
HANDSTAND ANATOMY

Lenka Minarik

www.lenkaminarik.com

Ask questions in the chat!!!



WHAT WE WILL TALK ABOUT



- Stability - to be able to balance
- Mobility - for the entry, different shapes
- Eyes, balance, benefits

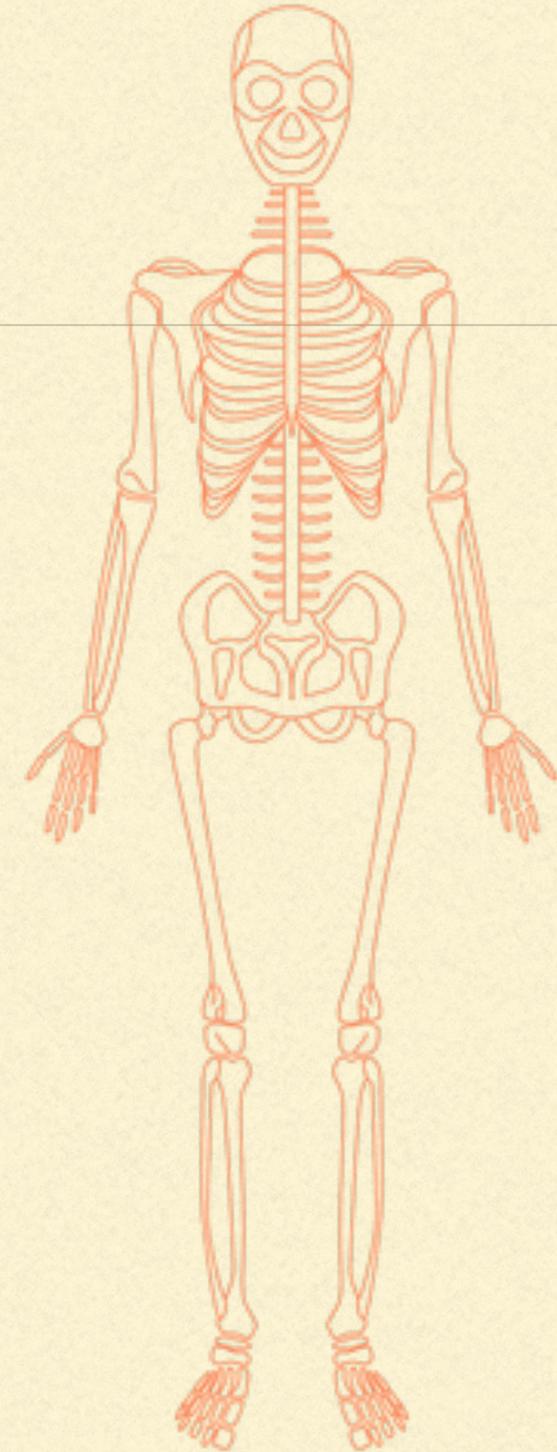
WHY IT'S HARD?

- smaller/different base of support (palms vs. feet)
- higher center of mass than in standing
- lesser strength of the wrists than ankles, shoulders than hips
- moving into the end range in both wrist and shoulders - muscles are usually not used to work hard in the end range, this requires lot of conditioning and preparation
- joints are not used to bare so much weight - muscles, connective tissue and bones need to become stronger over the time



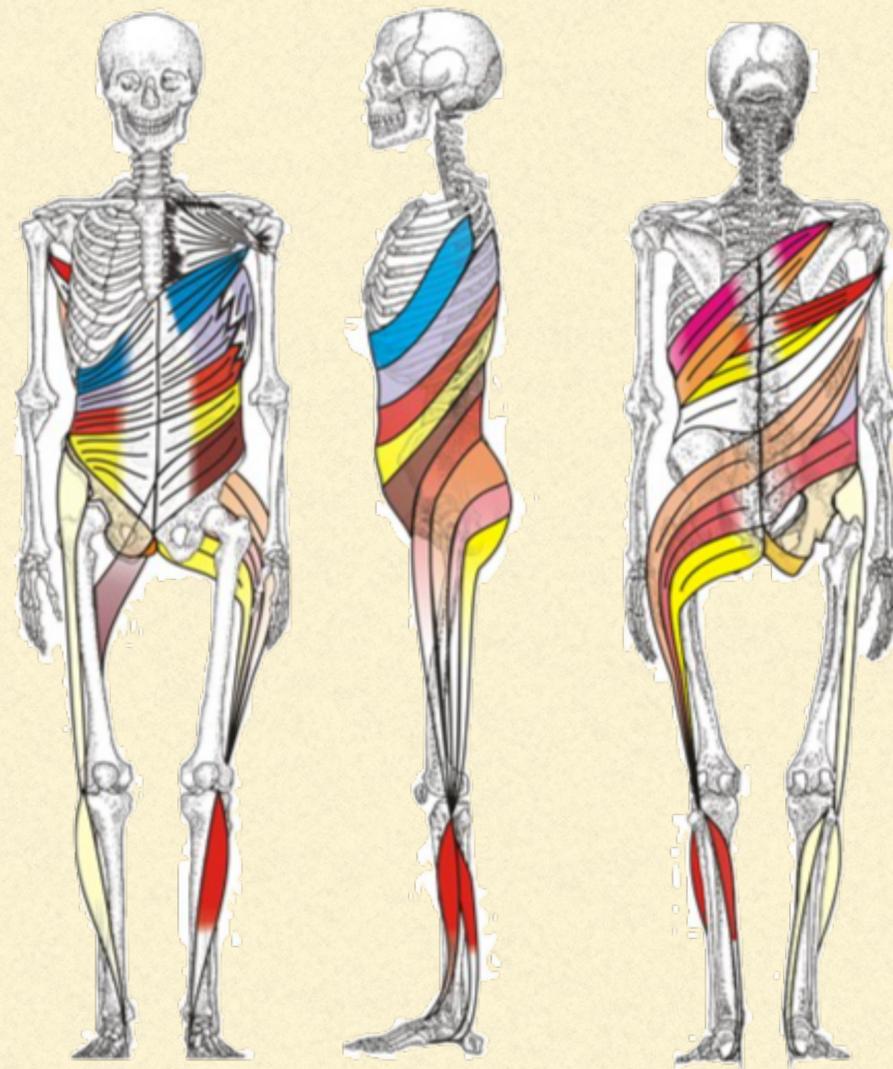
STABILITY

- Alternating pattern in joints
- Stabilising muscles - deep, closer to bones, shorter, or short muscle fibers
- Automatization (muscle memory) is important - when standing, we don't think of all the muscles that need to work
- Stabilizing muscles support the joints and bones - if not: degenerative changes, body will stabilize either by thickening the fascia, or growing/fusing bones, where they shouldn't

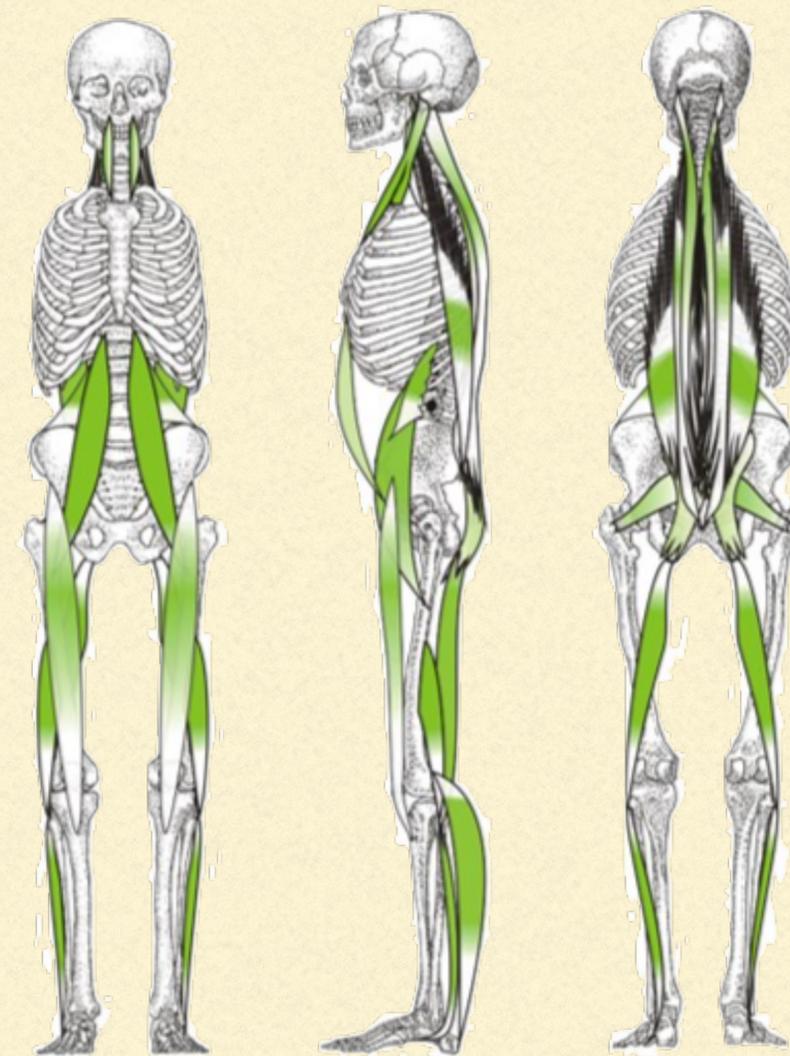


SPIRAL STABILITY

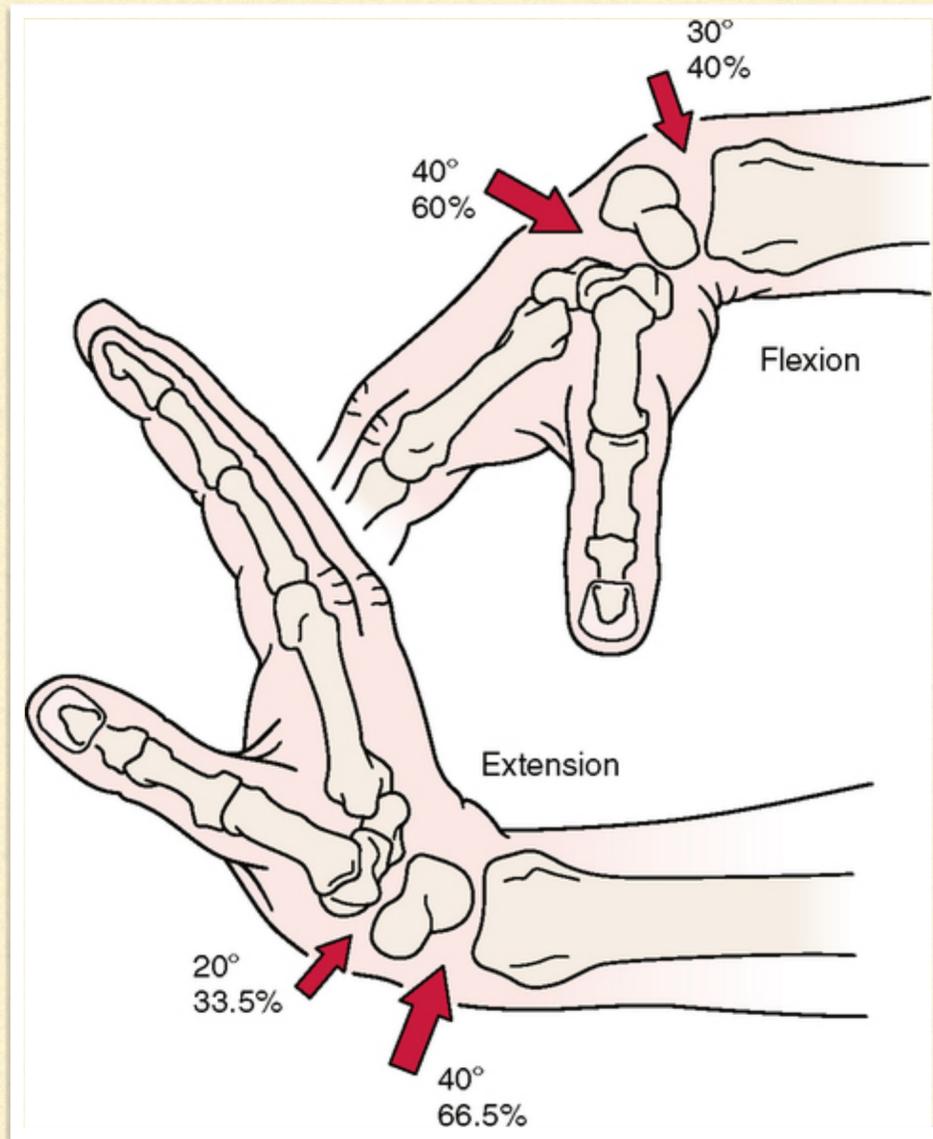
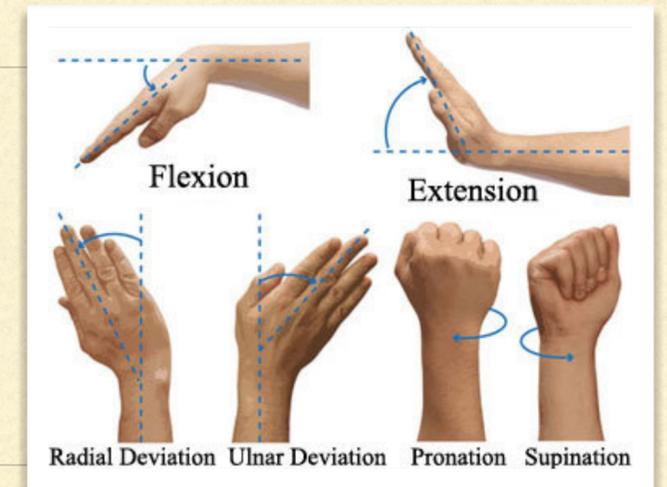
Spiral dynamic muscle chains
Stabilisation of movement



Vertical static muscle chains
Stabilisation at rest

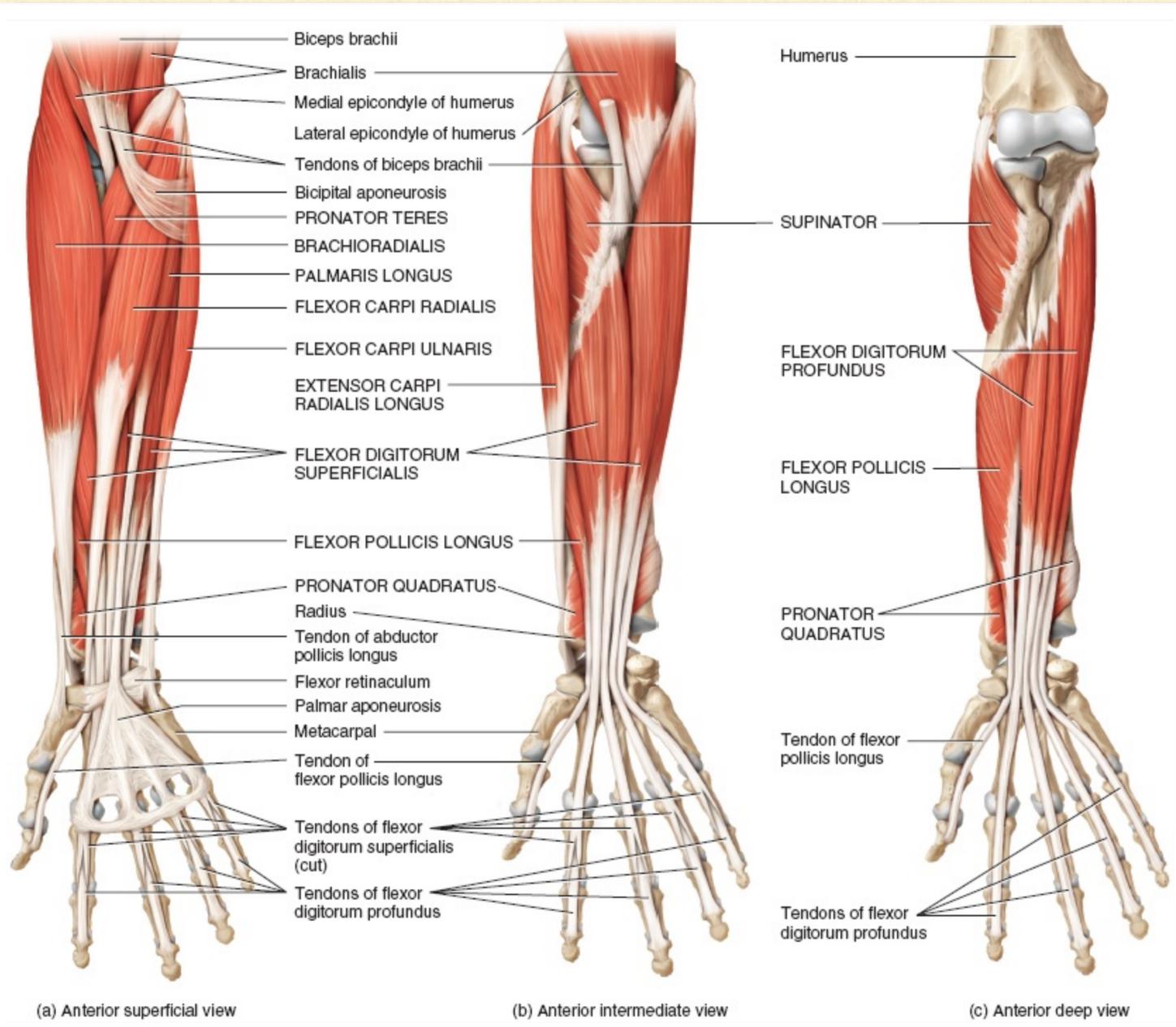


WRISTS & FOREARMS



- Movement: extension, flexion
- Forearm bones movement: pronation - the bones get crossed, supination
- Bones:
 - phalanges - distal, middle, proximal
 - metacarpi
 - wrists bones - 8, in two rows, creating an arch
 - forearm - radius and ulna (forearm bones uncrossed with arms next to body create upside down U = ulna is in the inside)

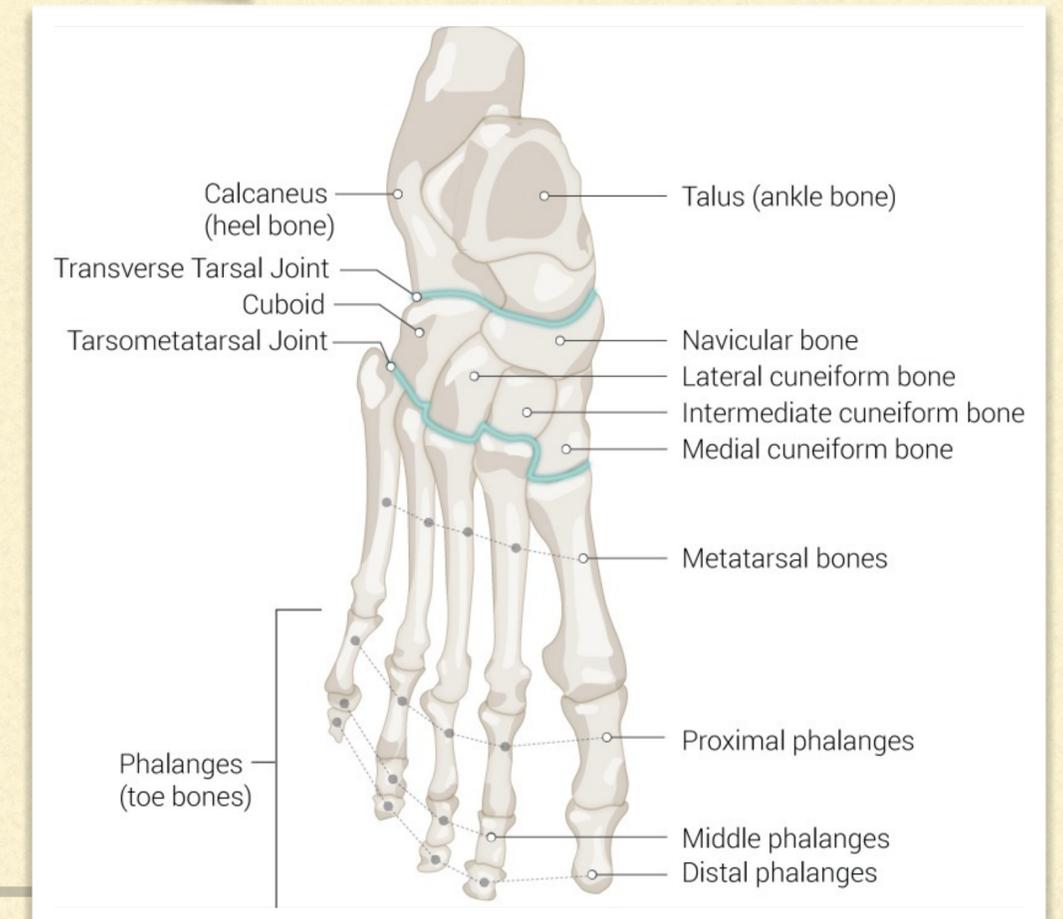
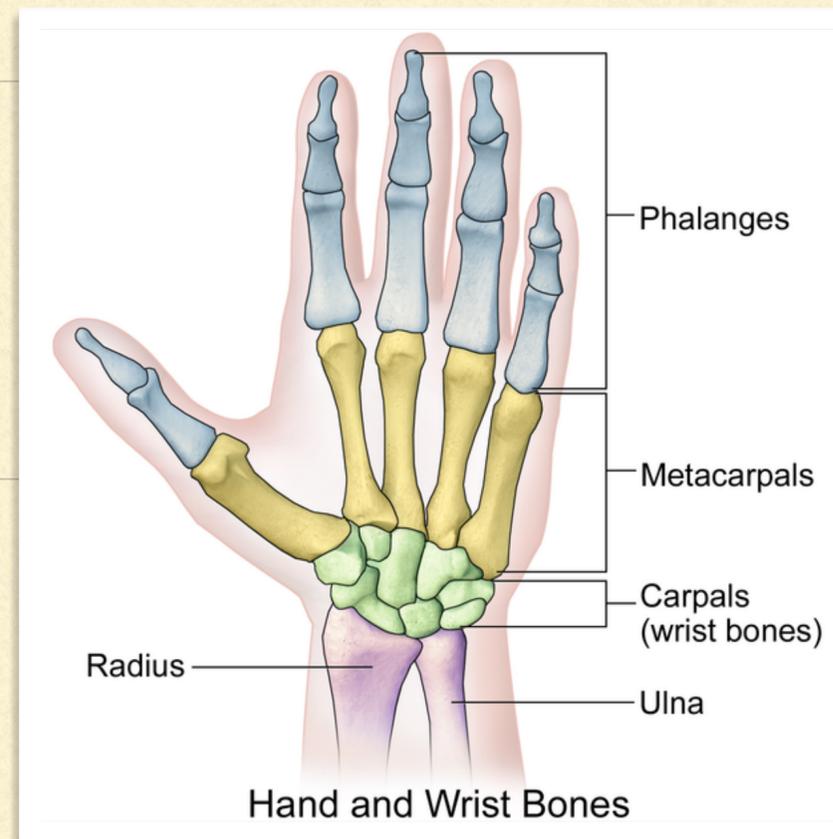
WRISTS & FOREARMS - MUSCLES



- Flexors - front chain
 - wrist flexors - in gymnasts - the most working muscles in handstand
- Extensors
 - weight on the outside of the wrists = mostly the outer muscles - sensitive to touch after HS
- Staying on the thumb side - makes the elbows straight = stability + it stabilizes the most mobile part of the palm!

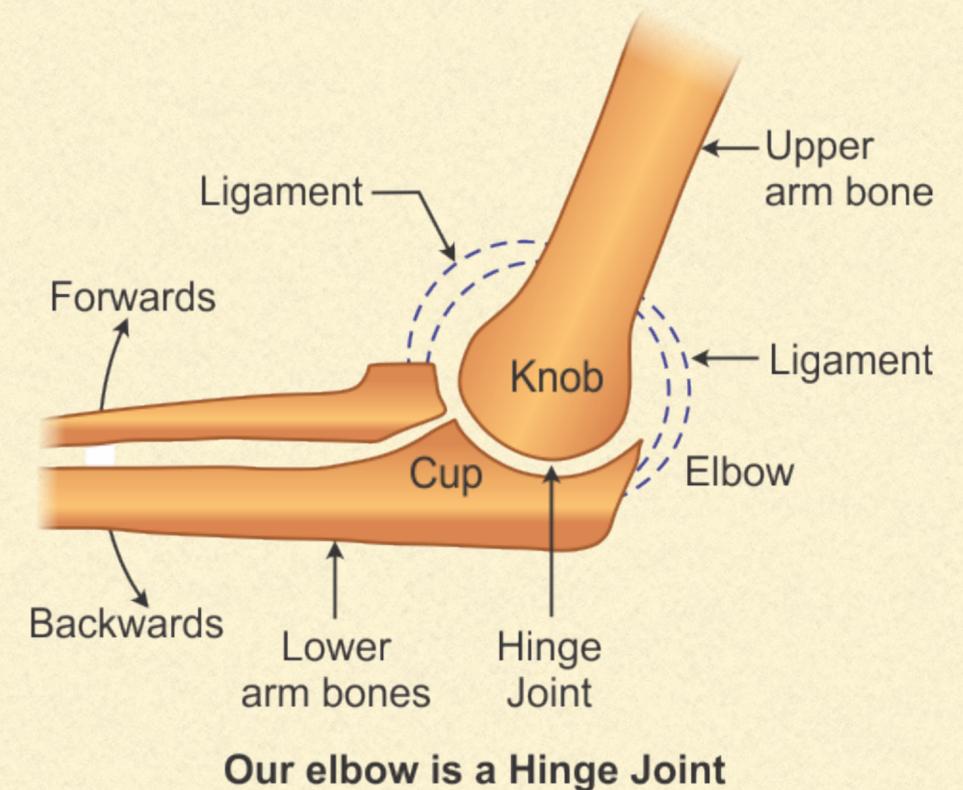
WRIST VS FEET

- thumb build to be moveable - metacarpal bone doesn't articulate with the others
- big toe metatarsal bone is. build for stability
- wrists (carpal) bones - small part of palm with an arch for the ligaments and nerves and blood vessels, straight between the forearm and metacarpals
- ankle (tarsal) bones big part of the foot, build at a 90 deg angle - almost unique to humans



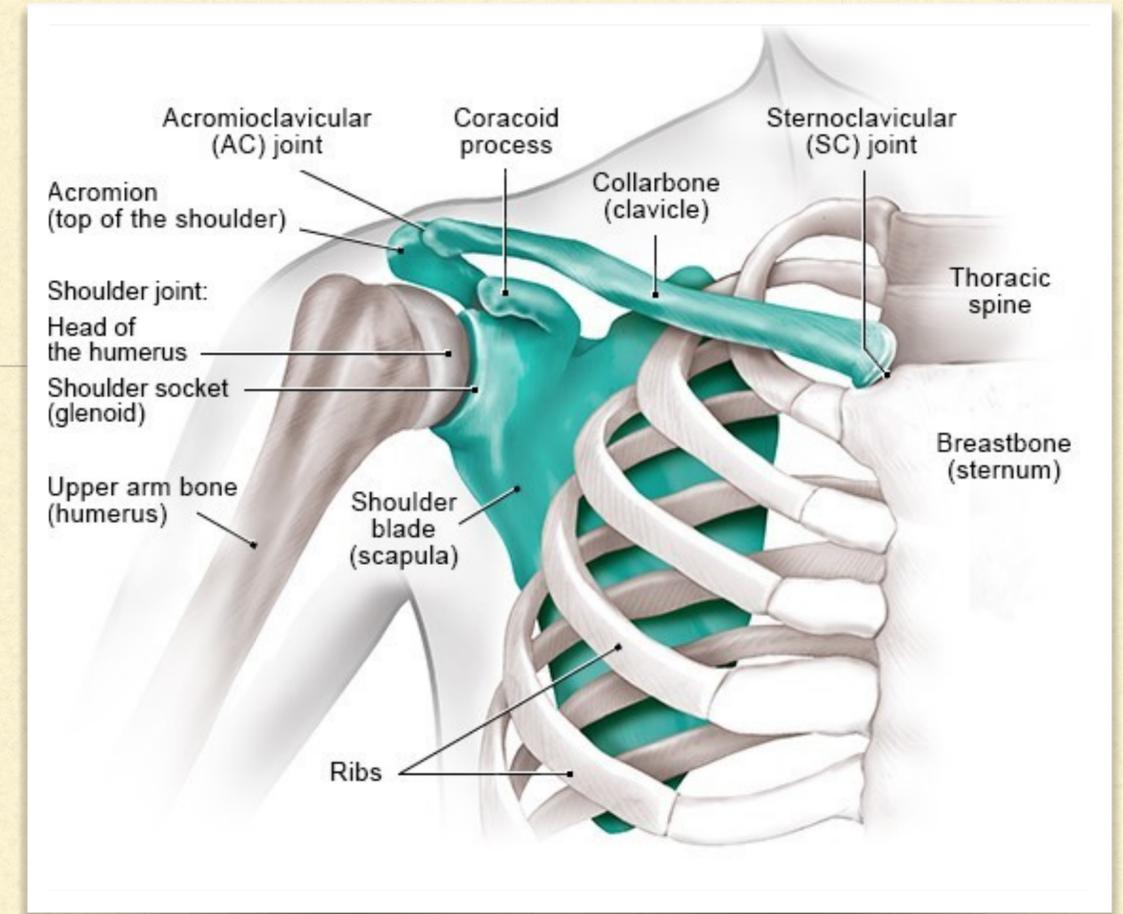
ELBOWS

- What feels like straight, will look different
- Simple hinge joint: flexion, extension
- Muscles:
 - biceps - biarticulate joint - if elbows are bend, can't work on extension
 - triceps



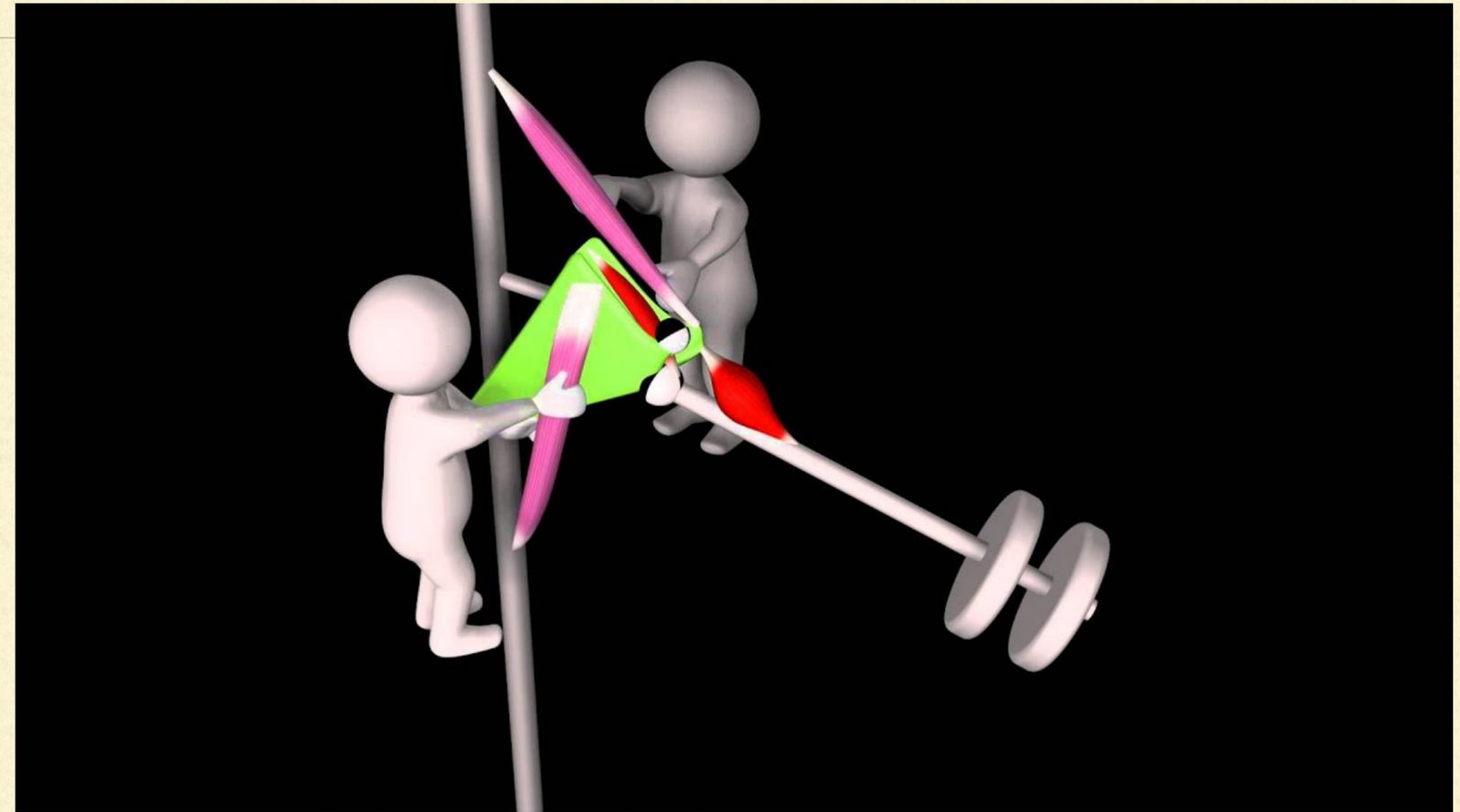
SHOULDERS - BONES

- designed for hanging & pulling
- most mobile joint - shallow fossa
- movement: flexion, extension, abduction, adduction, external (lateral) rotation, internal (medial) rot, protraction, retraction
- joints:
 - sternoclavicular, acromioclavicular, glenohumeral, and scapulothoracic
- max flexion = over head movement =>
 - gleno-humeral - external rotation + flexion (120 degrees)
 - int rotation = impingement of supraspinatus (flipping the grip - elbow stays close = ext. rotation)
 - thoraco-scapular - upwards rotation (30 no shoulder lift + 30 degrees shoulder starts lifting)
- max (hyper)extension - shoulder blades together to orient the fossa in direction of humeral movement



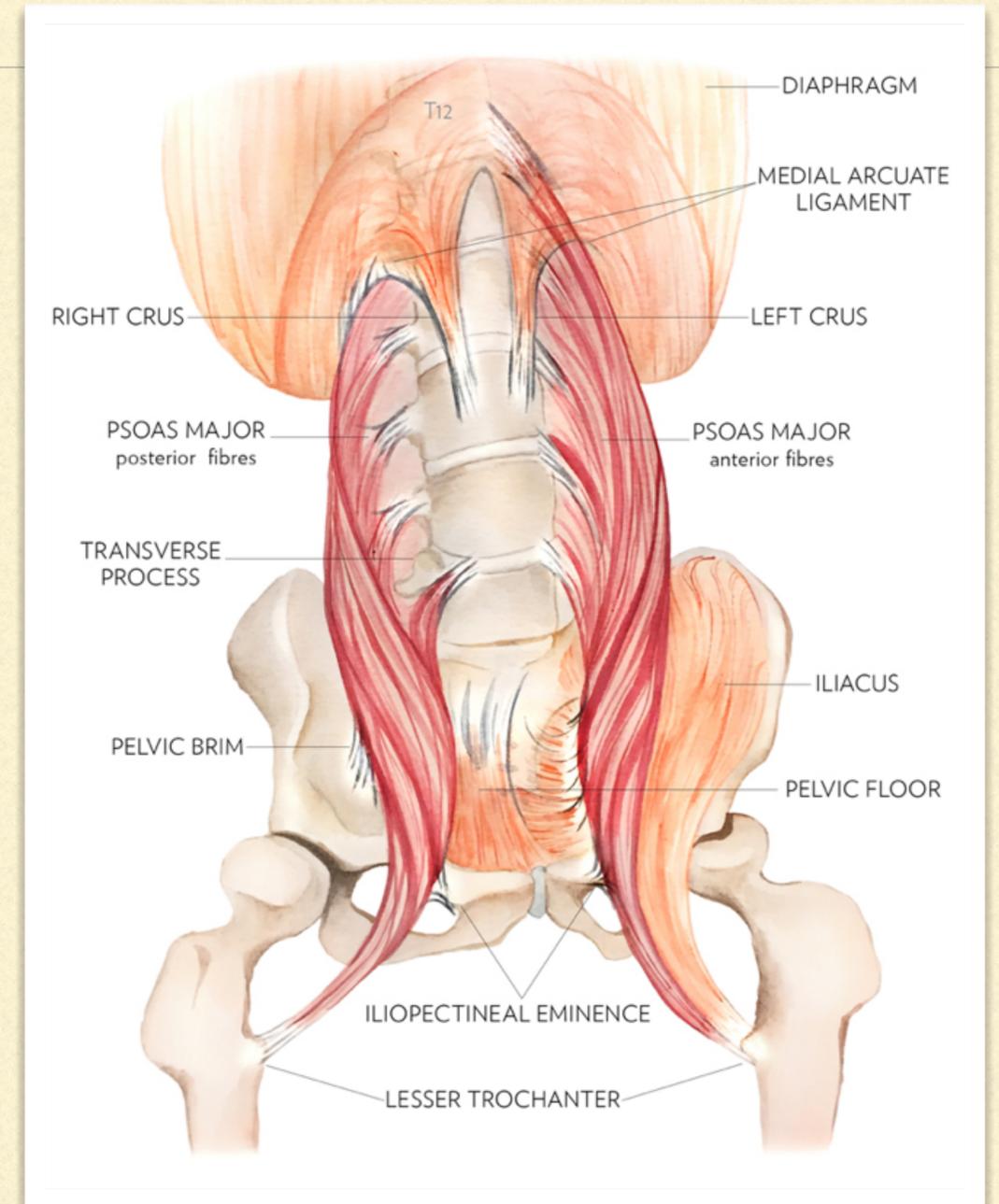
SHOULDERS - MUSCLES

- 30 muscles
- Stabilizing muscles:
 - Gleno-humeral - rotator cuff - SITS
 - Scapulo-thoracic - serratus ant.
- External rot = spiral stability
- Internal rot. muscles - the biggest ones - lattissimus, pectoralis



STABILITY IN THE REST OF THE BODY

- Neck - head position, minimize, just use eyes, neck = spine, spine follows the movement of the backbend
- Thorax - stable, however still can compensate for lower mobility of shoulders
- Lumbar spine/core - very unstable - transversus abdominis + psoas major
- Hips - unstable/affect the lumbar spine - center of gravity! - inner thigh muscles + gluteus medius
- Toes - connection to pelvic floor, breathing and general stability



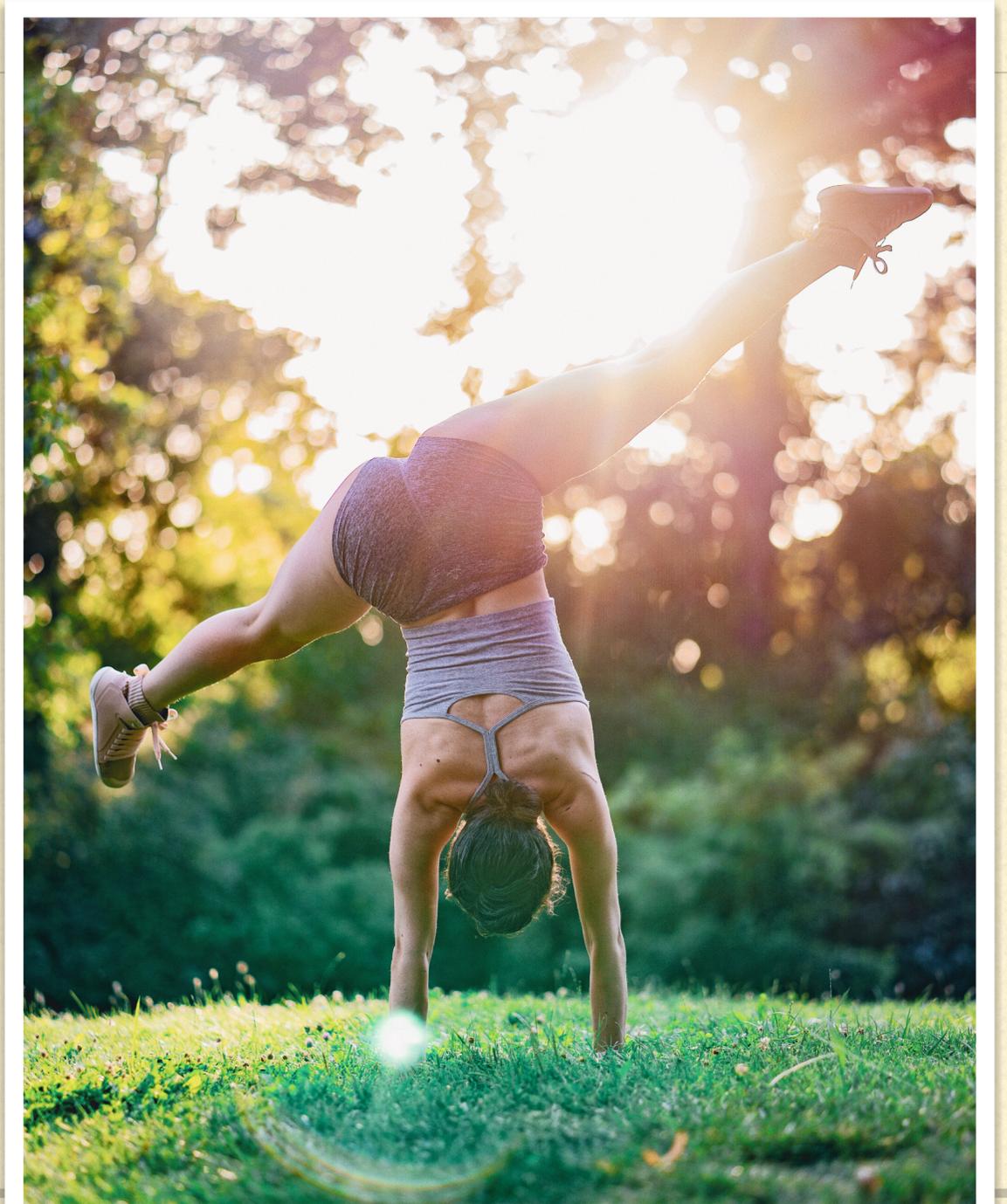
MOBILITY

- Path of least resistance - the brain tends to compensate for what's missing:
 - bending elbows
 - closing shoulders to not end of range for more strength -> banana
- Compression - strong hip flexors
- Lifting legs up - strong backside: wrists flexors, shoulders extension, erectors spinae, strong glutes + hamstrings - which are in end range?
- Engaging the muscles as they are being stretched to work on end range strength



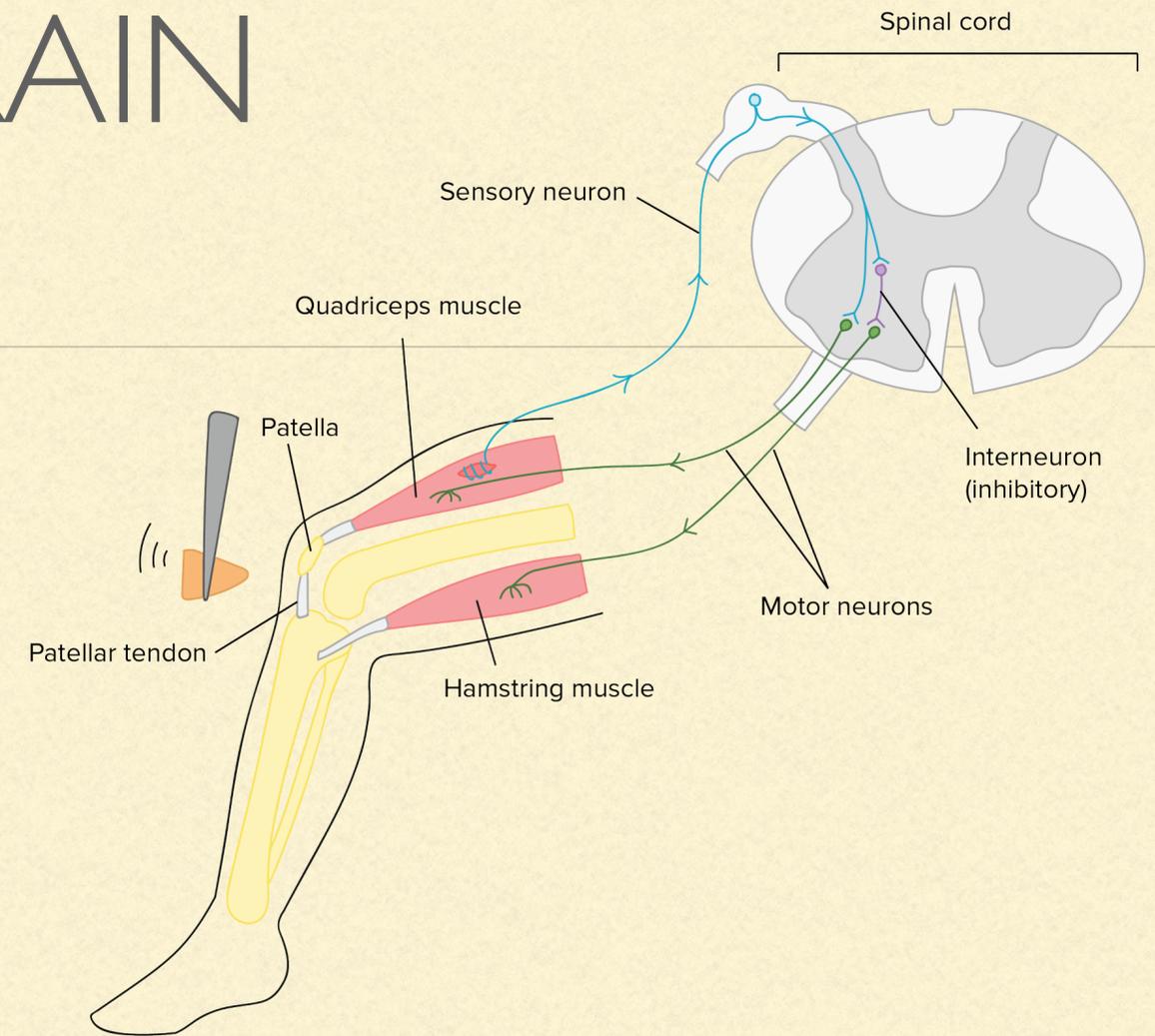
HOLLOWBACK SPLITS STRADDLE

- Working on a joint at a time outside the HS practice
- Using wall/sofa/chair to find the shape
- Active shape is better - standing splits (although the ground is still used in a way), active dhanurasana, active straddle



BUILDING STRENGTH + BRAIN CONNECTION

- physical strength might stem as much from exercising the nervous system as the muscles it controls
- how many of those neurons or the frequency of them being excited makes the difference in how strong the muscle is going to be - not just the pure muscle mass and number of muscle fibers makes the muscle strong!
- how to achieve this? add more weight to train your muscles - either using weights on wrists and ankles, or a weight vest
- in HS - start with lower weight - holds with legs at sofa, but than elevate the feet more and more, or one leg up, and eventually the whole body, one arm only
- shoulder exercise with weights



- focus - quality vs quantity - better to do fewer reps of something that is qualitatively good - longer holds, slowing down the movement, than repeating a pattern that is not working for us
- breathing is important - helps with focus
- cerebellum - responsible for walking on two legs and coordination not just between the limbs and body parts, but also eyes, and sensory stimuli - automation, not in cortex where we consciously think

WHY WE PRACTICE HS?

- Find any reason if it makes sense to you!
 - Focus training
 - Challenge (it's hard) - teaches us to patience and hard work
 - Ego?
 - Cardio? ,)
-

THANK YOU SO MUCH!

QUESTIONS AND ANSWERS? FEEDBACK?
