

# Musculoskeletal System

“What Changes with Age?”

# ↓ Decreased ↓

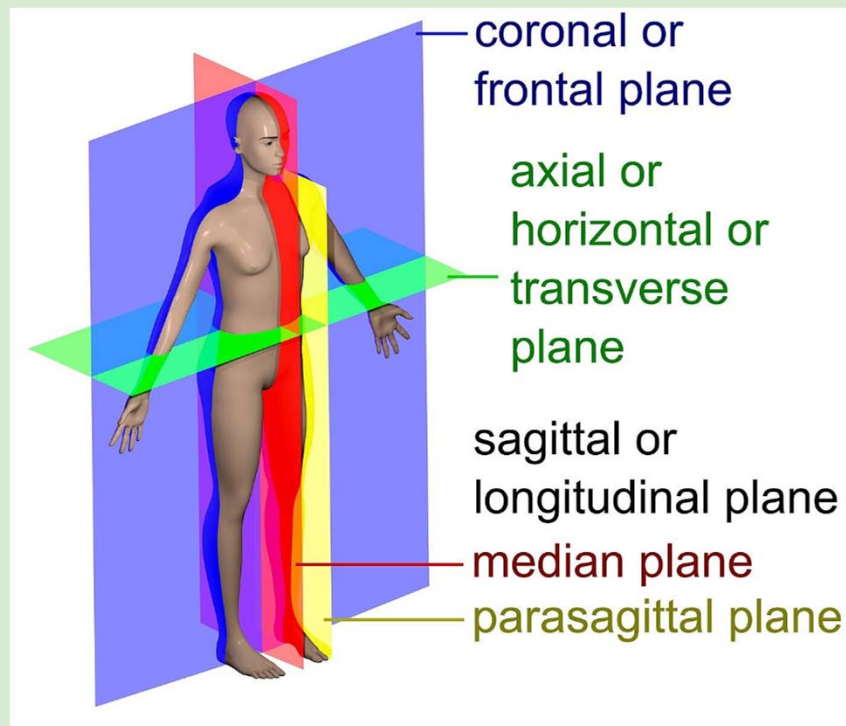
- **STRENGTH**
- **FLEXIBILITY**
- **BALANCE**  
(PROPRIOCEPTION)
- **ENDURANCE**
- **POWER**

# ↑ “Potentially” Increased ↑

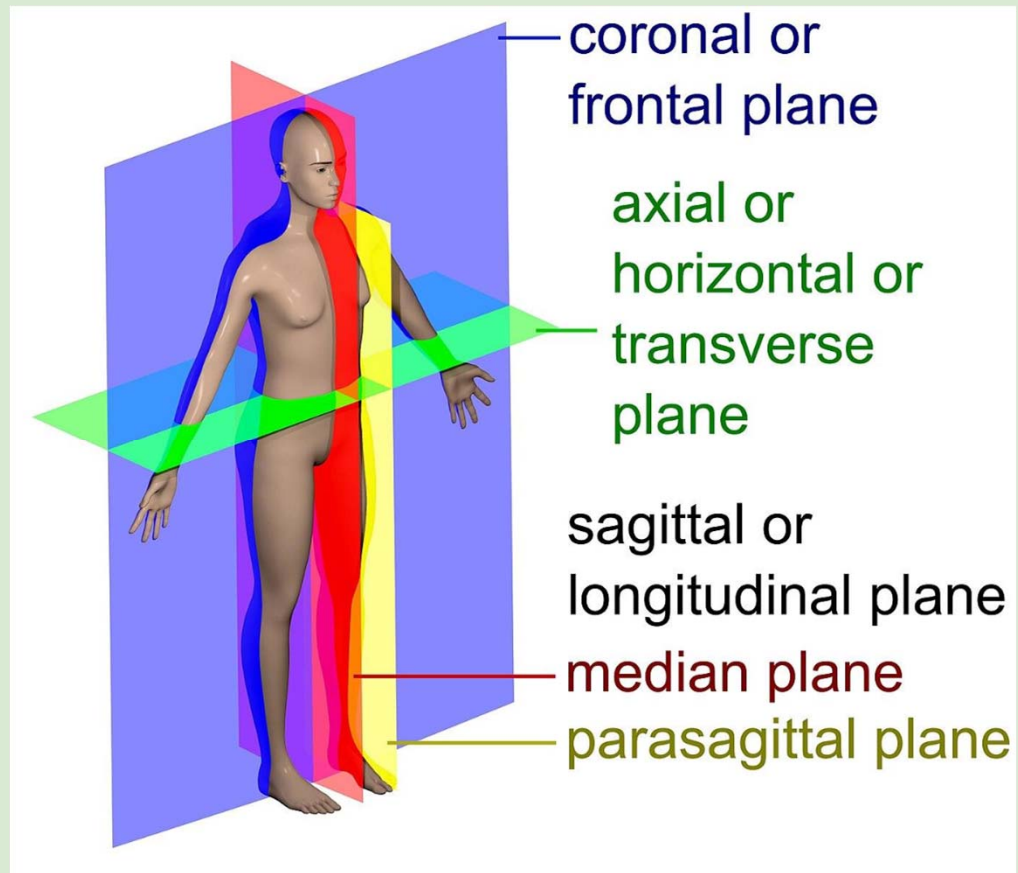
- MINDFULNESS
- KNOWLEDGE
- PATIENCE
- COMPASSION
- EMPATHY
- WISDOM

# Alignment

## FRONTAL PLANE



# SAGITTAL PLANE



coronal or  
frontal plane

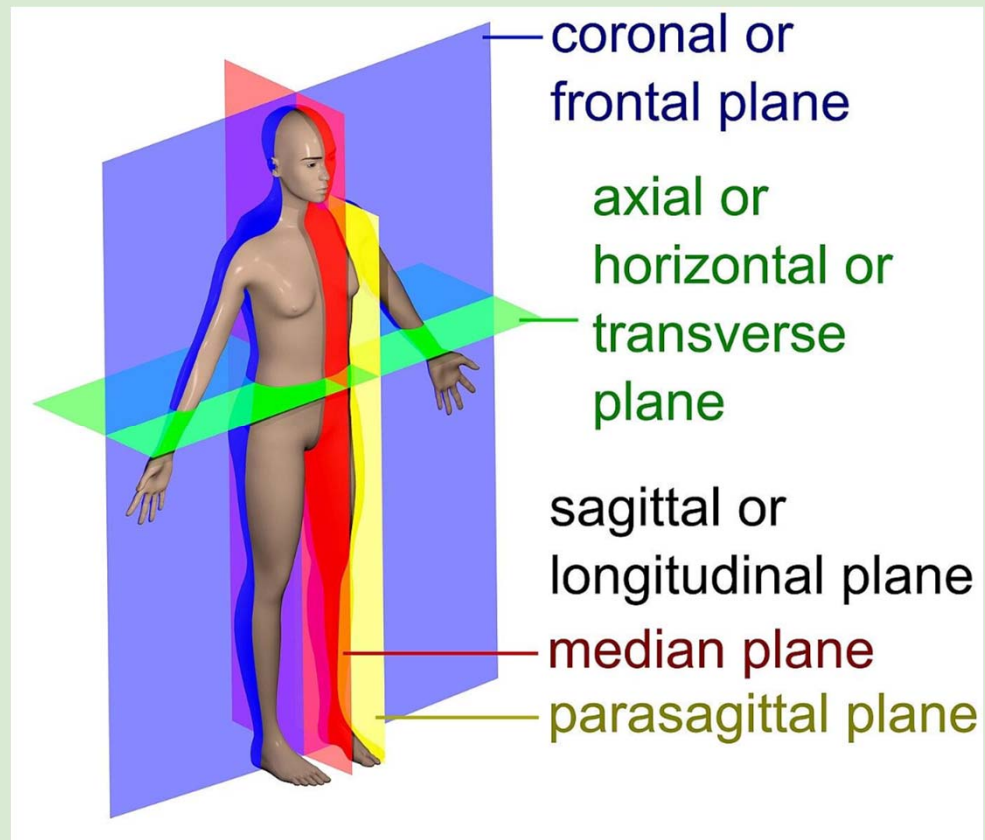
axial or  
horizontal or  
transverse  
plane

sagittal or  
longitudinal plane

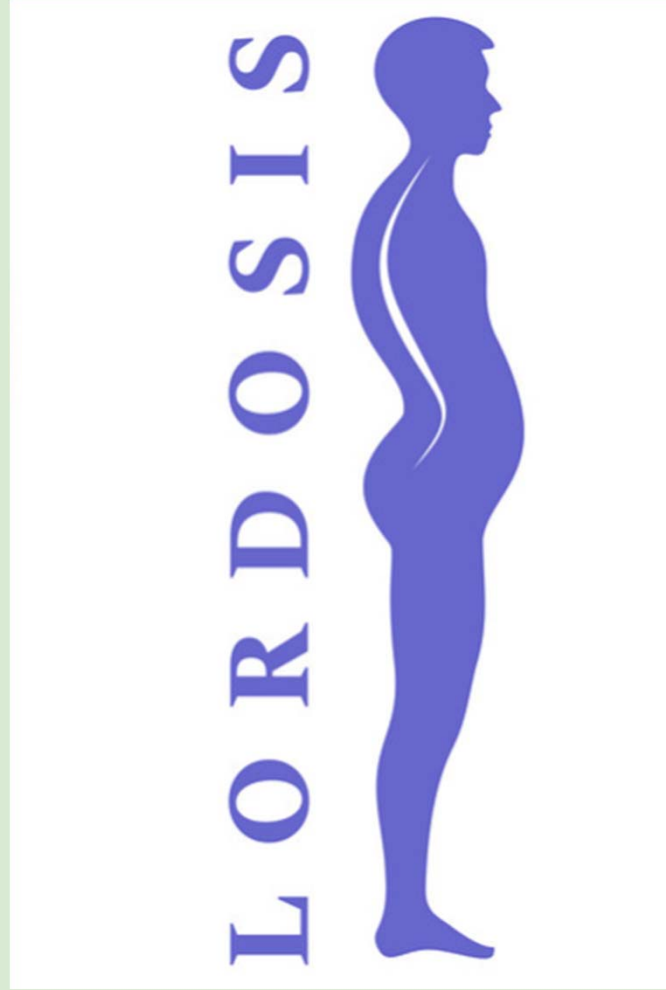
median plane

parasagittal plane

# TRANSVERSE/AXIAL PLANE



# LORDOSIS



# KYPHOSIS

KYPHOSIS





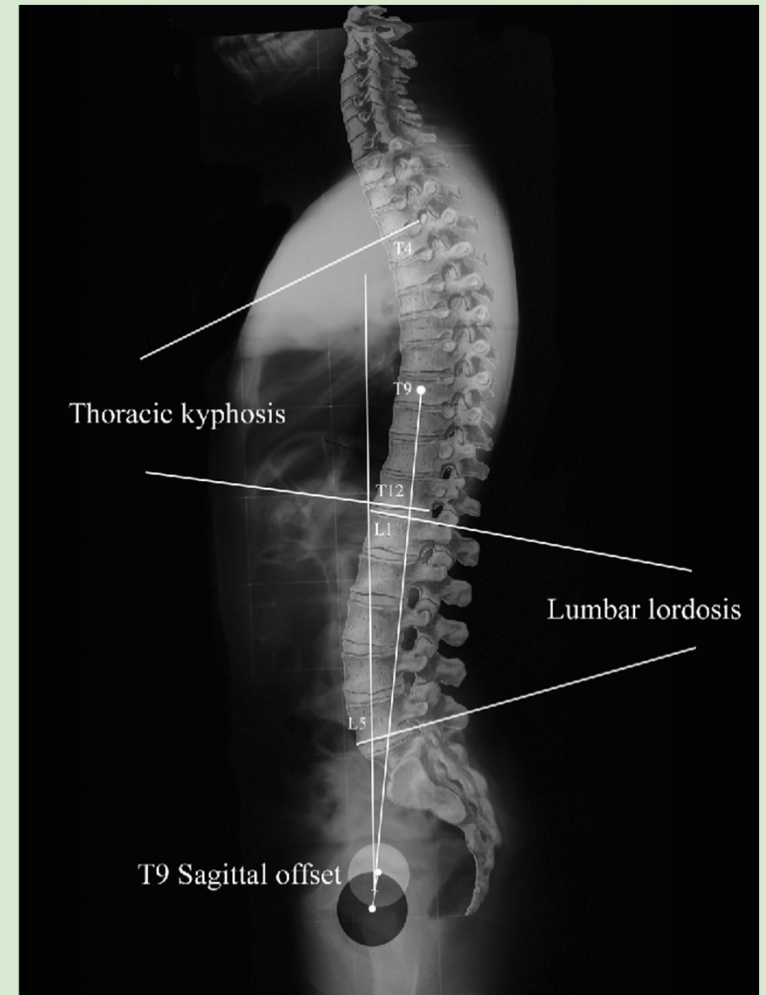
# SPINE

CERVICAL — LORDOSIS

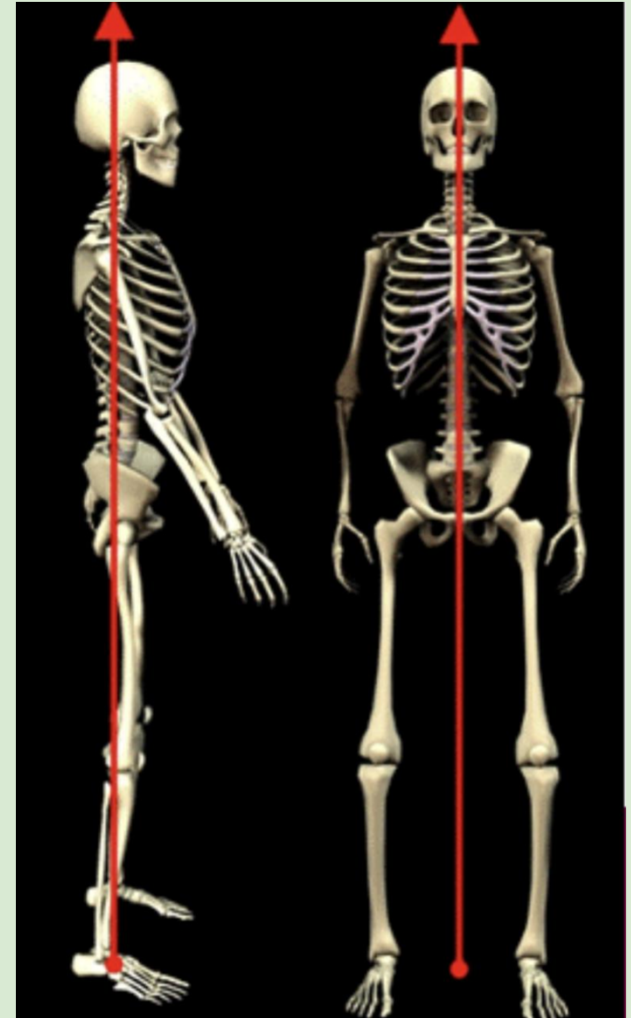
THORACIC — KYPHOSIS

LUMBAR — LORDOSIS

SACRAL — KYPHOSIS



Head Centered over  
Sacrum in **ALL** 3 Planes



# ANTIGRAVITY Muscles

Hips:  
(Pelvis)

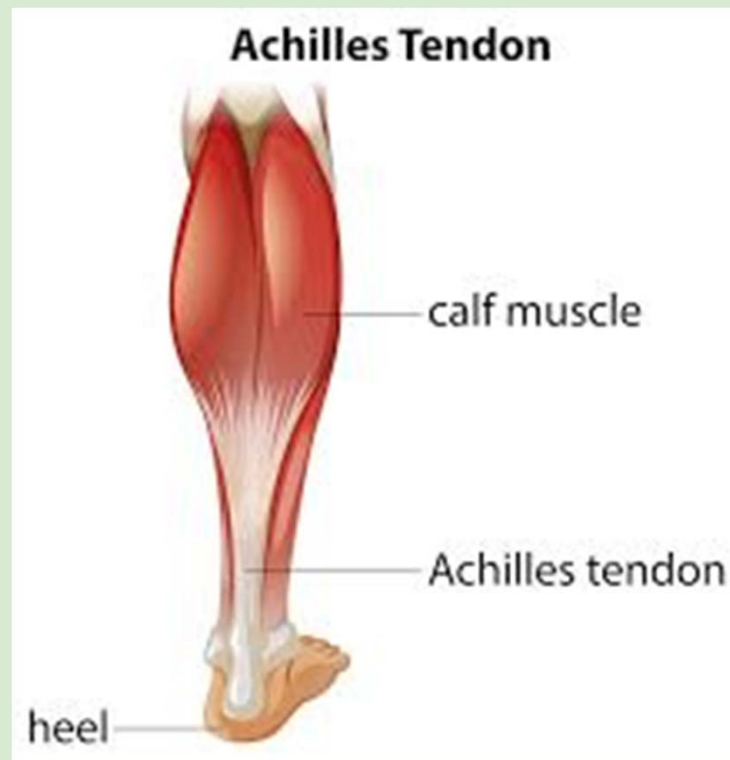
**Gluteus Maximus** (buttocks)



# Knees: Quadriceps (front of thigh)



# ANKLES: Gastrocsoleus (calf muscle/ Achilles)

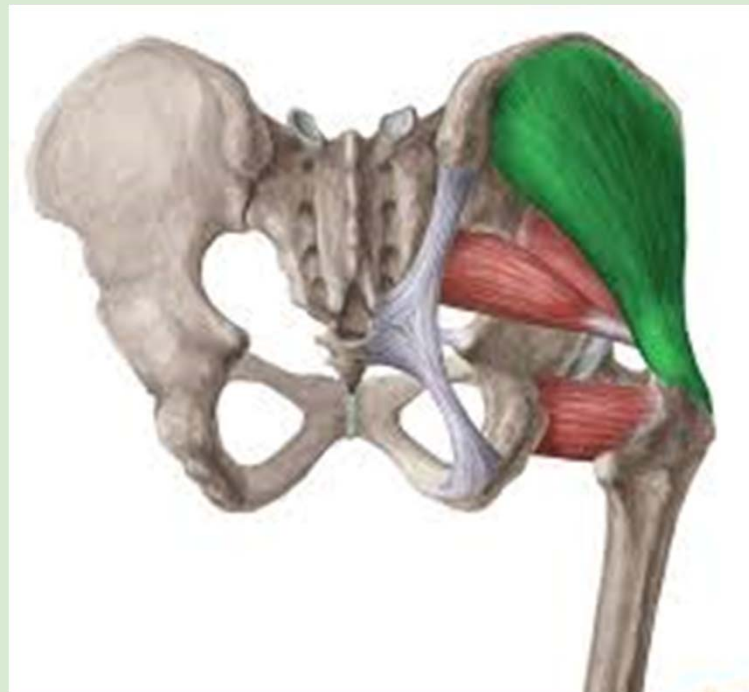


# SINGLE LEG STANDING

- **BALANCE**
- **STRENGTH**
- **ENDURANCE**

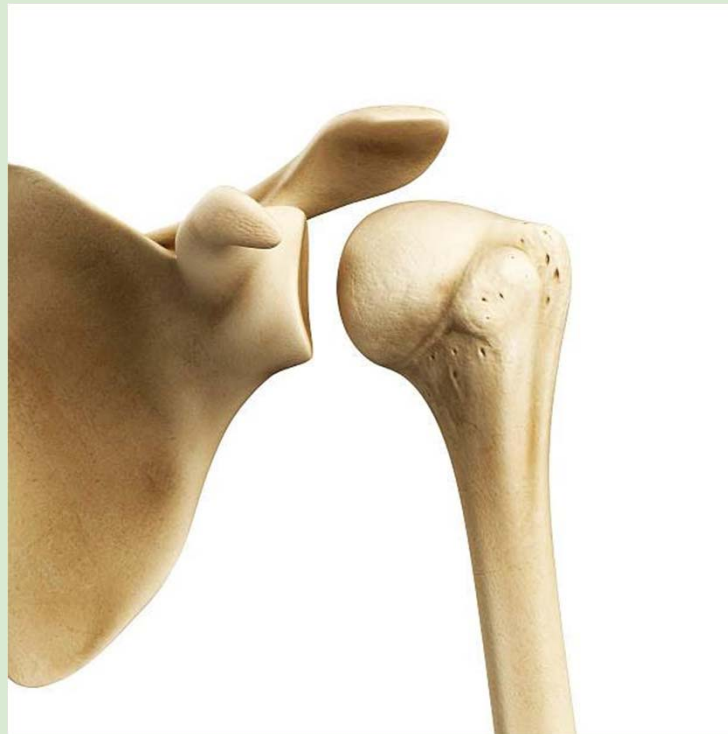
# GLUTEUS

## MEDIUS and MINIMUS



# SHOULDER

(limited bone constraint)

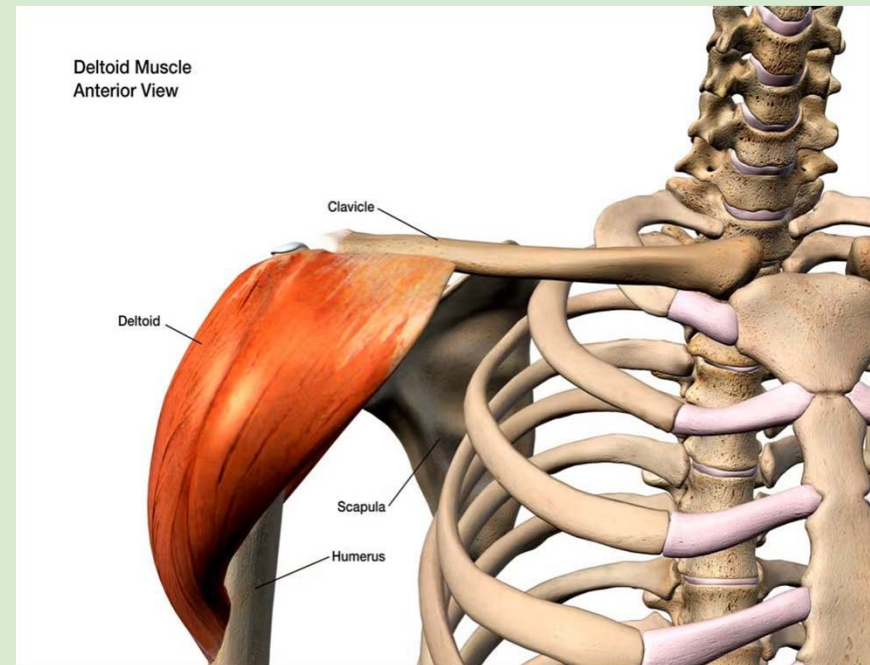




# ↑ Impingement ↑

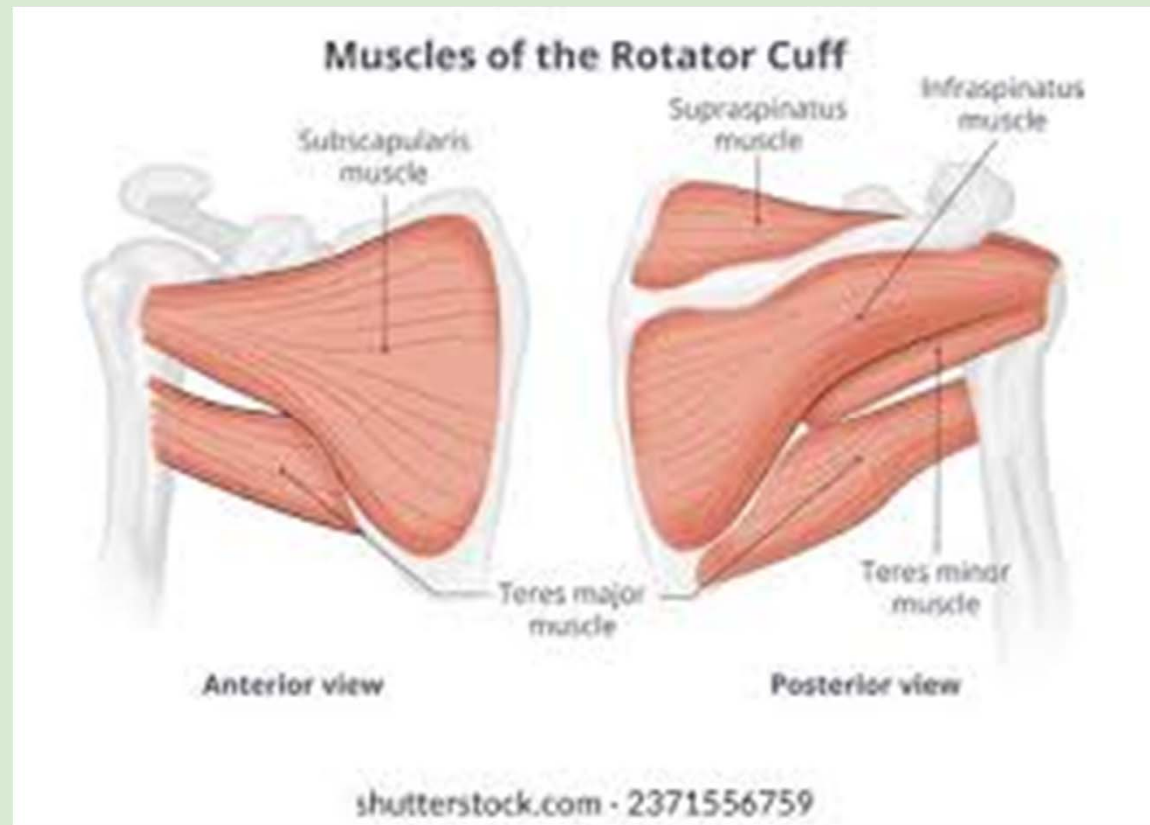
Muscles pull up humerus

- DELTOID - (shoulder)
- TRAPEZIUS - (back)
- PECTORAL MUSCLE (chest)

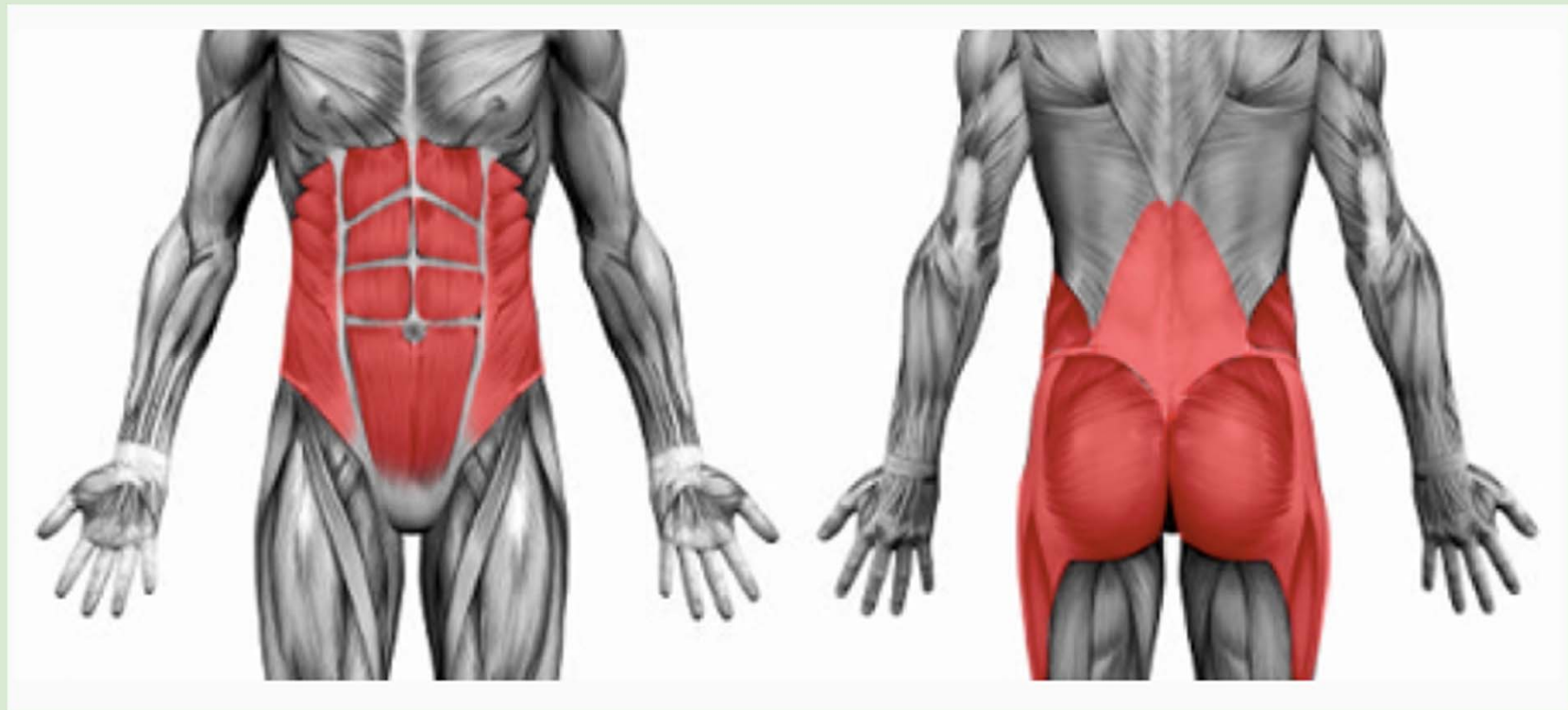


# Shoulder Stabilizer

Rotator CUFF  
Supraspinatus  
Infraspinatus  
Teres major  
Teres minor  
Subscapularis



# Spinal Alignment CORE STRENGTH is KEY



# **CONTRACTURE: STIFFNESS**

Loss of Range of Motion

Countermeasure: Work on FLEXIBILITY

# **WEAKNESS**

**COUNTERMEASURE:**

**\*STRENGTH**

**\*POWER**

# FATIGUE

## COUNTERMEASURES:

- \*Endurance

- \*Strength

- \*Power

# **Muscle Training**

Concentric Work (Shortening)

IsoMetric Work (in Place)

Eccentric Work (Elongating)

**Alignment**

**Balance**

**Range of Motion**

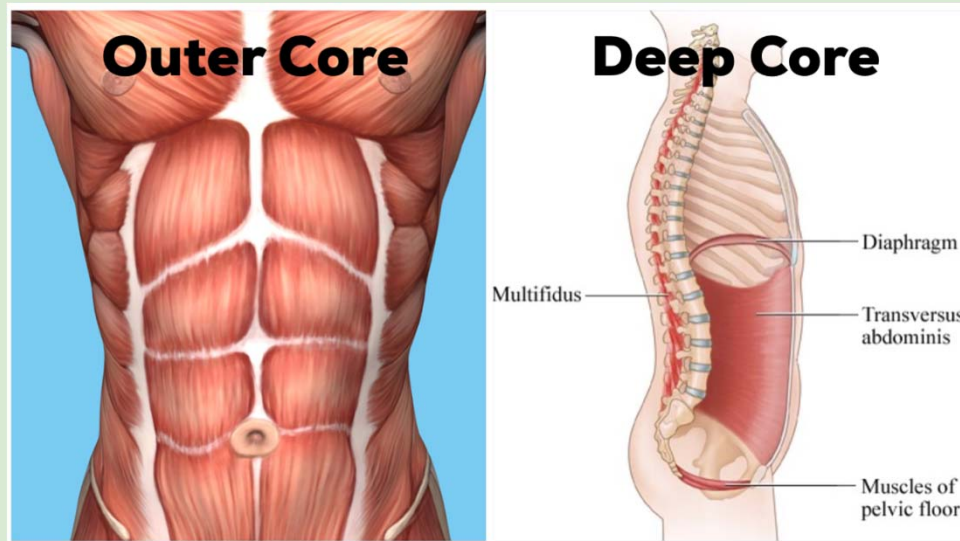
**Limb & Joint Positioning**



# CORE STRENGTH

“Home Base”

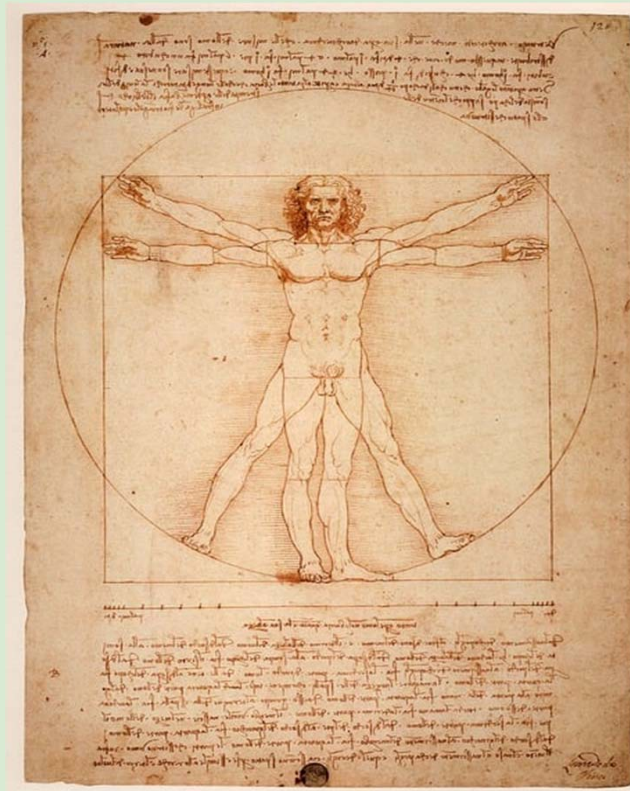
*Everything Else Builds on Core*



# **FLEXION: (Fetal Position)**



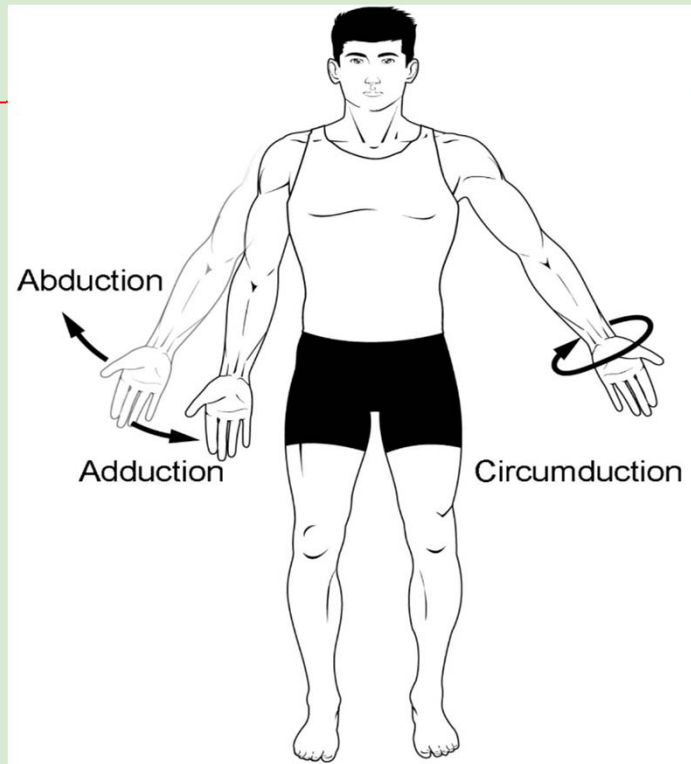
# EXTENSION:



**AB**DUCTION:

**AD**DUCTION:

**CIRCUM**DUCTION:



Angular movements: abduction, adduction, and circumduction of the upper limb at the shoulder

**QUESTIONS  
AND  
ANSWERS**

**THANK YOU!**