

6 Joints Assessments

Foot & Ankle,
Knee, Hip

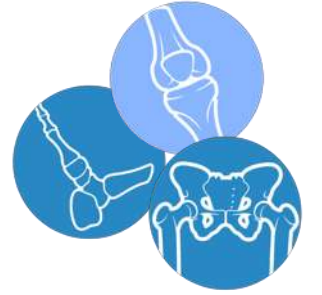
Dr. Grove Higgins

With Master Trainer Pat Marques



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Outline



- Welcome / Objectives
- Tips for assessing clients online
- Simple lower body assessment flow
 - What to look for
 - Common findings
- Using the NeuroBiomechanical Lens during assessments
- Examples

Tips for Assessing Clients Online - Clients



- Intake paperwork & waivers for online work
- Technology hurdles:
 - iPhone vs. Android (*compatibility with your technology?)
 - Live Streaming vs third party vs non-live video
 - May need to download an app (i.e. Zoom)
 - Third Party software: i.e. Dartfish app, PostureScreen app, etc.

Built like Adonis
Dumb as a Rock



[Article](https://bit.ly/trainonlinearticle)
[“Are you Covered for
Online Training Clients?”](https://bit.ly/trainonlinearticle)
<https://bit.ly/trainonlinearticle>

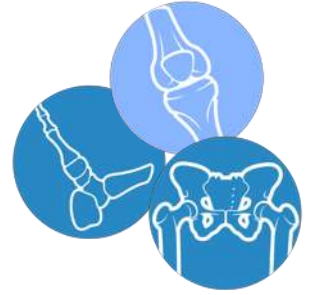


Tips for Assessing Clients Online - Clients



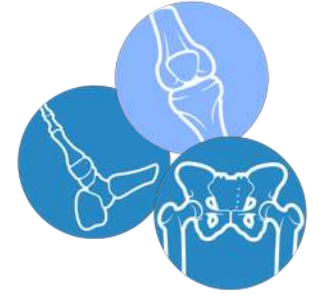
- Have an instructions email so clients can prepare properly:
 - *Athletic clothes* (not loose); can tuck shirt in if necessary
 - *Prepared to be barefoot* at times
 - *10-15' of walking space* to & from the camera/monitor and across screen (90°)
 - *Vertical space* to see head to toe for squats/lunge
 - Ideally the client camera/monitor can be at hip level for assessments
- Can pre-request videos (give specific camera angle/height instructions):
 - Gait (front & side)
 - Range of Motion of affected area
 - Squat & Lunge (front/side/rear)

Your Set-Up



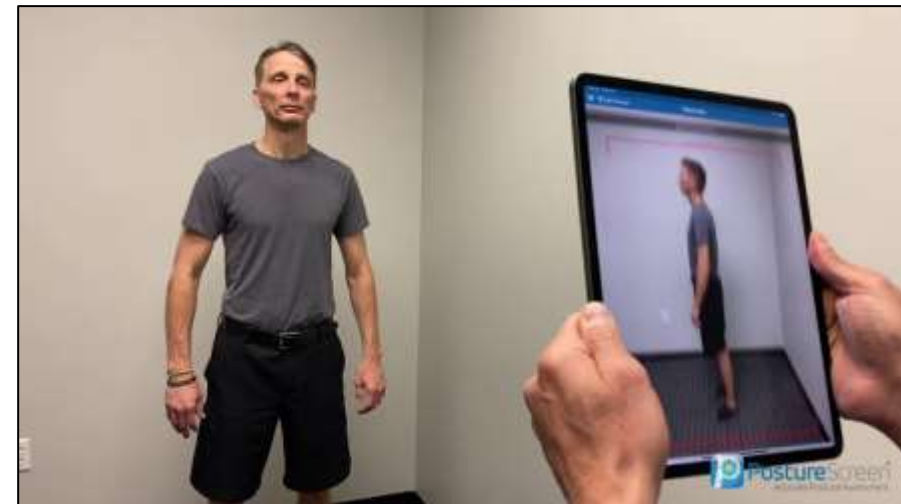
- Have read the intake paperwork & prepared specific questions
- Rehearsed your technology
 - Live Stream w/ family or friend
 - Third Party software: i.e. Dartfish app, PostureScreen app, etc
- Set up your own space so you can demonstrate
 - Lighting – a light behind your monitor can help make you more visible
 - Enough room to walk if necessary
 - Easy ability to adjust your camera for different views (foot close up vs. squat)

Online Assessment Techniques



Camera Tips

- Level the camera
- Mid-level of the body – most table heights
- Hallways and foyers
- Note fixed objects – doors, windows, corners, etc.
- Videos: Slo-Mo and pause
- Pictures/screenshots – can draw lines
- Email afterwards



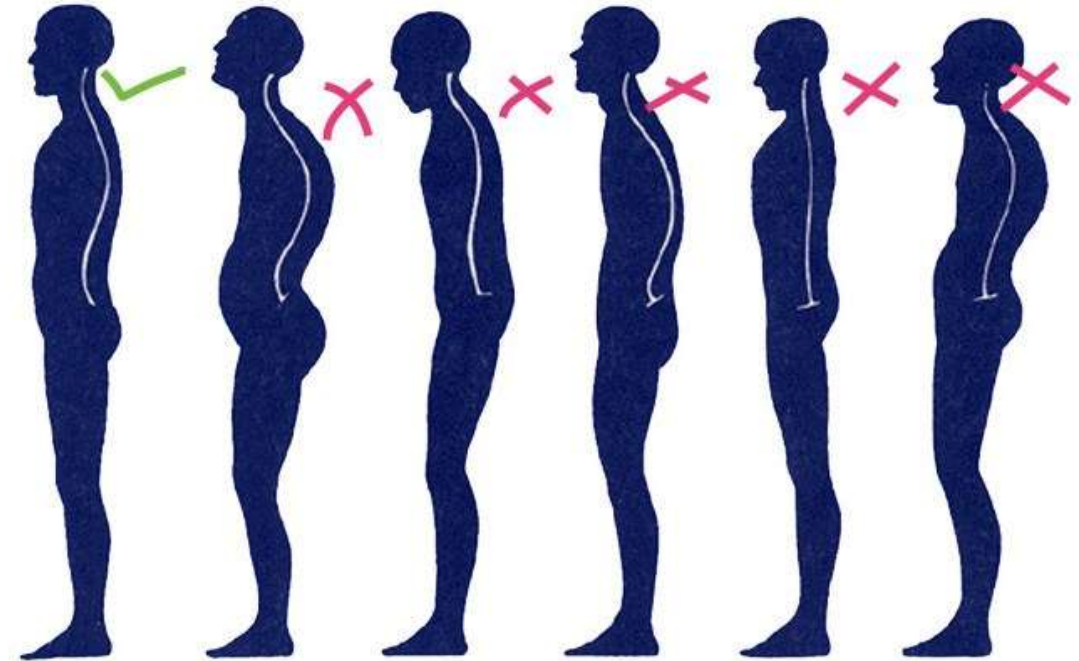
Simple Lower Body Assessment Flow



- Posture
- Gait – Walking is your #1 Screening Tool ALWAYS!
- Spinal Flexion (Toe Touch)
- Spinal Extension (Back Bend)
- Spinal Twist
- Squat
- Forward Lunge
- Knee To Chest
- Figure Four Position
- Muscle Strength Tests

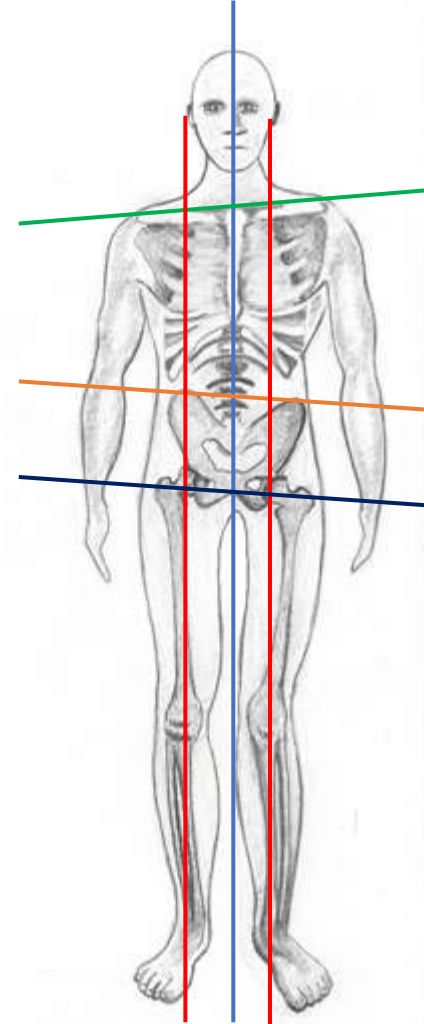
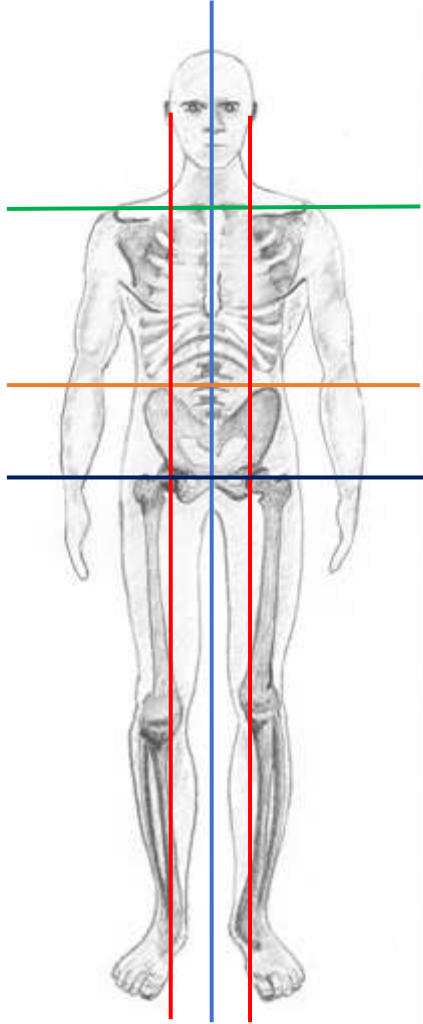
What to look for

- Symmetry
 - Side to side
 - Front to back
 - Top to bottom
- Alignment
- Smoothness / Efficiency of Motion
- Range of Motion
- Pain
- Body & Facial Cues (“Startle” Reflex)
 - Facial distress
 - Excessive blinking
 - Flexion/adduction of head/shoulders



What jumps out at you?

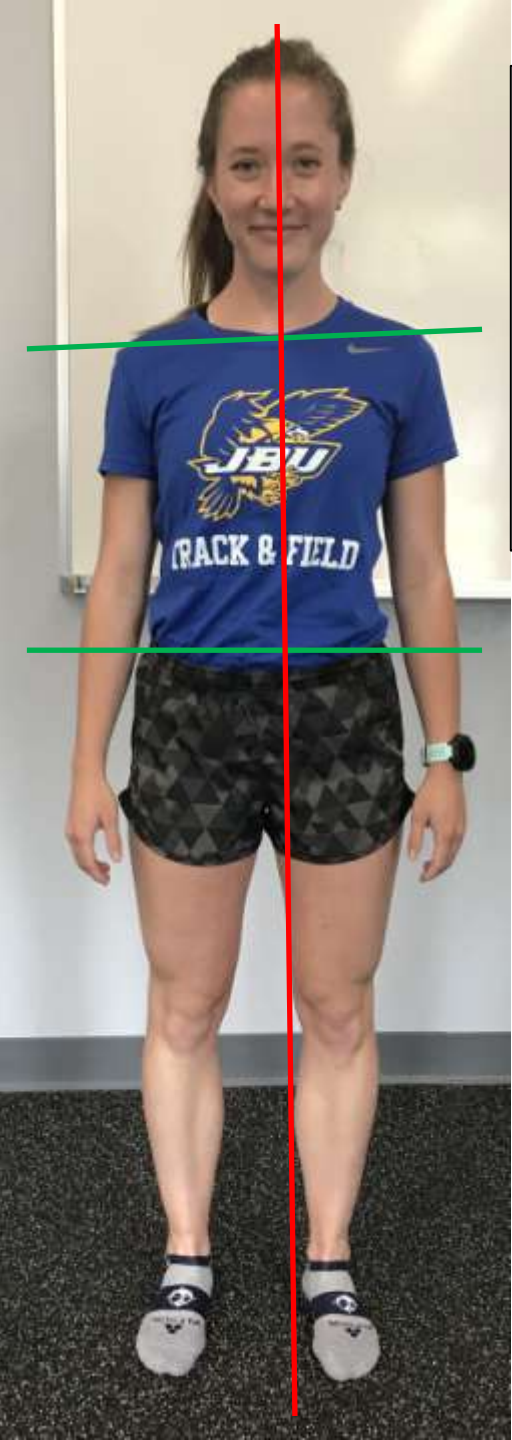
Posture





Looking for:

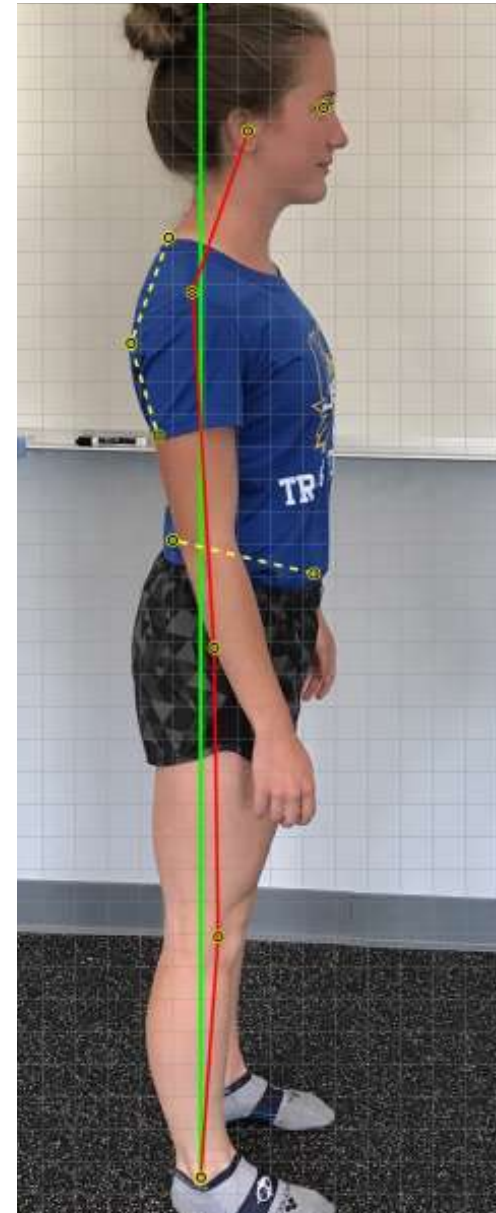
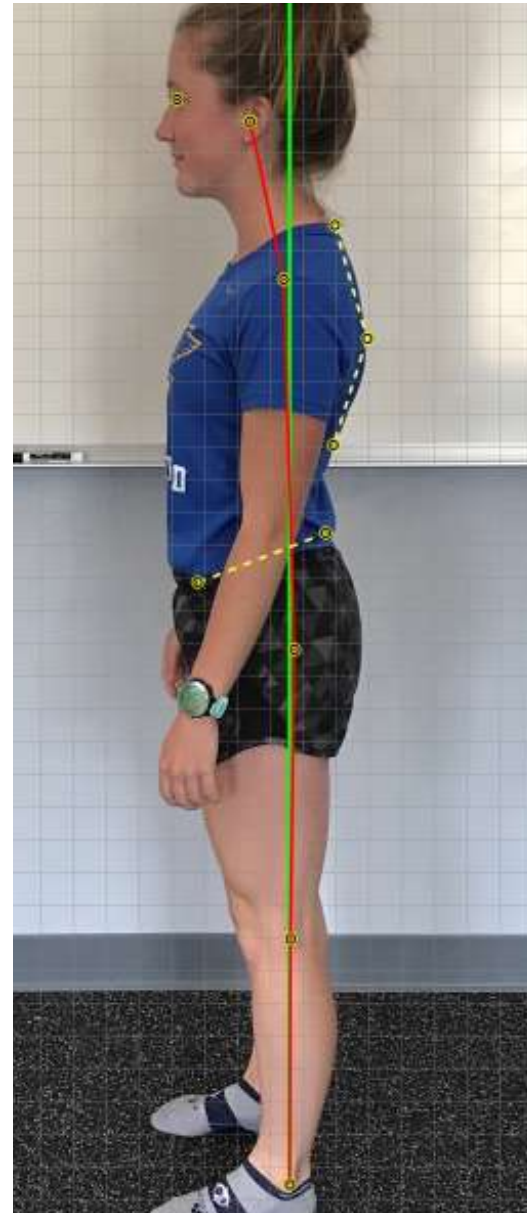
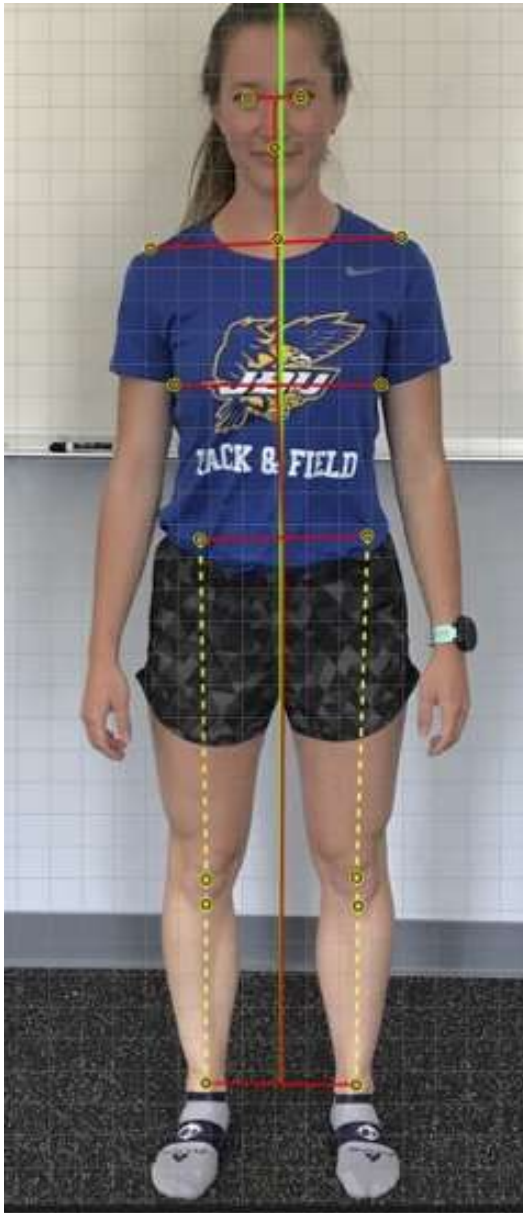
- Head alignment ICW midline/spine
- Shoulder tilt



Low Tech Posture Analysis

- Lines to note deviations from Midline
- Lines to show Shoulder and Pelvis Misalignments
- Interpret rotations





High Tech Posture Analysis

- Specific degrees with accentuated line to make posture deviations obvious!
- Precise tracking of changes over time



<https://www.postureanalysis.com/>

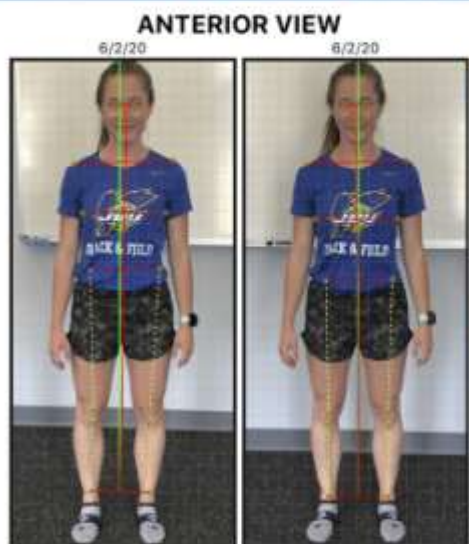
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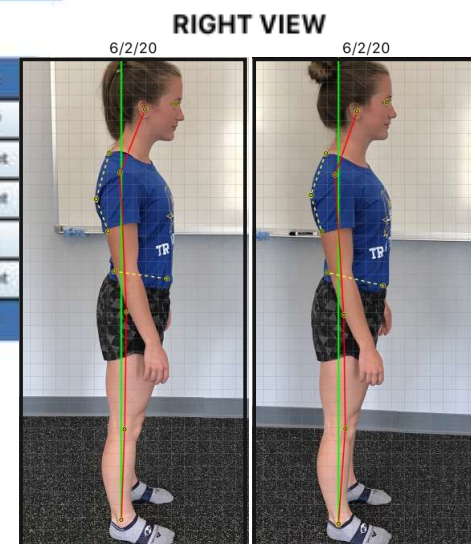
PostureScreen Comparison Report for Sarah Larson performed on 6/2/20 and 6/2/20

PostureScreen Comparison Report for Sarah Larson performed on 6/2/20 and 6/2/20



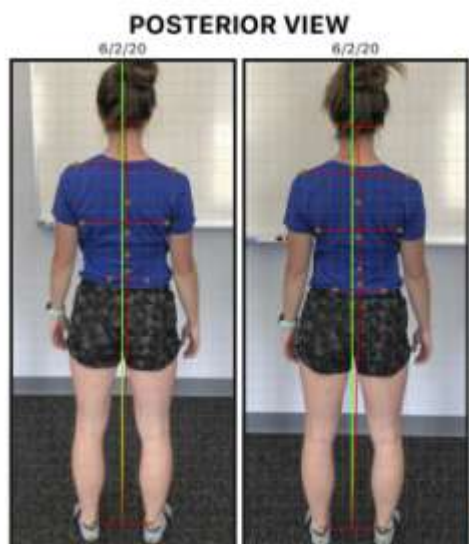
Posture Displacements

Body Region	Anterior Translations		Anterior Angulations	
	6/2/20	6/2/20	6/2/20	6/2/20
Head	0.21" right	0.16" right	2.3" right	1.4" right
Shoulder	0.28" left	0.01" right	2.1" right	2.5" right
Ribcage	0.10" right	0.32" right	n/a	n/a
Hip/Pelvis	0.57" left	0.13" left	1.4" right	1.4" right
Total	1.26"	0.61"	5.8"	5.8"



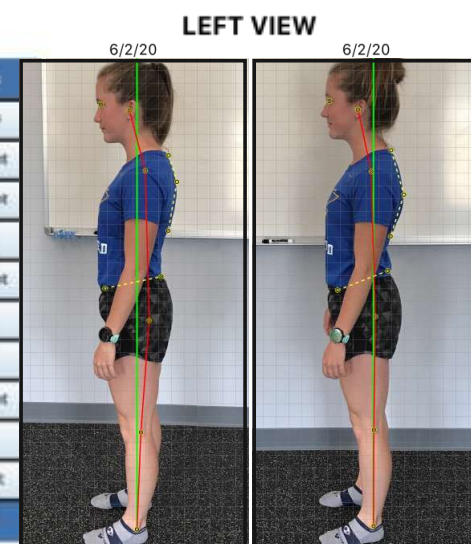
Posture Displacements

Body Region	Lateral Translations		Lateral Angulations	
	6/2/20	6/2/20	6/2/20	6/2/20
Head	1.21" anterior	2.85" anterior	21.39° flexed	19.10° flexed
Shoulder	0.82" posterior	1.11" posterior	2.60° extended	3.47° extended
Hip/Pelvis	0.25" anterior	0.21" posterior	0°	0°
Knees	0.42" anterior	0.89" anterior	2.05° flexed	4.12° flexed
Total	4.72"	5.06"	26.0°	26.7°



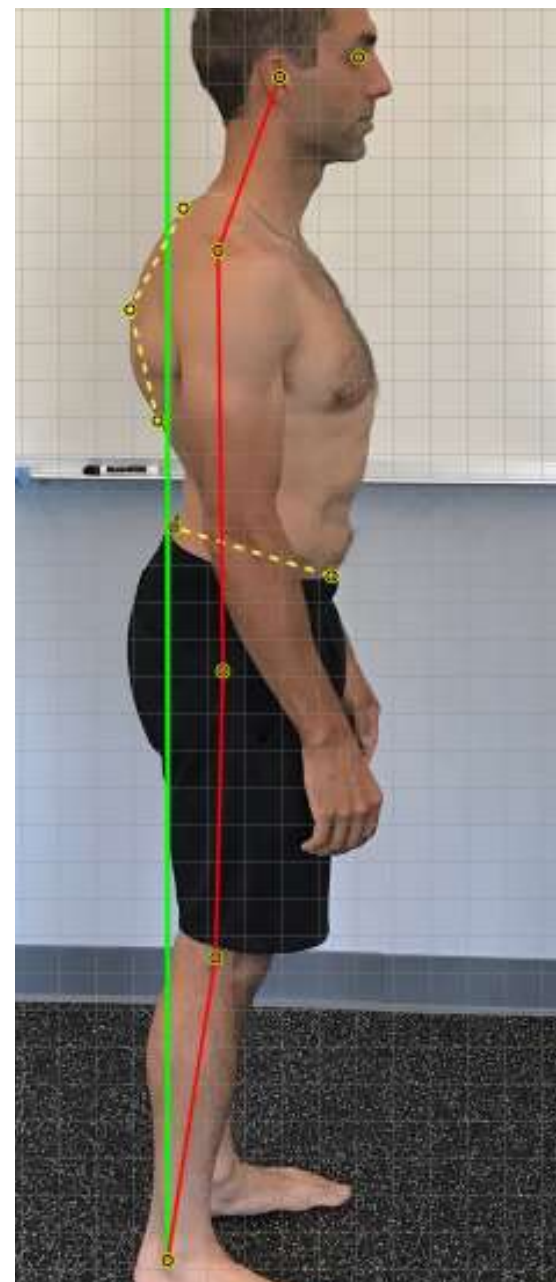
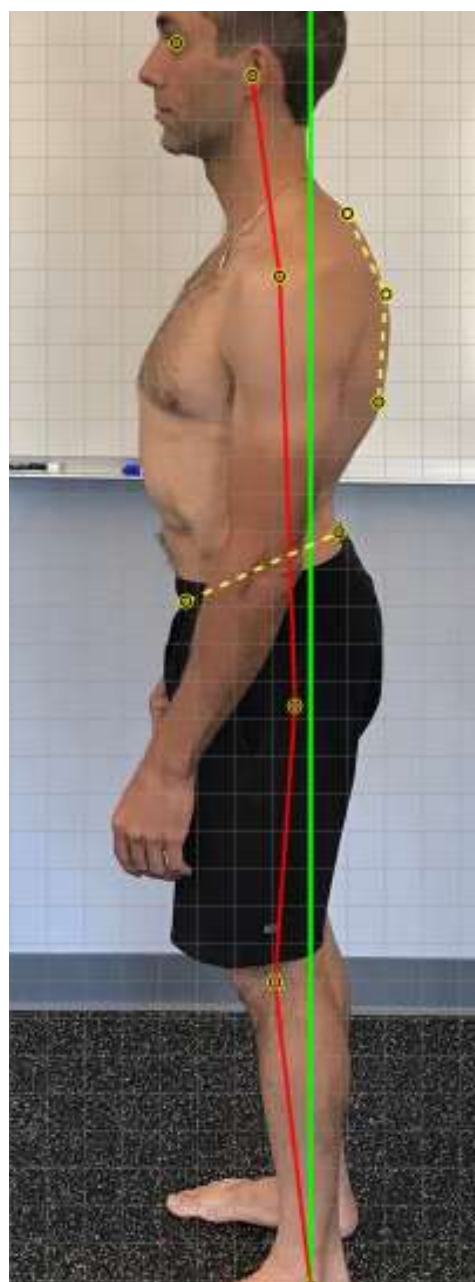
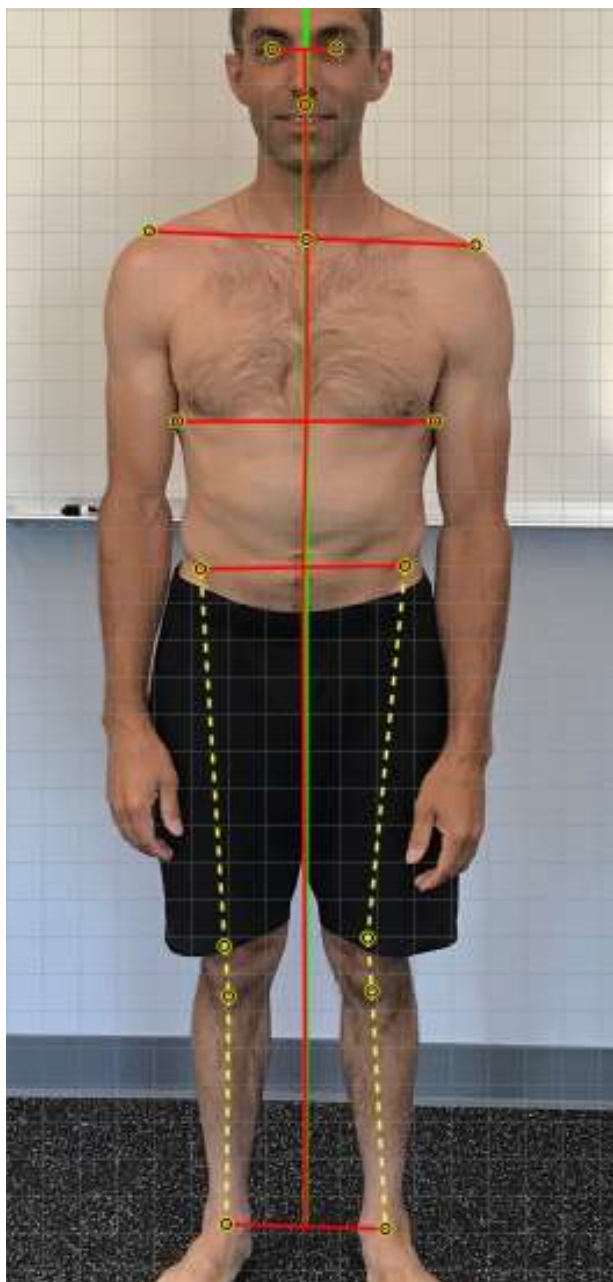
Posture Displacements

Body Region	Posterior Translations		Posterior Angulations	
	6/2/20	6/2/20	6/2/20	6/2/20
Head	0.07" left	0.12" right	0°	1.4" right
Shoulder	0.11" right	0.37" left	3.3" right	2.7" right
Ribcage	0.48" left	0.06" left	n/a	n/a
Hip/Pelvis	0.76" left	0.96" left	1.9" right	1.4" right
T1-T4	0.22" left	0.02" left	2.1" right	0°
T4-T8	0.04" left	0.02" left	0°	0°
T8-T12	0.01" left	0.12" left	0°	1.7" right
T12-L3	0.06" left	0.03" left	1.7" right	0°
L3-Mid P5/S5	0°	0.03" right	0°	2.3" right
Total	1.75"	1.74"	6.9"	9.1"



Posture Displacements

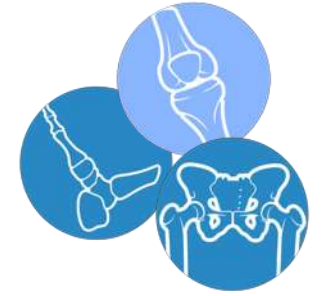
Body Region	Lateral Translations		Lateral Angulations	
	6/2/20	6/2/20	6/2/20	6/2/20
Head	2.04" posterior	1.71" posterior	14.57° flexed	12.04° flexed
Shoulder	0.51" posterior	0.53" posterior	1.51° flexed	1.61° flexed
Hip/Pelvis	1.08" anterior	0.19" anterior	4.24° extended	0°
Knees	0.50" anterior	0.05" anterior	2.29° extended	0°
Total	4.13"	2.48"	22.6°	13.6°



Estimated Effective Head Weight secondary to head vs. shoulder posture is 35.8 lbs instead of 11.7 lbs



Gait



Looking for:

- Do the arches flex through the step?
- Foot overly pronated (flat) or supinated?
- Do the feet face forward (neutral), in, or out?
- Do the knees face forward (neutral), in, or out?
- Are the hips extending?
- Shoulders level?
- Head tilted, rotated, or “bobblehead”

Rules for Movement/Range Assessments



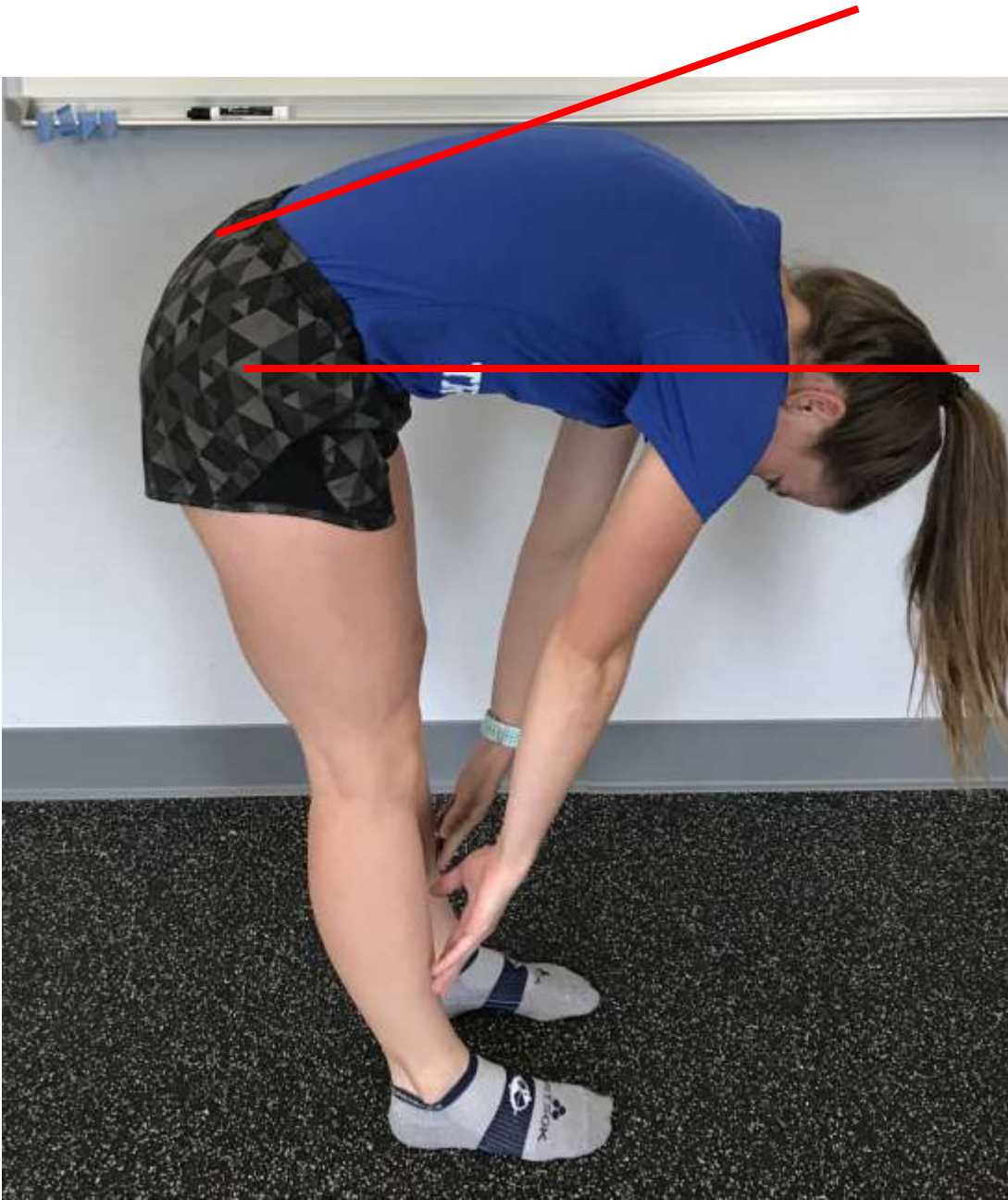
- Explain Rules
 - No Pain – Beware “high pain threshold”
 - Slow and Controlled
 - Note where restrictions are
 - Note other areas of discomfort
 - Be Honest
- Describe but don’t coach – want to see client’s natural motion and ability to transliterate
- Make the movement the focus – not balance
- Safety, Safety, Safety

Spinal Flexion – Toe Touch

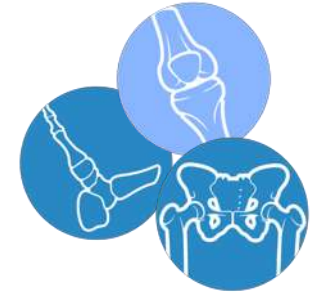


Common Observations

- Lack of Range of Motion
- Twisting
- Knee bend – one side or the other
- No Curve
- Flat back – limiting ROM
- All motion coming from hips
- Pronation of foot

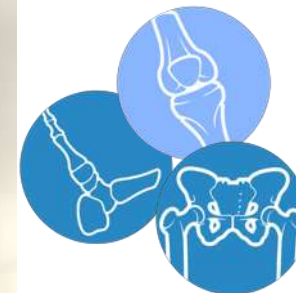
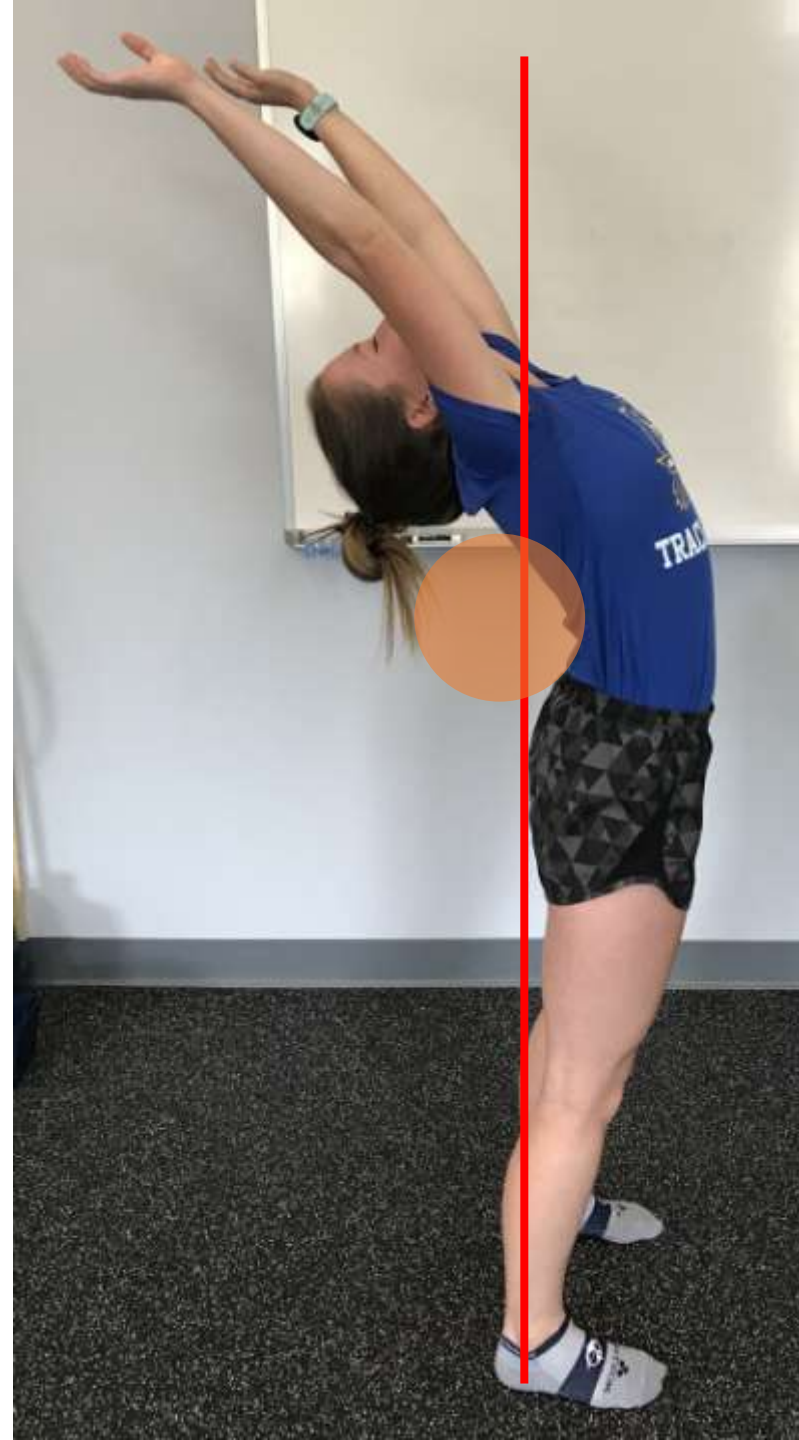
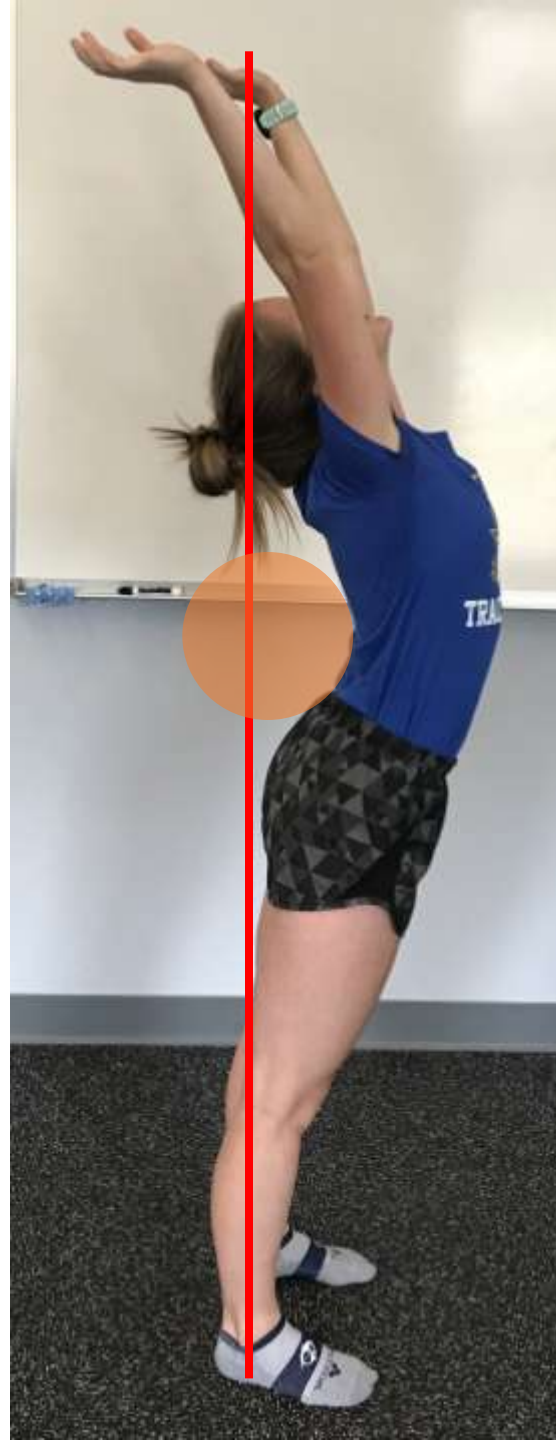


Spinal Extension – Backbend



Common Observations

- Lack of Range of Motion
- “Jamming” at sacrum or higher
- Tightness in anterior hips
- No anterior pelvic glide
- Limited Shoulder Flex or reduced through ROM
- Difficulty coming out of position



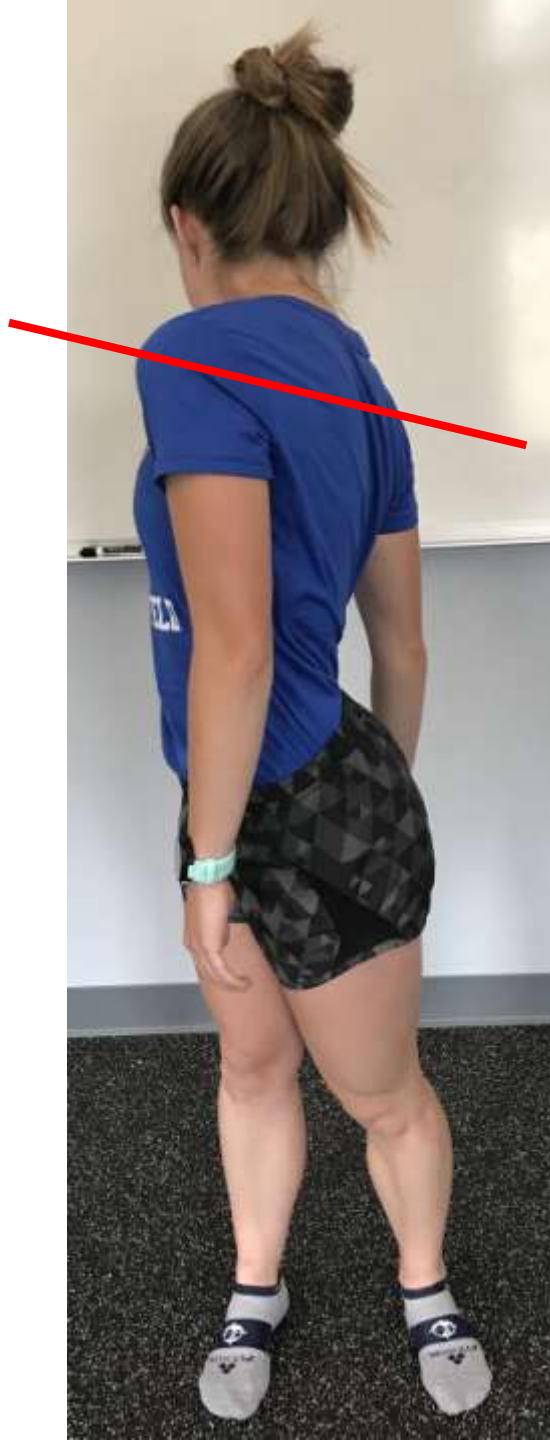
Spinal Twist



Common Observations

- Asymmetric lack of Range of Motion
 - Bra line issues common
- “Jamming” on one side
- Bent knee
- Rolled ankle
- Holding breath
- Not turning head
- Spinal lateral flexion instead





- Errors
- Lateral Flexion

- Toe Push

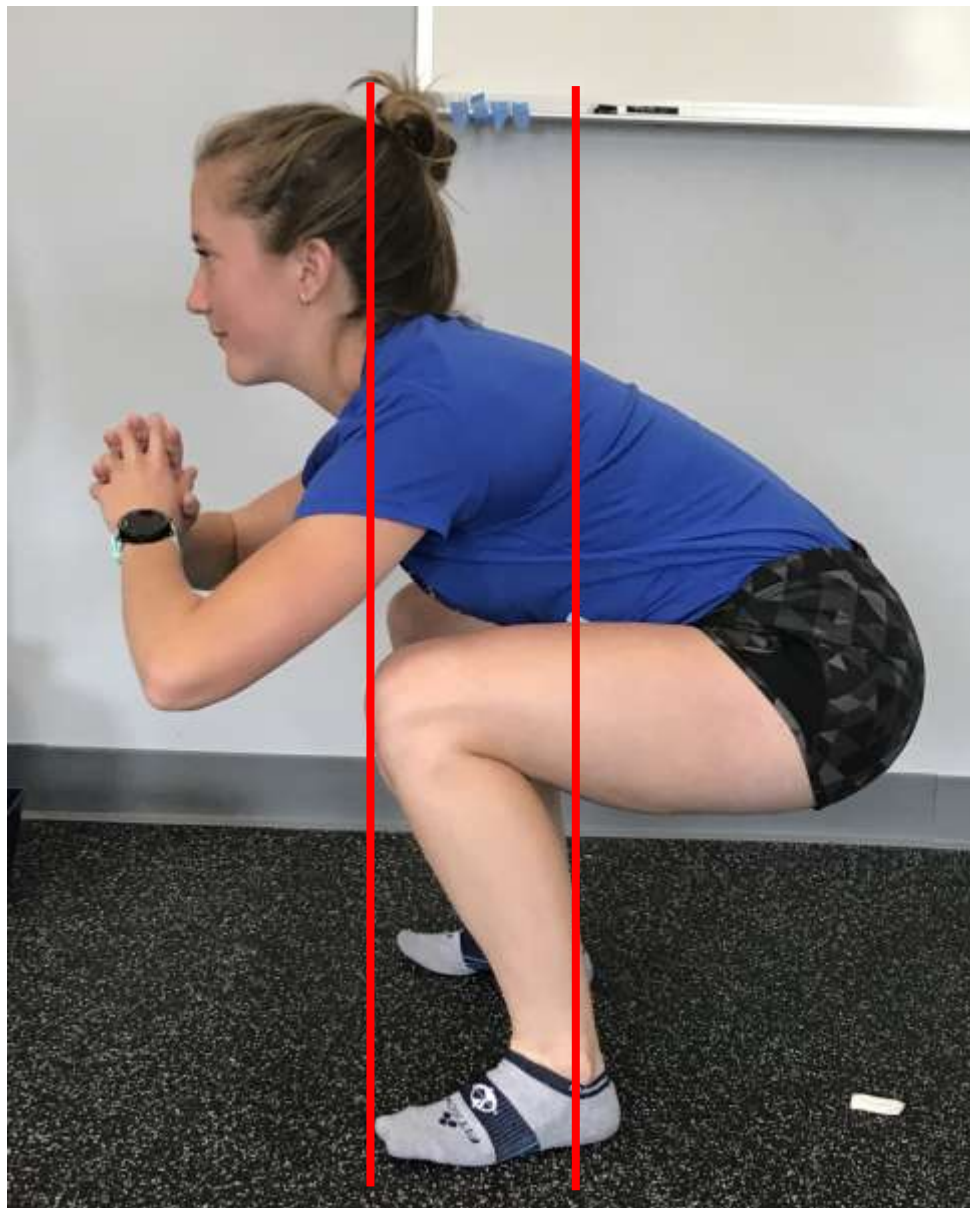
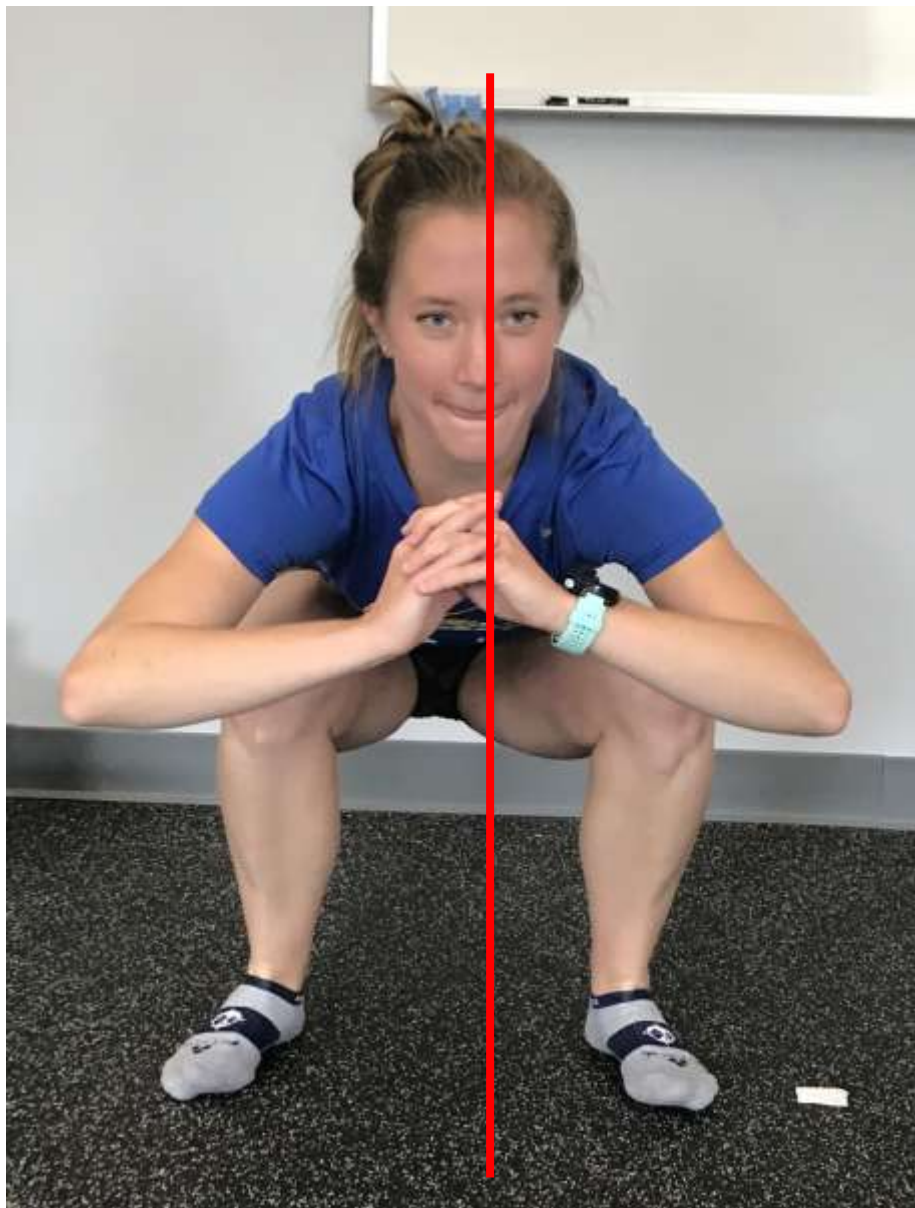


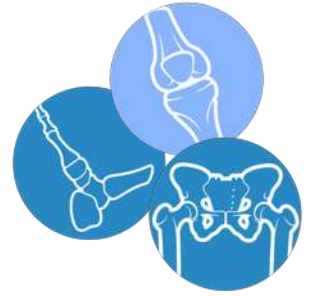
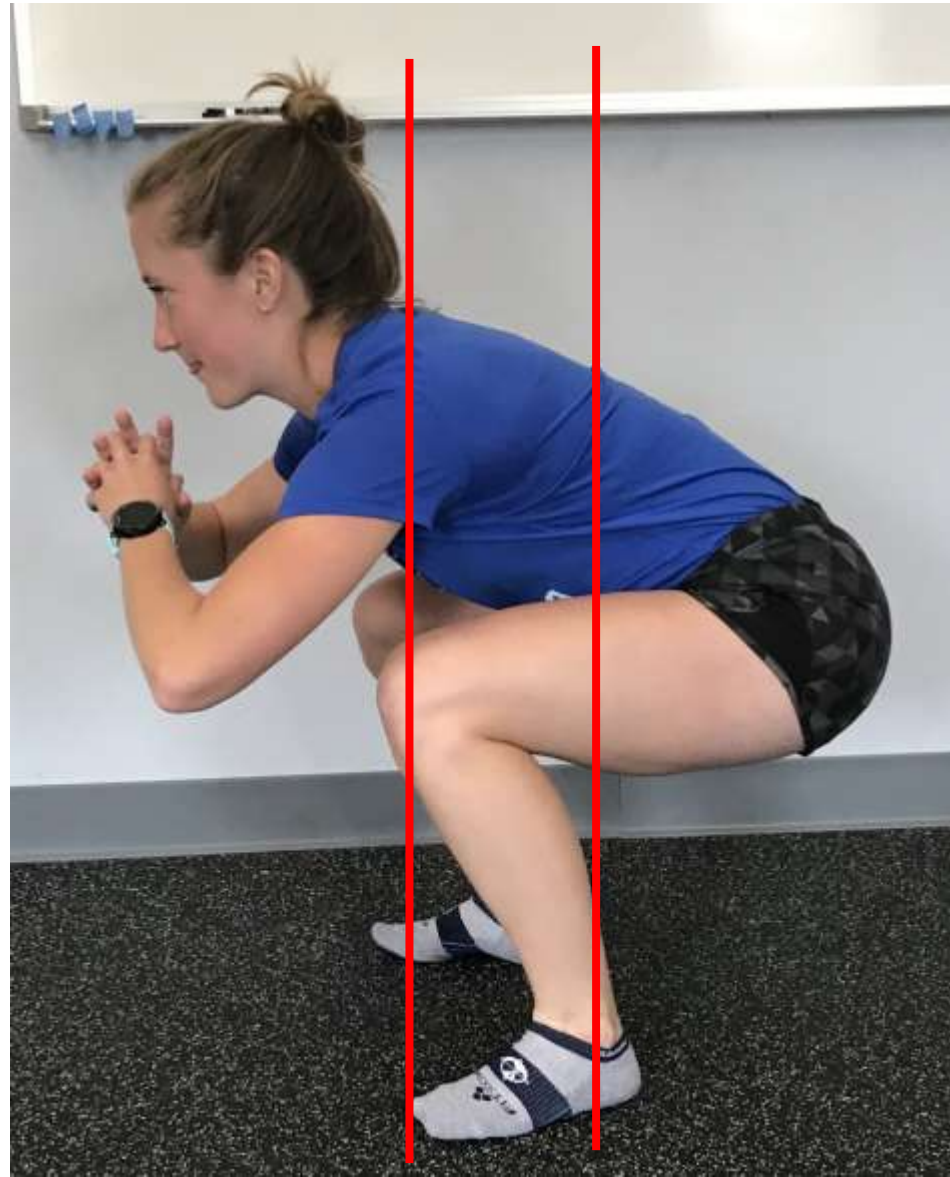
Squat



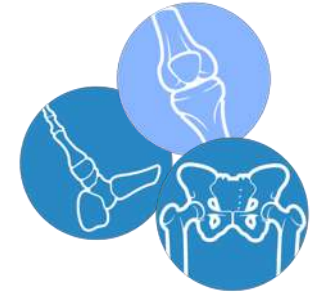
Common Observations:

- General asymmetries at the feet, knees, & hips
 - Avoiding a ROM at a joint
- Twisting
 - Favoring a side
 - Engrained motor pattern
- Lack of Tibial Motion
 - Forward restrictions – watch for bootcamp squats
- Stability
- Forward spine
- Balance



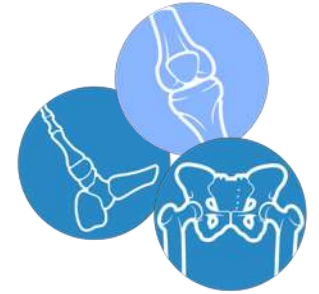
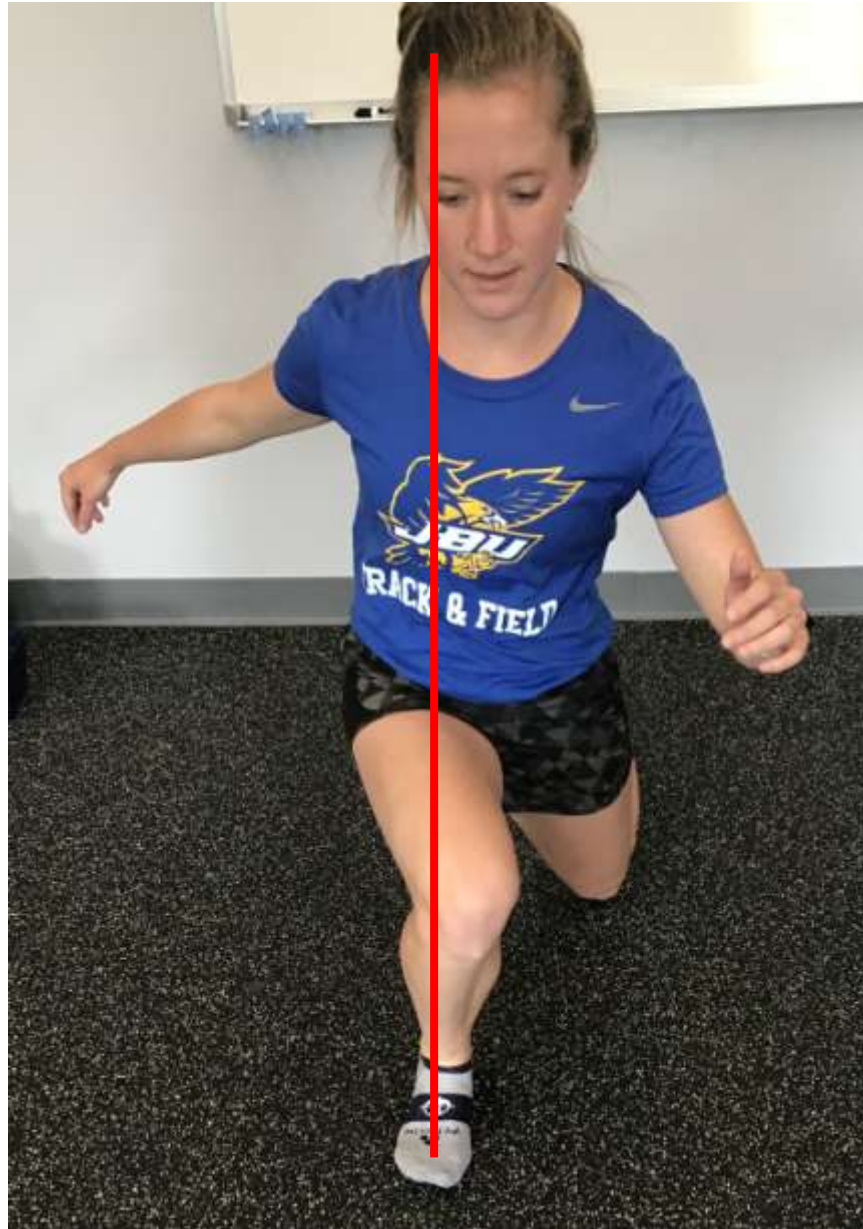
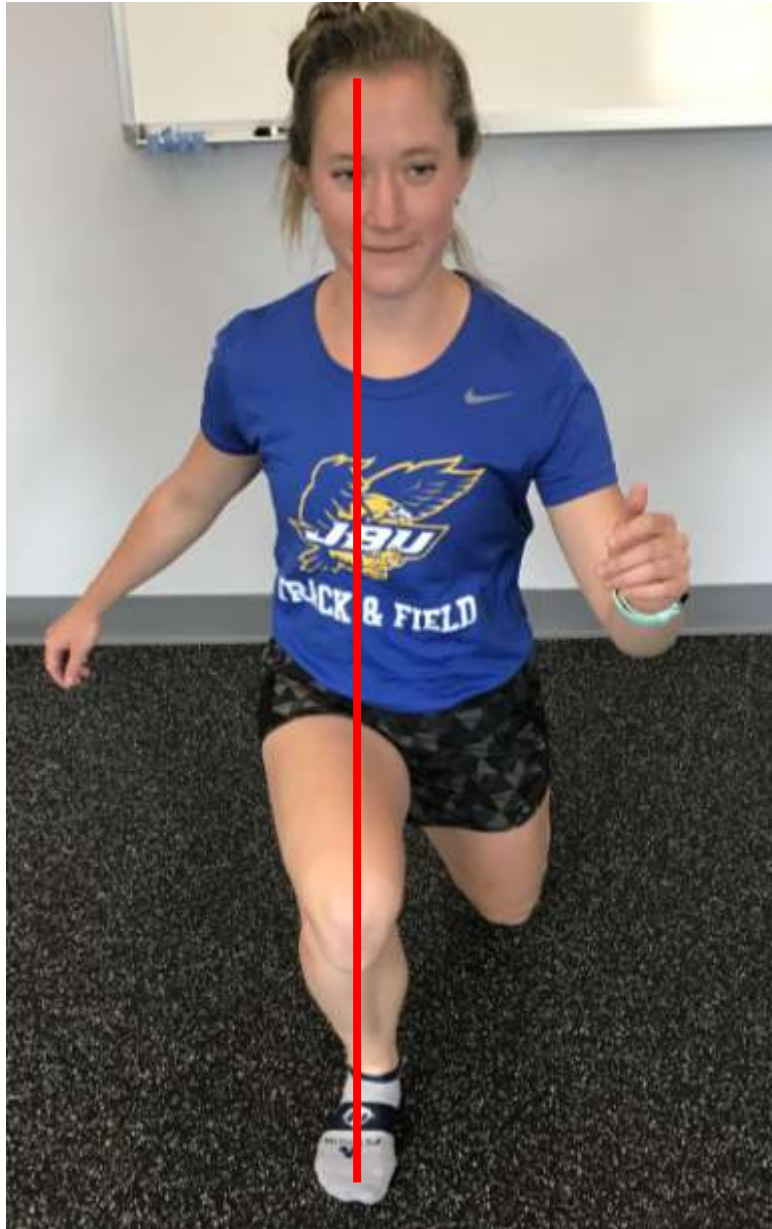


Forward Lunge



Common Observations

- Lack of knee fwd motion
- Foot stability
- Knee position vs. foot
- Hip, knee, foot alignment
- Unilateral stability





Knee to Chest



Common Observations

- Lateral (of the shoulder)
- Knee Flexion ROM

Figure Four Position

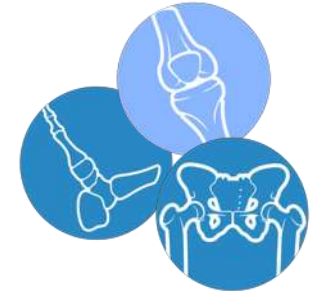


Common Observations

- Poor external ROM
- Poor horizontal extension
- Pinch in deep anterior hip
- Pinch lateral hip

Pain in the Hip -> Possible pathology if does not improve with stretching or core engagement
Refer for evaluation

Muscle Strength Tests



- **What are we testing?**
 - Hip Flexion – Rectus Femoris – L2-4
 - Knee Extension – General Quadriceps – L2-4
 - Knee Flexion – Hamstrings – L5-S2
 - Hip Abduction – Glutes (Med/Min) – L4-S1
 - Hip Forward Flexion w/ Ext Rot – Psoas – L1-4
 - Hip Adduction – L2-4
 - Toe Walk – S1-S2
 - Heel Walk – L4-L5
- **Strength Testing Guidelines:**
 - Client initiates
 - Should feel the muscle lock-in
 - No pain
 - No cheating/accessory motion



Hip Flexion
Rectus Femoris
L2-4



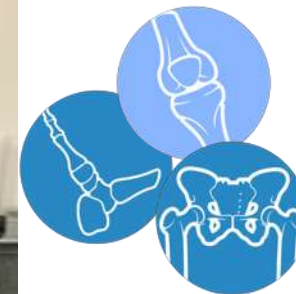
Knee Extension General Quads L2-4



Knee Flexion
Hamstrings
L5-S2



Hip
Abduction
Glute
Med/Min
L5-S1



Hip Forward
Flexion w/ Ext
Rot
Psoas
L1-4



Hip
Adduction
Psoas
L2-4

The NeuroBiomechanical Lens of Assessment



Every movement and drill/exercise is an assessment!

- What are we looking for?
 1. Threat
 - Does it hurt? (want to know the pain-free ROM)
 - Is it scary? (is client in threat doing the movement)
 - Does a neural assessment (ROM) get worse?
 2. Quality
 - Can they perform the movement with control and precision?

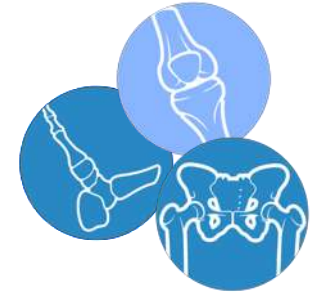
The NeuroBiomechanical Lens of Assessment



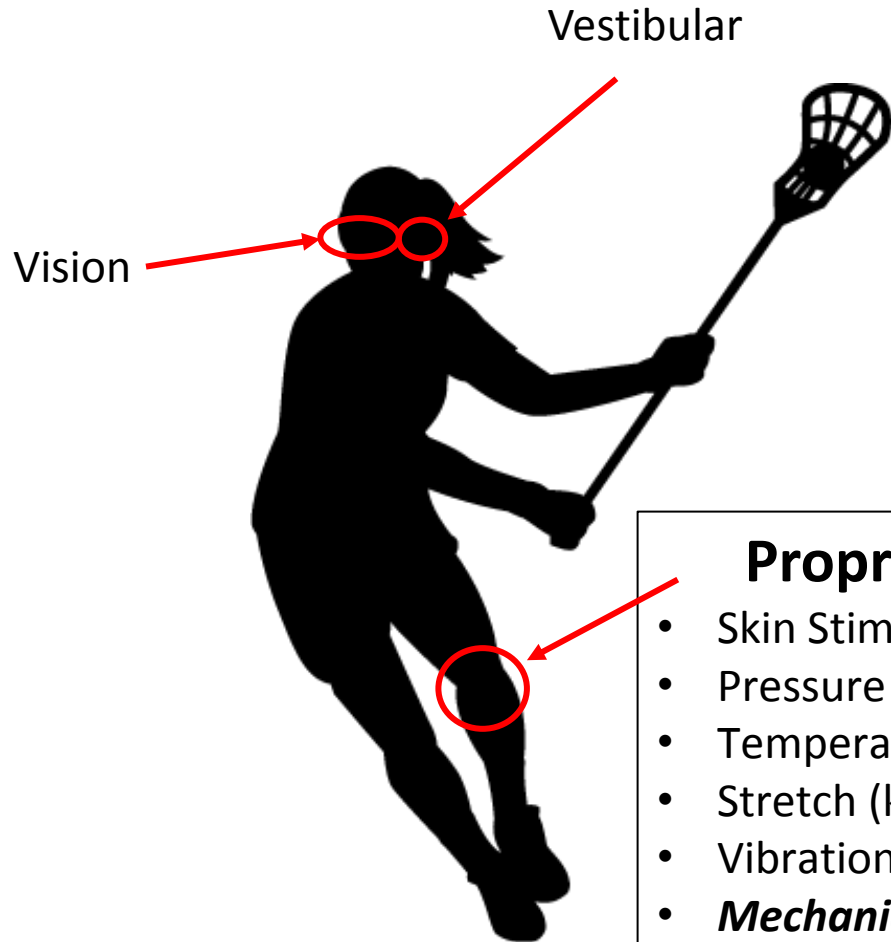
- If Threatening, then...
 - Make it smaller and/or slower
 - Add sensory input
- If bad quality of movement, then...
 - Smaller and/or slower may help
 - Sensory input may help
 - Give external ques/targets



How to affect what you have seen using.... Neurology!

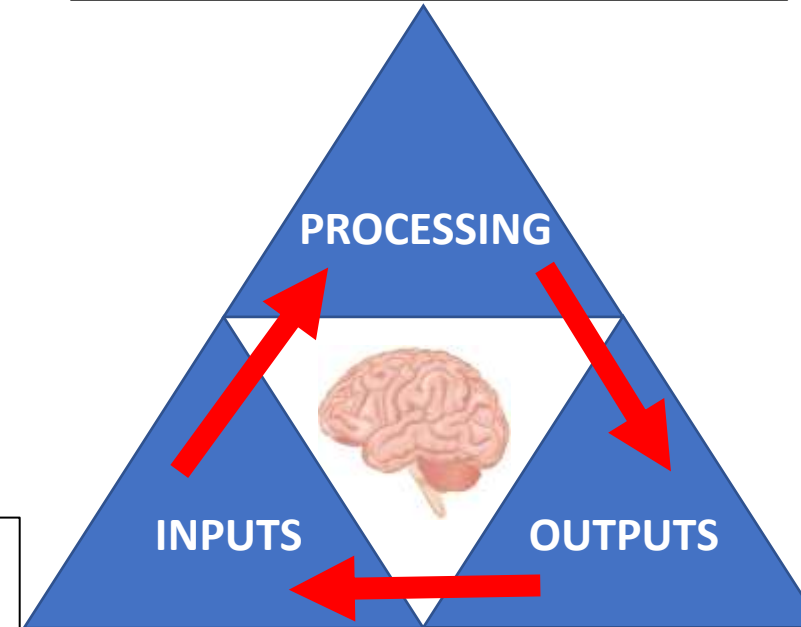


- **Interprets** all sensory input
- **Predicts** based on experience
- **Compares** real time feedback
- Makes a **Decision**



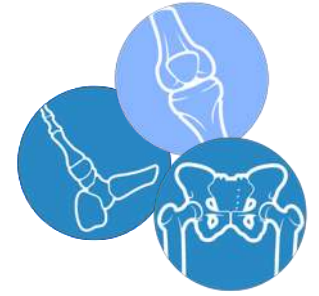
Proprioception

- Skin Stimulation
- Pressure (wraps)
- Temperature (hot/cold)
- Stretch (kinesiology tape)
- Vibration
- **Mechanical tension / Movement**



- **Poor** / **Good** Movement Quality
- **Stiff** / **Flexible**
- **Weak** / **Strong**
- **Pain** / **No pain**

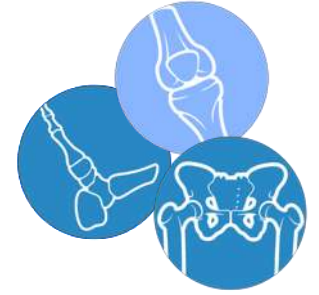
How to affect what you have seen using.... Neurology!



A process flow to use as you assess:

- What joints seem dysfunctional?
- What muscles cross those joints?
- What drills or exercises could I give the client for those joints/muscles?
 - Joint Mobility Drills (see 5-Joint Webinar Series)
 - Nerve Glides (see 5-Joint Webinar Series)
 - Corrective exercises you already know
 - Sensory input stimulus

How to affect what you have seen using.... Neurology!



Increased Sensory Input

- Informs motor cortex
- Increases proprioceptive signalling

Good Movement (Joint Mobility Drills)

- Exercises the motor cortex
- Increases proprioceptive signalling

Improved
Motor
Control

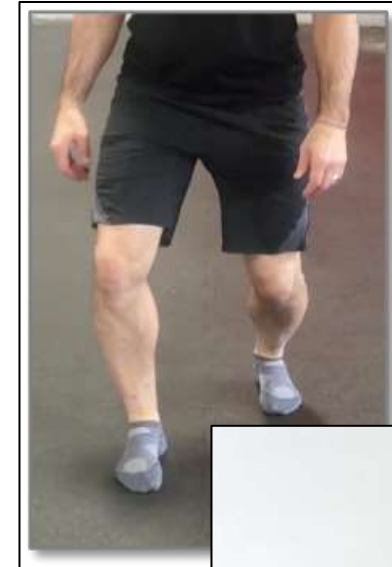
Goal = Better Movement Quality:

- More symmetry
- Smoother movement
- Improved stability
- Better alignment

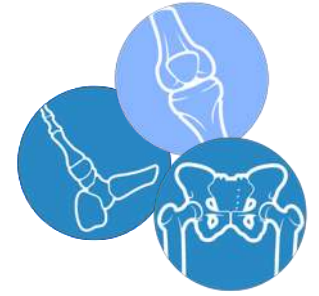
How to affect what you have seen using.... Neurology!



- **Example #1:** Left foot and knee alignment off (usually valgus)
- **Assessment results:**
 - Arches look ok
 - Dorsiflexion was good
 - Hip flexion & external rotation was good
 - Knee flexion was good
 - Tibial rotation limited
- **Possible fixes:**
 - Knee mobility drills
 - Sensory input around knee joint
 - Wrap/pressure
 - Skin stim
 - Vibration
 - Stretch (kinesiology tape)



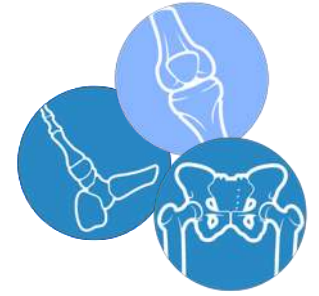
How to affect what you have seen using.... Neurology!



- **Example #2:** Left foot and knee alignment off (valgus)
- **Assessment results:**
 - Left arch flatter/ankle pronation
 - Left dorsiflexion was good
 - Hip flexion and/or external rotation limited
 - Knee flexion was good
 - Tibial rotation ok
- **Possible fixes:**
 - Hip mobility drills
 - Deep pressure/percussion
 - Vibration
 - Temperature
 - Stretch (kinesiology tape)
 - Sensory input around hip joint



How to affect what you have seen using.... Neurology!



- **Example #3:** Weak hip musculature in Muscle Tests

- **Assessment results:**

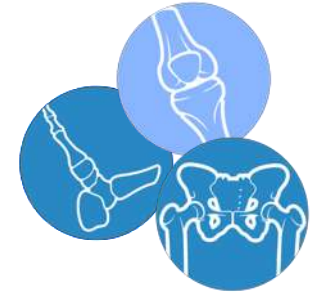
- Weak rectus femoris
- Weak gluteus medius
- Weak psoas
- Poor ankle & arch stability
- Knee flexion & tibial rotation ok

- **Possible fixes:**

- Ankle & hip mobility drills
- Sensory input around hip or ankle joint
 - Deep pressure/percussion (hips)
 - Vibration
 - Wraps (ankle)
 - Stretch (kinesiology tape)



QUESTIONS?



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- through June 30th

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Afterwards June 30th find the series on MedFit Classroom for \$480 for the series.

6 Joints Assessments



Shoulder, Elbow, Wrist/Hand

June 11th

Wrist/Hand Bonus Webinar – June
18th

Gait Assessment – August 4th

Watch for Live Anatomy Workshop
this Fall!



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