Five Joints Webinar Series

Week 6: Assessments Part 1

Presented by Dr. Grove Higgins

Chiropractor, Rehabilitationist, Soft Tissue Injury Expert, Researcher, Anatomy Instructor, Biomechanist, Human Performance Expert, Speaker, and Corporate Health Consultant.

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Webinar Details

- All listeners are muted to minimize background noise. Only the presenter and moderator will be audible.
- Questions will be addressed at the end of the webinar. Please enter your question(s) at anytime throughout the presentation by using the Go To Webinar “Question” feature in your control panel.
- A recording of the webinar will be made available for future viewing to all webinar registrants.

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About the Presenters

Dr. Grove Higgins

- Chiropractor & Soft Tissue Practitioner
- Speaker and Educator
- Functional Anatomy Instructor
- Strength & Conditioning
- Research
  - Biomechanics Gait and Foot Development
  - Anatomy of Lower Leg Modeling
  - Exercise & Hormonal Response
- Been in Medicine Since 1993

Patrick Marques, Lt. Col. USA Ret.

•BS Exercise Science, CPT, Z-Health Master Trainer & Instructor

•Speaker and Educator

•Corrective Exercise Therapist

•Researcher on Exercise & Hormonal Response, Sleep, and more

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

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Tips for Assessing Clients Online - Clients

- Intake paperwork & waivers for online work
- Technology hurdles:
  - iPhone vs. Android (*compatability 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.

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

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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)

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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)

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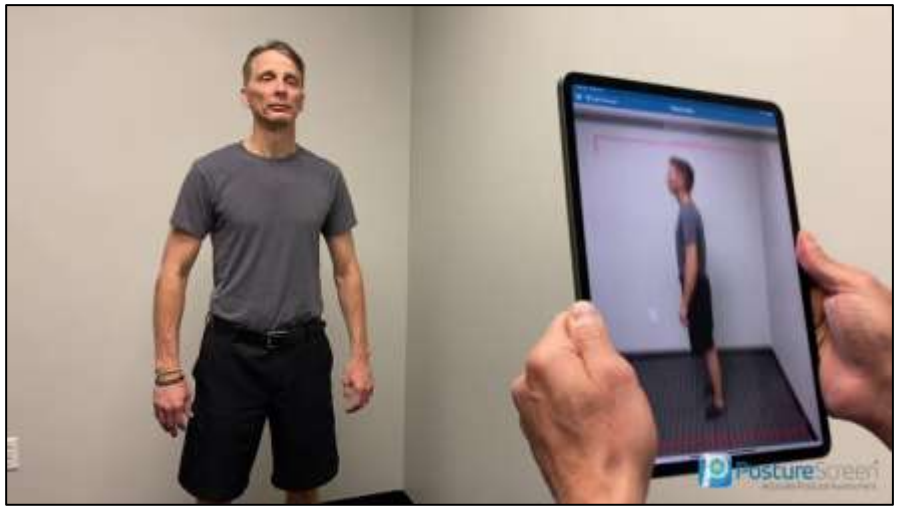
Online Assessment Techniques

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



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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

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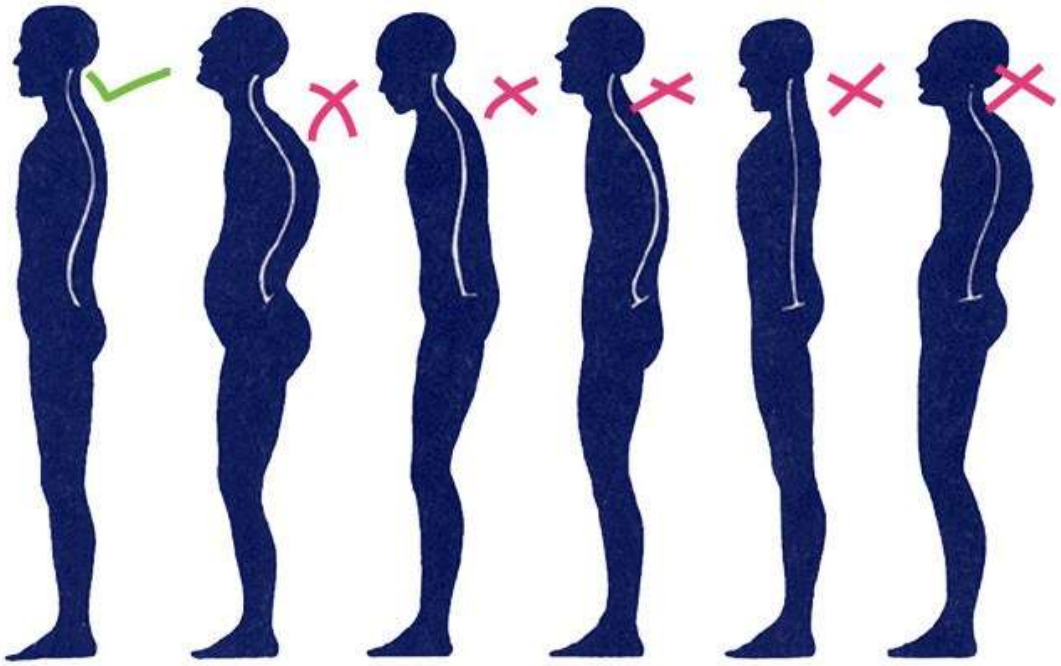
What to look for

- 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?

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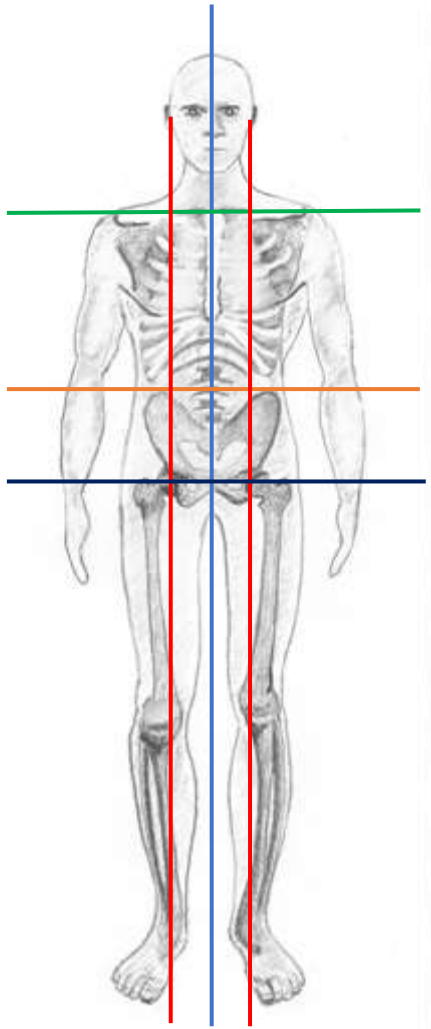
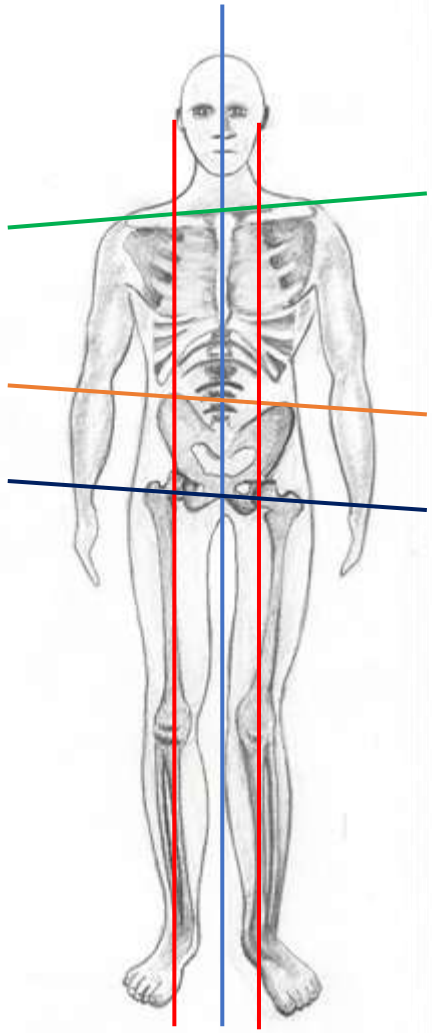
Posture





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Looking for:

- Head alignment ICW midline/spine
- Shoulder tilt

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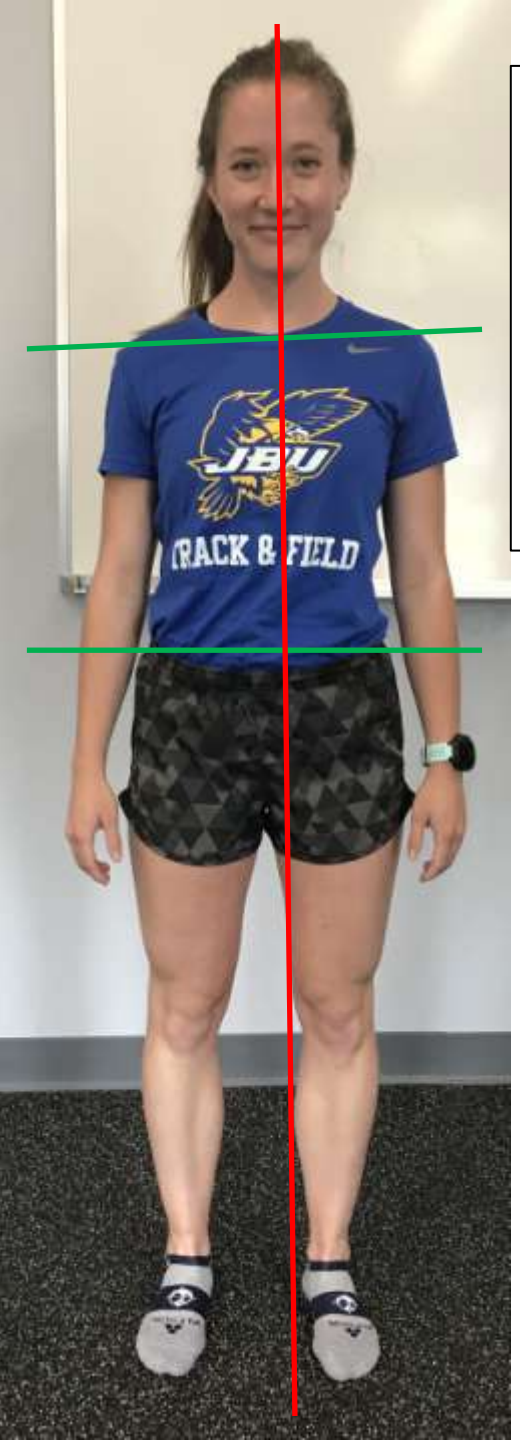
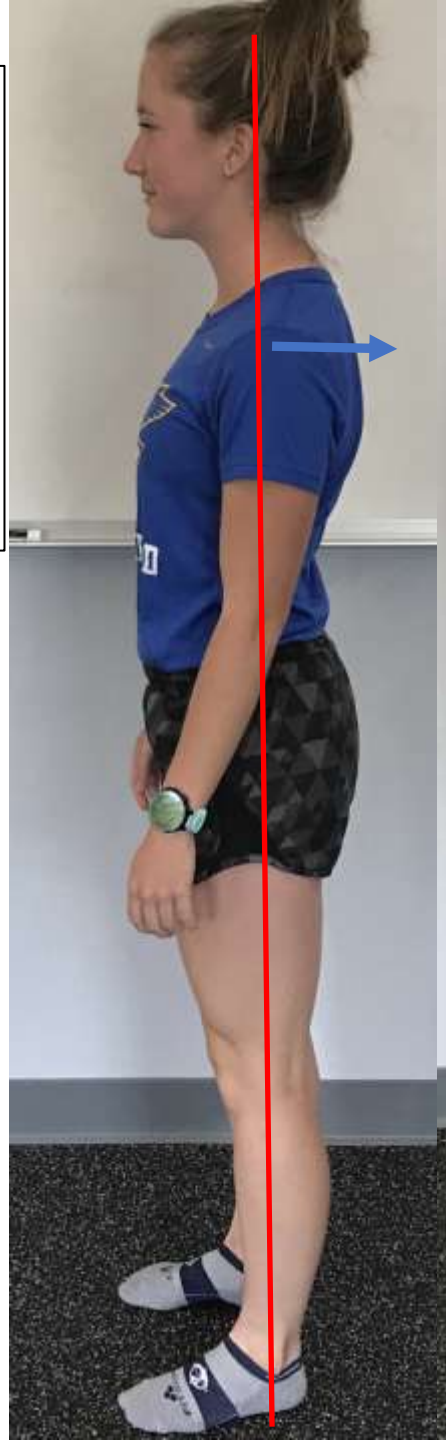
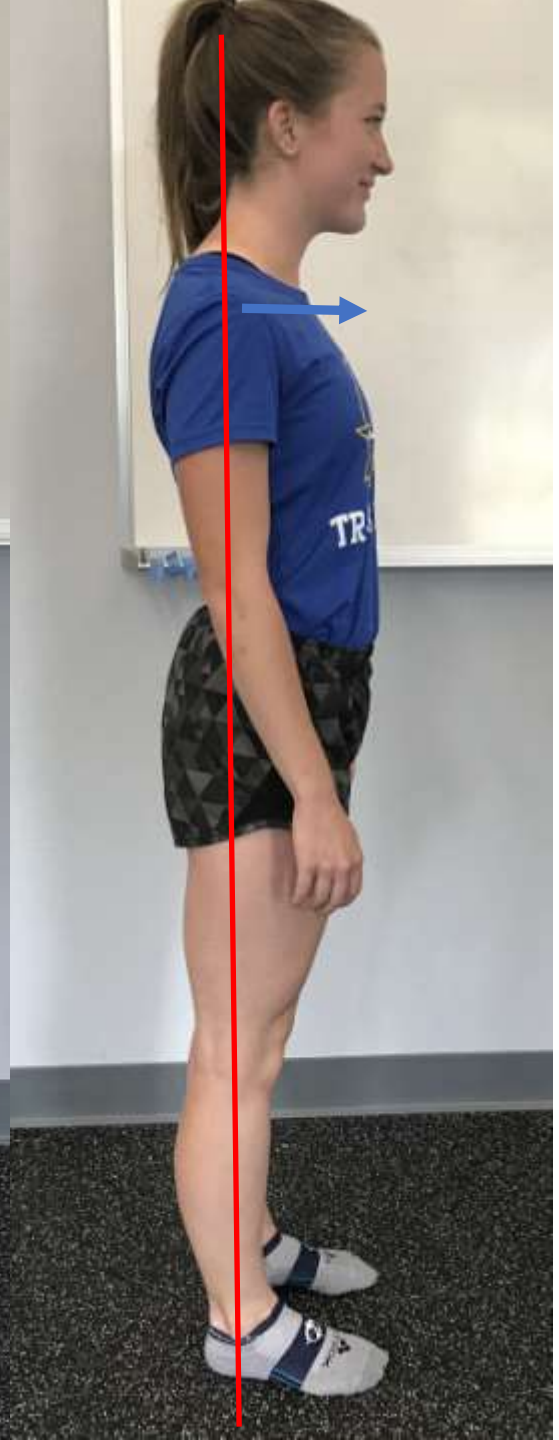


Low Tech Posture Analysis

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





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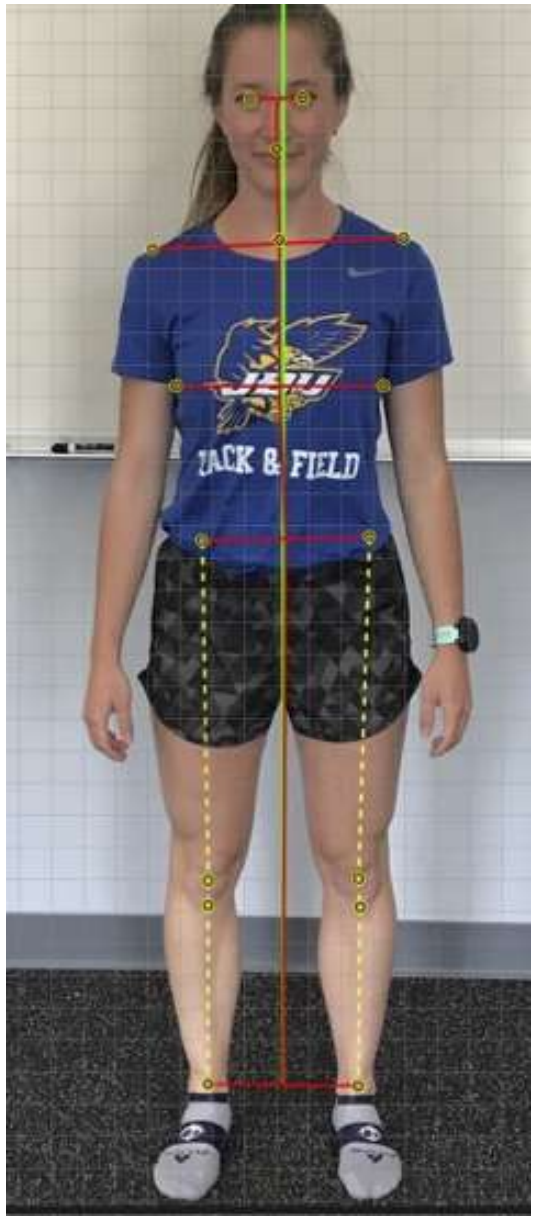

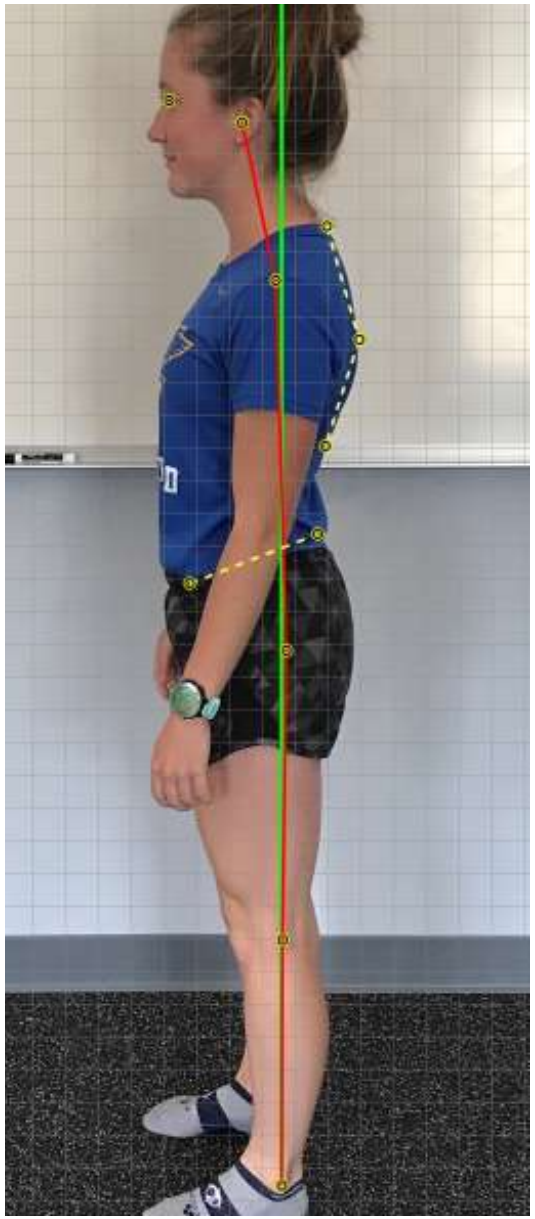

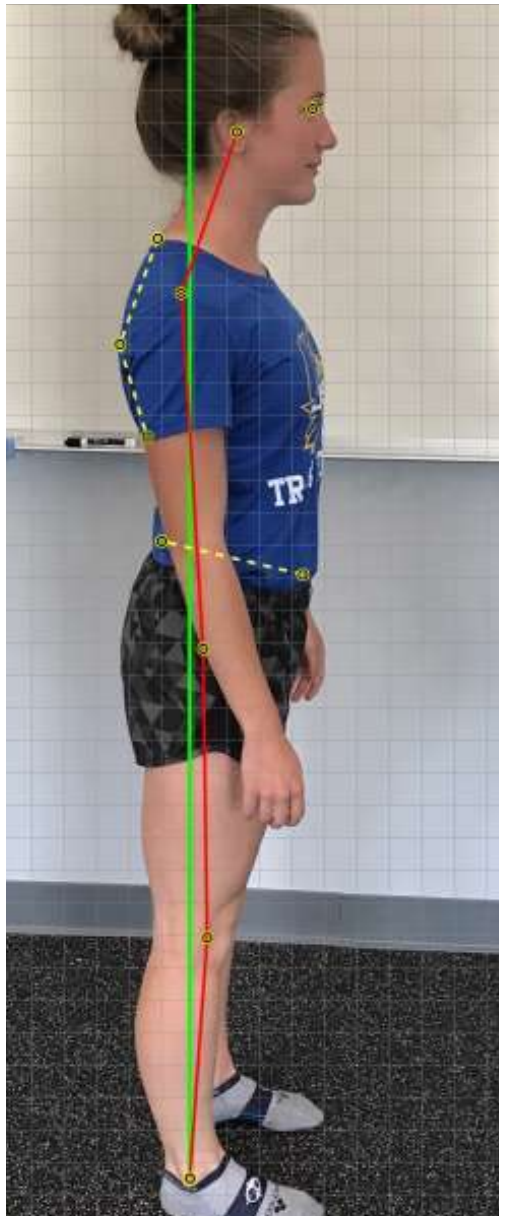

High Tech Posture Analysis

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

https://www.postureanalysis.com/

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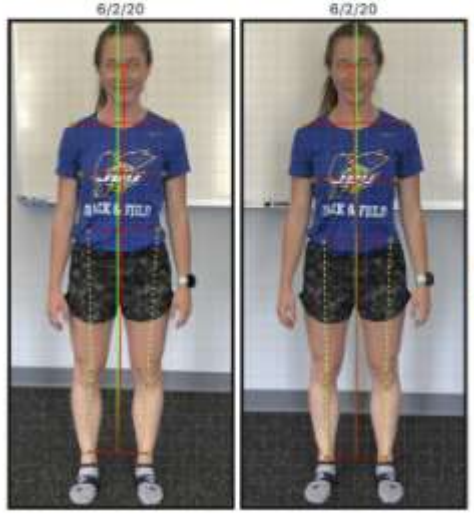
PostureScreen® Accurate Postural Assessment

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

ANTERIOR VIEW

6/2/20 6/2/20

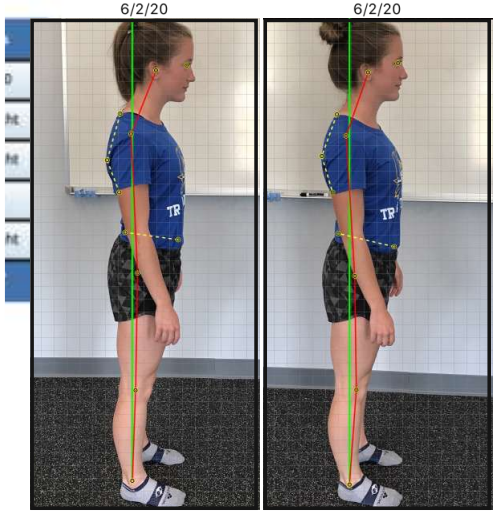


Posture Displacements

Body Region	Anterior Translations		Anterior Angulatio	
	6/2/20	6/2/20	6/2/20	6/2/
Head	0.21" right	0.16" right	2.3° right	1.4° r
Shoulder	0.28" left	0.01" right	2.1° right	2.5° r
Ribcage	0.10" right	0.32" right	n/a	n/
Hip/Pelvis	0.67" left	0.13" left	1.4° right	1.4° r
Total	1.26"	0.61"	5.8°	5.

RIGHT VIEW

6/2/20 6/2/20

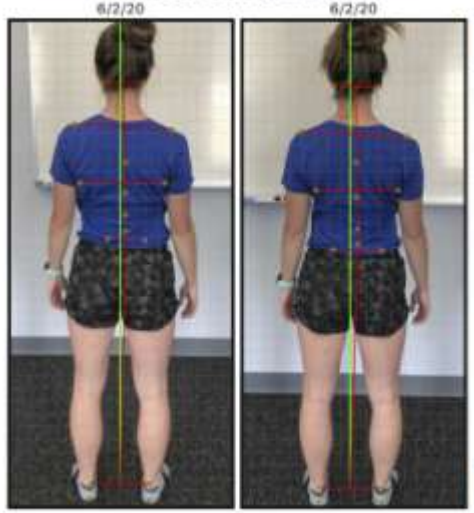


Posture Displacements

Body Region	Lateral Translations		Lateral Angulations	
	6/2/20	6/2/20	6/2/20	6/2/20
Head	3.23" 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°

POSTERIOR VIEW

6/2/20 6/2/20

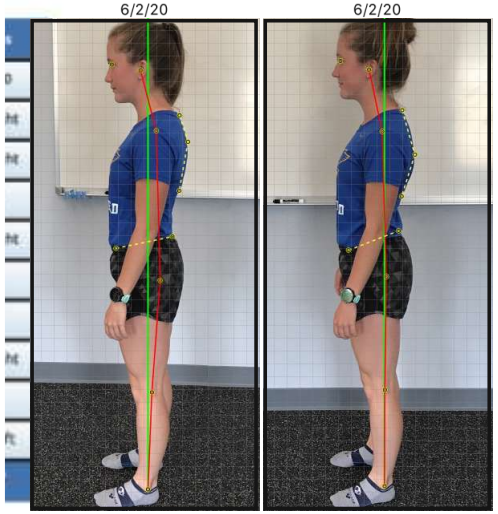


Posture Displacements

Body Region	Posterior Translations		Posterior Angulatio	
	6/2/20	6/2/20	6/2/20	6/2/
Head	0.07" left	0.12" right	0°	1.4° r
Shoulder	0.11" right	0.37" left	3.3° right	2.7° r
Ribcage	0.48" left	0.06" left	n/a	n/
Hip/Pelvis	0.76" left	0.96" left	1.9° right	1.4° r
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° r
T12-L3	0.06" left	0.03" left	1.7° right	0°
L3-Mid PSIS	0°	0.03" right	0°	2.3° r
Total	1.75"	1.74"	8.9°	9.

LEFT VIEW

6/2/20 6/2/20



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°

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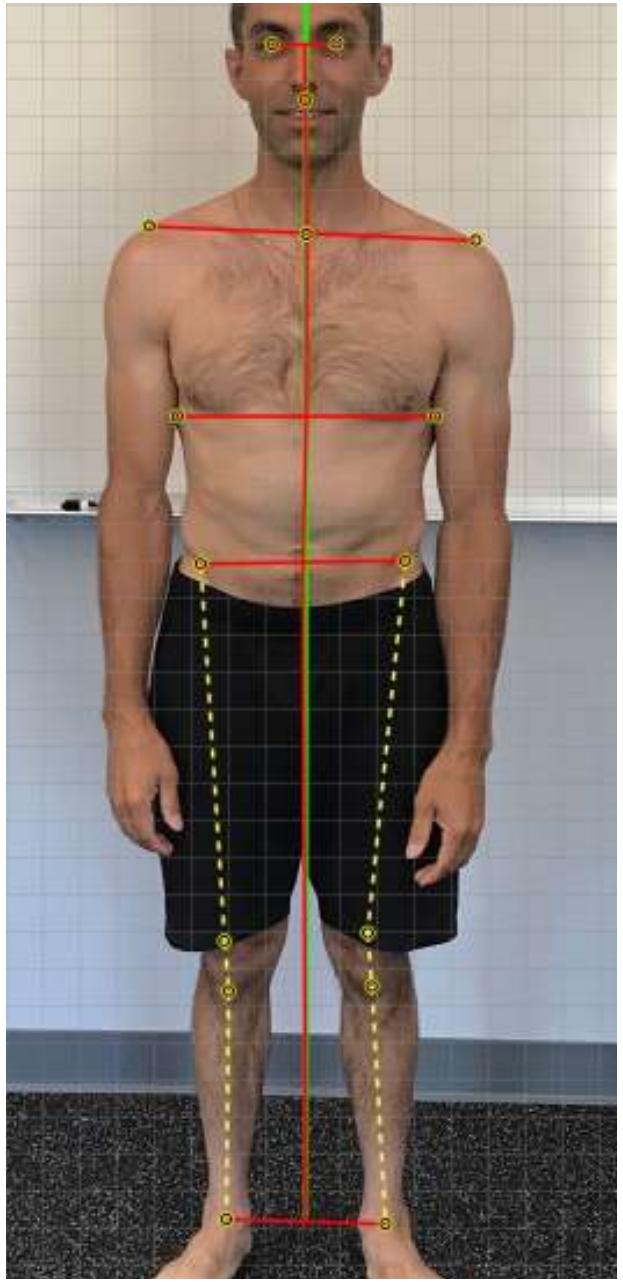

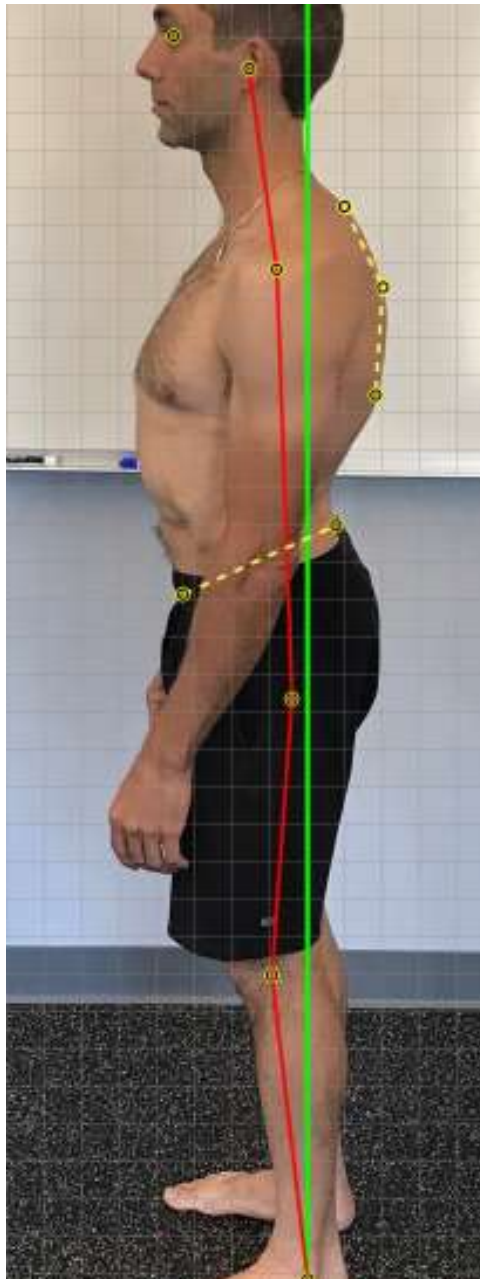

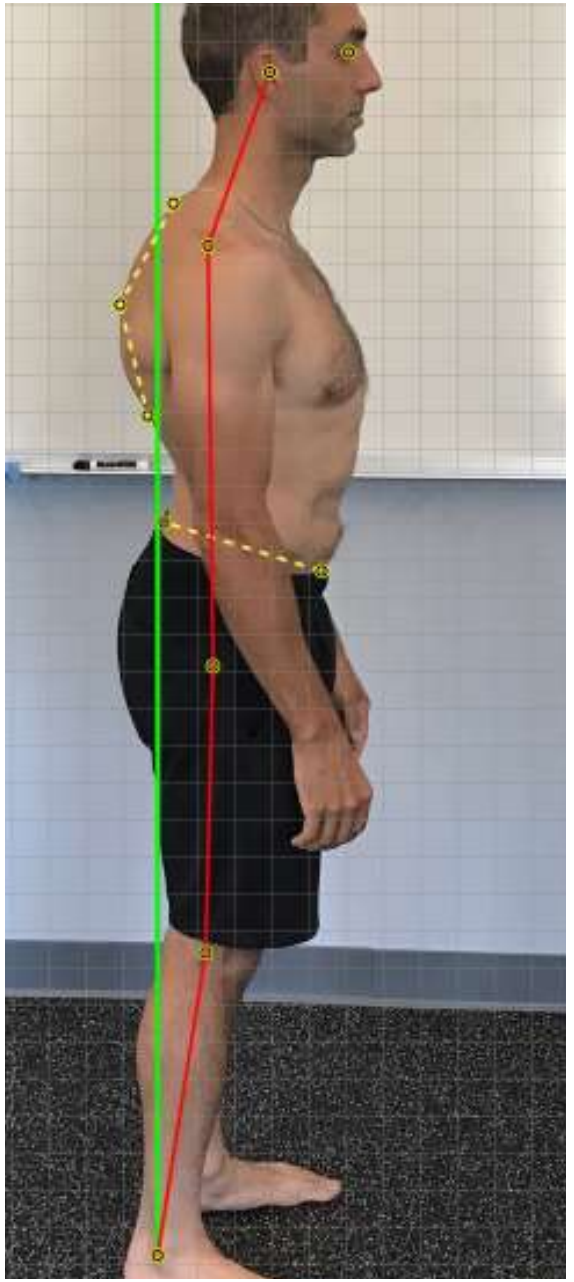

Estimated Effective Head Weight secondary to head vs. shoulder posture is 35.8 lbs instead of 11.7 lbs

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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”

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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

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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

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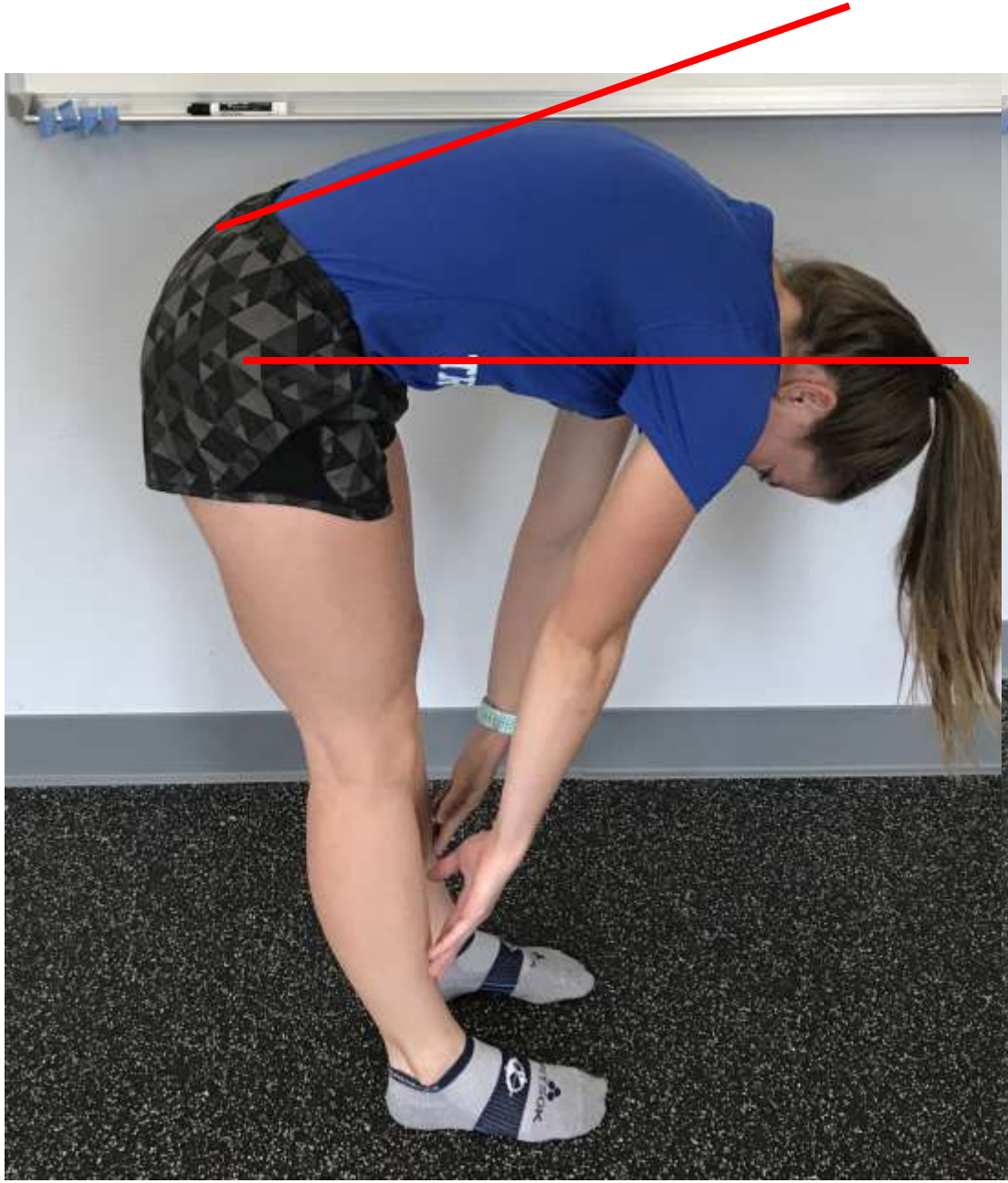

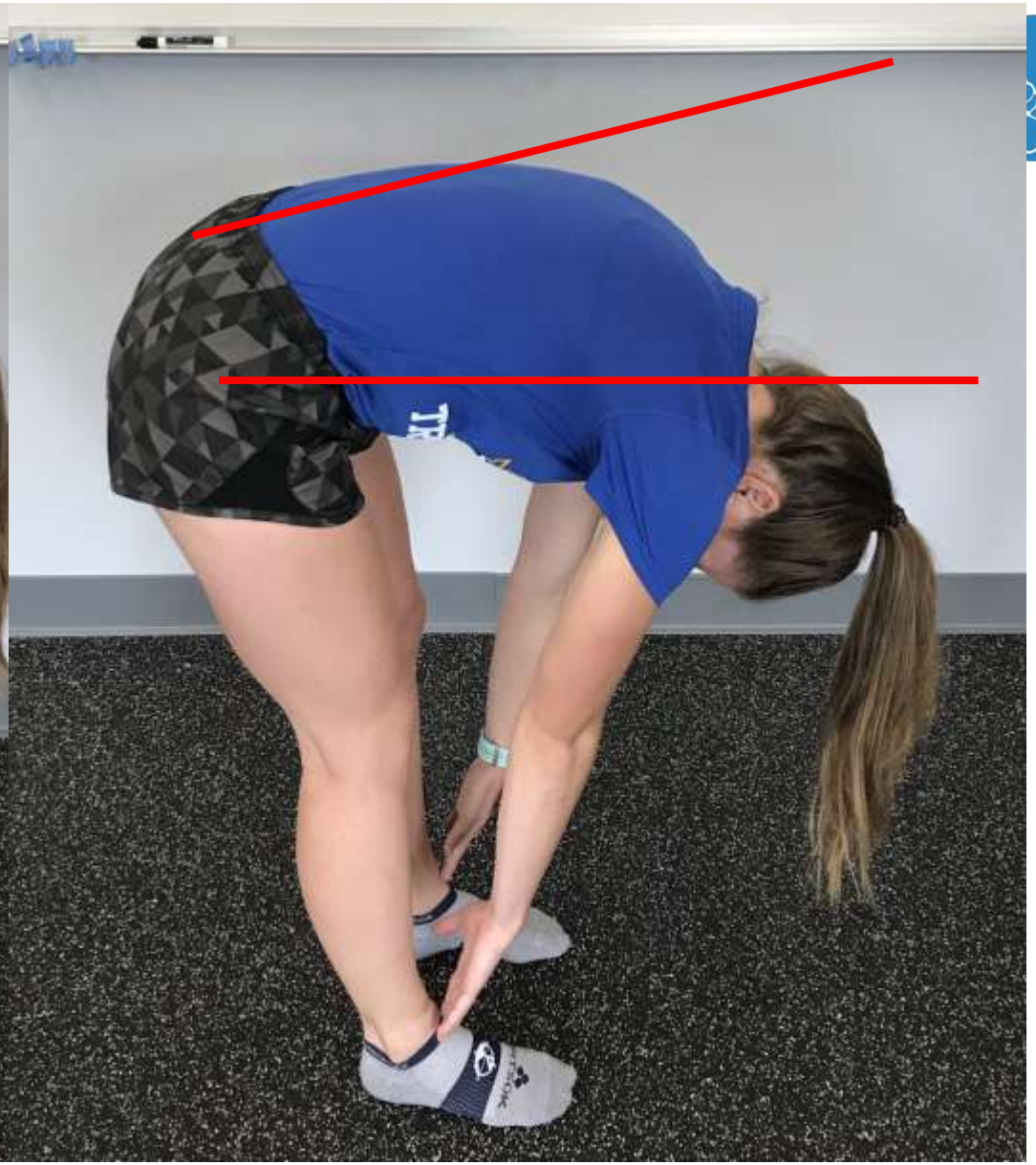

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Spinal Extension – Backbend

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

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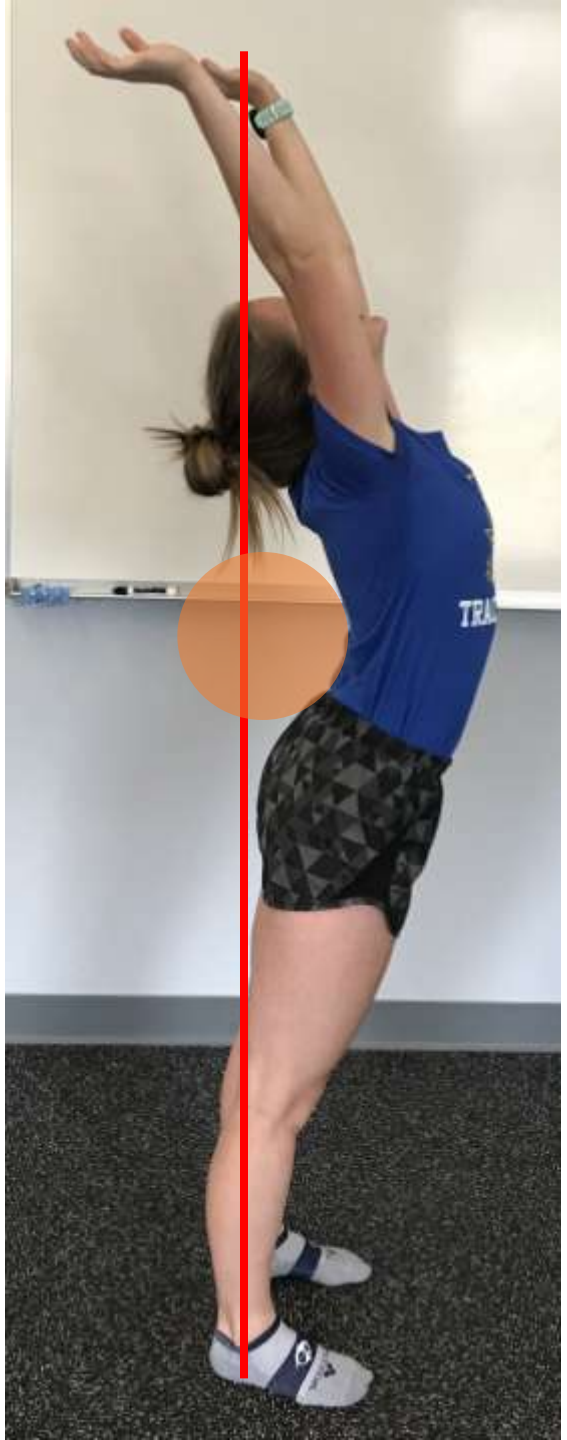

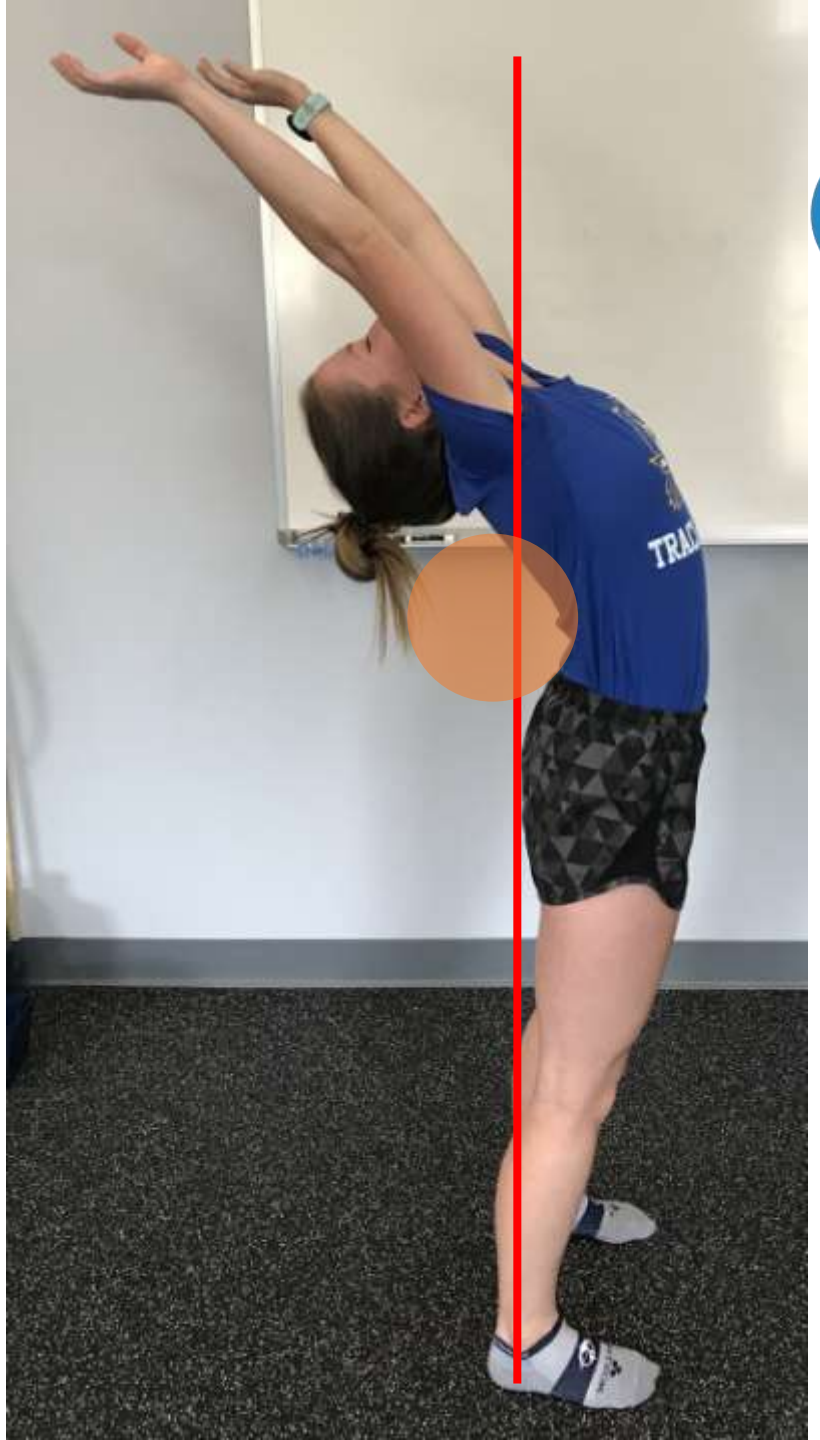

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Spinal Twist

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

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Errors

- Lateral Flexion

- Toe Push

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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

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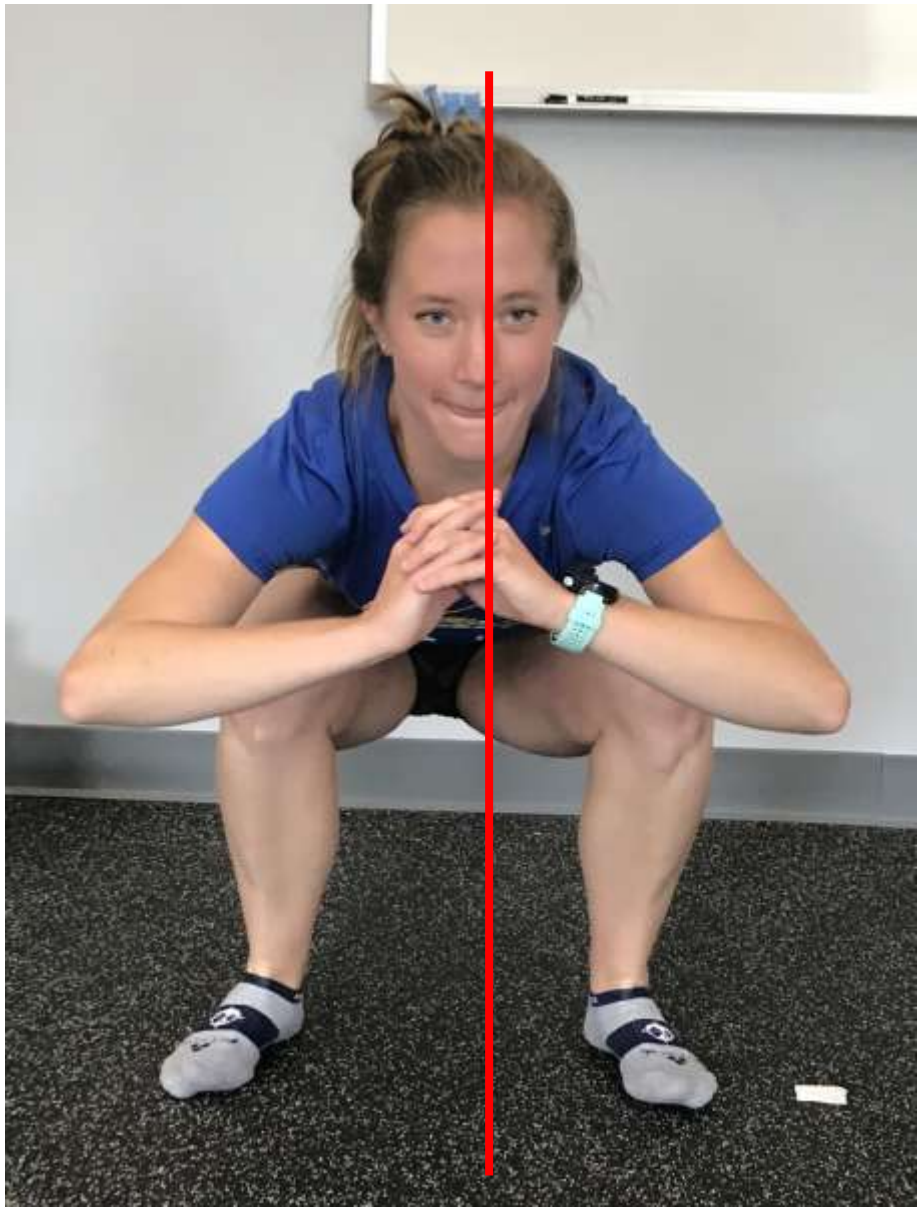

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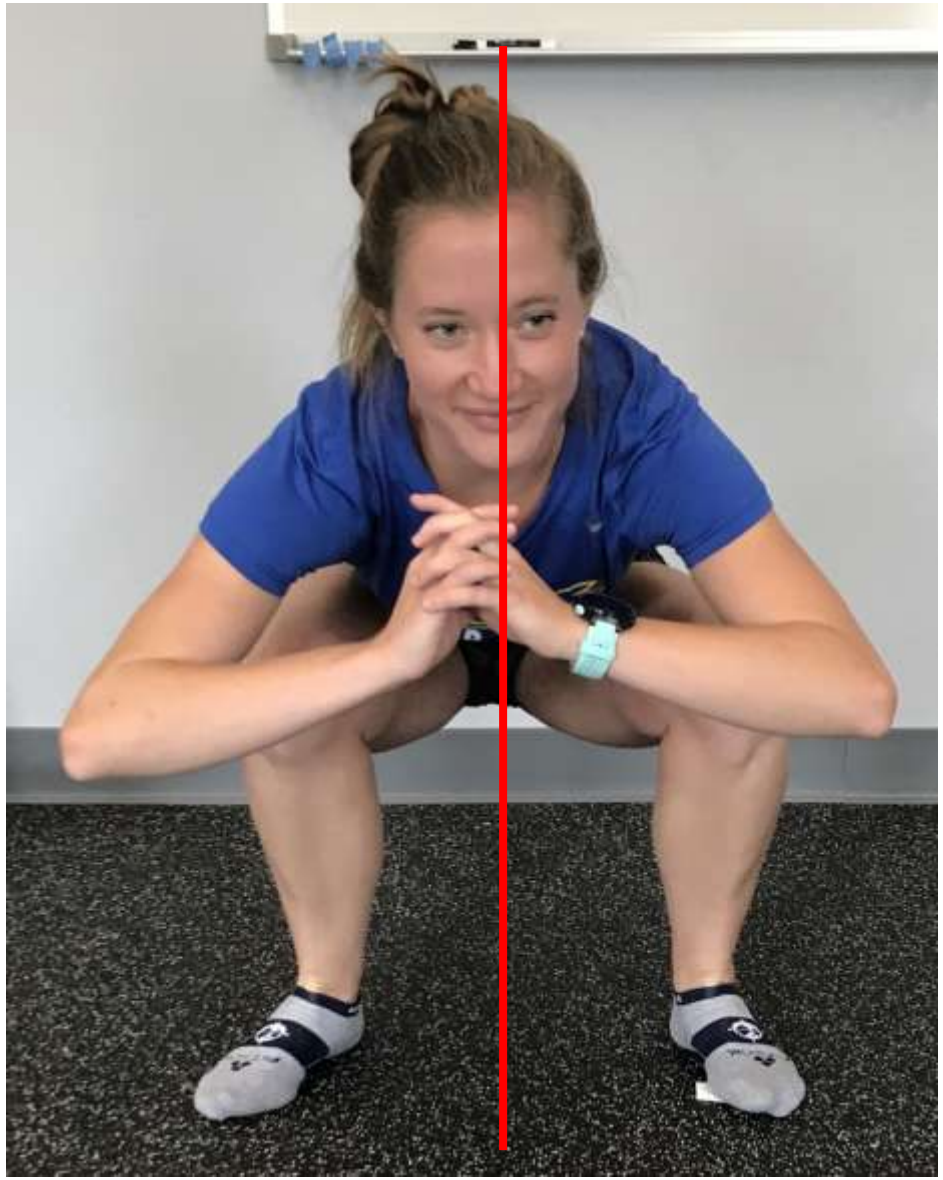

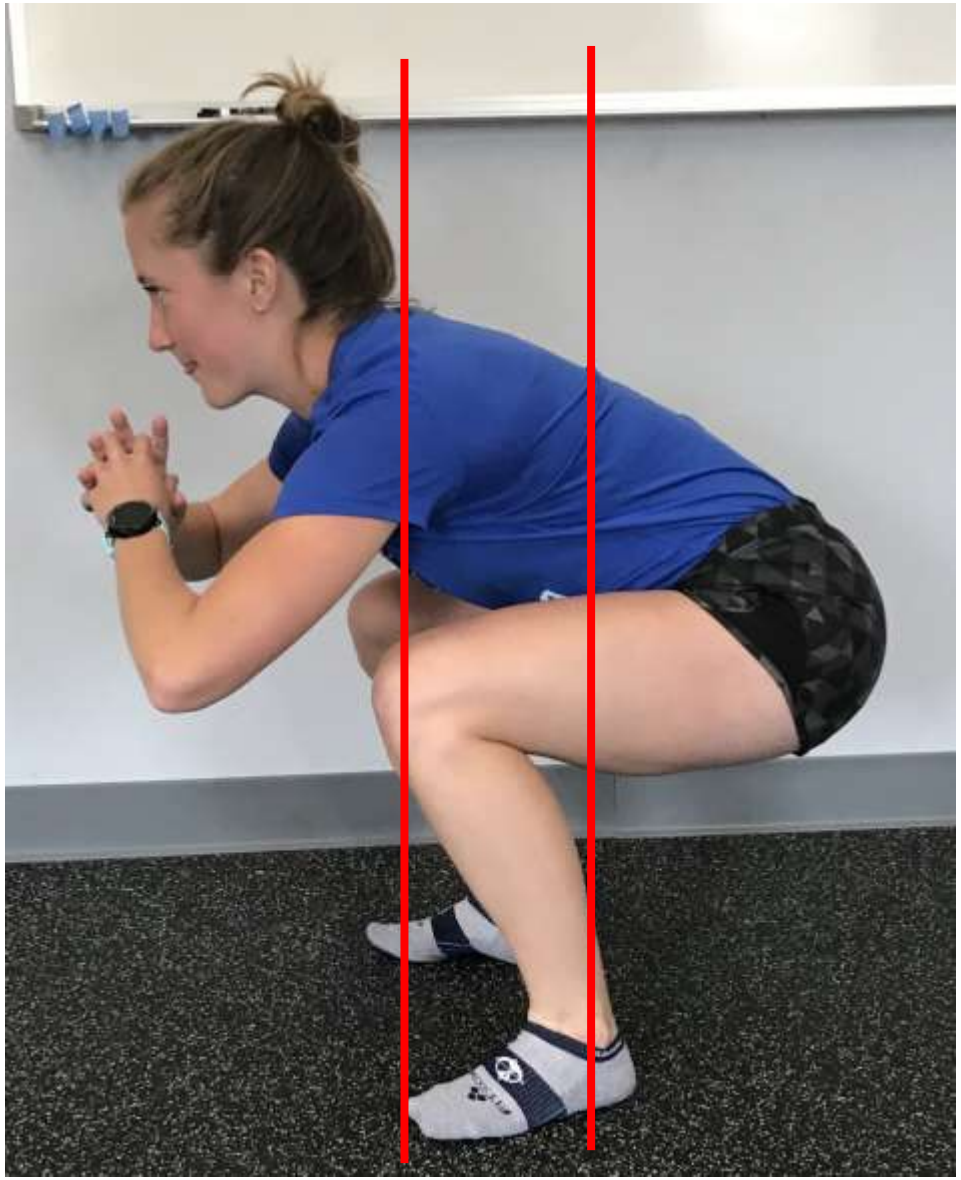

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Forward Lunge

Common Observations

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

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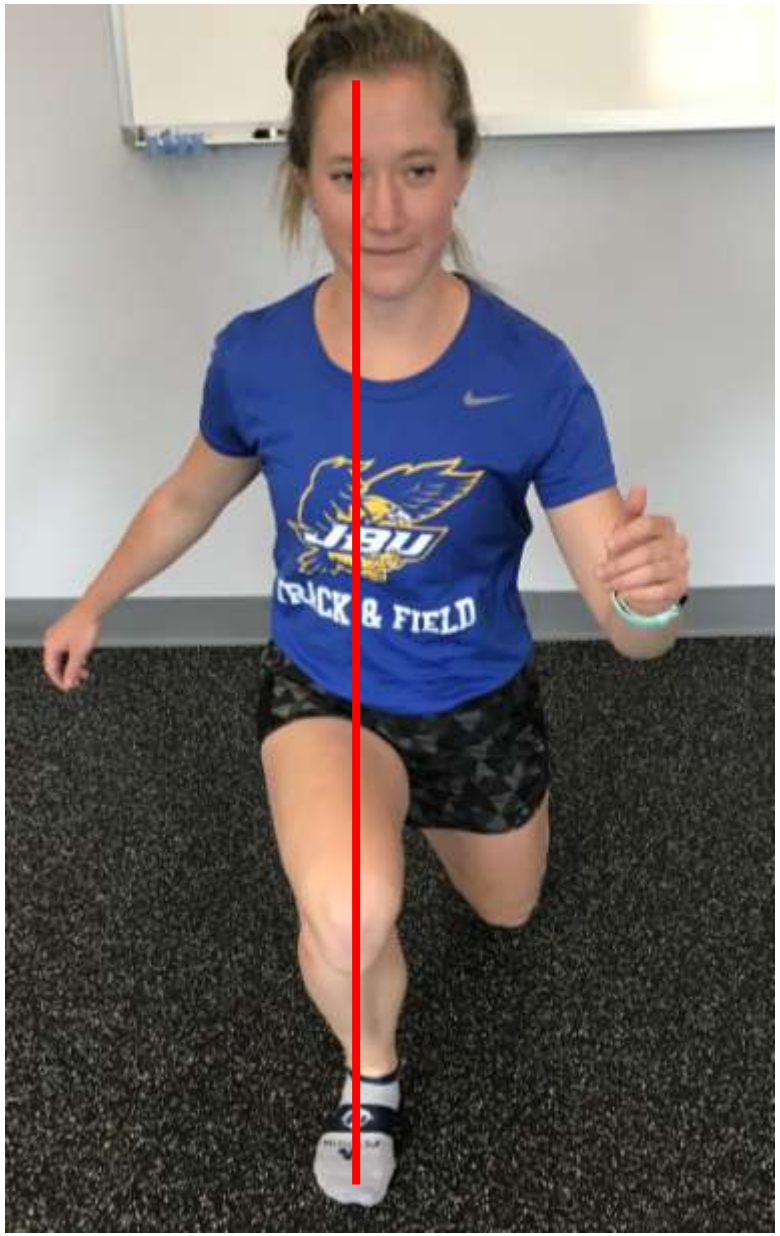

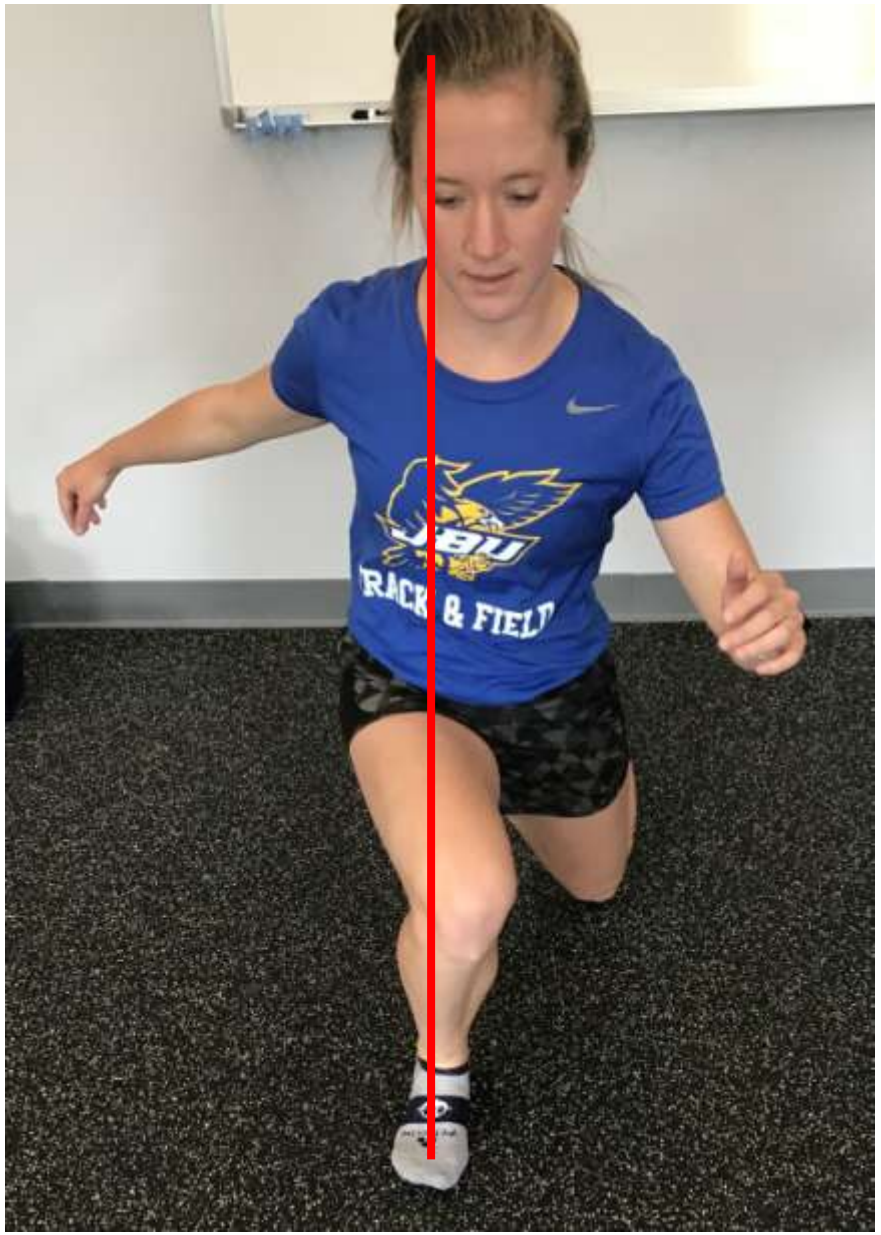

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Knee to Chest

Common Observations

- Lateral (of the shoulder)
- Knee Flexion ROM

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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

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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

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Hip Flexion
Rectus Femoris
L2-4

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Knee Extension
General Quads
L2-4

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Knee Flexion
Hamstrings
L5-S2

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Hip Abduction Glute Med/Min L5-S1

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Hip Forward Flexion w/ Ext Rot

Psoas

L1-4

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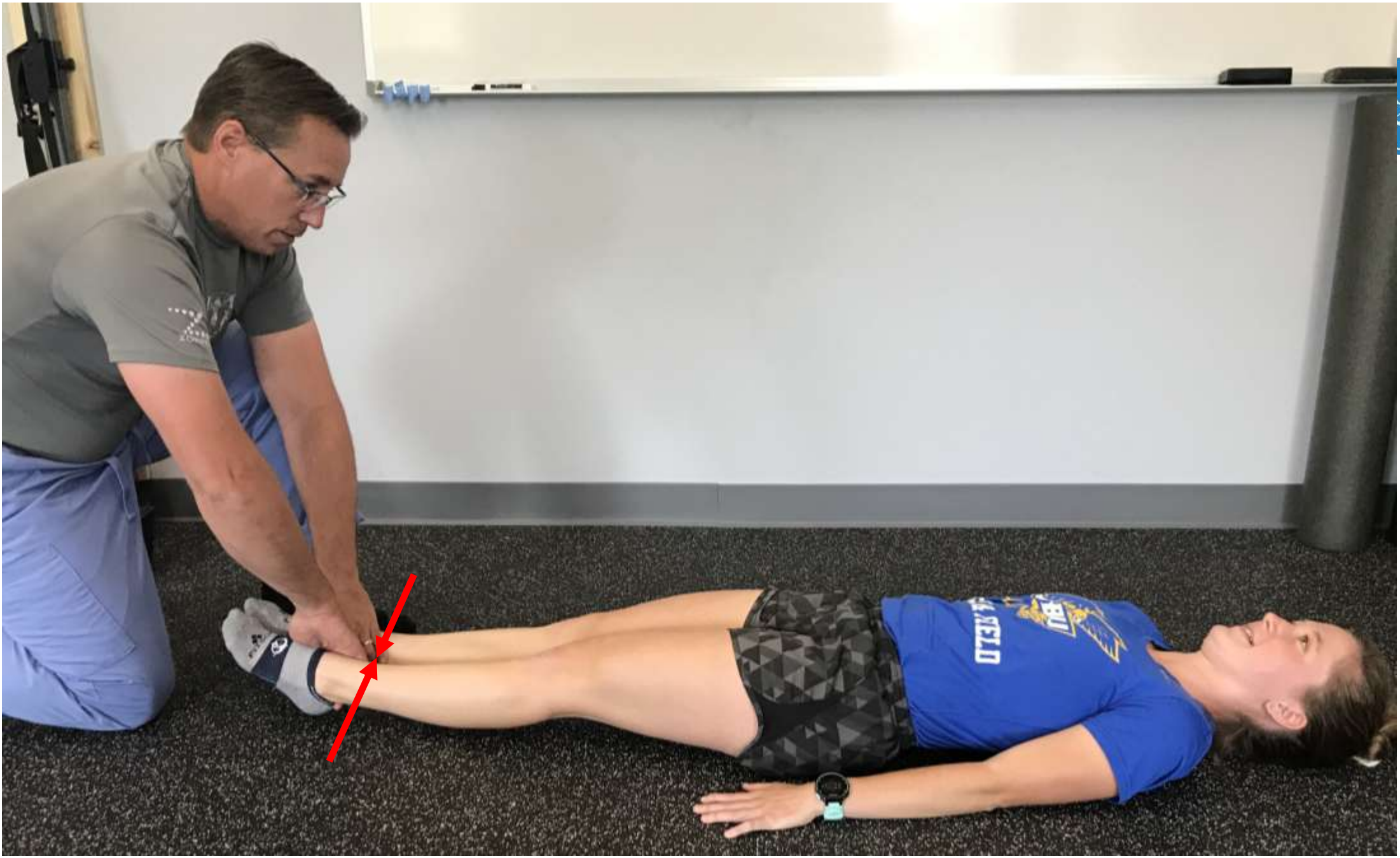

Hip
Adduction
Psoas
L2-4

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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?

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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

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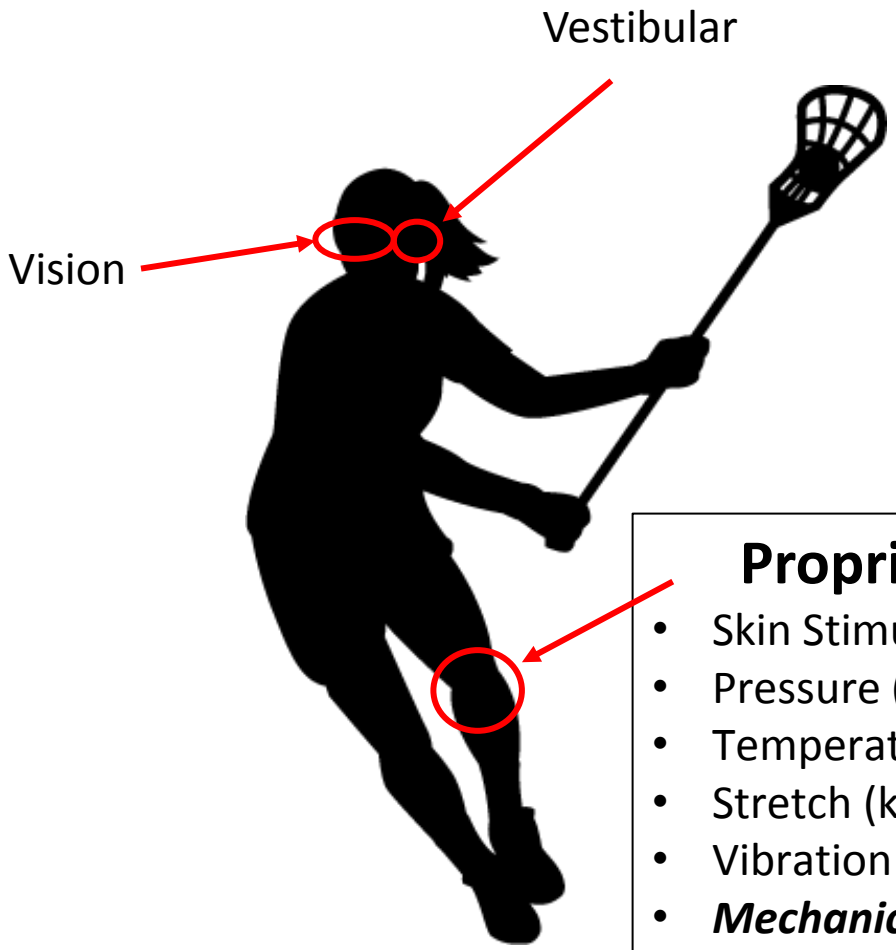
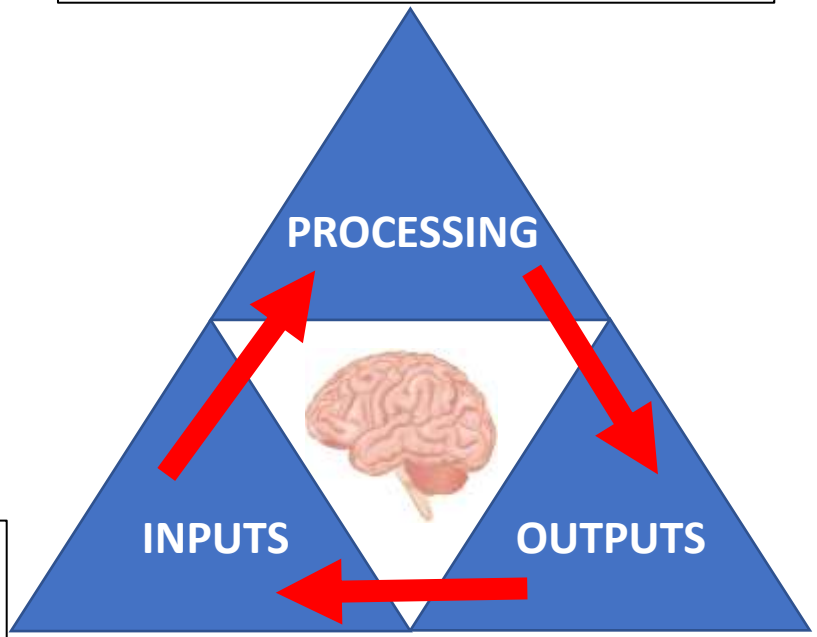
How to affect what you have seen using…. Neurology!

- ***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***

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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

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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

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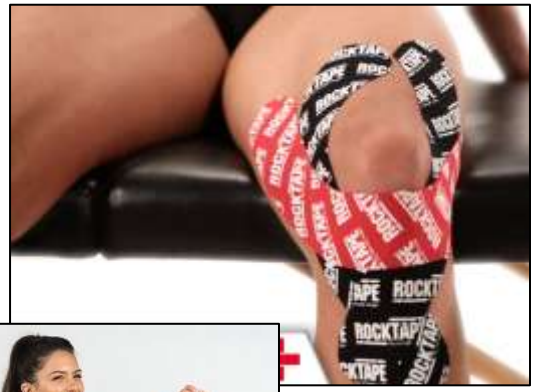
How to affect what you have seen using…. Neurology!

- **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)



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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
  - Sensory input around hip joint
    - Deep pressure/percussion
    - Vibration
    - Temperature
    - Stretch (kinesiology tape)

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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)

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QUESTIONS?

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6 Joints Assesments

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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Master Trainer Pat Marques

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Five Joints Webinar Series

Week 7: Assessments Part 2

Presented by Dr. Grove Higgins

Chiropractor, Rehabilitationist, Soft Tissue Injury Expert, Researcher, Anatomy Instructor, Biomechanist, Human Performance Expert, Speaker, and Corporate Health Consultant.

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JUST ADDED!

~~FIVE~~ SIX JOINTS:

WRIST & HAND

Live Presentation:
Thursday, June 18
10:00-11:30am PDT

Purchase at medfitclassroom.org/five-joints; we'll also send an email to all registrants of this webinar with link to purchase.

Thank you!

Question and Answer Segment

Please type your question in the questions box to be answered by the presenter.

For More Info or Questions
Email: ivy@medfited.org

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