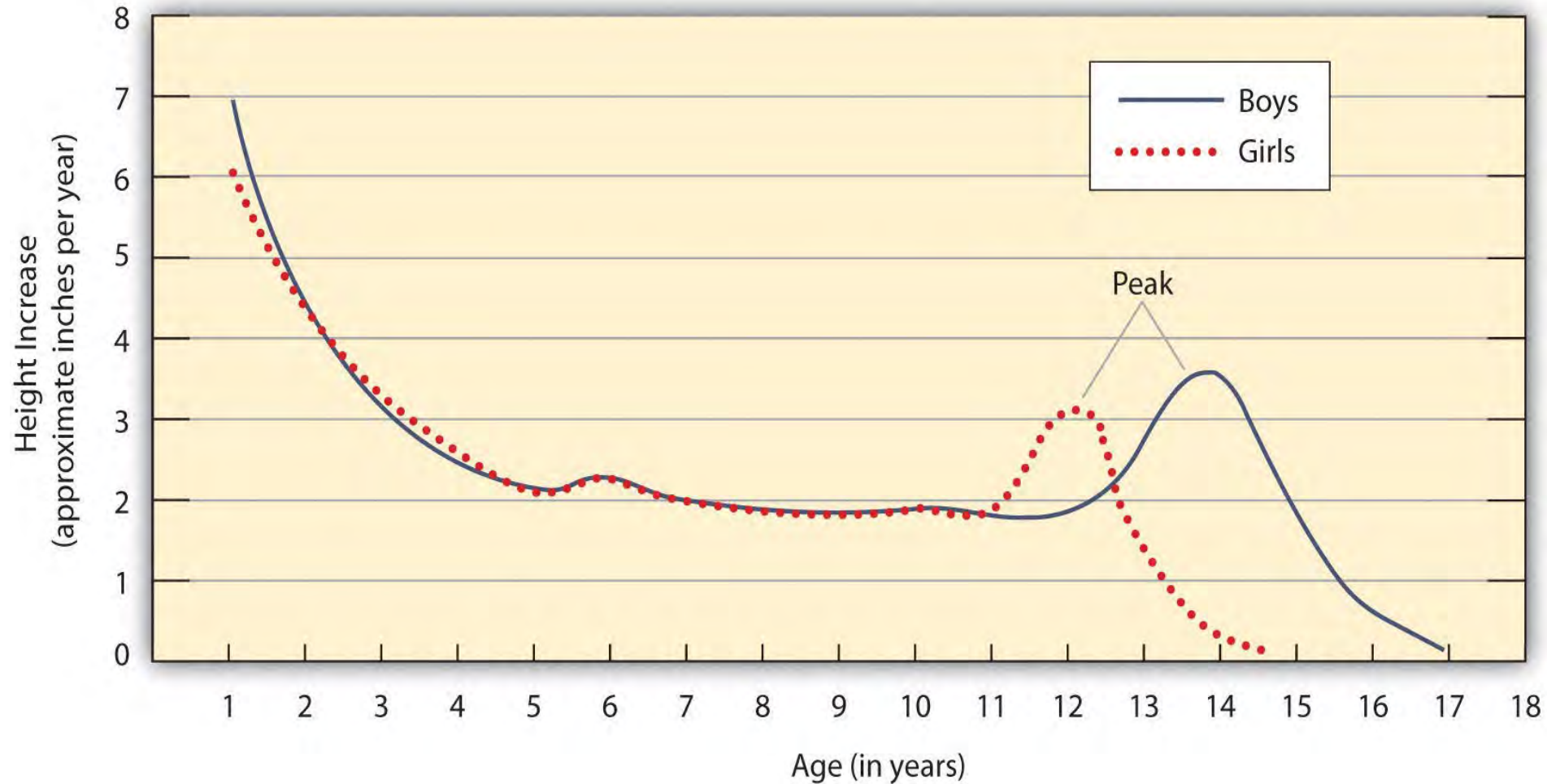


Trigger Point Release

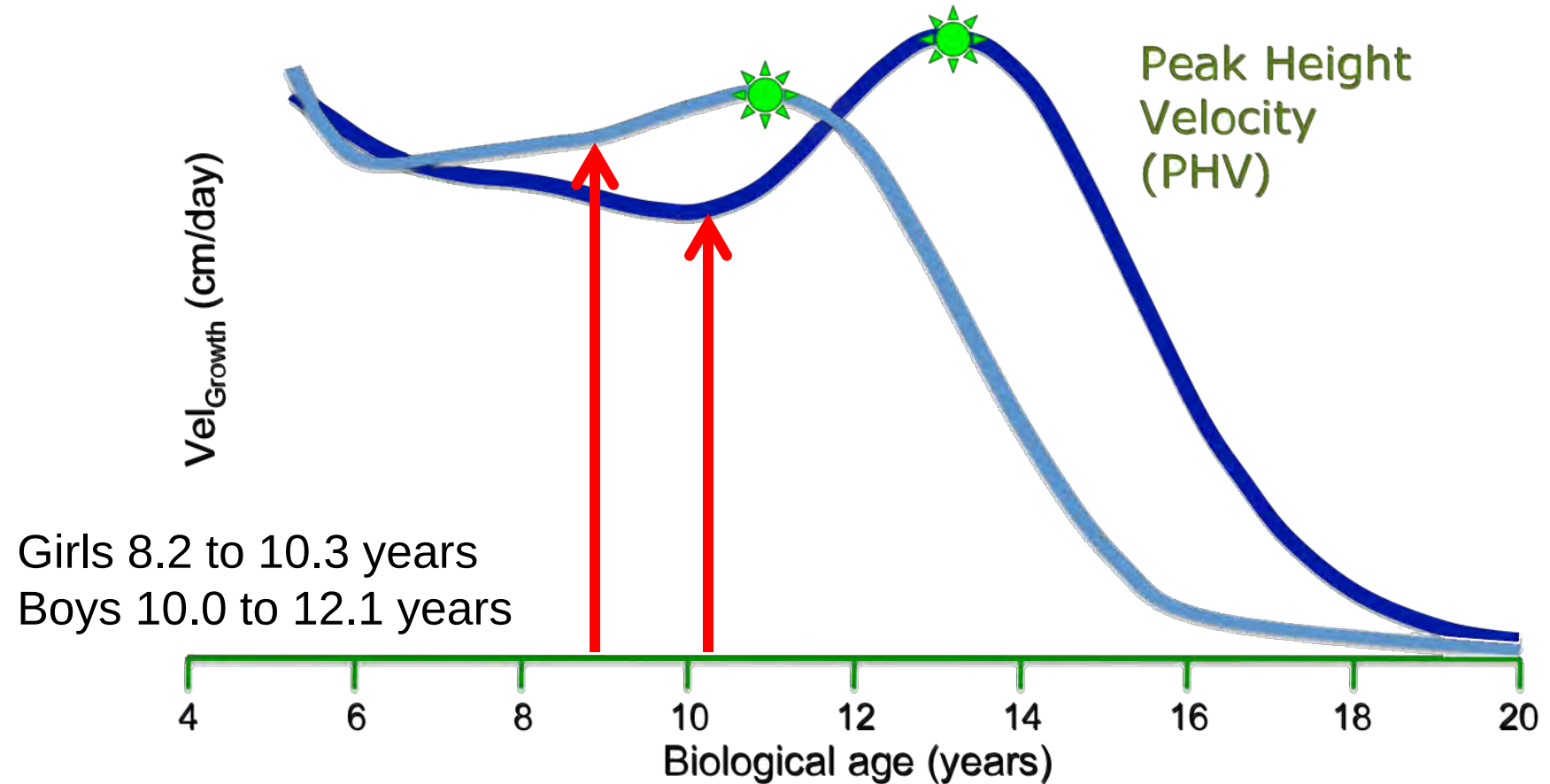
Growth Spurt



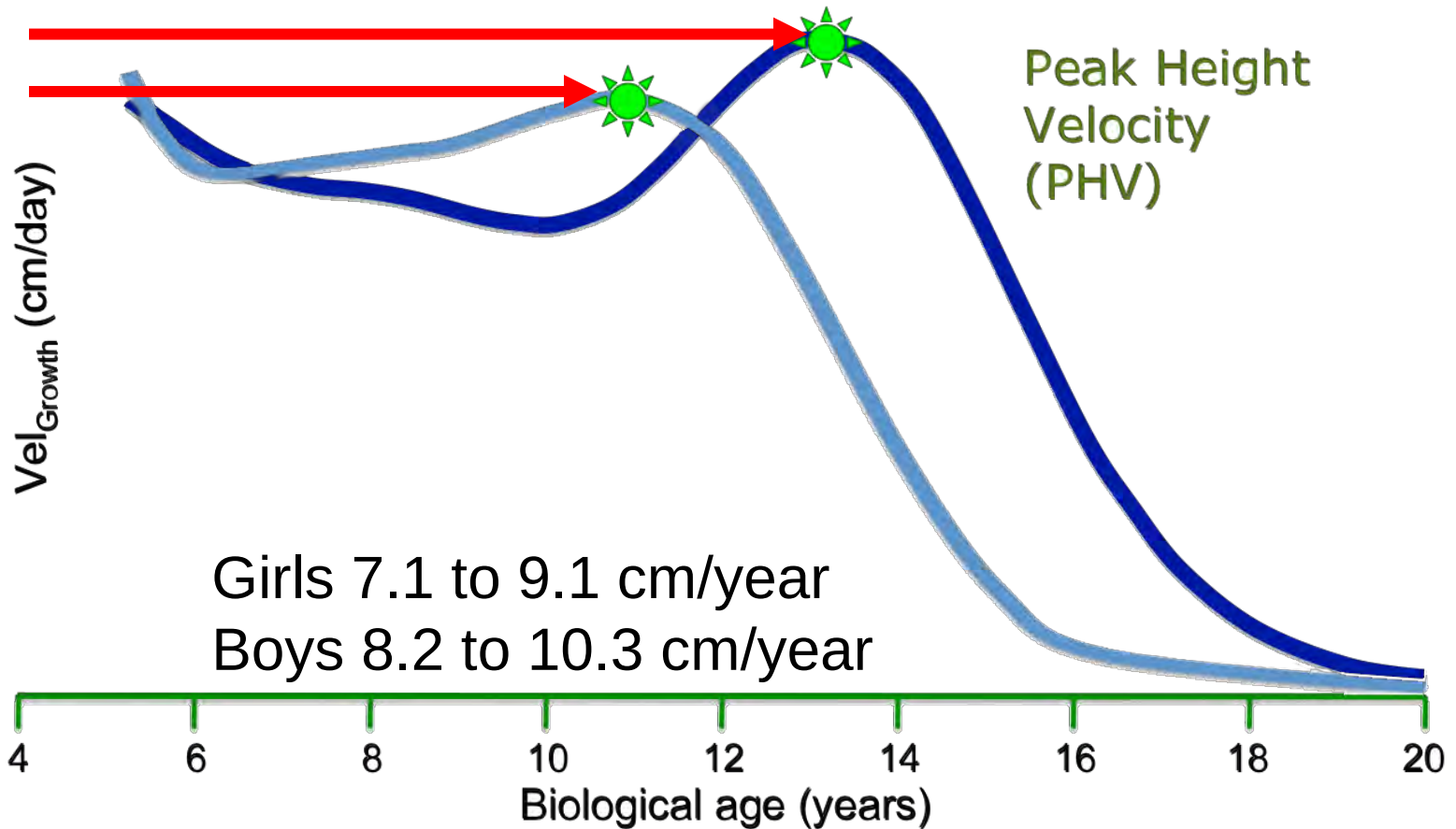
Growth Velocity



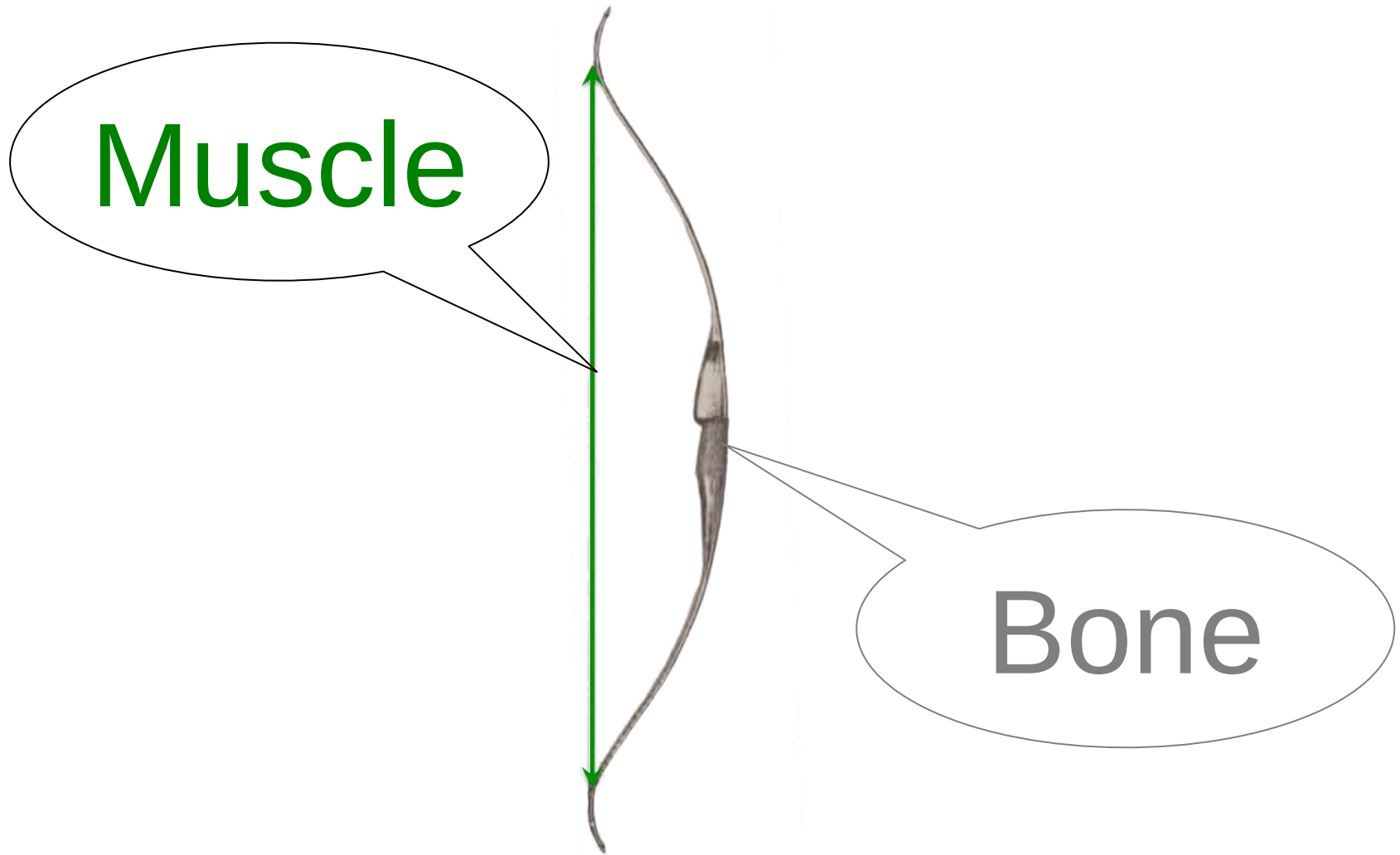
Take Off (TO)



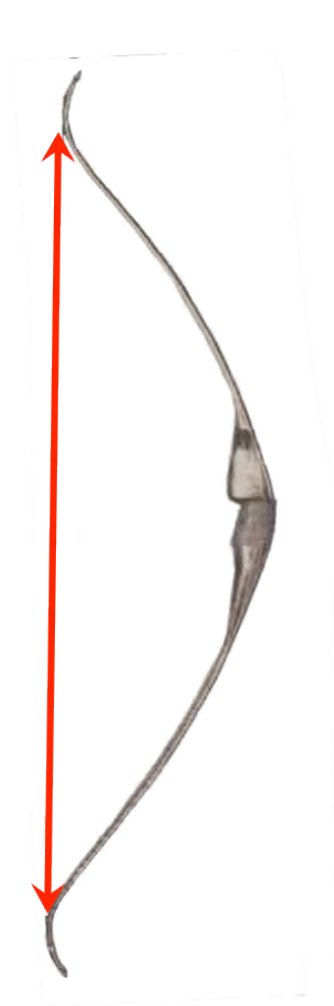
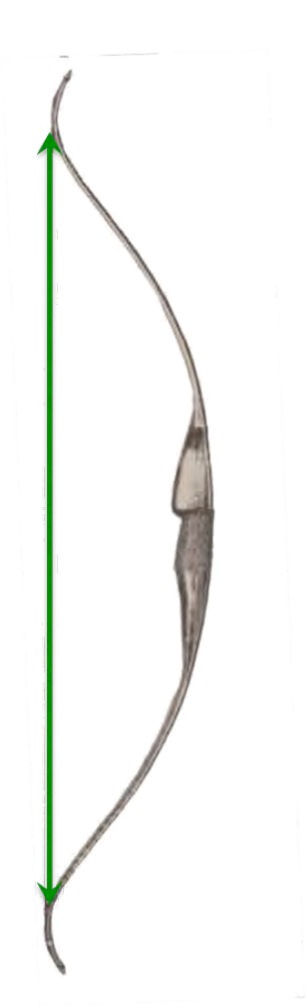
Peak Height Velocity (PHV)

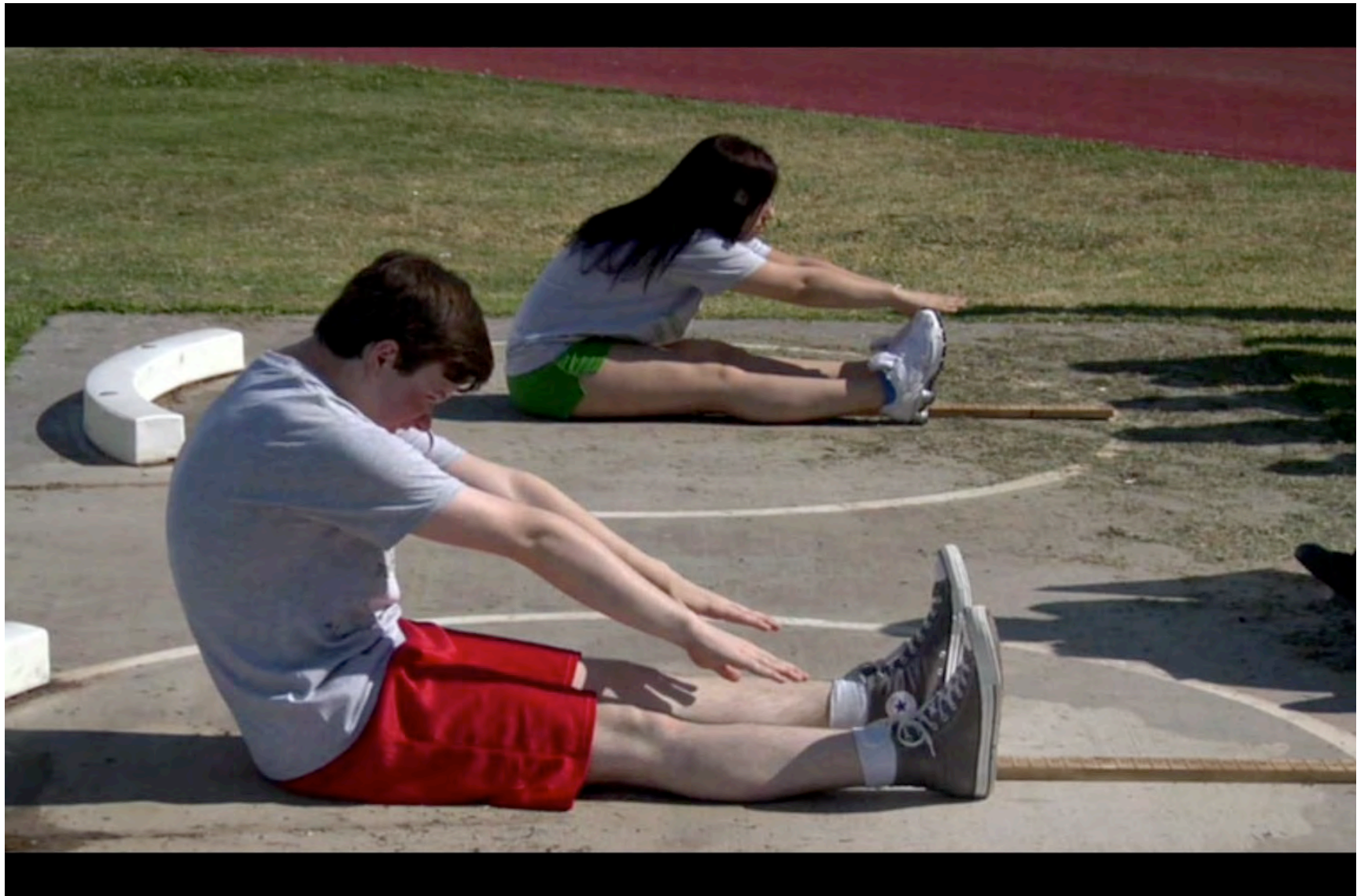


Bones grow first – Muscles follow



Muscles are set on Tension





Monitoring Growth



When Growing Fast

Stretch Slow

Train Fast



2) Chemical

Inflammation

- Lifestyle
- Cold or Flu
- DOMS
- Inflammaging
- Arthritis
- Diet / Nutrition
- Bacterial / Viral
- Environmental Factors



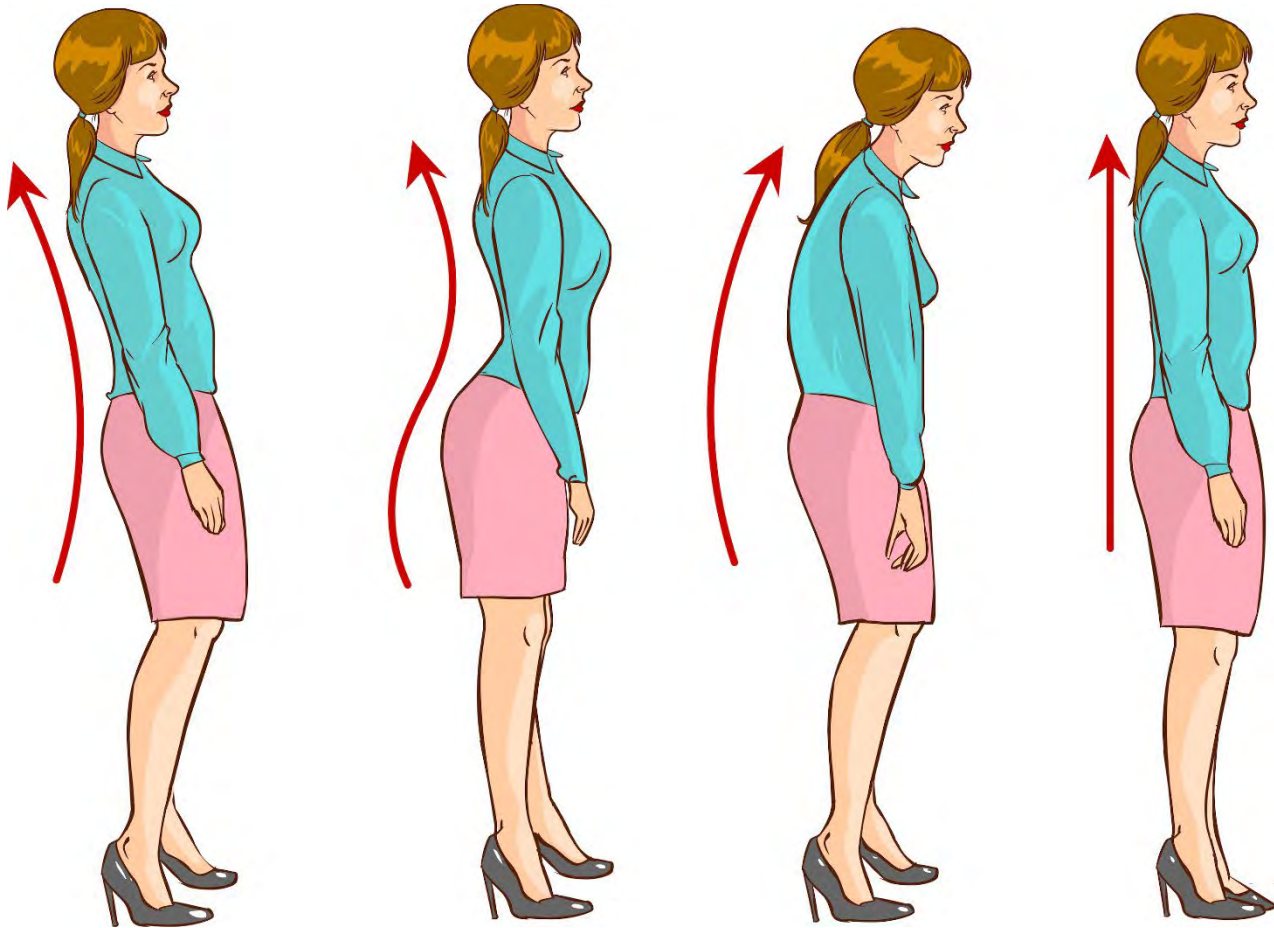


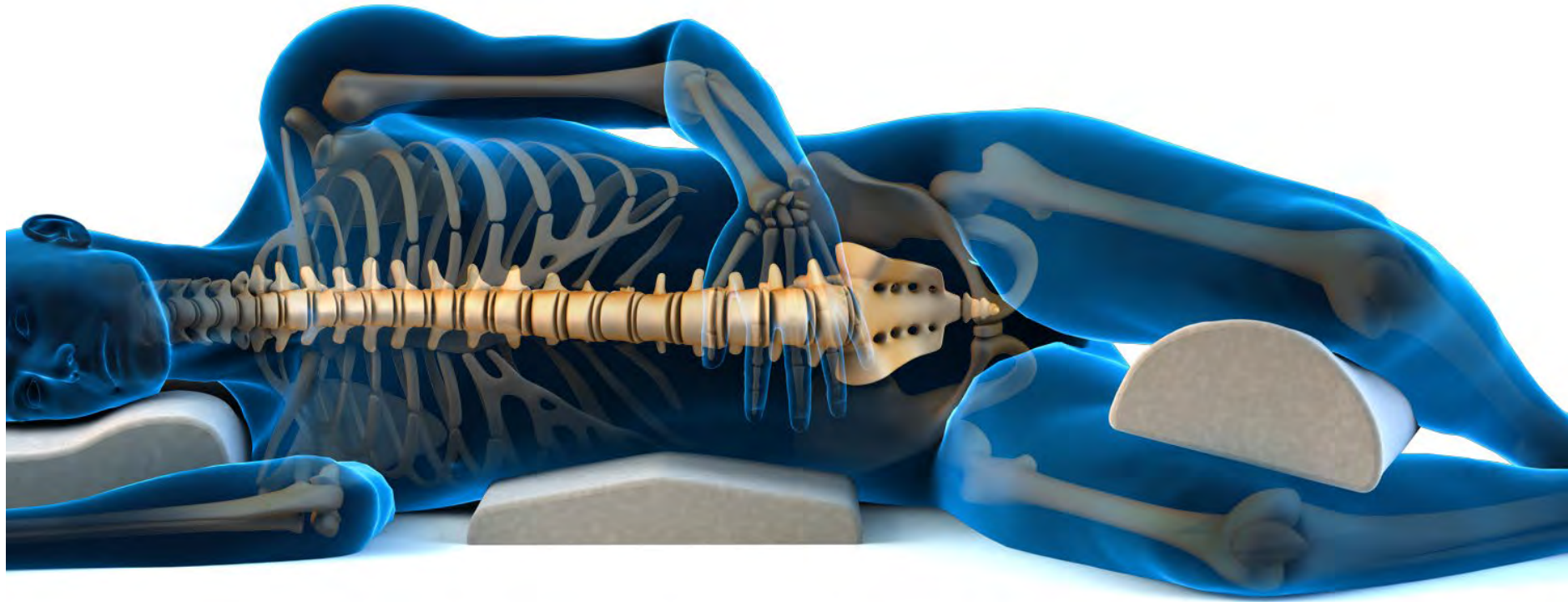
Reducing Inflammation

Diabetes

Patients with type 2 diabetes have reduced mobility across all joints tested compared to age/weight matched controls

Ischemia



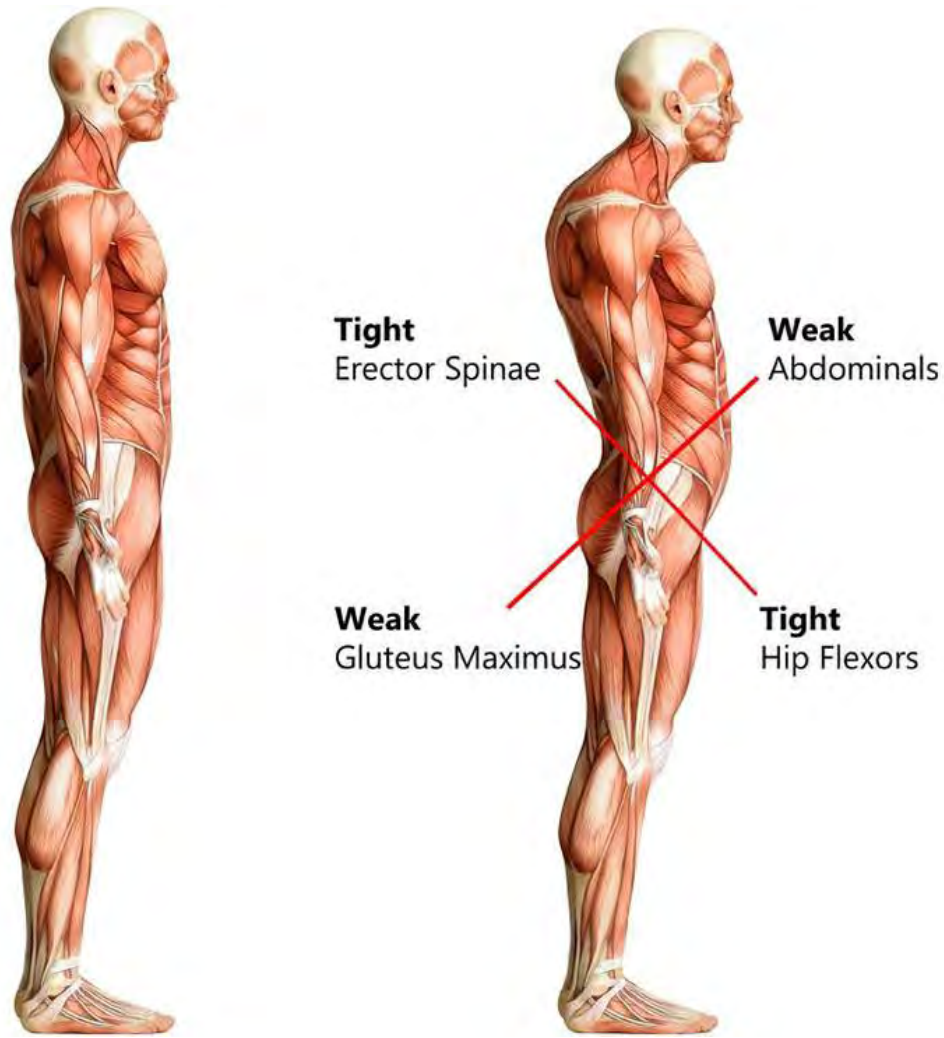


Ischemia Cause #1: Sleeping Position

Ischemia Cause #2: Ergonomics



Ischemia Cause #3: Poor Posture



Increasing Blood Supply



Increasing Blood Supply

Laser

Ultrasound

Nutrition

Infra-red

PEMF

Lymph

Exercises That Increasing Blood Supply

Cardio

Deep
Breathing

Yoga

Sauna

Walking

Dynamic
Warm-Up



Static vs. Dynamic

Posture Control





Diet



3) Neurological Causes

A classic illustration of Smokey Bear, a brown bear wearing a yellow hat with the word "SMOKEY" in red. He is holding a large, dark, curved object, possibly a shield or a piece of wood, in his left paw. The background is a light blue-grey color.

Warning & Protecting

*Pain is one way the neurological
system communicates with you*

Neurological Facilitation

Tight ■ Stiff

Guarding



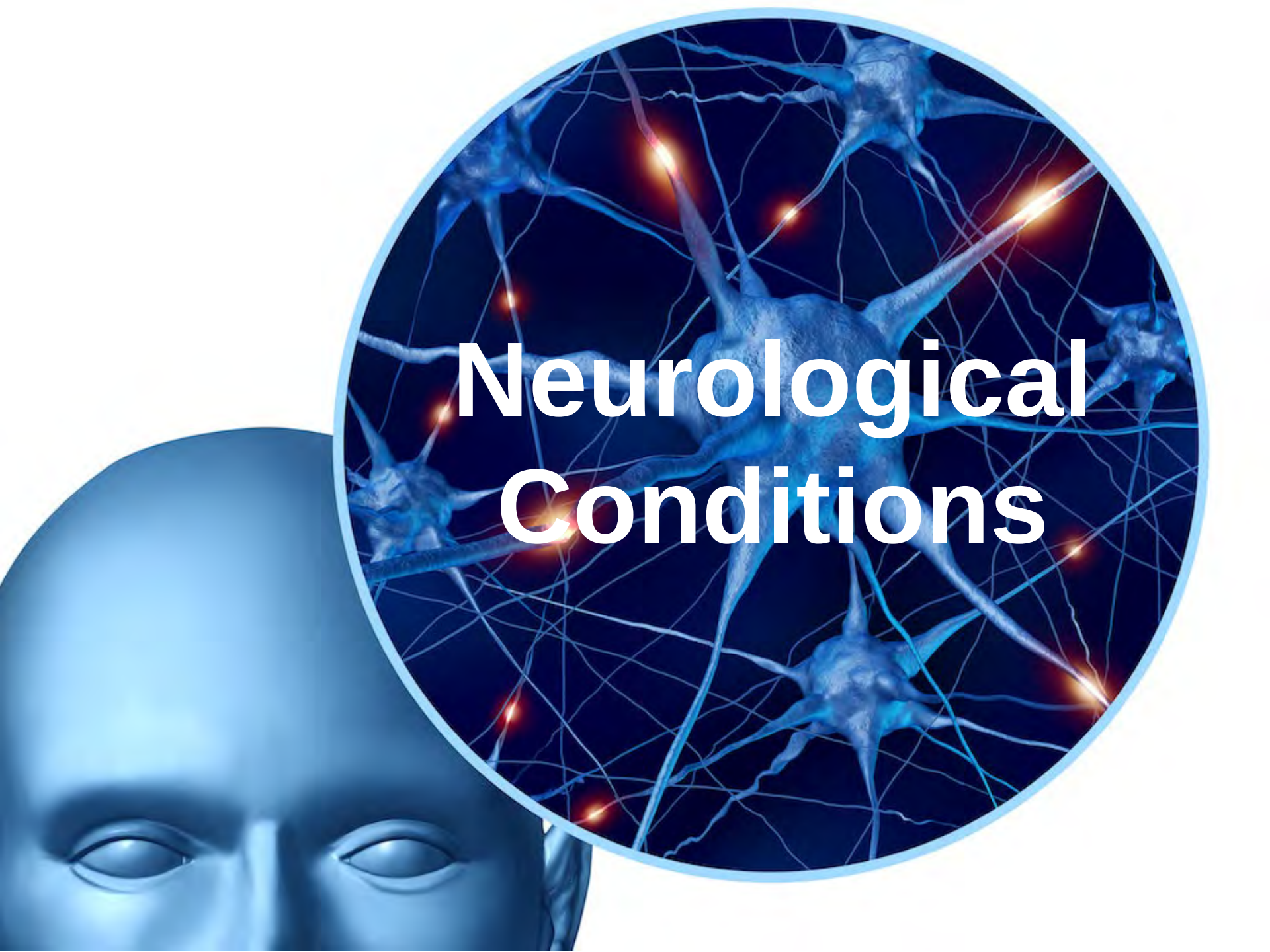
Let's Feel One

A person with brown hair tied back, wearing a teal long-sleeved shirt and black shorts, is walking away from the camera on a concrete sidewalk. To their left is a paved road with a silver car parked on the shoulder. To their right is a grassy area with a row of small trees. The scene is brightly lit, casting a shadow of the person onto the sidewalk. The text "Overload Underload" is overlaid in large white letters across the center of the image.

Overload Underload

PNF Stretching





Neurological Conditions

Neurological Conditions

Stroke

Parkinson's

Multiple
Sclerosis

ALS

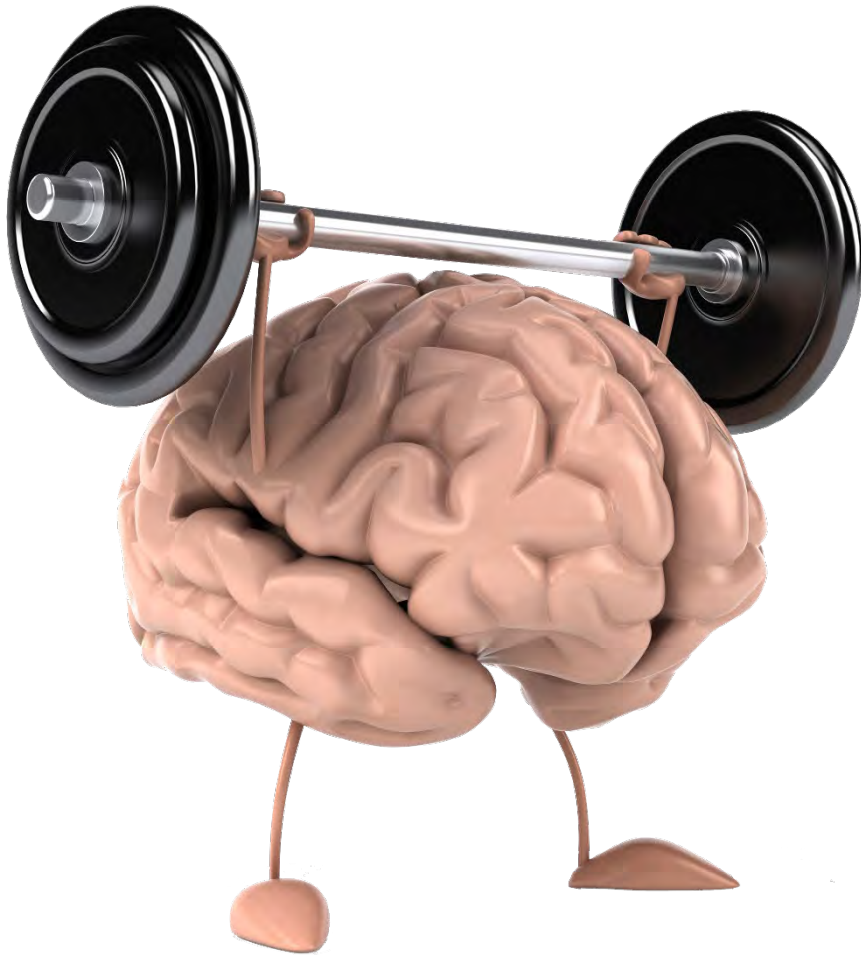
Cerebral
Palsy

Dystonia



Neurological Motor Patterns

Train the Brain



Not the Muscles





**Bad
Motor
Pattern**



Stretch Tolerance



Mobility Questions to Ask

- Limited In One Plane or Multiple
- On the Contracting or Elongating Side?
- Is There Pain or Swelling?
- Is It Posture Specific?
- Was There a Previous Injury?
- How is Their Diet?
- Work Environment or Sleeping Patterns?
- How Old Are They?