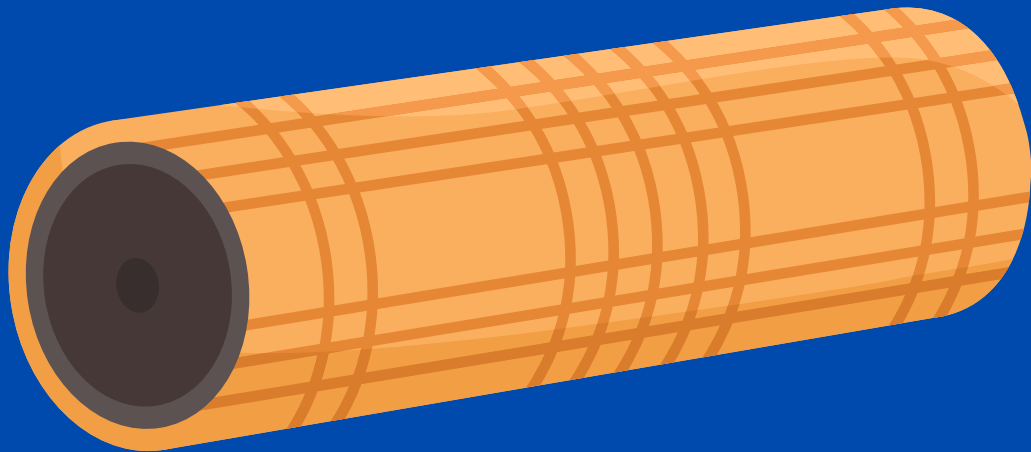


SORTA HEALTHY

CES GUIDE

(WE ARE UNAFFILIATED WITH NASM)



Kinetic Chain Checkpoints

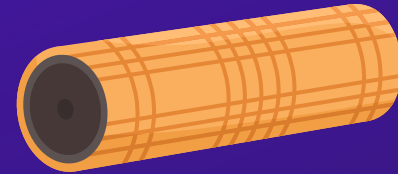
- Feet and ankles
 - Knees
- Lumbo-pelvic-hip-complex
 - Shoulders
- Head and neck



Corrective Exercise Continuum

1

Inhibit: Myofascial techniques



2

Lengthen: Types of stretching (dynamic, static, neuromuscular).



3

Activate: Isolated strengthening

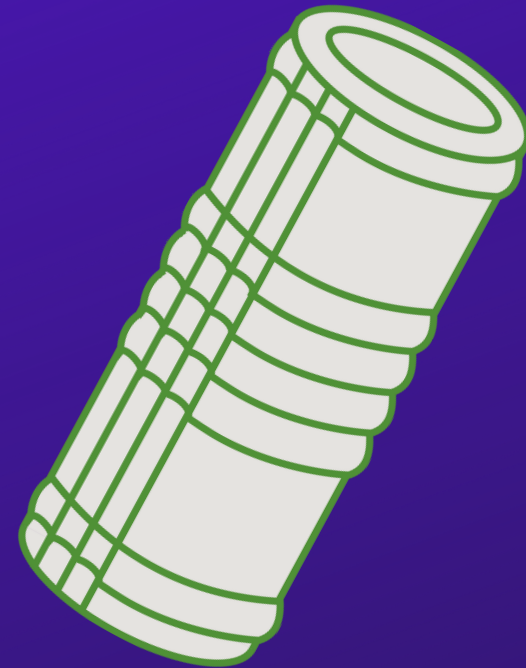


4

Integrate: Integrated dynamic movement



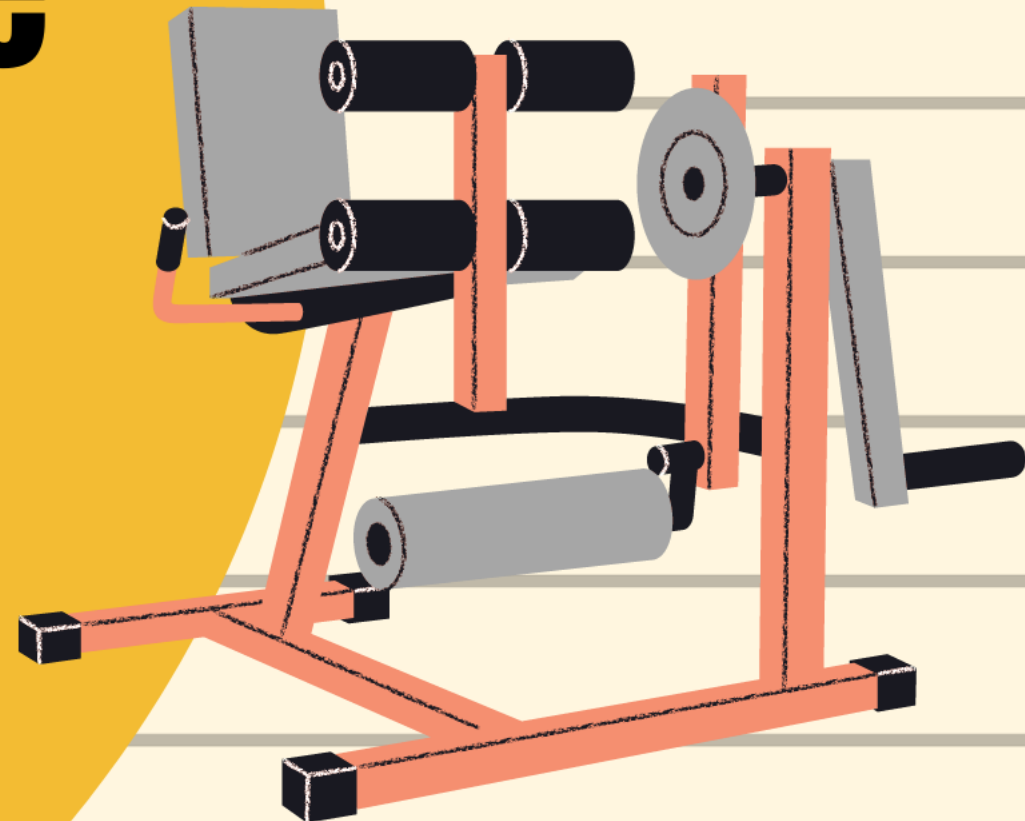
**We'll be coming back to
that corrective exercise
continuum soon! Let's cover
some background info first!**



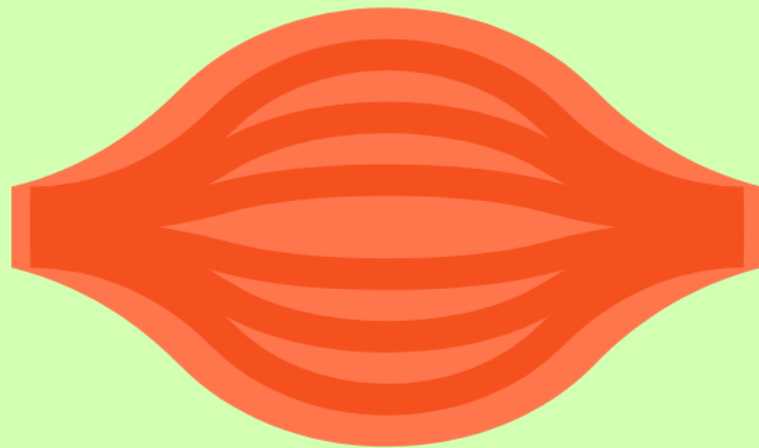
Next up lets talk about agonists and antagonists. An agonist is the prime mover or muscle that does most of the work during a specific exercise. An antagonist is the muscle that opposes the agonist.

The easiest example of this is the biceps and triceps. When I'm doing a biceps curl the biceps are the agonist, meaning they do most of the work. The opposing muscle group, the triceps, would be the antagonist.

So, if I am doing a leg extension, what muscle group is the agonist and what muscle group is the antagonist?



The agonist would be the quadricep muscles.



The antagonist would be the hamstring muscles.



You also have **synergists** which **assist prime movers or agonists with movements.**

Stabilizer: Muscles that
support the body
as the prime mover and
synergists do their thing.

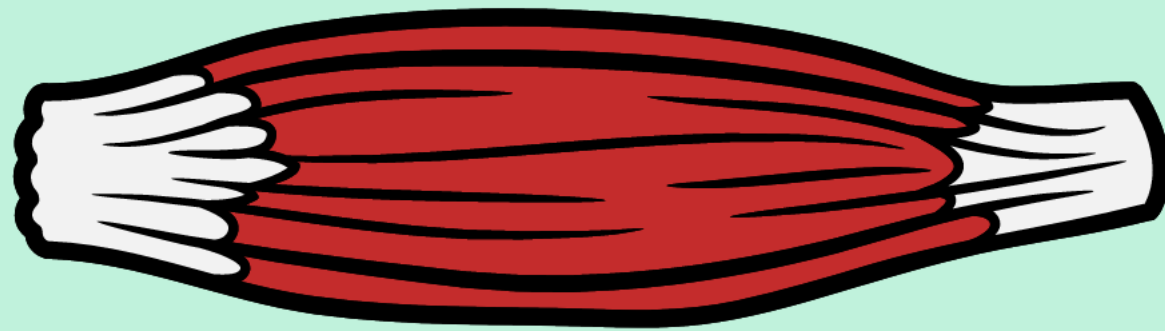




First up we have static or isometric contractions.

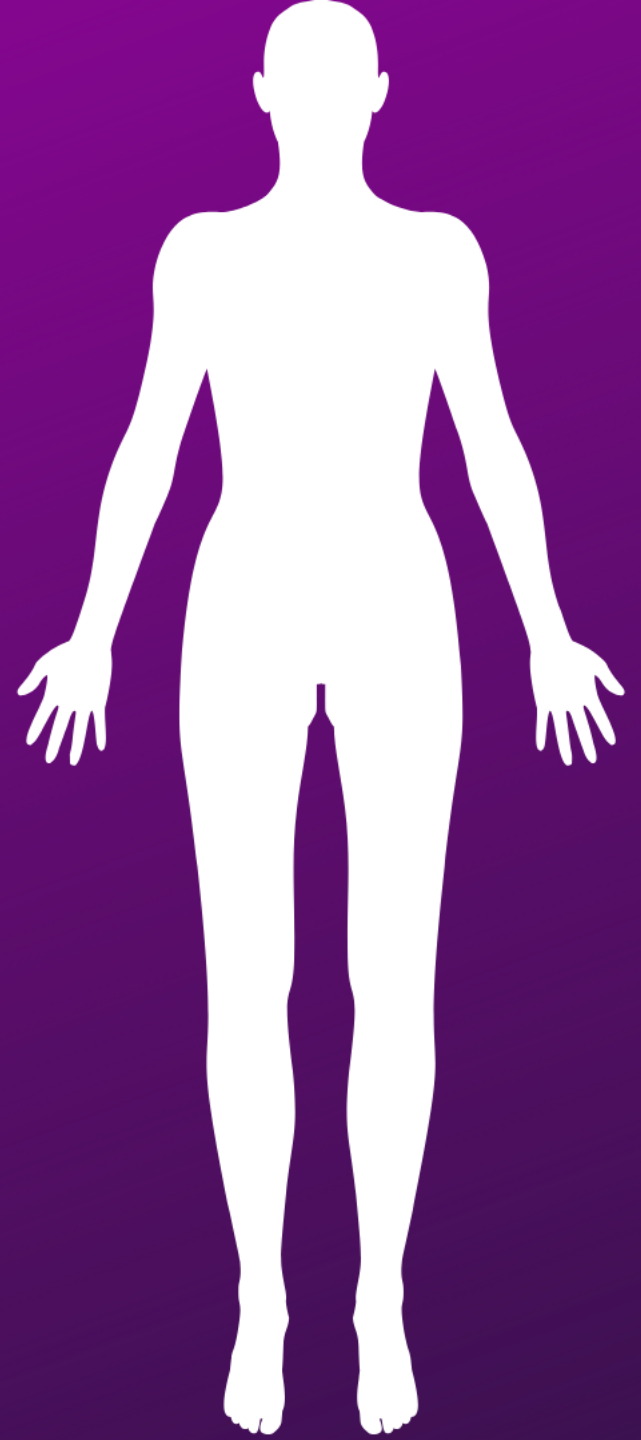
These contractions occur when there is no change in muscle length.

An concentric contraction is when a muscle shortens.



An eccentric contraction is when a muscle lengthens.

Planes Of Motion And Movement



Superior - toward the head end of the body

Inferior - away from the head or lower

Anterior - front of the body

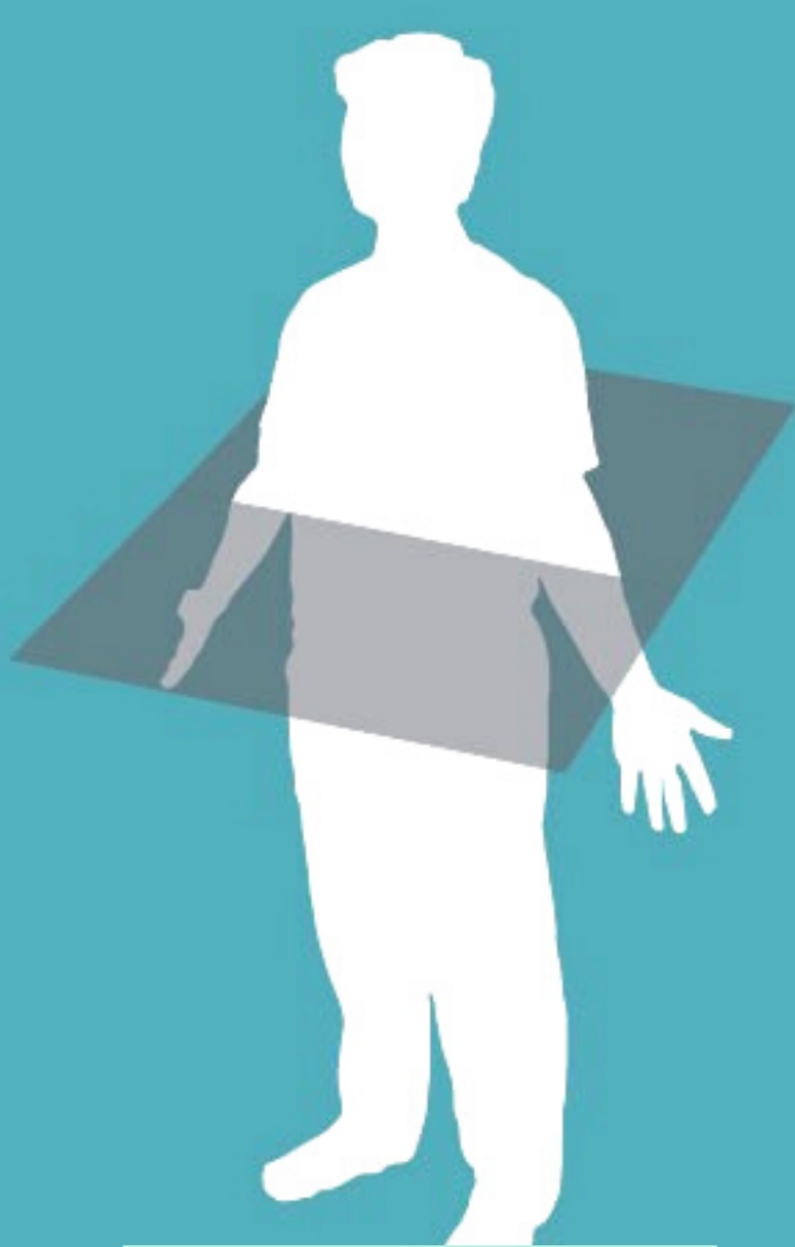
Posterior - back of the body

Medial - toward the midline of the body

Lateral - away from the midline of the body

Proximal - nearest the trunk or the point of origin

Distal - farthest from the trunk or the point or origin



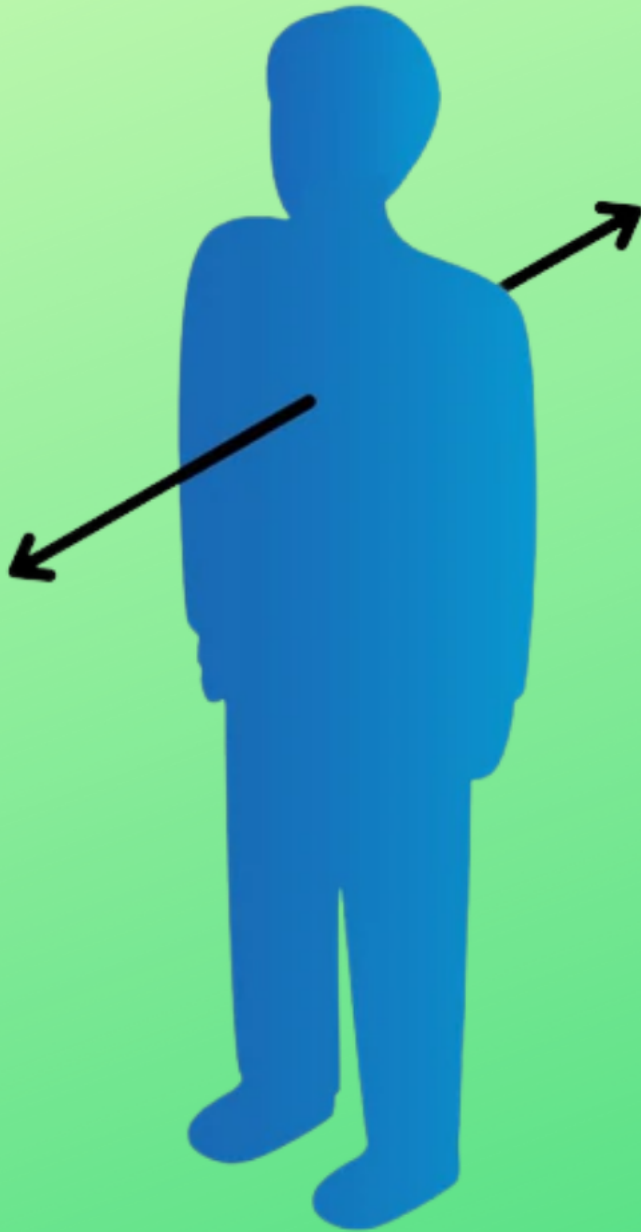
Transverse



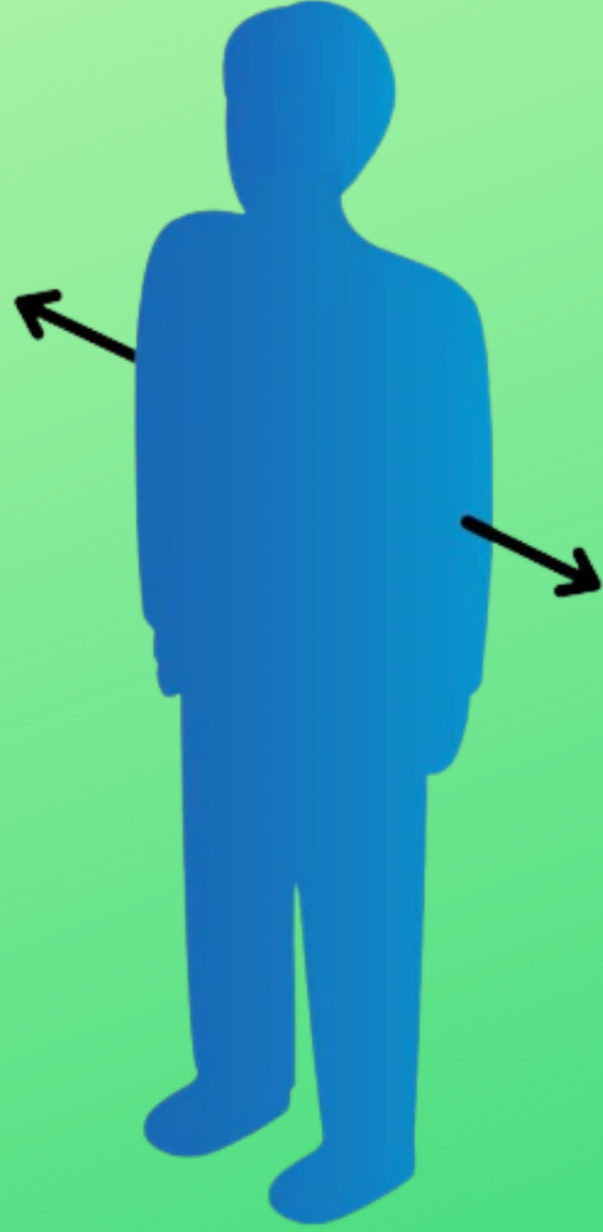
Frontal



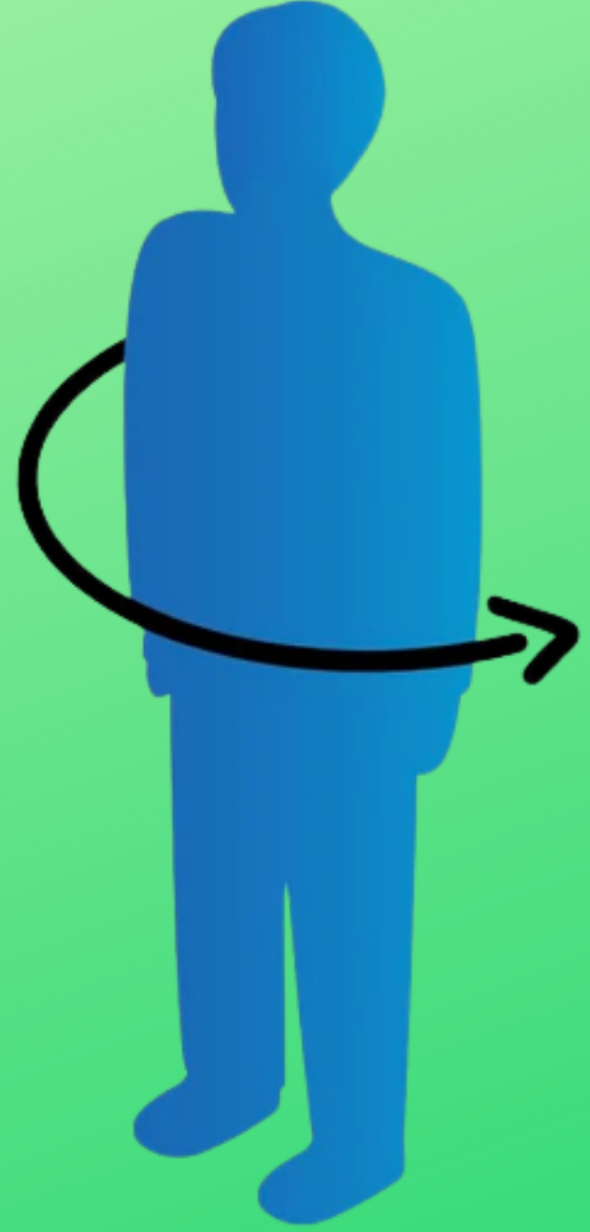
Sagittal



Sagittal



Frontal



Transverse

Movements In the Sagittal Plane

Flexion: Decreasing the joint angle

Extension: Increasing the joint angle

**Dorsiflexion: Moving the top of the foot toward
the shin (ankle only)**

**Plantarflexion: Moving the sole of the foot
down towards the ground (pointing toes)**

Movements In the Frontal Plane

Adduction: Movement toward the midline

Abduction: Movement away from the midline of
the body

Elevation: Moving to a superior position (scapula)

Depression: Moving to an inferior position (scapula)

Inversion: Tilting the foot towards midline

Eversion: Tilting the foot away from the midline

Movements In the Transverse Plane

Rotation: When the torso or a limb moves around its vertical axis

Pronation: Rotating the forearm or foot to a palm-side or foot-side down position

Supination: Rotating the forearm or foot to a palm-side or foot-side up position

Horizontal abduction: Moving the upper arm away from the midline of the body when it is elevated to 90 degrees

Horizontal adduction: Moving the upper arm towards the midline of the body when it is elevated to 90 degrees

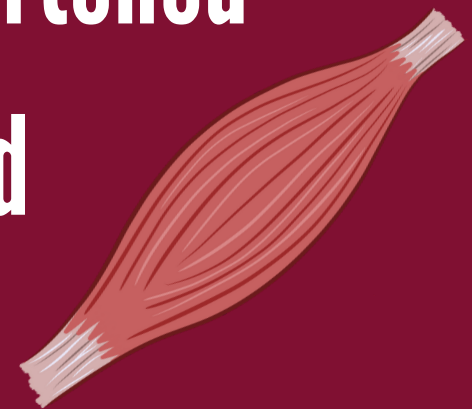
It's possible that you'll get a question or two where you'll be shown an exercise, and you'll have to identify what movement is taking place. You will also have to identify what plane of motion the movement is occurring in.



Muscle Origin: The more stable or beginning muscle attachment.

Muscle Insertion: The less stable & more distal muscle attachment.

Neural Drive: The rate and volume of activation signals a muscle receives from the central nervous system. Shortened muscles experience too much neural drive. Lengthened underactive muscles experience too little.

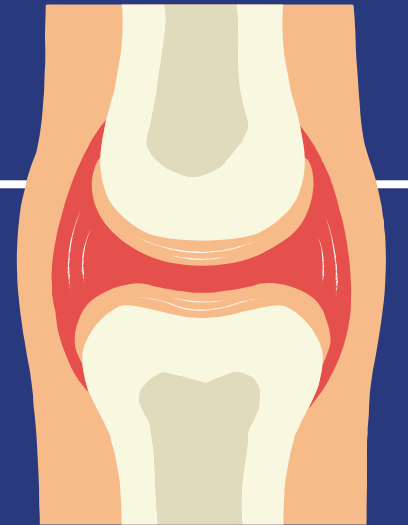


Proprioception: Cumulative input from sensory afferents to the central nervous system.

Sensorimotor Integration: The ability of the CNS to gather sensory info to execute a motor response.

Intra vs intermuscular coordination: Intra is one muscle and inter is multiple muscles. Think interstate.

Force Couple Relationship: The synergistic action of muscles to create movement around a joint.



Motor Behavior: The body's response to internal and external environmental stimuli.

Motor Control: Used by the CNS to assimilate and integrate sensory information with previous experiences.

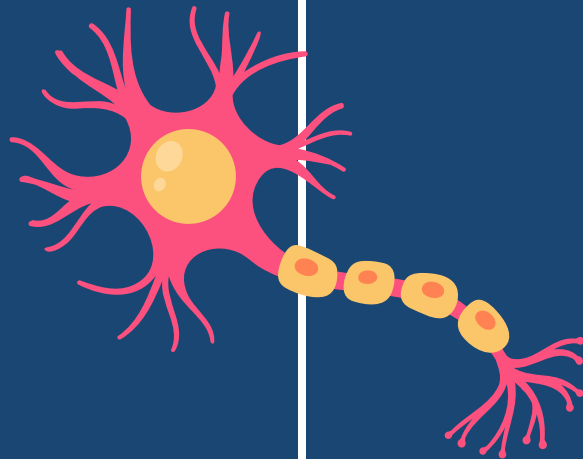
Motor Learning: Practice and experience leading to a relatively permanent change in a person's ability to move well.

Motor Development: The change in motor behavior over time throughout a person's life span.



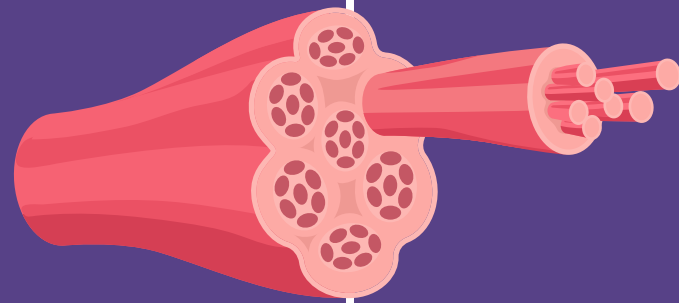
Afferent: Sensory neurons that carry signals from sensory stimuli towards the central nervous system.

Efferent: Motor neurons that carry signals from the central nervous system to the muscles to create movement.



Local Musculature: Muscles that connect to the spine and help with LPHC stabilization. Primarily, type 1 endurance muscles.

Global Musculature: These muscles originate at the pelvis, rib cage, and lower extremities. Primarily, type 2 fast twitch muscles.



Deep Longitudinal System

erector spinae,

thoracolumbar fascia,

sacrospinous ligament,

biceps femoris, tibialis

anterior, fibularis longus

Regulates ground response
forces when walking, etc.

Posterior Oblique Subsystem

Glute max, lats, SI joint,
thoracolumbar fascia

When someone walks/runs
it transfers force between
lower and upper extremities.

Important with rotational
activities.

Maintains alignment with SI
and LBP joints.

Anterior Oblique Subsystem

Internal/external obliques,

adductors, hip external

rotators

Involved in pelvic stability,

involved in rotation

alongside the POS.

Contributes to leg swing.

The Lateral Subsystem

Glute medius, TFL,
adductors, QL.

Involved in pelvic stability in
the frontal plane during
single leg movements.

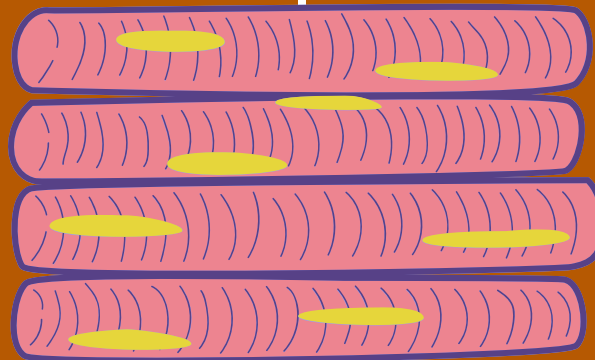


Overactive/shortened:

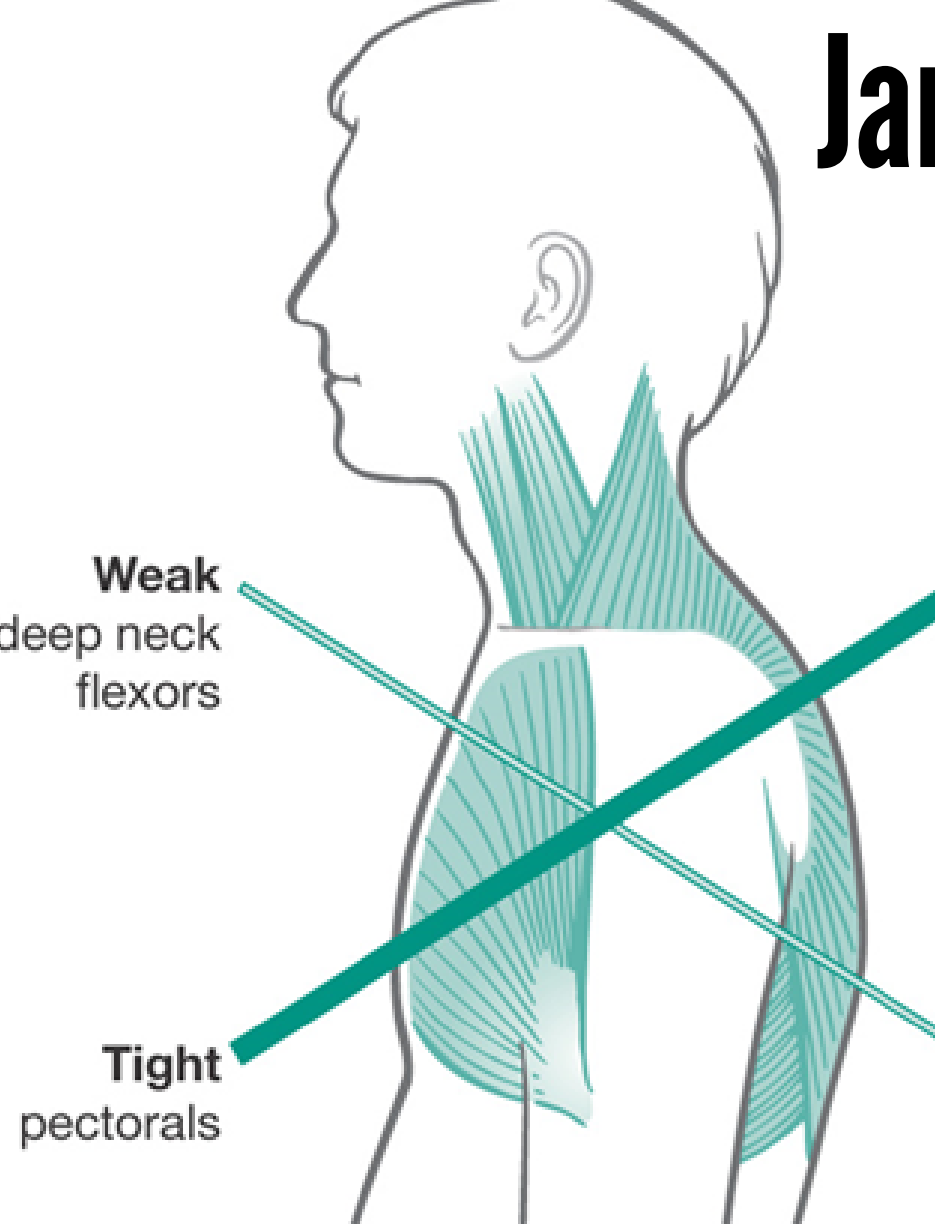
**elevated neural drive causes
a muscle to be stuck in a
chronic contracted state.**

Underactive/lengthened:

**A muscles antagonist pulls it
into a chronically elongated
state, inhibiting neural
drive.**



Janda's 3 Crossed Syndromes

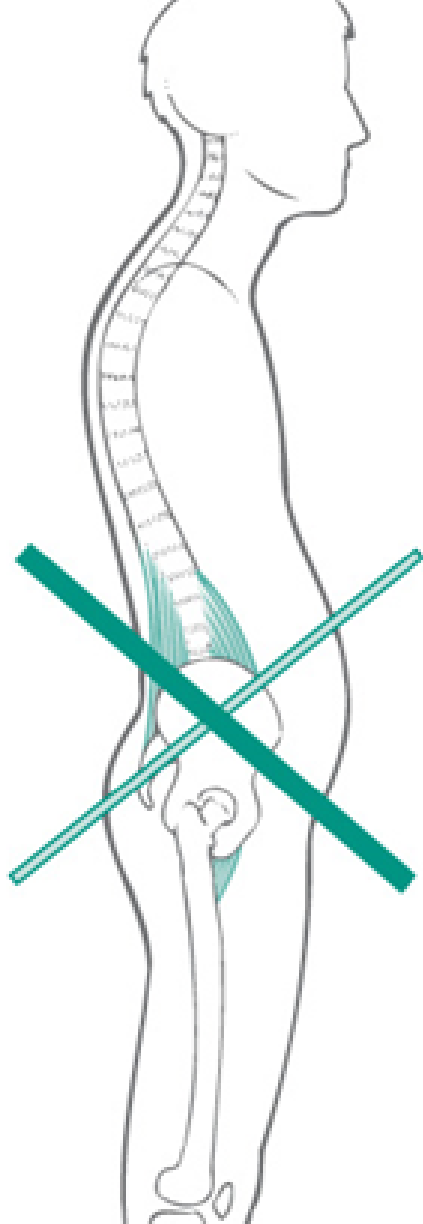


Upper

Tight
upper trapezius
and
levator scapula

Weak
lower trapezius
and serratus
anterior

Tight
erector
spinae



Lower

Weak
abdominal

Tight
iliopsoas

Weak
gluteus
maximus



The image displays four side-view diagrams of the human spine, each with a dashed vertical line representing the ideal alignment. The first diagram shows a balanced, S-shaped spine. The second shows an exaggerated inward curve in the upper back. The third shows a spine that is nearly straight. The fourth shows a pronounced outward curve in the lower back.

Kendall's

4

Postures

Ideal

**Kyphosis/
lordosis**

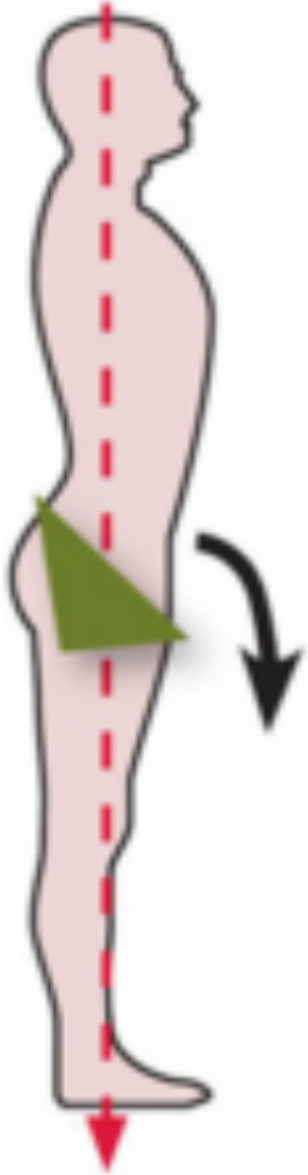
Flat-back

Sway-back

**Let's get into more detail on
postural distortions/patterns!**



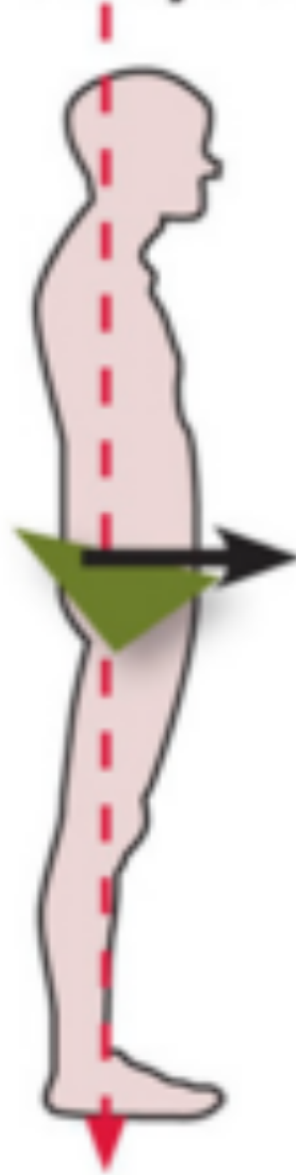
Lordotic



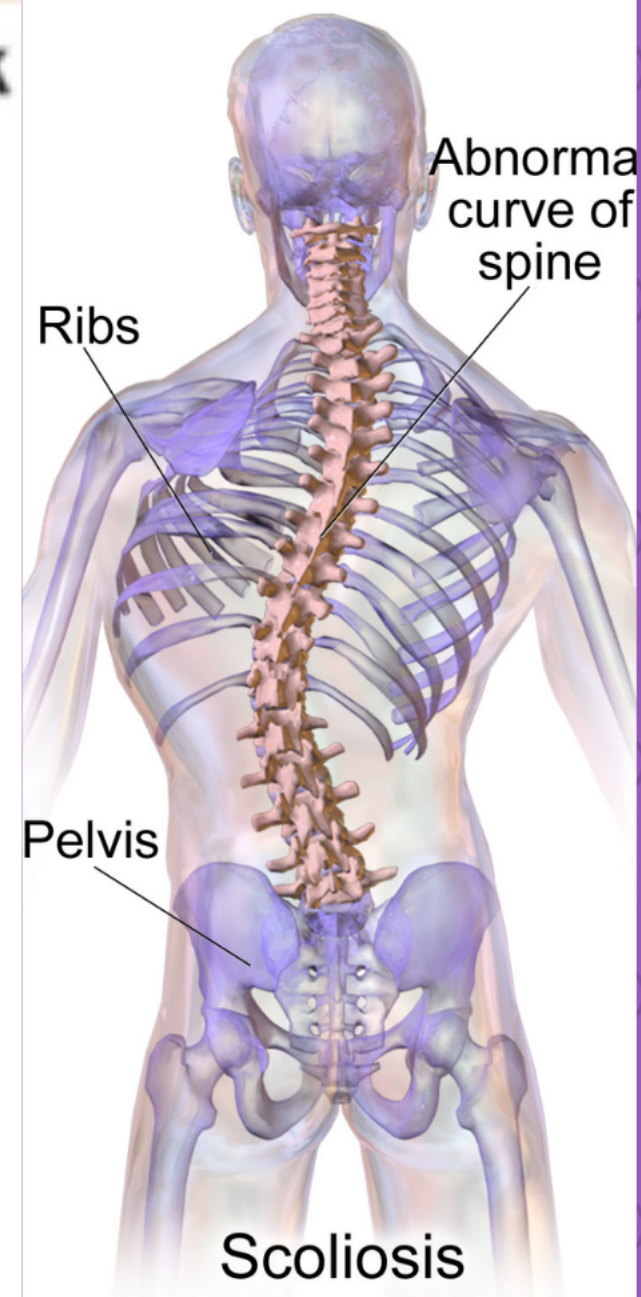
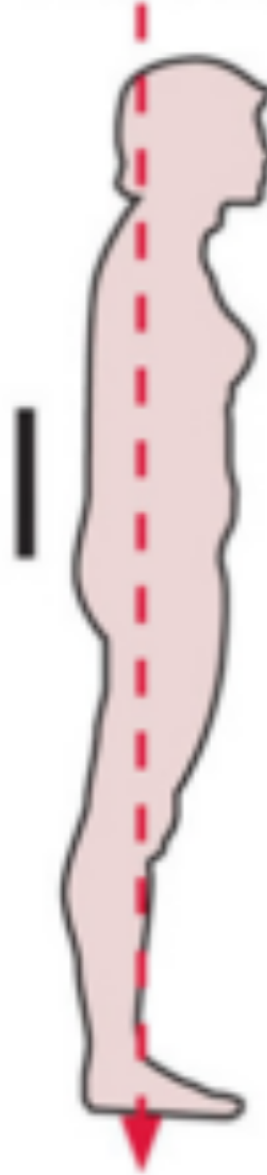
Kyphotic



Swayback



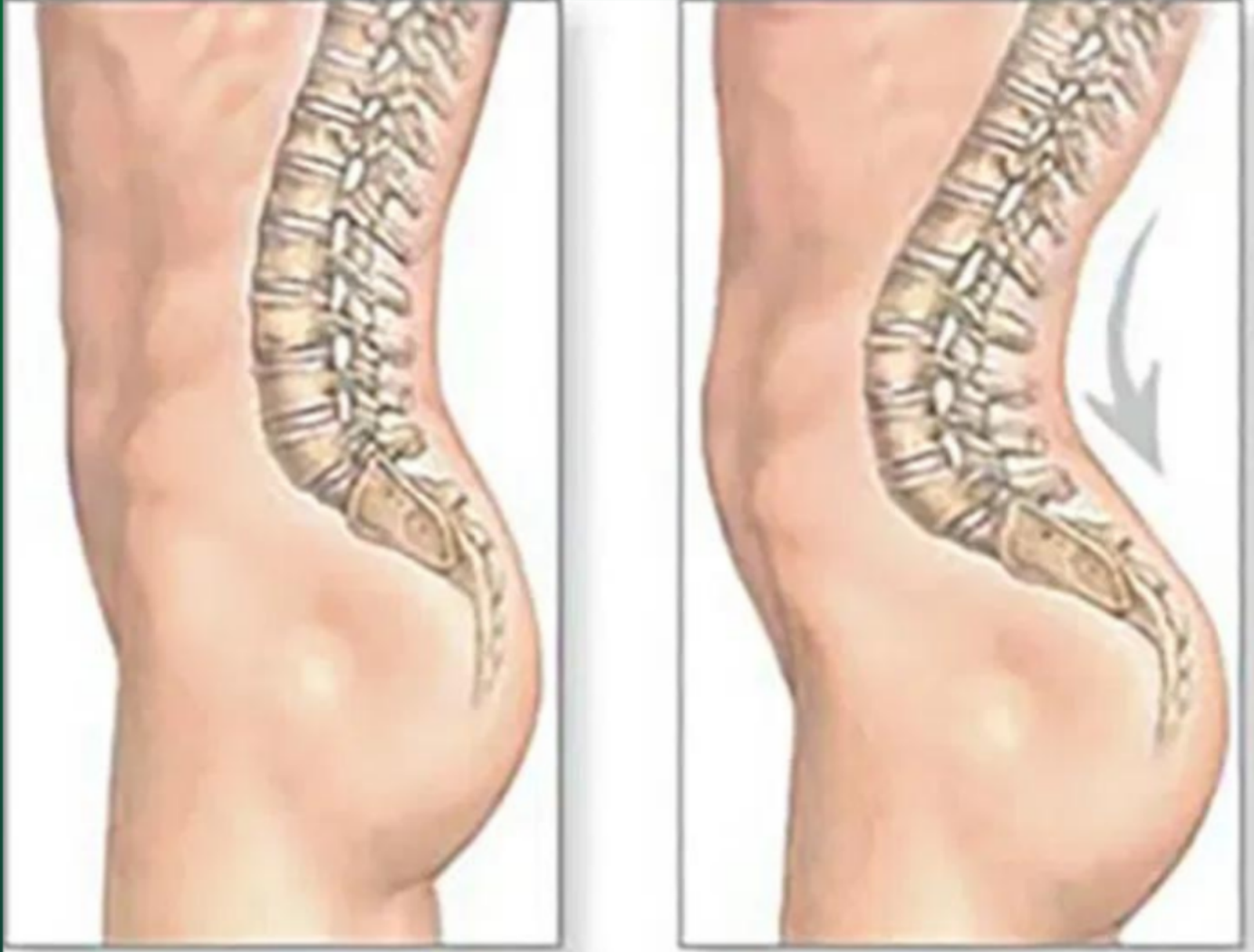
Flatback





**THIS OVERLY LORDOTIC
POSTURE, THE ONE THAT
LOOKS LIKE YOU'RE
STICKING YOUR BUTT OUT
FOR INSTAGRAM, THIS IS
REFERRED TO AS LOWER
CROSSED SYNDROME.**

NORMAL SPINE



**LOWER CROSSED
SYNDROME**



**The hip flexors and lumbar
extensors are too tight,
and short and tight.**

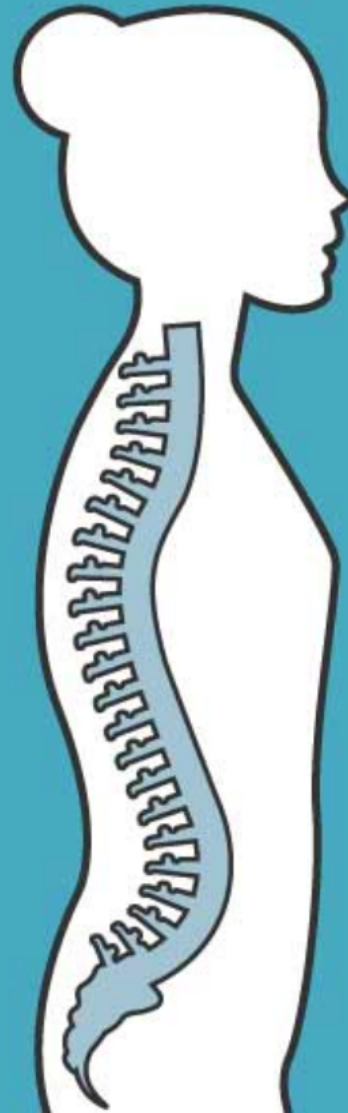
**Your hip extensors (glutes, hams),
and your core muscles are
lengthened and weakened.**



The anterior chest, shoulder muscles, lats and neck extensors are too tight and shortened.

The rhomboids, lower and mid traps, and neck flexors are lengthened and weak.

Normal Spine Kyphosis





† SHOULD MENTION HERE,
THAT AN OVERLY
KYPHOTIC POSTURE IS
VERY OFTEN REFERRED
TO AS UPPER CROSSED
SYNDROME BY NASM.

NORMAL BACK



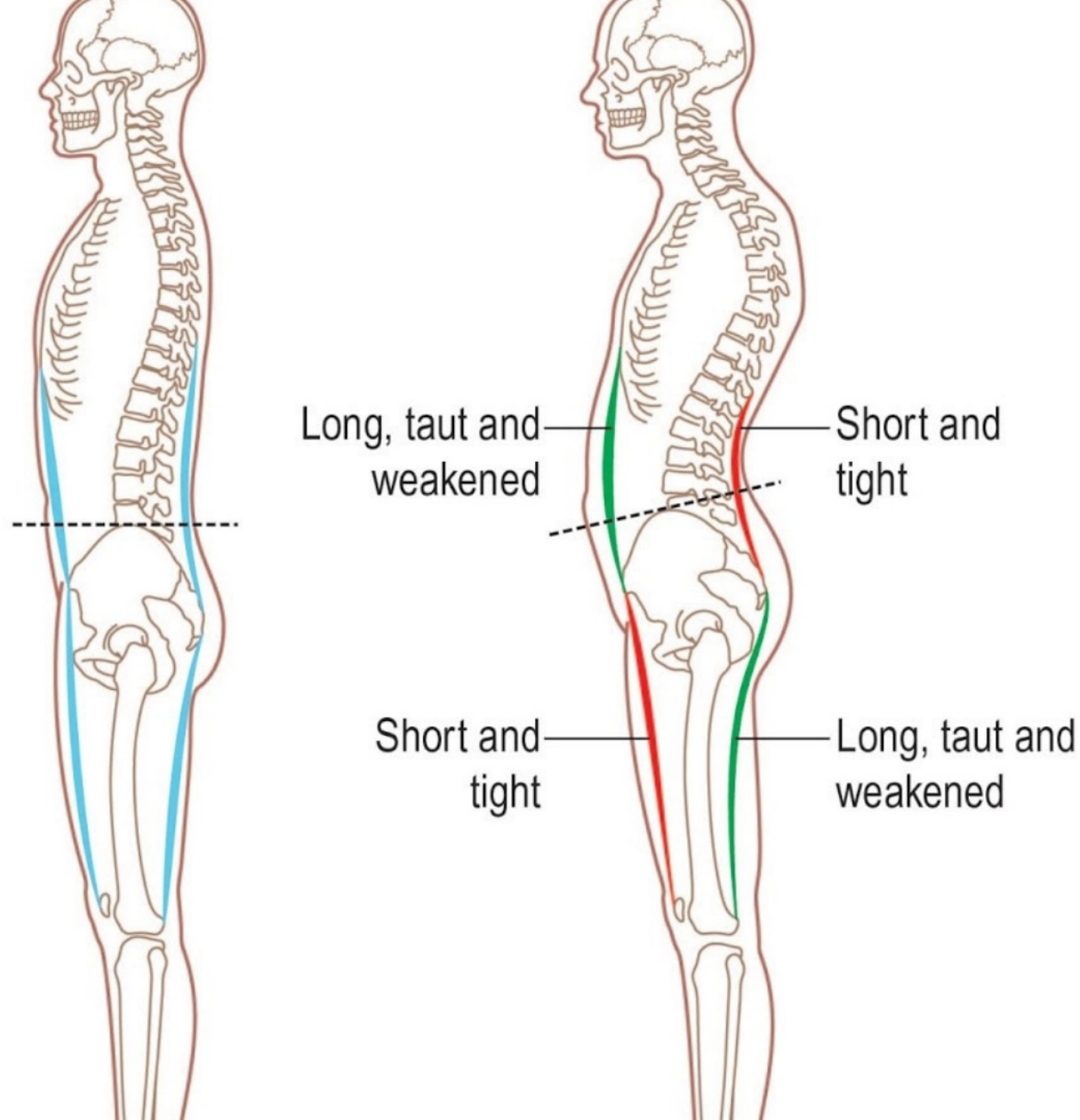
UPPER CROSSED

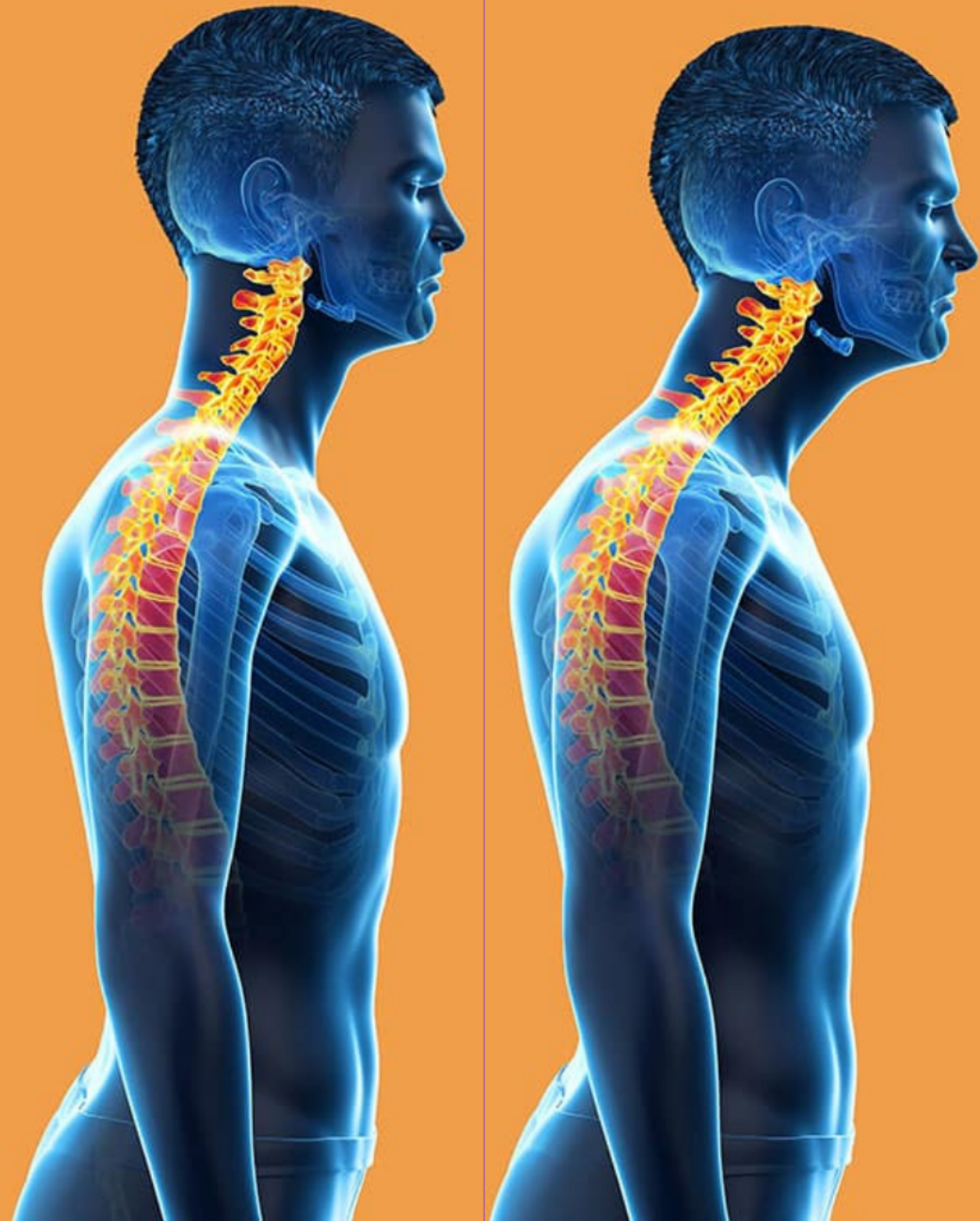
SYNDROME



Anterior Pelvic Tilt

**It usually occurs
alongside a
lordotic posture,
as well
as kyphosis.**

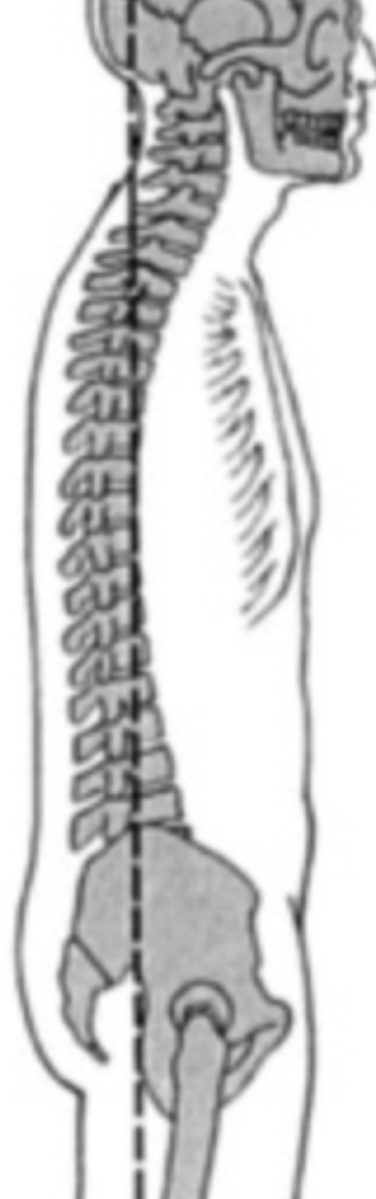




Forward Head Posture

The overactive muscles here are the cervical spine extensors, the upper traps, and the levator scapula.

These are a little less important, but be ready to look them up.



Flat-back



Sway-back

REGIONAL INTERDEPENDENCE

Basically, pain in a certain area could be caused by an issue in a different location.

EX: Knee pain could be caused by a hip problem

SCOPE OF PRACTICE

If a client reports pain, refer out.

**We don't diagnose or treat
areas of discomfort.**

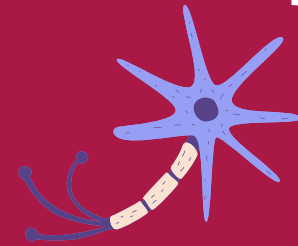
**Don't assume pain is caused by a
muscular imbalance.**

Human Movement System

Skeletal System



Nervous System



Muscular System



SMR: Self Myofascial Rolling

Pressure is determined by roller density & diameter.

Myofascial Flossing

Also known as voodoo flossing. It's done by wrapping a latex band around muscles and stretching.

Myofascial Rolling Training Variables

Frequency: Most days of the week

**Reps: Hold 30-60 seconds on
area of discomfort. Do 4-6 reps.**

**Intensity: Some discomfort but
should be able to relax and breathe.**

Duration: 5-10 mins total time. 90-120s per muscle group.

Types Of Stretching In Lengthening Phase

Static Stretching: Typical stretch. Hold for at least 30s.

Dynamic Stretching: Active stretch where you're using a muscles force production and the bodies momentum to take a joint through full ROM.

Neuromuscular Stretching: Incorporates static stretching and isometric contraction. Also called PNF.

Neuromuscular Stretching

- 1** Take the stretch to its end ROM and hold for 10s
- 2** Have client submax. contract the intended muscle for 5-10s
- 3** Passively or actively stretch client to new end range
- 4** Hold the new position for 20-30s and repeat all steps up to 3 times



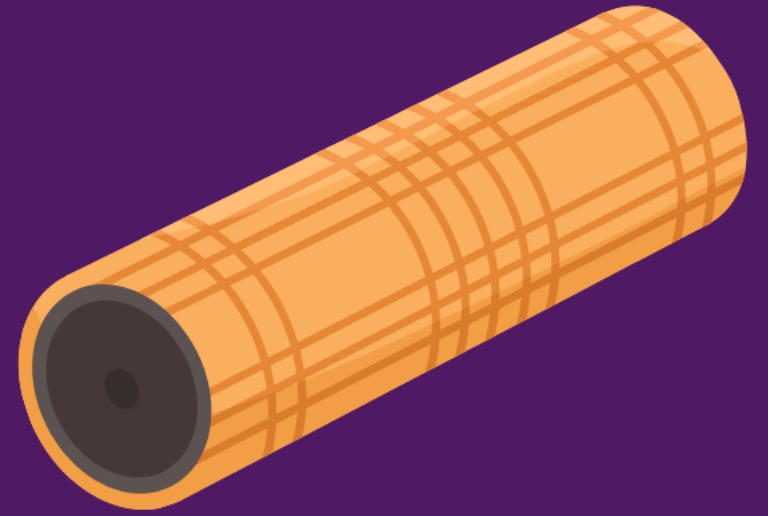
Other Types Of Stretching

Active Stretching: Multiple reps of a 2 second static stretch but a contraction of the antagonist muscle is also present to induce reciprocal inhibition.

Ballistic Stretching: Similar to dynamic stretching, but more bouncy and high speed. There is a greater chance of injury with this type of stretching.

Reciprocal Inhibition: The relaxation of muscles on one side of a joint to accommodate contraction on the other side.

Autogenic Inhibition: The ability of a muscle to relax when it experiences a stretch or increased tension.



Altered Reciprocal Inhibition

An overactive shortened muscle causes less activation of its antagonist.

EX: Overactive/shortened psoas could cause glute max to be less effective.

Relative Flexibility

The body's ability to find the path of least resistance to achieve a task, even if the movement pattern is suboptimal.

Golgi Tendon Organ (GTO):

Located at the point where the muscle and tendon meet (musculotendinous junction). The GTO is sensitive to change in muscle tension and the speed of tension change.

Muscle Spindle:

Sensory organs that lie parallel to the muscle fibers. They detect muscle length and the speed/rate at which a muscle is stretching.

Disfacilitation: Muscles/spindles calm down a bit after some static stretching (at least 30s)

Golgi Tendon Organs: Activated by tension exerted on muscle tendons. Less associated with static stretching, more with dynamic since they're more active during muscle contraction. GTO inhibition stops around 60 to 100 milliseconds after stretching



Warm-up Duration

Myofascial rolling: 90s-120s to improve viscoelasticity, temperature, increase inhibition, etc.

Static Stretching: <60s per muscle group

Dynamic Stretching: \leq 90s per muscle group

Task Specific Activities: 5-15 mins

Contraindications to Stretching

- ① Acute injury or muscle strain/tear of the muscle being stretched
- ② Recent musculoskeletal surgery/treatment
- ③ Acute rheumatoid arthritis of the affected joint
- ④ Osteoporosis

Acute Training Variables for Static Stretching

Can be done daily (unless specified otherwise)

Reps: 1-4

Duration: 20-30s static hold
60s for older clients 65+

Acute Training Variables for Isolated Strengthening

Frequency: 3-5 days a week

Reps: 10-15

Duration: 4/2/1 (eccentric, isometric, concentric)

Contraindications to Isolated Strengthening

- ① Acute injury or muscle strain/tear of the muscle being strengthened
- ② Impaired joint motion
- ③ Acute rheumatoid arthritis of the affected joint
- ④ Pain produced during movement

Acute Training Variables for Integrated Dynamic Movement

Frequency: 3-5 days a week

Reps: 10-15 Sets: 1-3

Duration: Controlled

Contraindications to Integrated Dynamic Strengthening

- ① Acute injury or muscle strain/tear of the muscles being strengthened
- ② Acute injury to joint involved during movement
- ③ Acute rheumatoid arthritis of the affected joint
- ④ Pain produced during movement
- ⑤ Position of client relative to clients condition

CES Assessment Flow

1 Client Intake

2 Static Postural Assessment

3 Overhead Squat or Modified Overhead Squat Assessment
Optional: Dynamic or Loaded Assessments

4 Mobility Assessments

5 Corrective Exercise Programming (ILAI)

Client Intake

- First step in the assessment process
- PARQ or PARQ+ should be included
- General lifestyle info should be gathered
- Previous injuries should be discussed
- Time should be spent on goals & rapport building



Kinetic Chain Checkpoints

The points you should observe
dynamic and static posture.

These points are the feet/ankles,
knees, LPHC, shoulders, head/neck.



Static Postural Assessment

Anterior View

Foot and Ankle Externally rotated, Flat Arch, (Planus) Arch raised (Cavus)

Knees Valgus (knock kneed) Varus (bowlegged)

LPHC Pelvis (uneven to horizon), Lateral Spine Shift

Shoulders and T.spine Elevated, Rounded

Head and C.spine Tilted, Rotated

Pes Planus Right, Left

Static Postural Assessment

Lateral View

Foot and Ankle Lower leg posteriorly displaced (plantar flexed)

Knees Flexed or hyperextended

LPHC anterior/posterior tilt, L-spine reduced or excessive lordosis, Hips, etc

Shoulders and T.spine Not inline with hips/ears, kyphosis/rounding

Head and C.spine Forward in cervical extension

Static Postural Assessment

Posterior View

Foot and Ankle Externally rotated, flat arch (planus) raised arch(cavus)

Knees Valgus (knock kneed) Varus (bowlegged)

LPHC Pelvis (uneven to horizon), Lateral Spine Shift

Shoulders and T.spine Elevated, Rounded

Head and C.spine Tilted, Rotated

Transitional Movement Assessments

-They involve movement, but no change in support. BW resistance is used.

OH. Squat, Mod. OH. Squat, SL Squat, Split Squat



Overhead Squat

- Typically the first movement assessment done
- Assess dynamic posture, core stability, neuromuscular control
- A good way to spot muscle imbalances (knee valgus, limited ankle mob.)



Overhead Squat Continued

- 1. The client stands on a flat & stable surface. The feet are shoulder-width apart and pointing straight ahead.**
- 2. The feet and ankles should be in a neutral position.**
- 3. The assessment should be performed with the shoes off to better view the client's foot and ankle complex.**
- 4. With the elbows fully extended the client should have their arms completely overhead.**

Overhead Squat Continued

- Your client should attempt squatting to parallel (femur parallel with ground).
- The squat depth can be reduced if the client can't achieve that depth or has discomfort/pain.
- The client will perform roughly 5 reps while the trainer views from the front and side.



Overhead Squat Anterior

Foot and ankles: The feet should stay straight ahead

Knees: They should track straight forward or over the second and third toes.



Overhead Squat Lateral

-View the LPHC (hips) and shoulders from the side.



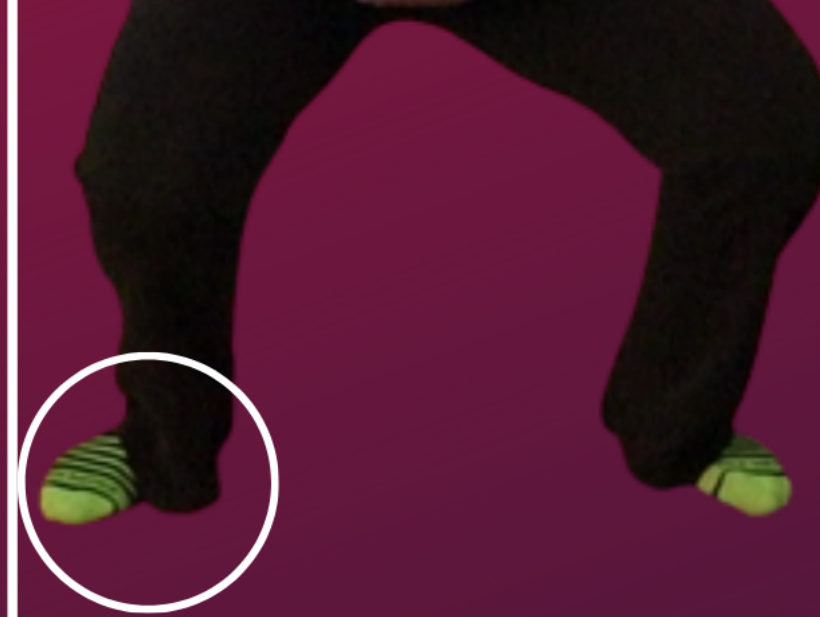
Overhead Squat (feet turn out)

Overactive

- Gastrocnemius/soleus (calves)
- Hamstrings complex

Underactive

- Anterior and posterior tibialis
(shin muscles)
- Gluteus maximus and medius



Overhead Squat (knees cave in)

Overactive

- TFL
- Adductors

Underactive

- Glutes (med and max)
- Anterior and posterior tibialis



Overhead Squat (low back arches)

Overactive

- Hip Flexors
- Lumbar Extensors
- Lats

Underactive

- Glute max
- Hamstrings
- Abdominals



Overhead Squat (forward lean)

Overactive

- Hip Flexors
- Gastrocnemius and soleus
- Rectus Abdominus and External Obliques

Underactive

- Glute max
- Hamstrings
- Lumbar extensors



Overhead Squat (arms fall forward)

Overactive

- Lats
- Pecs
- Teres Major

Underactive

- Middle and Lower Traps
- Rhomboids
- Posterior Delts & some R.cuff.



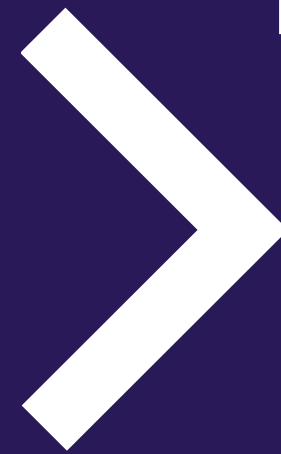
OH Squat Continued

feet turn out, heels rise,

knee valgus, excessive

anterior pelvic tilt, weight

shift, excessive forward lean



Perform heels

elevated

modification

OH Squat Continued

If form improves program
for the foot and ankle. If
not, address LPHC.

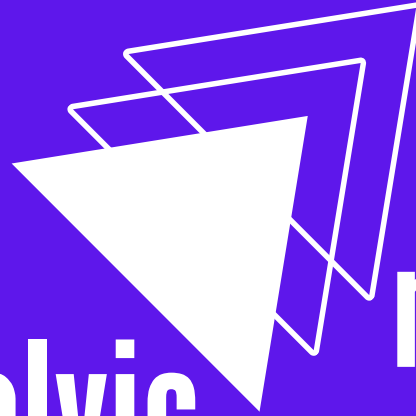


OH Squat Continued

Perform hands

on hips

modification



excessive anterior pelvic,

arms fall forward

OH Squat Continued

If form improves program
for the shoulder complex,
if not, address core stab.



Single-Leg Squat

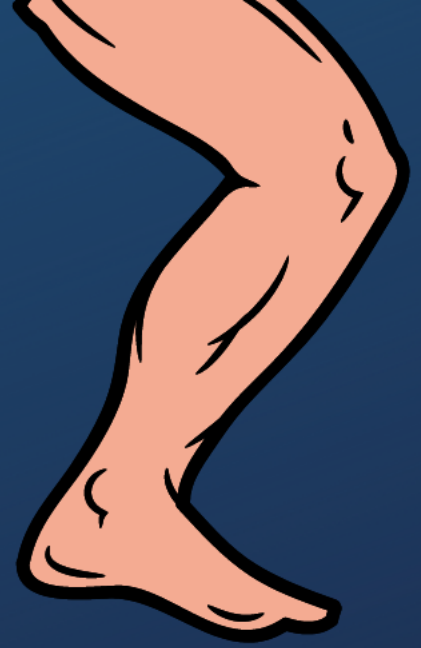
- Strong inter- and intrarater reliability
 - Uses an anterior view
- Up to 5 reps will be completed for both sides
- The client squats as deep as possible (while maintaining balance) and returns to the starting position.



Single-Leg Squat Continued

- The client stands on a flat, stable surface, with hands on hips and their eyes focused forward

- The client lifts one foot approximately 6 in. off the floor. The foot, ankle and knee should be in a neutral, straight ahead position.



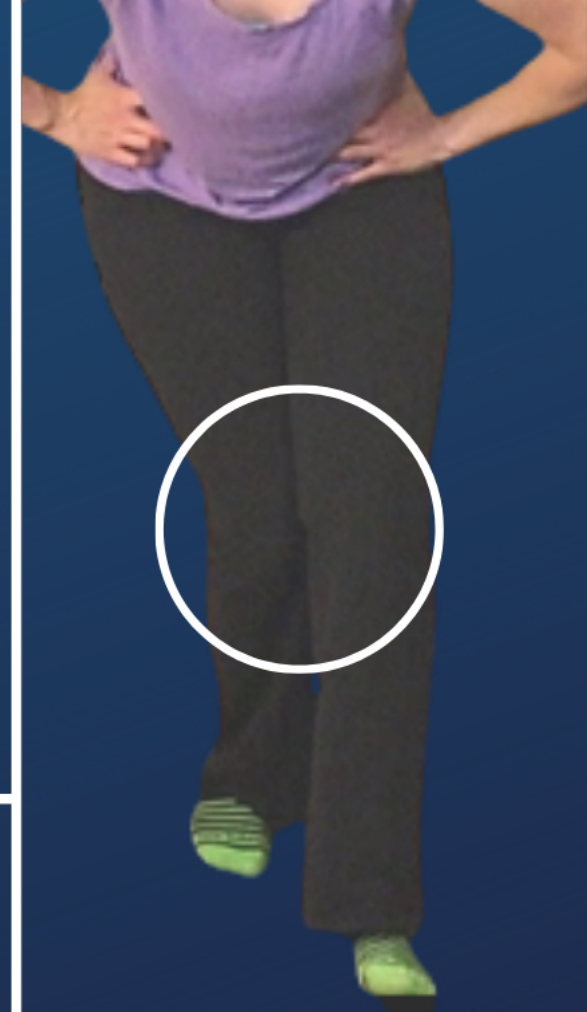
Single-Leg Squat (knee valgus)

Overactive

- TFL
- Adductors

Underactive

- Glute max. and med.
- Anterior and posterior tib.



SL Squat Continued

Can client safely
maintain SL position?



Do SL squat and note
compensations

SL Squat Continued

Can client safely

maintain SL position?

→ **NO!**

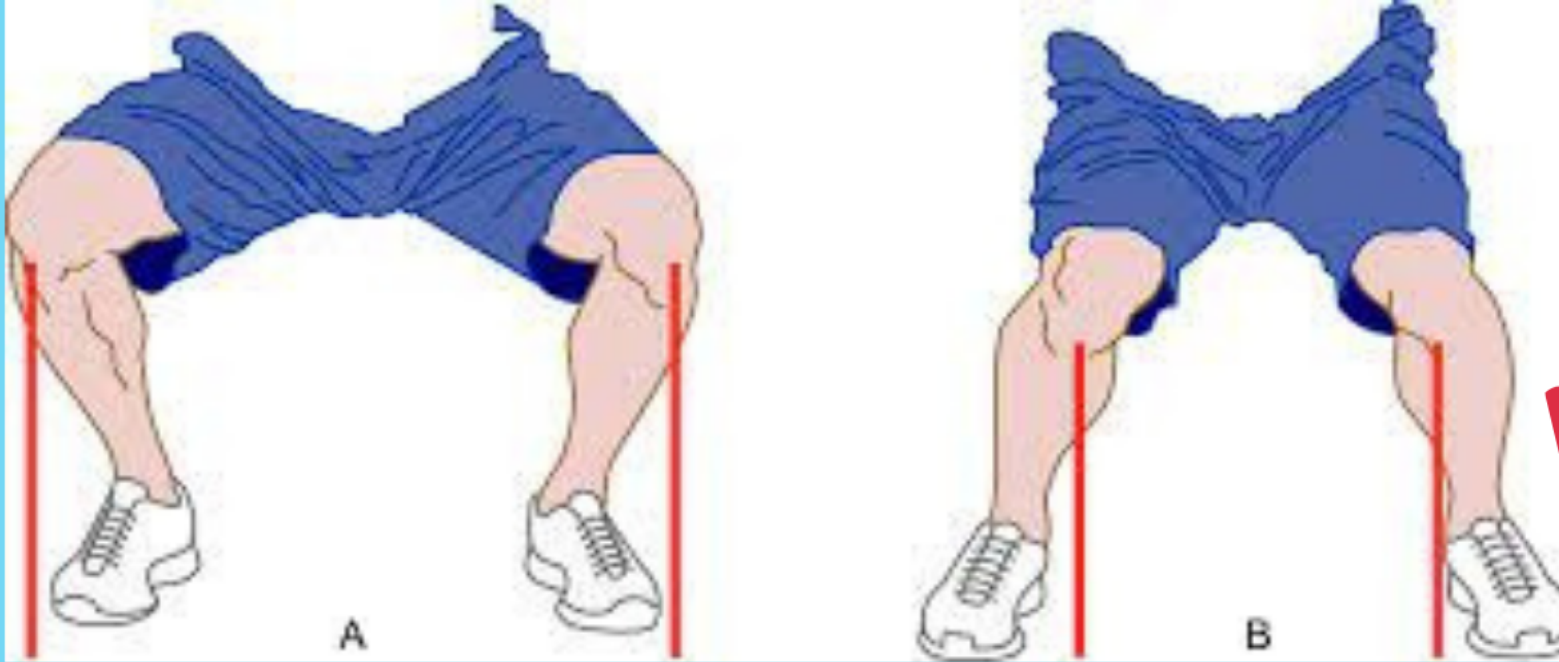
→ Split stance ok!

→ Do split squat assessment
and record compensations

Split Squat Assessment


- Feet no wider than hip width
- Toes pointed straight ahead
- Hands on hips
- View from the front, side, and back
- The client does 5 reps in each view
- Rear knee moves towards ground but doesn't touch






GOOD SQUAT

**ADDUCTORS TOO
STRONG AND TIGHT
RELATIVE TO
ABDUCTORS. GLUTES
TOO WEAK.**



Pes Planus Distortion Syndrome

Ankle joints—pes planus (collapsed arch)

Knee joints—valgus and internally rotated

Hip joints—adducted and internally rotated



Pes Planus Distortion Syndrome

Ankle joints—pes planus (collapsed arch)

Knee joints—valgus and internally rotated

Hip joints—adducted and internally rotated



Pes Planus Distortion Syndrome

Overactive

- **Adductor Complex (inner thigh muscles)**
 - **Gastrocnemius and Soleus**
 - **Hip Flexors**

Underactive

- **Anterior & posterior tibialis (shin muscles)**
 - **Glute Max and Med. (butt muscles)**



Loaded Movement Assessments

-These are optional

Loaded Squat, Standing Push,

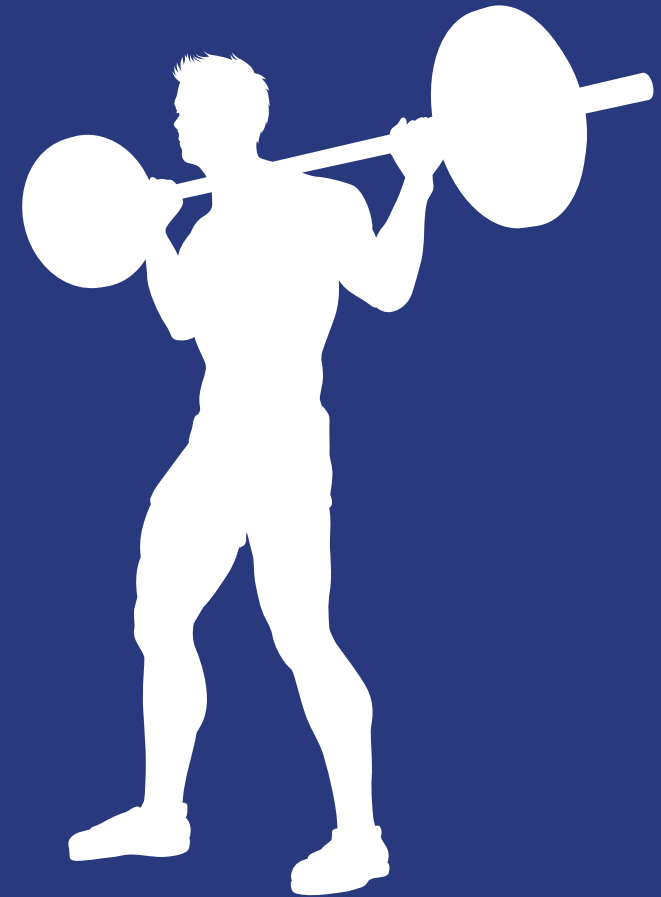
Standing Pull, Standing

Overhead Dumbbell Press



Loaded Squat Assessment

- Feet hip to shoulder width
- Toes pointed straight ahead
- Can be done without shoes
- Resistance should tire but not exhaust
- Front, back, goblet, etc. all work
- 5 reps per view point at parallel depth



Loaded Squat Assessment



-2,0,2 tempo

-You can also change weight as you go

-You can have your clients do extra or less reps

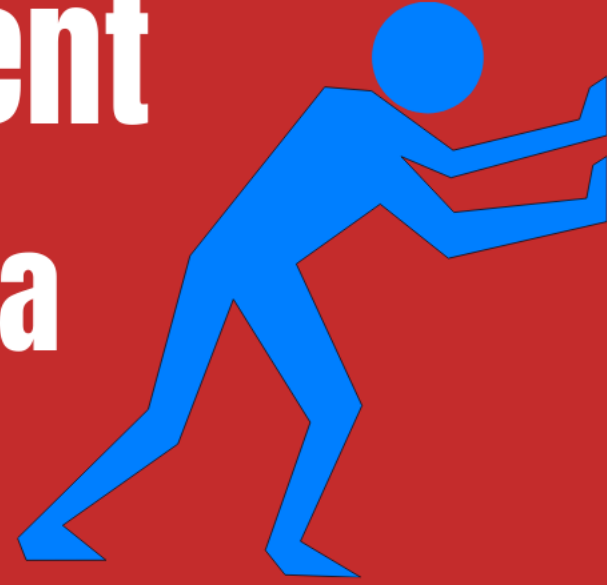
Overhead Dumbbell Press Assessment

- Have the client fully press the weights overhead
- The client does 10 reps
- View from the side
- 2,0,2 tempo



Pushing and Pulling Assessment

- The client should be standing in a narrow split stance.
- The client does 10 reps with challenge but not exhaustion
- From the side we're viewing LPHC, shoulders, cervical spine, and the head



Pushing Assessment



Pull Assessment



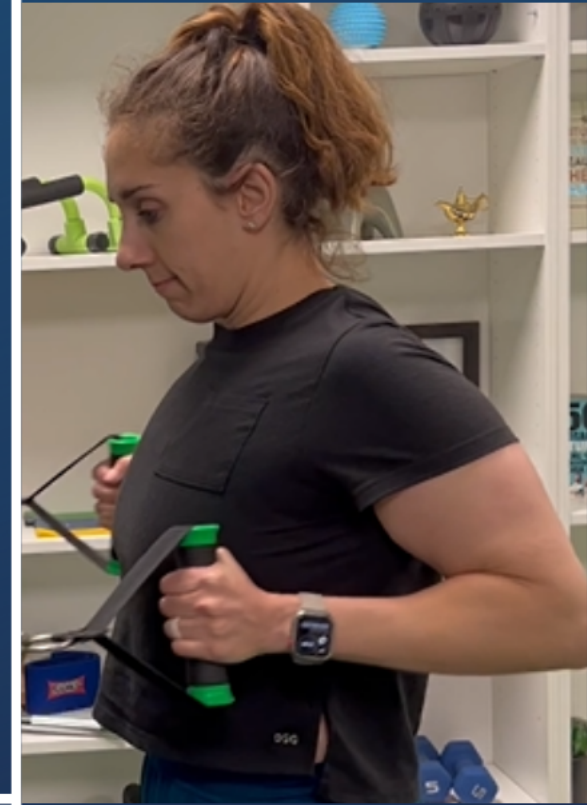
Pushing & Pulling (head forward)

Overactive

- Levator Scapula**
- Sternocleidomastoid**
- Cervical Spine Extensors**

Underactive

- Deep Cervical Flexors**



Pushing & Pulling (scap. elevation)

Overactive

- Levator Scapula
- Upper Traps

Underactive

- Lower Traps



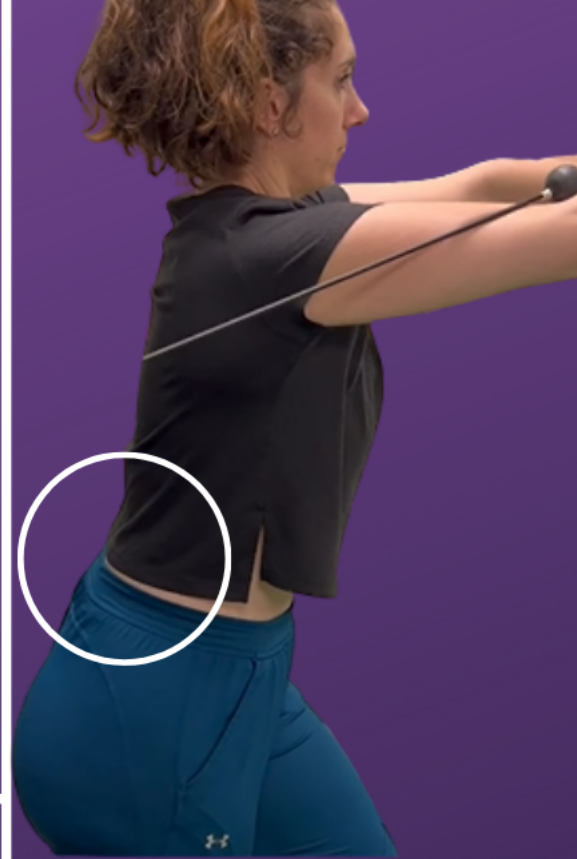
Pushing & Pulling (low-back arch)

Overactive

- Hip flexors (TFL, Psoas, Rectus Femoris)
- Lumbar Extensors

Underactive

- Glute Max
- Glute Med
- Abdominals



**WHAT IS OVERACTIVE
IF THE SHOULDER IS
ELEVATED AND HEAD
IS FORWARD?**



**WHAT IS OVERACTIVE IF
THE SHOULDER IS ELEVATED
AND HEAD IS FORWARD?**



- A. THE LOWER TRAPS & LATS**
- B. THE LEVATOR SCAPULA & CERVICAL SPINE
EXTENSORS**
- C. THE RHOMBOIDS & THE PECS**
- D. THE UPPER TRAPS AND RHOMBOIDS**

**WHAT IS OVERACTIVE IF
THE SHOULDER IS ELEVATED
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A. THE LOWER TRAPS & LATS

**B. THE LEVATOR SCAPULA & CERVICAL SPINE
EXTENSORS**

C. THE RHOMBOIDS & THE PECS

D. THE UPPER TRAPS AND RHOMBOIDS

Review but don't memorize table 9-2 in the text. We've gone over many muscle imbalance or length tension relationships, but we can't cover every example. More are covered in the anatomy videos too.

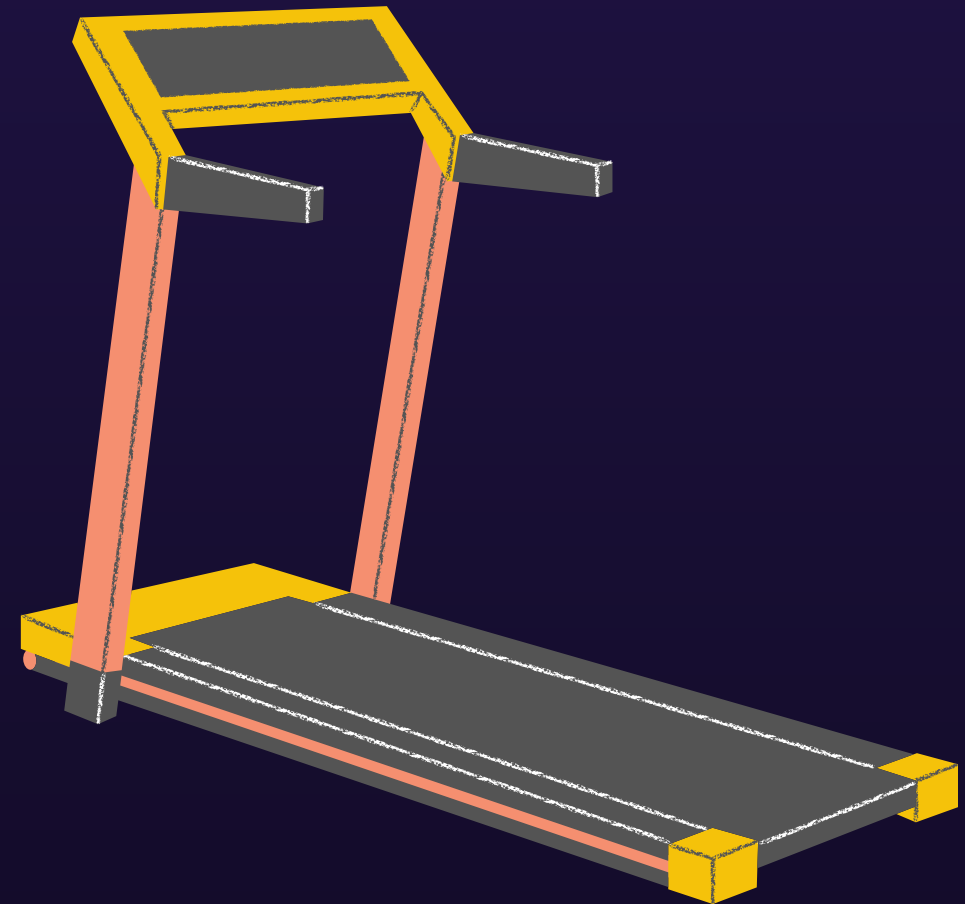
Dynamic Movement Assessments

-These are optional

Gait/walking assessment,

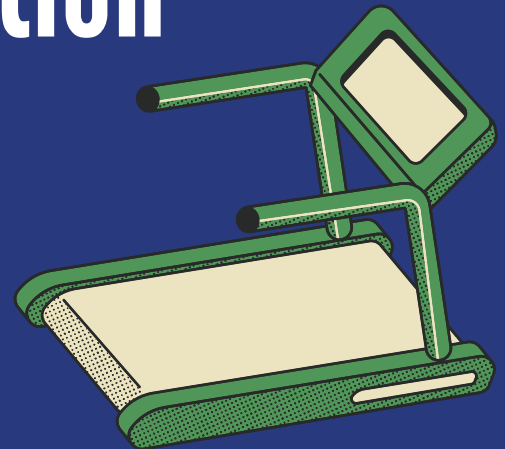
depth jump assessment,

Davies test



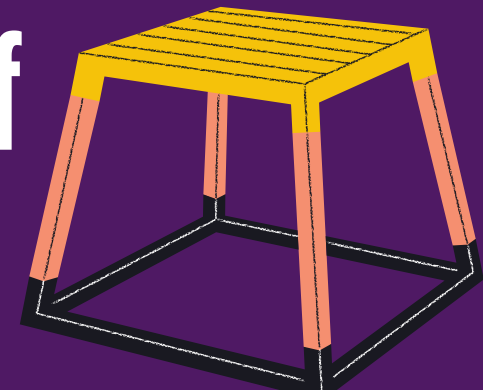
Gait Assessment

- Viewed from all three angles
- Feet should remain parallel
- LPHC should not shift too much side to side
- Foot and arch should stay in a neutral position
- Done on a treadmill with an incline of 1
- They should walk at a normal speed



Depth Jump Assessment

- Individual stands on a 12in box
- Target line is drawn 12in in front of box
- Client hops off box with feet just after line
- Upon landing, client jumps as high as possible
- View from front and side, look for usual stuff
- 1 to 3 reps per view recommended



Davies Test

- Place two pieces of tape 36in apart
- Client assumes push-up pos. with a hand on each piece
- Right hand moves to left hand & vice versa
- Perform alternating touches for 15s
- Count the # of times both hands touch the same side
- Do three trials

Mobility Tests



Ankle Mobility (weight bearing lunge)

- Front leg is tested**
- Lunge pos. with front foot 2in from wall**
- Clients front leg lunges towards wall, hands support**
- The client should try to keep heels/feet planted**
- Normal Mob: Knee touches wall**
- Limited Mob: Heel lifts, knee doesn't touch, compensations**

Ankle Mobility (weight bearing lunge)



Ankle Mobility (MTP Great Toe)

- Can be done seated or standing**
- Client moves big toe upwards as much as possible**
- Other toes stay stable**
- Normal Mob: No compensation, big toe lifts over others**
- Limited Mob: The opposite of above**

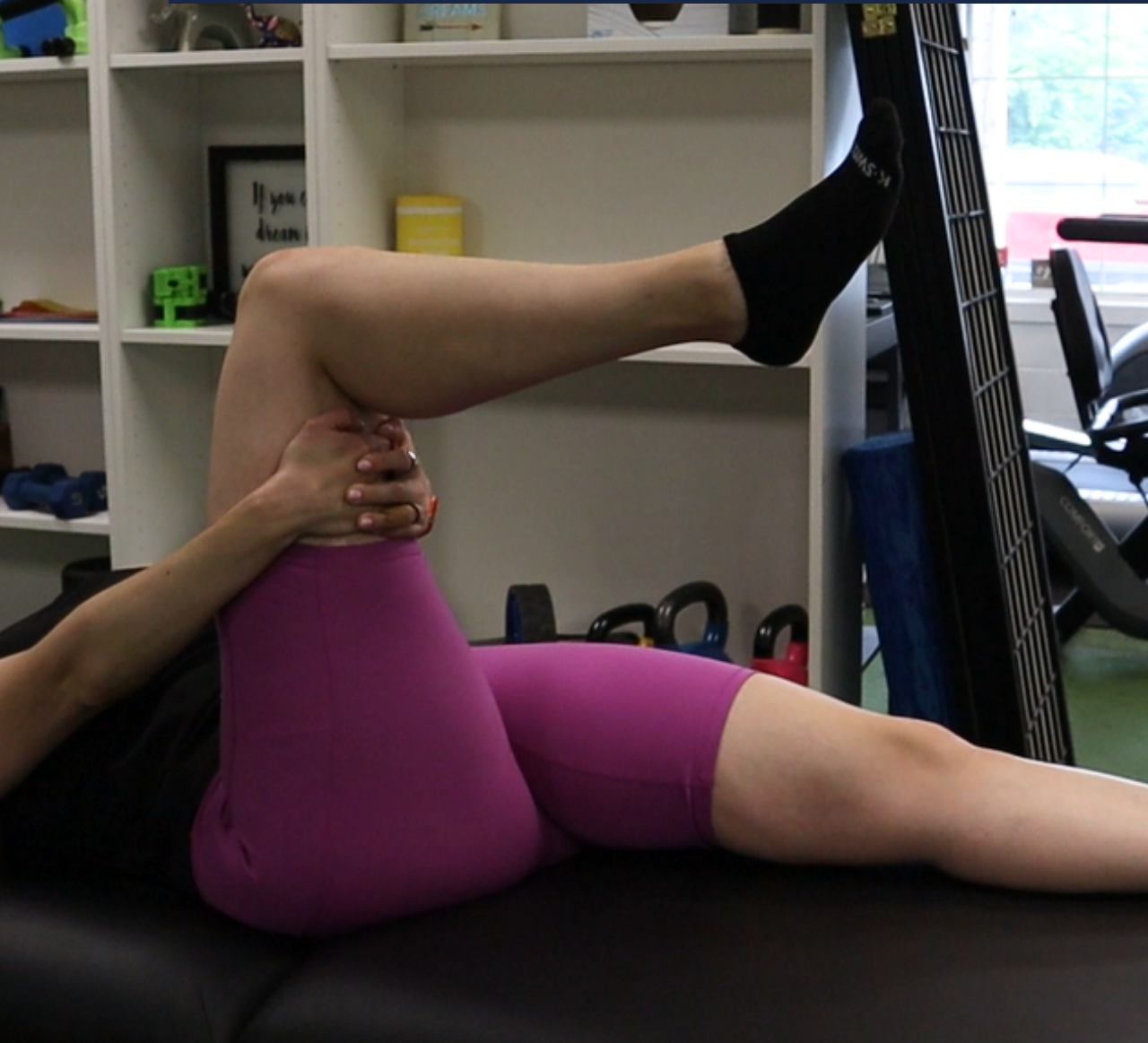
Ankle Mobility (MTP Great Toe)



Active Knee Extension Test

- Lying supine on table
- Client brings test knee to 90 degrees
- Client extends that knee as much as they can
- Normal Mob: No compensation, client can extend their knee straight, or come close.
- Limited Mob: The opposite of above

Active Knee Extension Test



Active Knee Flexion Test

- Lying prone on table
- Client flexes knee as far as tolerable
- Normal Mob: No compensation, client can touch their butt or come close
- Limited Mob: The opposite of above

Active Knee Flexion Test



Lumbar Flexion And Extension

-Normal Mob. Flexion: No compensation,
client can touch their toes.

-Normal Mob. Extension: No compensation,
the client arches the back enough where
their shoulders pass their hips.

Lumbar Flexion And Extension



Modified Thomas Test

- Test leg is relaxed on table.
- Restricted hip extension: Test thigh lifts off the table.
- Restricted knee flexion: Test knee is slightly extended and not at 90 degrees.

Modified Thomas Test



We covered many of the mobility assessments here today, but there are more shown in chapter 10. Don't memorize everything, but look them over before taking your test.



Random Things To Know!



Be ready to use the NASM search function!

I had questions like "is _____ in the lifestyle or occupation portion of the client intake?" Also, as an example, they could ask what degree of

ROM is normal in the passive hip internal rotation assessment. Who the f* cares. You're not going to memorize everything like that.**

Use search when needed.

Athletic Position: The knees are comfortably flexed, shoulders back, eyes up, feet approximately shoulder-width apart, and the body mass balanced over the balls of the feet. The knees should be over the balls of the feet and the chest should be over the knees.

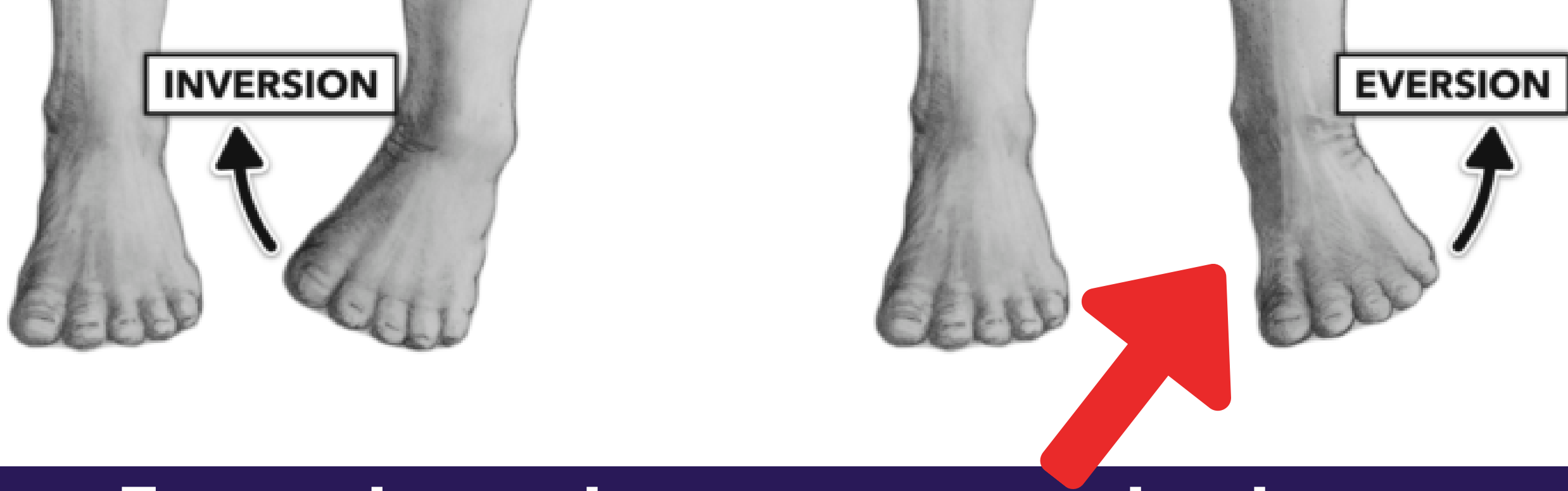




Gastrocnemius Soleus
(Plantarflexion)



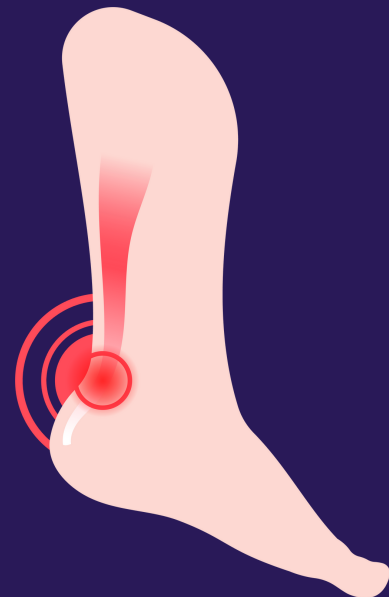
Anterior Tibialis
(Dorsiflexion)



**Too much eversion, or over pronation, is a problem and the foot arch could collapse.
Strengthen anterior and posterior tibialis.**

Tendinopathy: The term that refers to tendon pain without knowledge of the exact cause of it.

Tendinitis vs. Tendinosis: Inflammation of a tendon, most commonly from overuse but also from infection or rheumatic disease. Tendinosis is the chronic version and tendinitis is the acute version.



Patellofemoral Syndrome: Abnormal tracking of the patella within the femoral trochlea or patellar groove.

IT-Band Syndrome (Runner's Knee): Inflammation or irritation of the IT-band occurs because of a lack of flexibility of the TFL, which can cause an increase in tension on the IT-band during running.

Frank has IT band syndrome. What should he strengthen in the activate phase?

Frank has IT band syndrome. What should he strengthen in the activate phase?

A: Rectus Femoris

B: The TFL

C: The gastrocnemius and soleus

D: Gluteus Medius

Frank has IT band syndrome. What should he strengthen in the activate phase?

A: Rectus Femoris

B: The TFL

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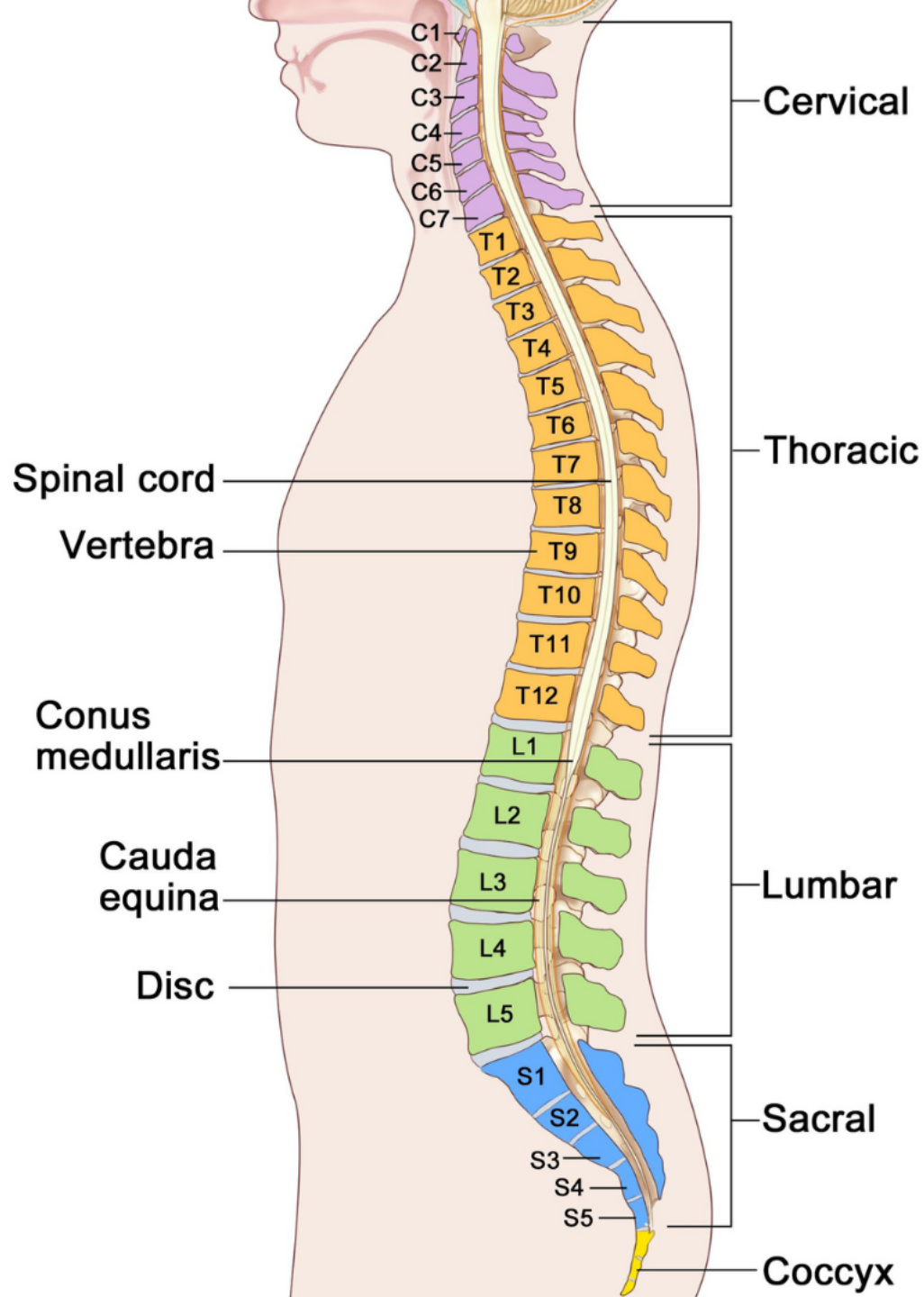
D: Gluteus Medius

Tennis Elbow (lateral epicondylitis): Outside of the elbow pain. Be careful of over gripping.

Strengthen forearm extensors. 

Golfers Elbow (medial epicondylitis): Inside of the elbow pain. Lots of things can cause it.

Strengthen forearm flexors. 



Remember breakfast (7 cervical) lunch (12 thoracic) and dinner (5 lumbar) for vertebrae. You also have 5 fused sacral vertebrae.

**Let's say I have a client
who's squatting and
leaning too far forward.
Choose the best cueing
advice to give this client.**



- A. Tell the client their squat is a mess**
- B. Tell the client to shift the weight back onto the ball of their foot, heels, and hips**
- C. Hand the client light weights for increased stability**
- D. Stop the squat immediately and don't have that client do them anymore**



A. Tell the client their squat is a mess

B. Tell the client to shift the weight back onto the ball of their foot, heels, and hips

C. Hand the client light weights for increased stability

D. Stop the squat immediately and don't have that client do them anymore

Let's take that same client who's squatting and leaning too far forward. Now tell me what muscles are likely overactive and which are underactive.



A. Overactive: Hip Flexors

Underactive: Tensor Fasciae Latae

B. Overactive: Glutes

Underactive: Hamstrings

C. Overactive: Hip Flexors Underactive: Glutes

D. Overactive: Glutes Underactive: Adductors

A. Overactive: Hip Flexors

Underactive: Tensor Fasciae Latae

B. Overactive: Glutes

Underactive: Hamstrings



C. Overactive: Hip Flexors Underactive: Glutes

D. Overactive: Glutes Underactive: Adductors