

Hinge Theory

XXXXX Assessment

XXXX Gym

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DX: LBP

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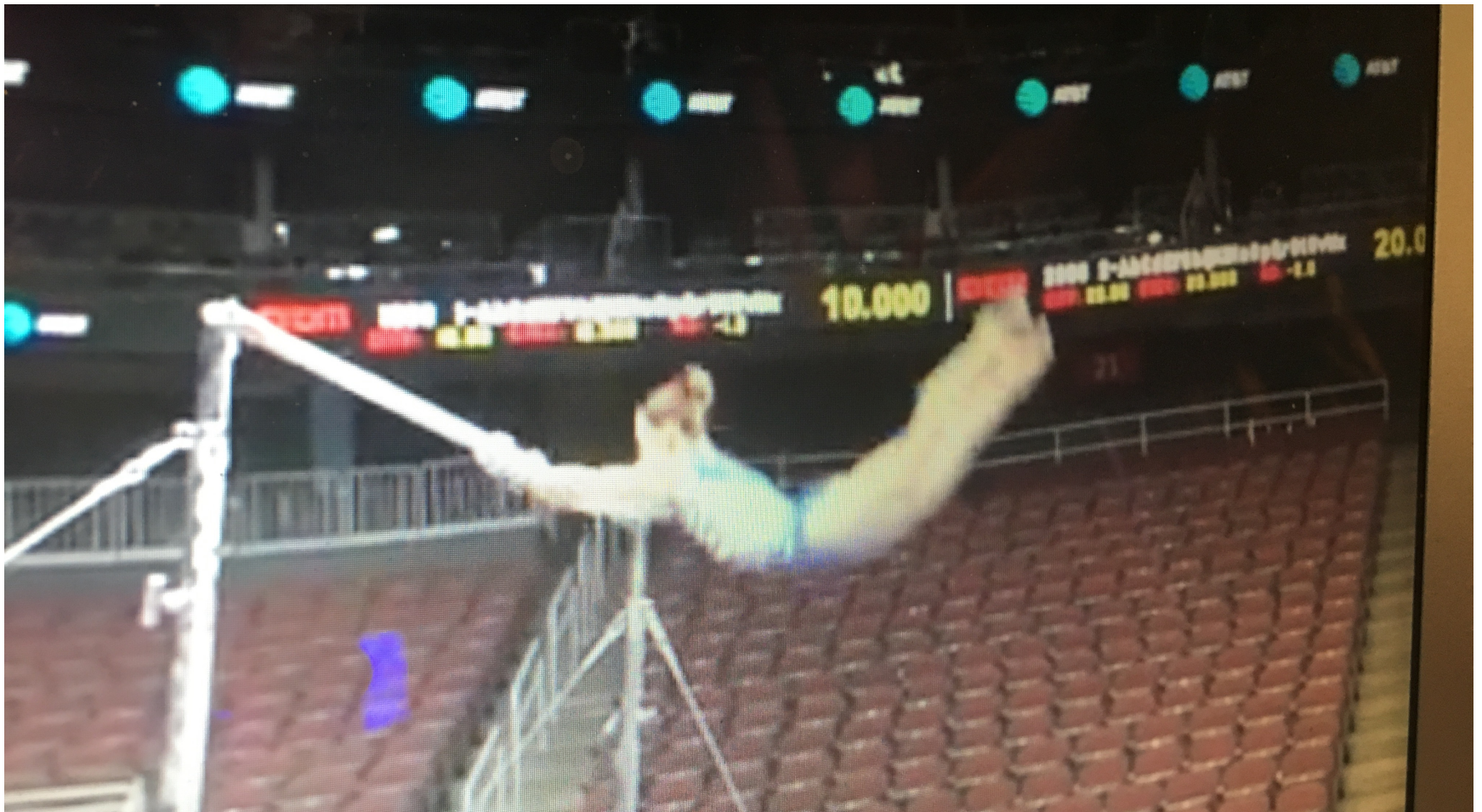
Functional Spine Motion: Gymnastics



Entry position- spine good, shoulders closed, increases spine stress



Open arch position- Jaeger pre-release, heel drive



Spine position, shoulder flexion, head



Post release, heel drive, good open position (just note that stress even so to the spine)

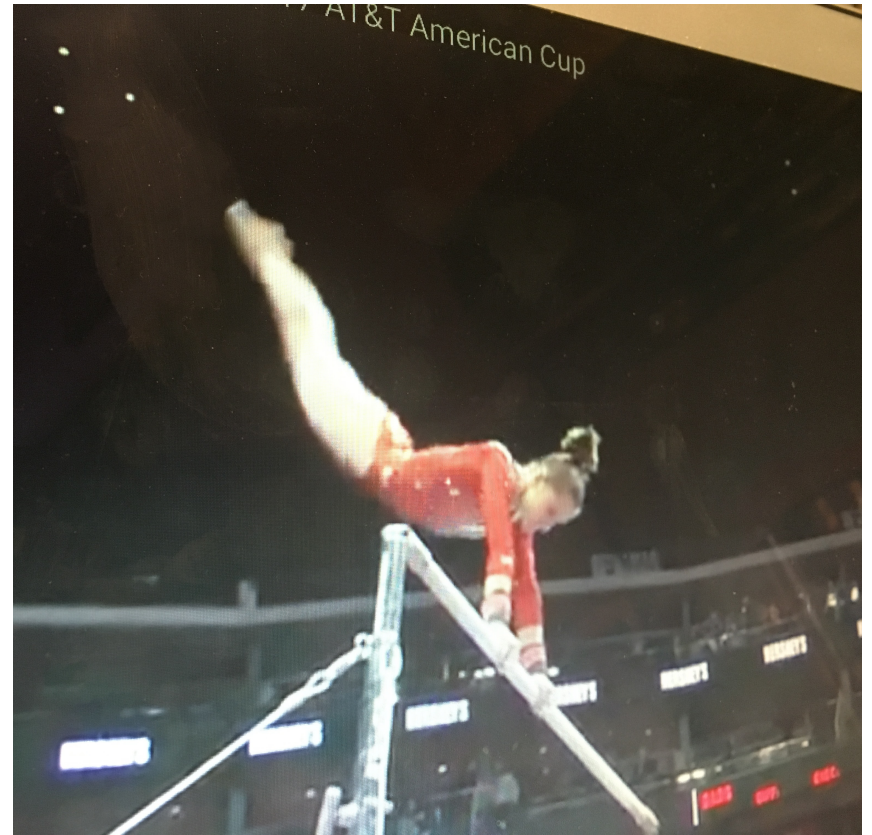


Snap pre stalder, inbar, toe on work. Less than some nation's trends, still stressful to the spine

More controlled



“Hinged”- see pic



Roundoff- floor, pre 1 ½ step out

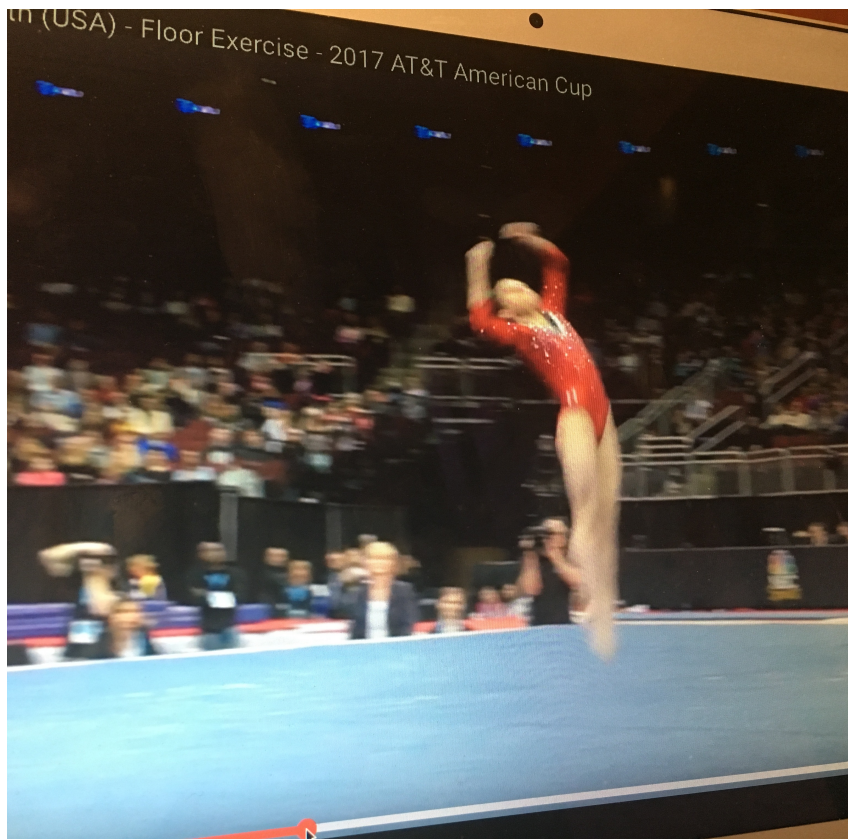


Good square position after 1 ½ on floor



Takeoff comparison

Square take off



Stress to spine and rotation (right) before airborne



Crooked landing arabian, one of the only left focused stress points



Teaching prone activation – order and muscle choice

Great position



Initial activation- excessive kyphosis, overuse of lats



Handstand assessment

Vertical after correction with rib tilting, hip opening, breast bone burying, L to R rib approximation



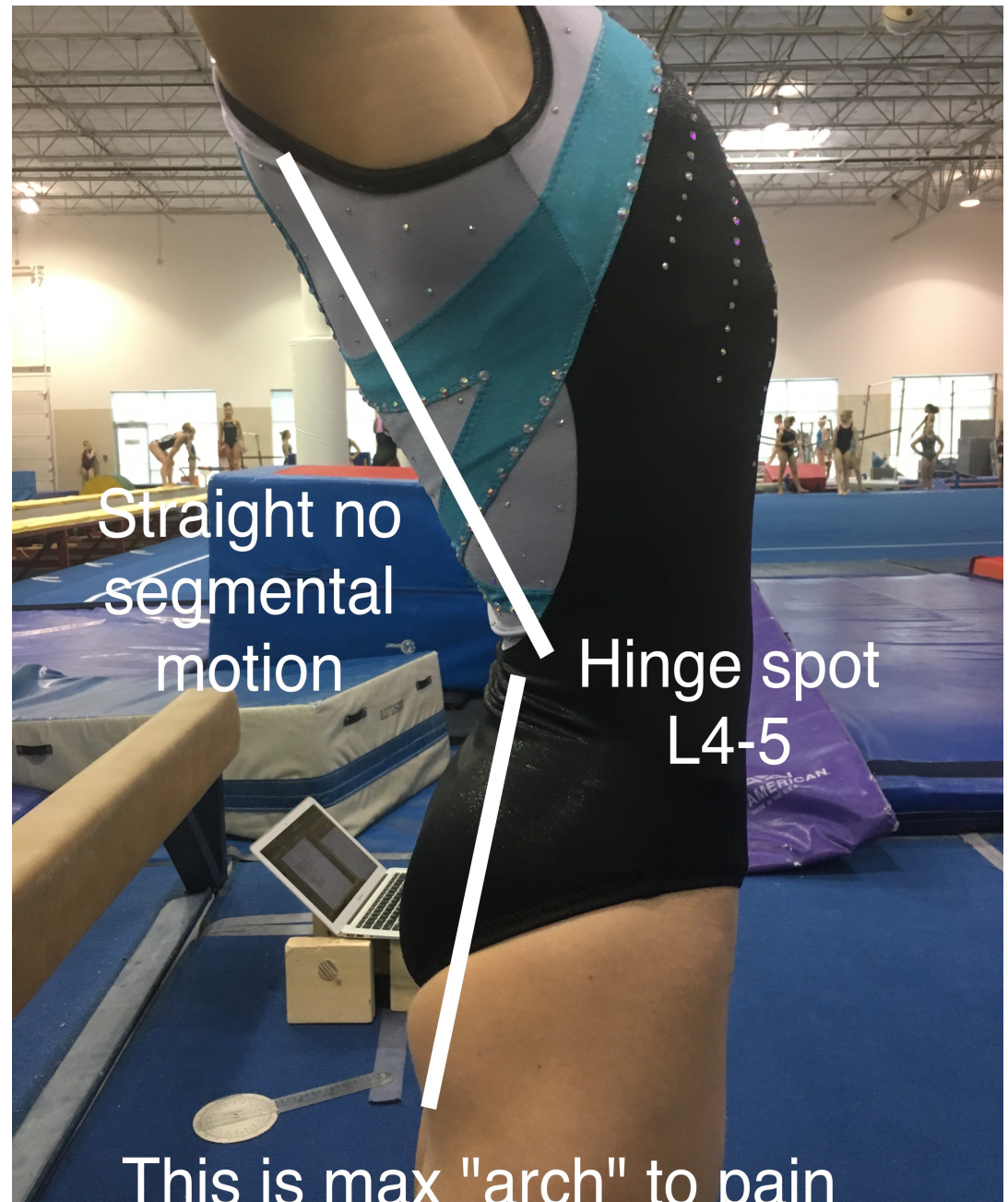
Initial look, no verbal corrections



Pain assessment

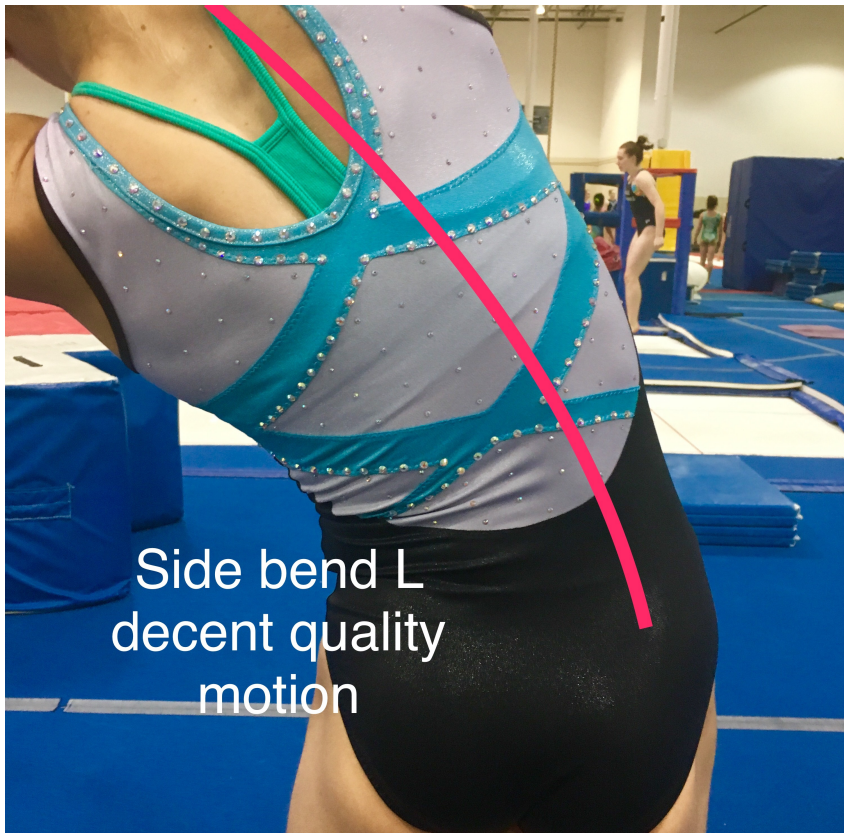
Simple verbal instructions to bend backwards from the top down

- Open shoulder angle (barely to neutral)
- Open kyphosis (this is VERY corrected compared to resting position)
- Slight anterior pelvic tilt
- Hinge, excessive stress, at L3-4-5

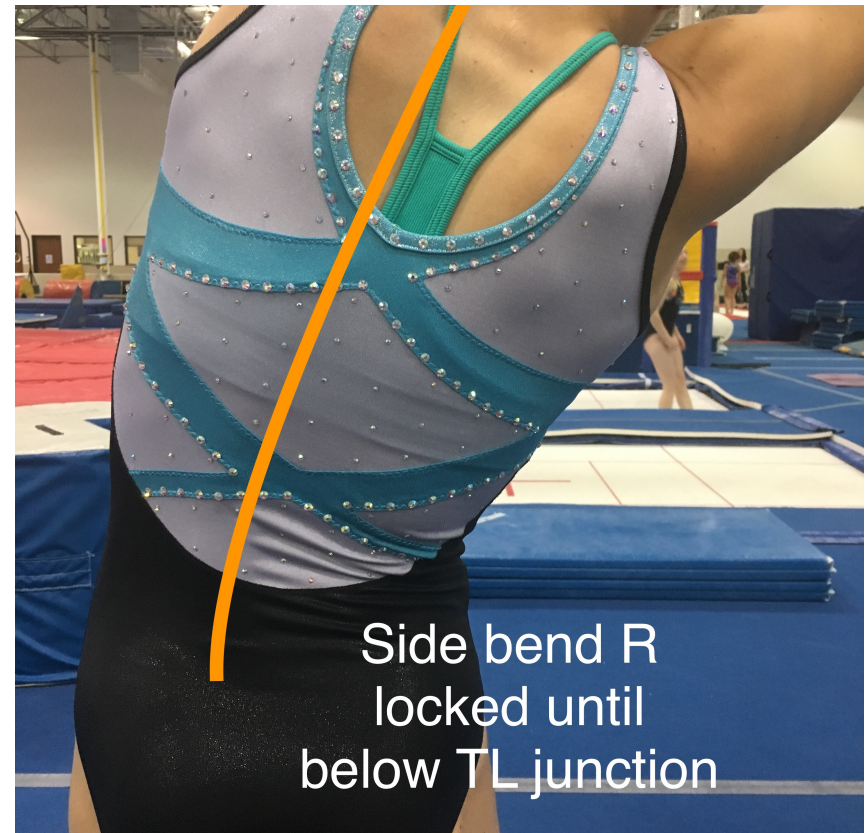


Side bending assessment

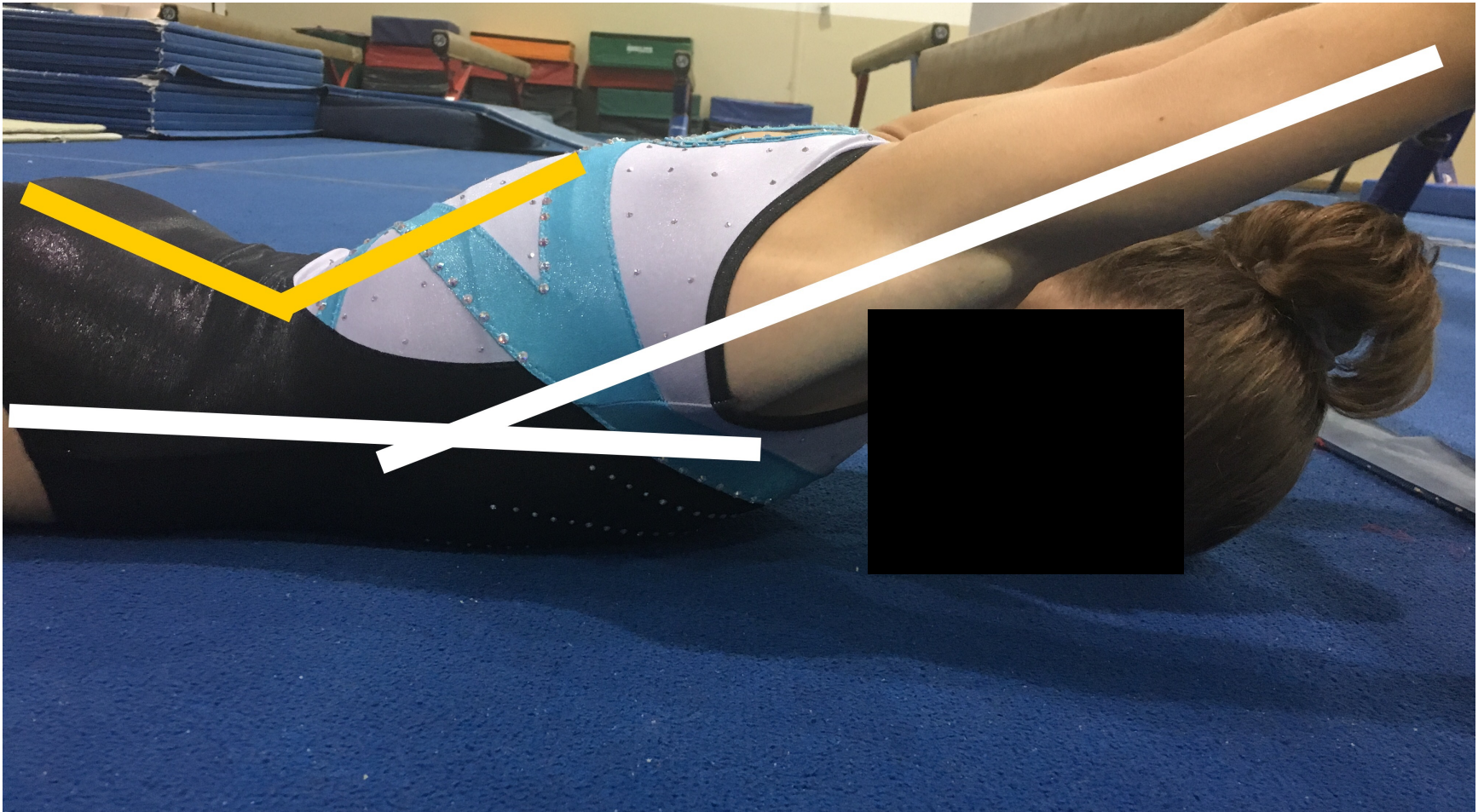
Toward the Left, not as bad as anticipated with lack of R paraspinal guarding (worse edematous side on film)



Toward right, LEFT side PSP guarding, possibly due to pain with right compression

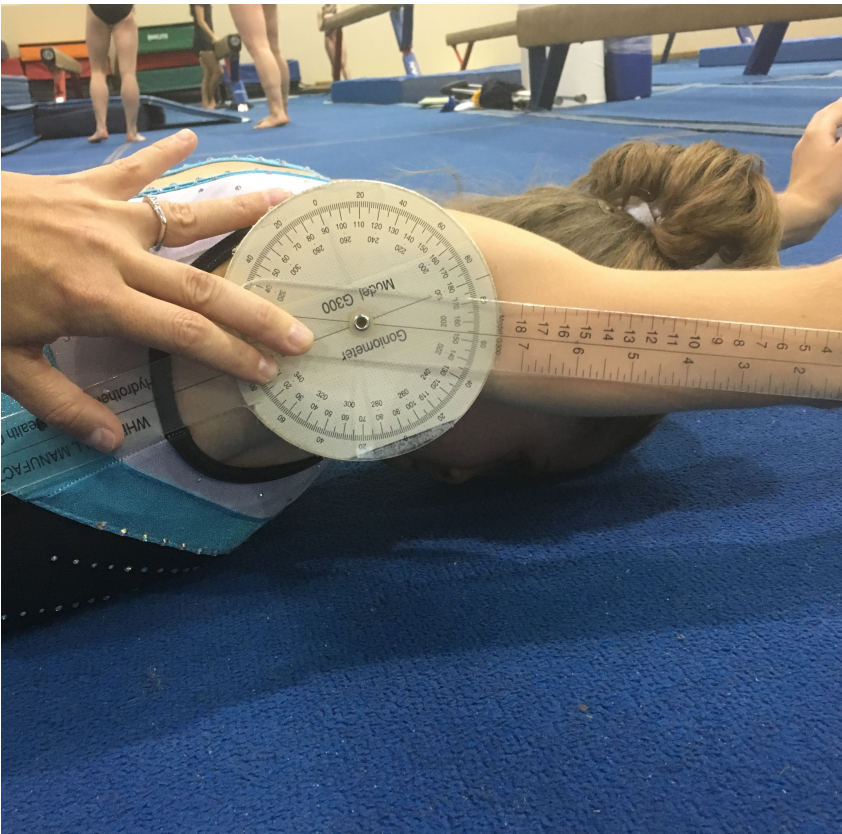


Prone passive range shoulder flexion assessment



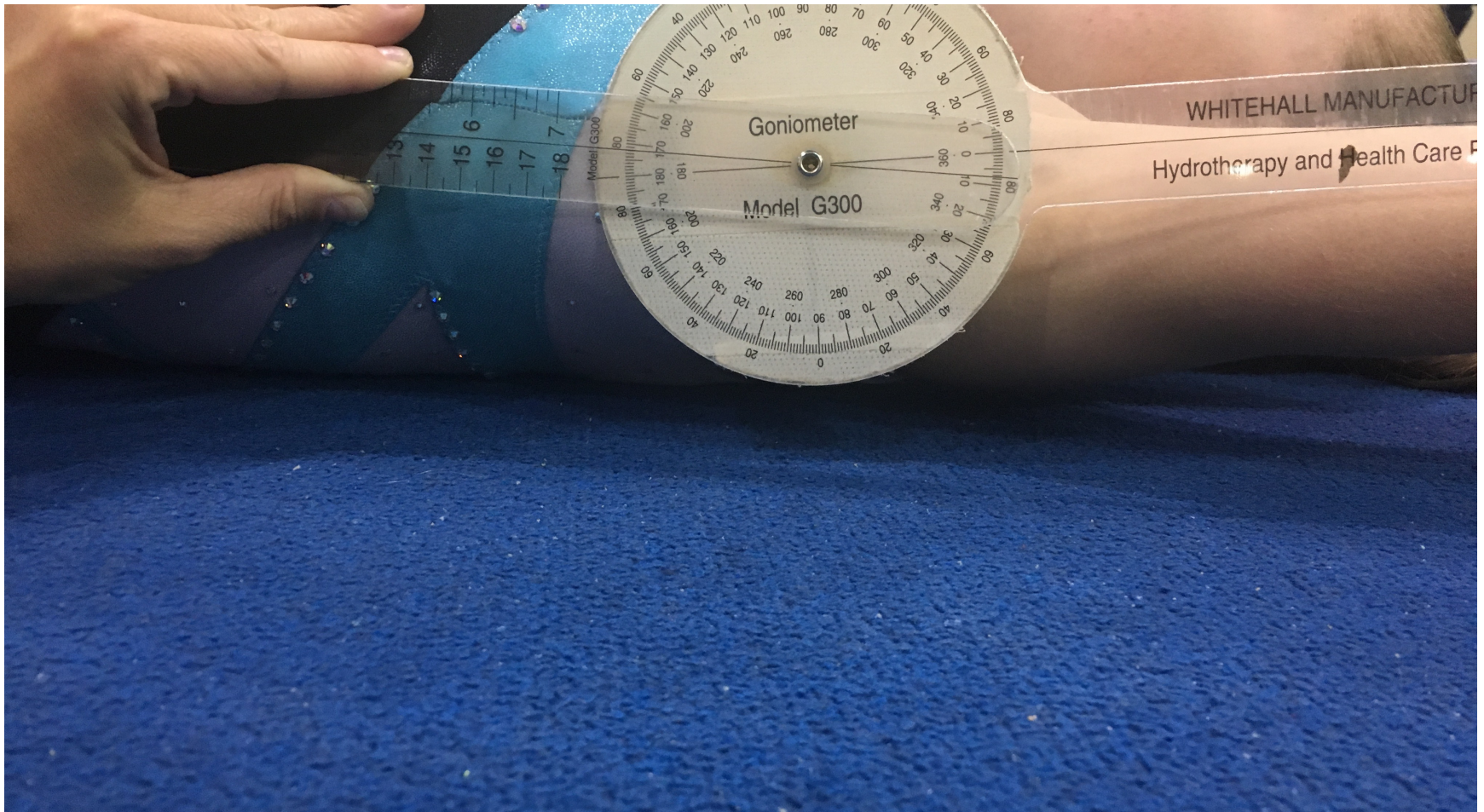
Prone Active range (AROM) assessment

Goniometer measure

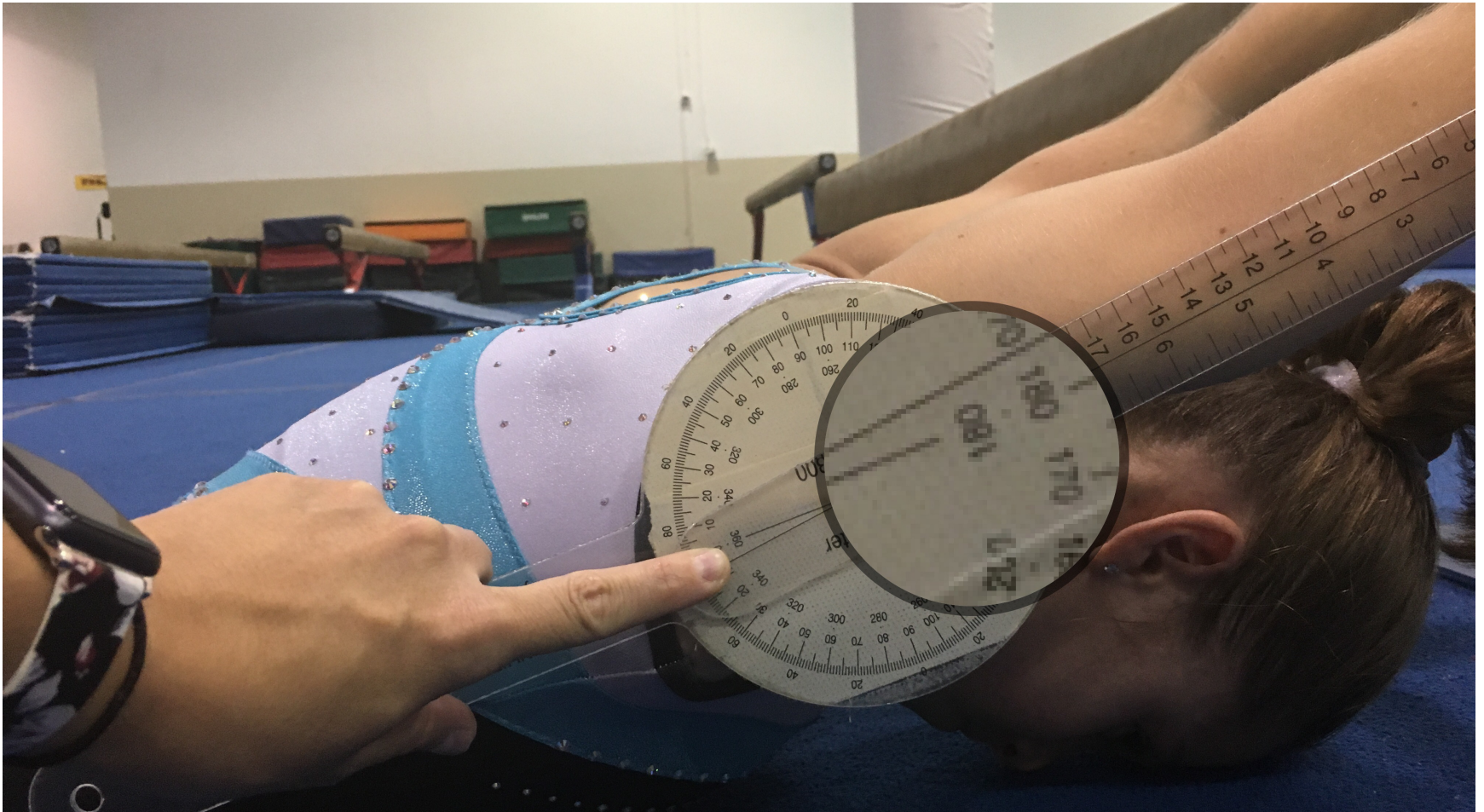


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- Verbal instructions to not use lumbar spine extensors
- Straight elbows
- Not grabbing hands
- Keep chest down
- Open shoulder angle

On back- supine assessment (gravity not strength)



OVERPRESSURE- 7 deg past neutral



Prone assessment on low beam

- Scapular winging
- Superior impingement
- Lat and subscap tightness

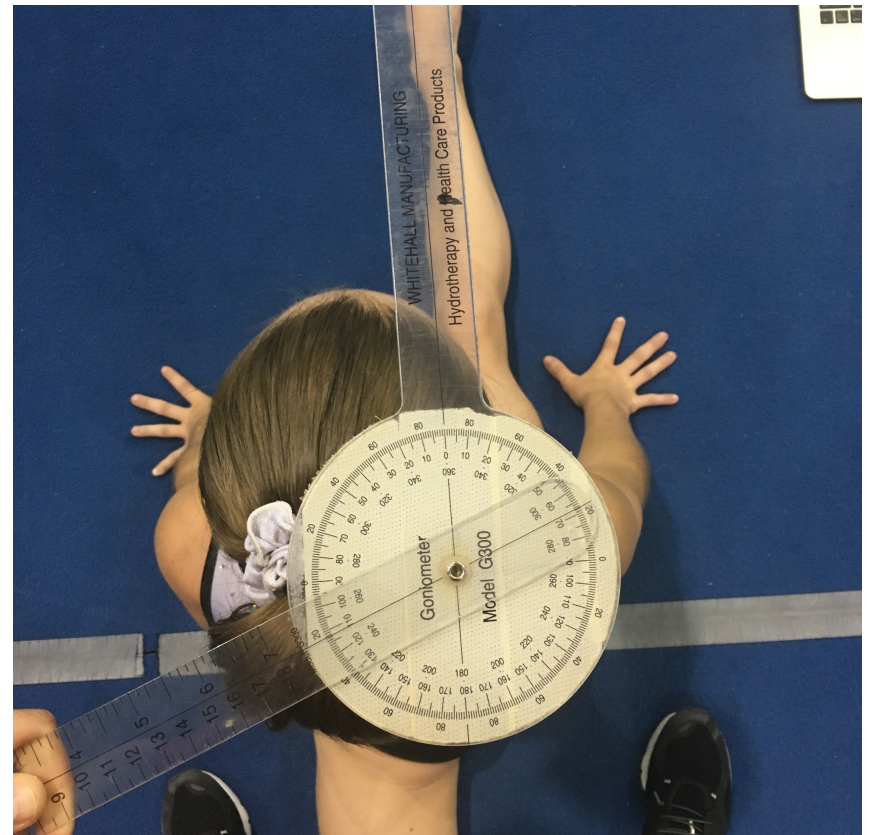


Regular split assessment

Left

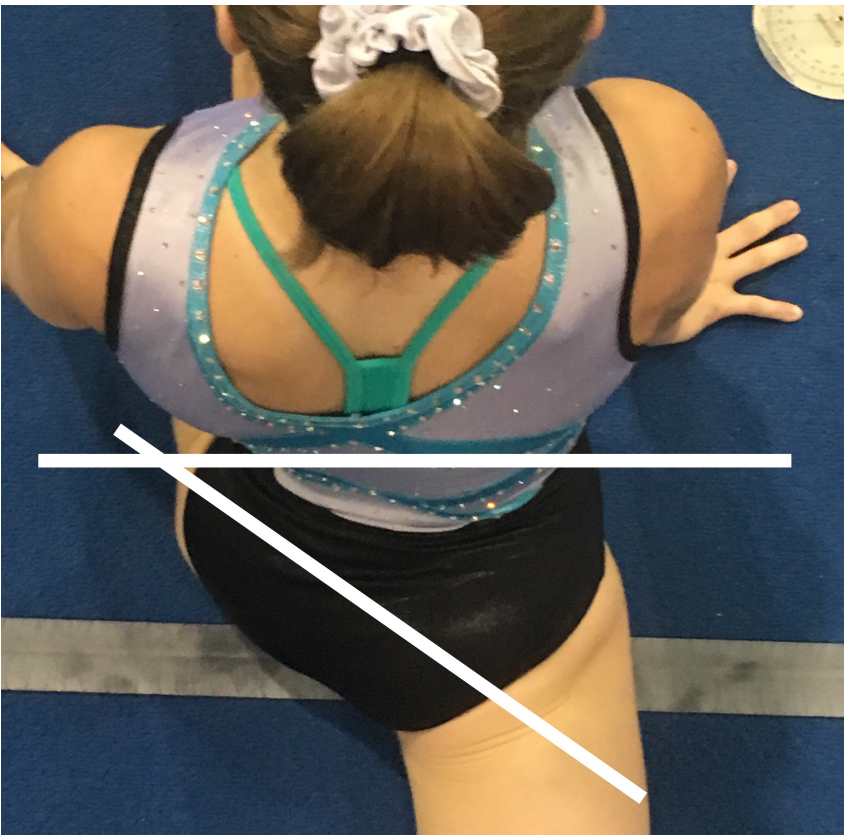


Right

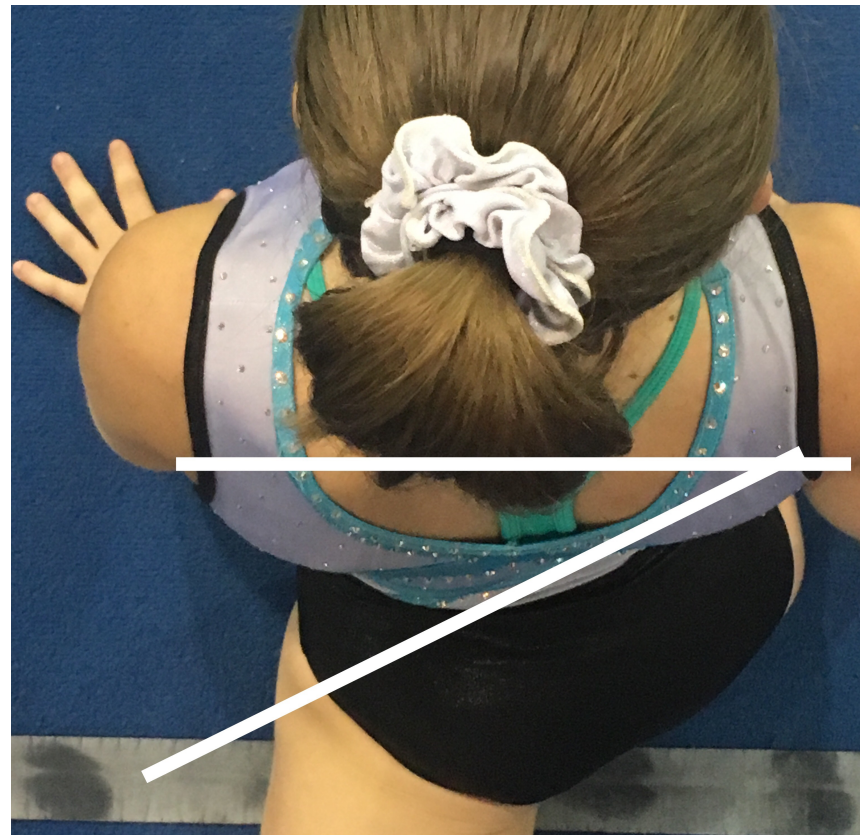


Square vs actual ilium/hip rotation

Left (testing RIGHT hip flexor flexibility)



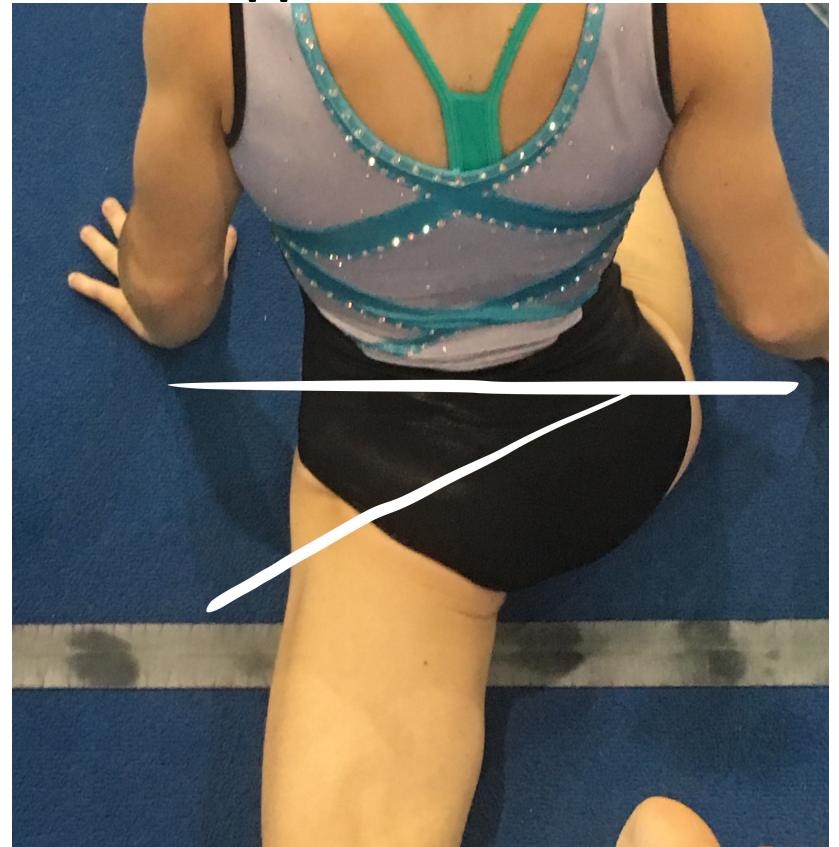
Right



Left and right with back knee bent

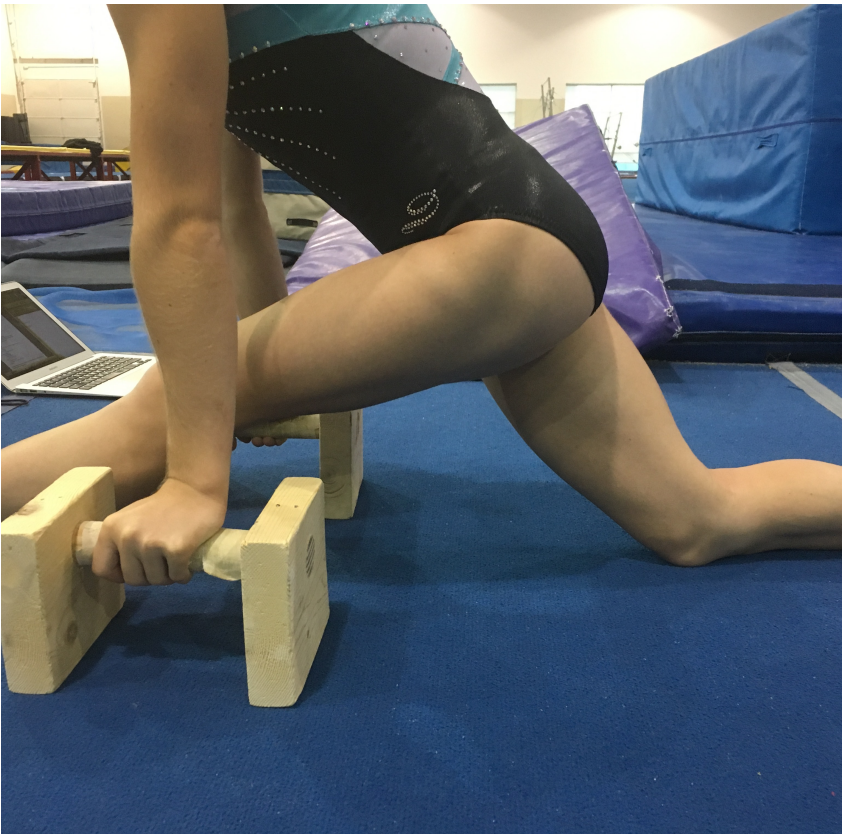
Stresses rectus femoris and other two-joint hip muscles

Excessive stress on the side of the FRONT leg (due to opposite upper body to lower body motion “opposition”)

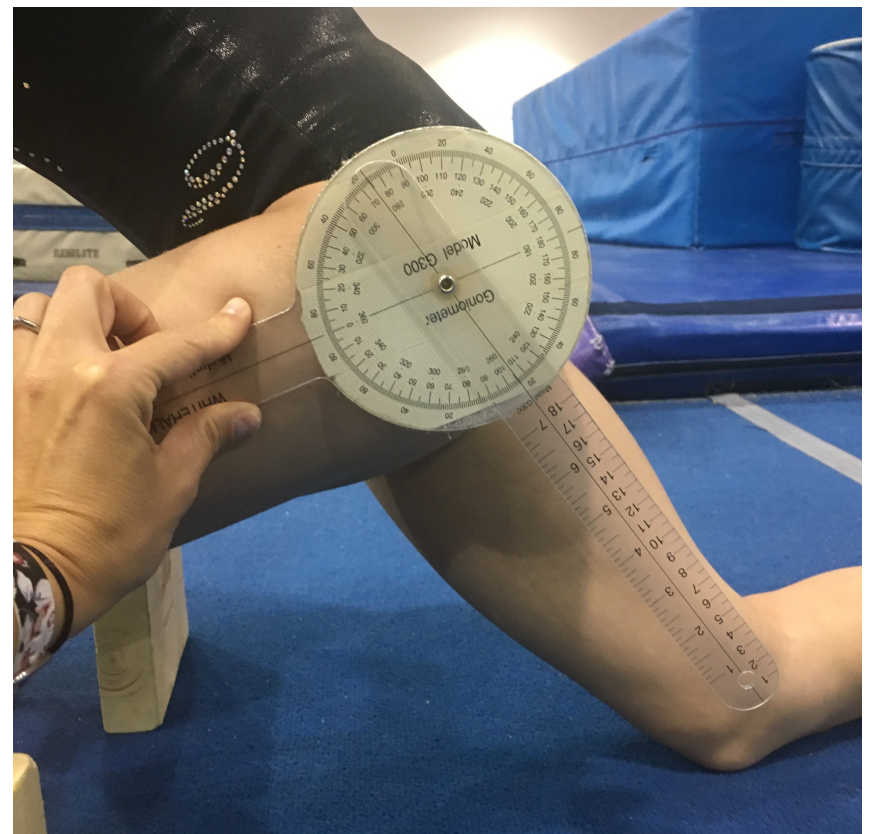


Square split assessment

Left side hips square- ASIS



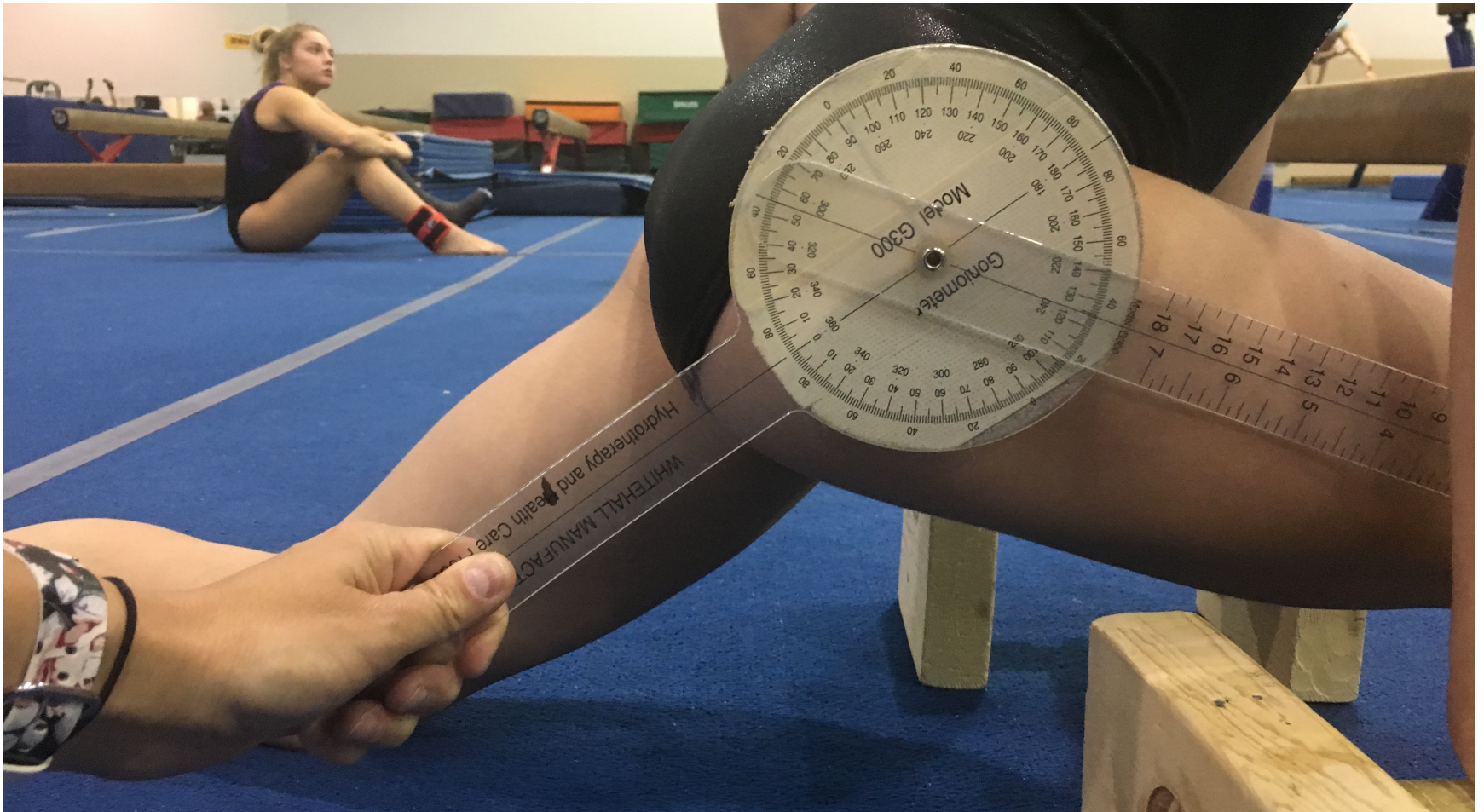
Measure



Side view- right side square

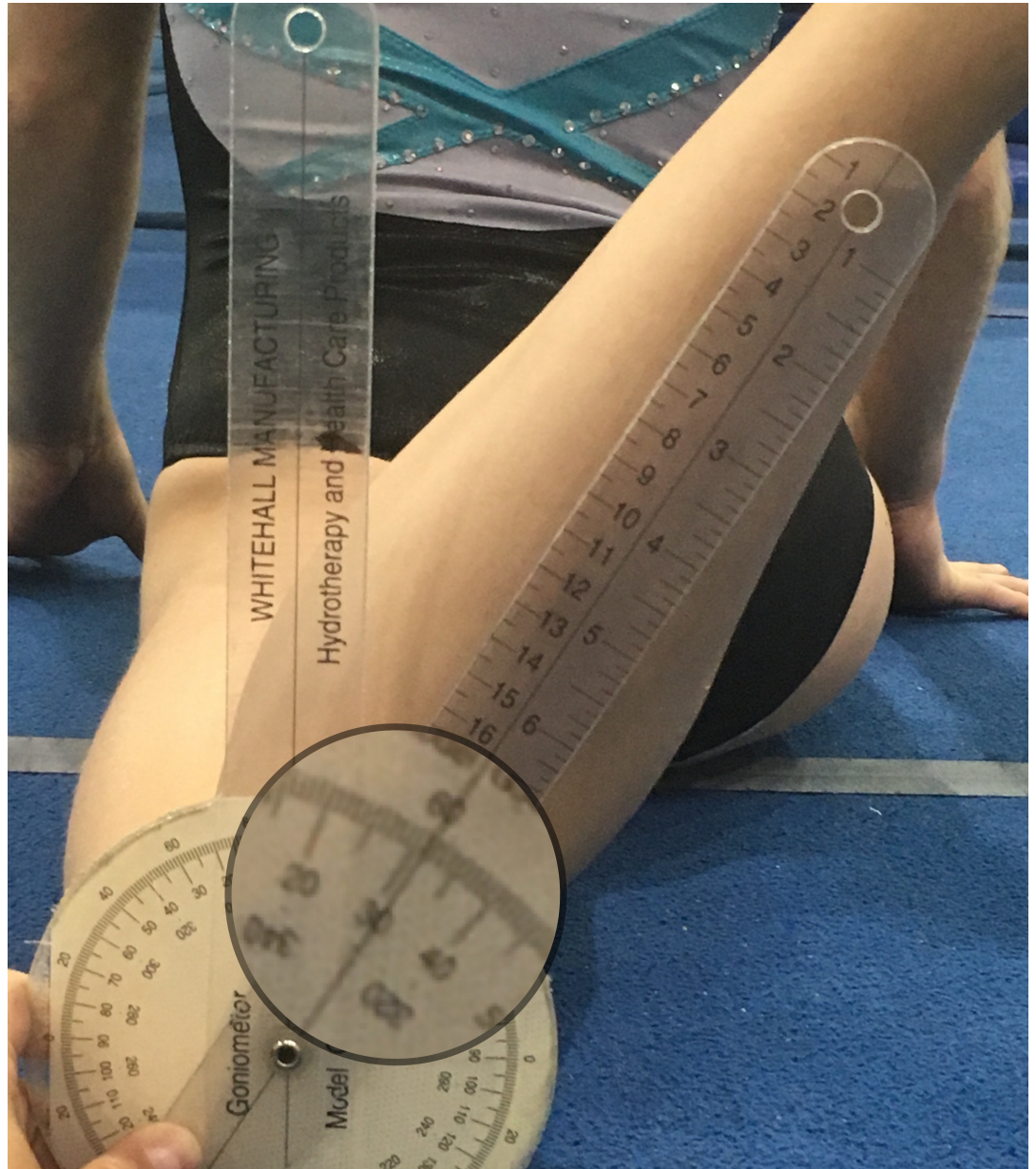


Measure



External rotation focus

- Functionally, need to be conscious of this for beam (straight), tumbling, vault entry with roundoff, split position work in air (leap) and more
- Rotation is due to non-square of hip
- Due to lack of right leg hip flexor flexibility, LEFT (front) leg hamstring flexibility, SIJ and hip joint and hip capsule mobility and more



Posterior pelvic tilt BACK LEG focus on stretching two joint hip flexor/knee extensor by extending hip, rotating pelvis under (posteriorly) and bending knee

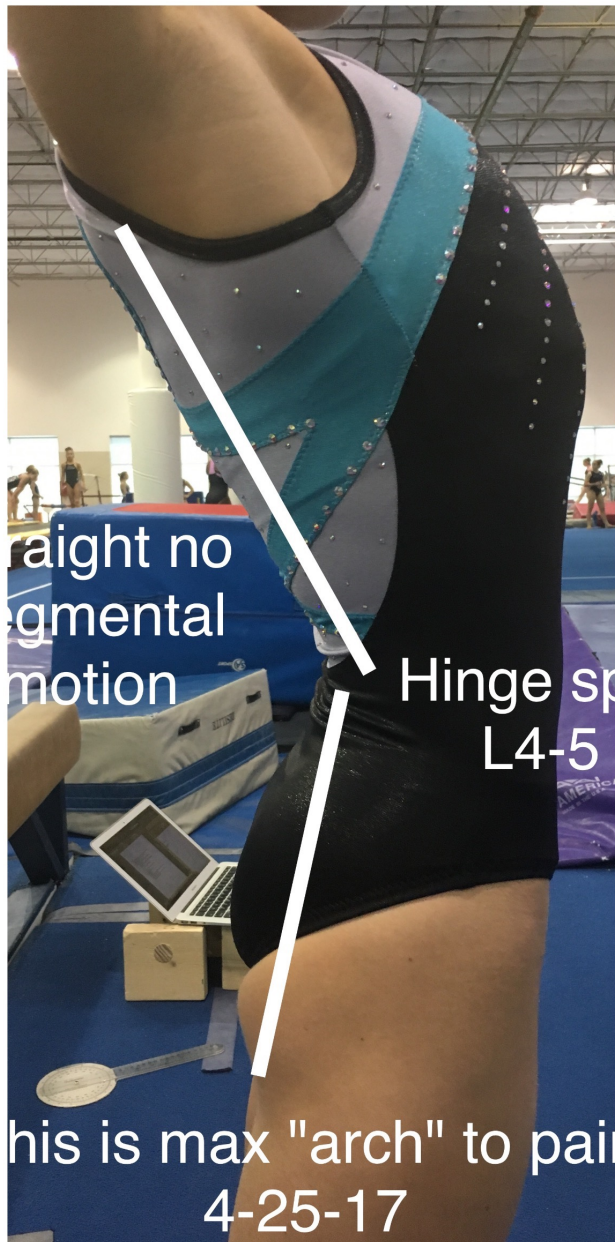


Partner ankle stretch: feet far away so no low back stress, goal: open axilla (pits). Walk feet closer when arching approved



After 6 week intervention

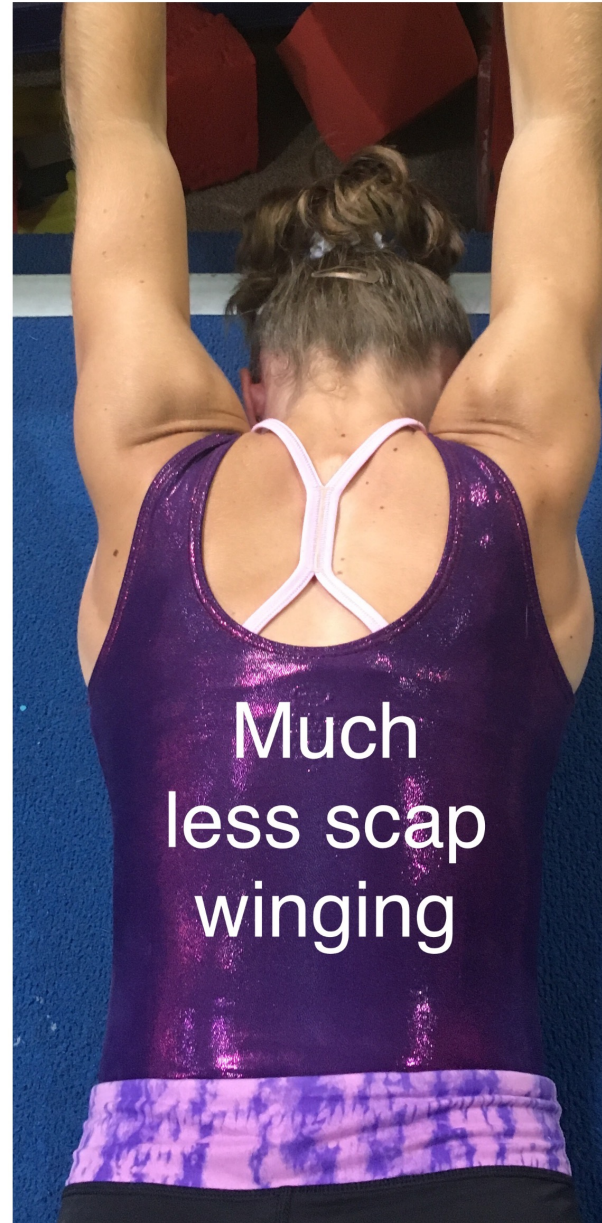
Post Intervention



Kyphosis/Lordosis Reversal



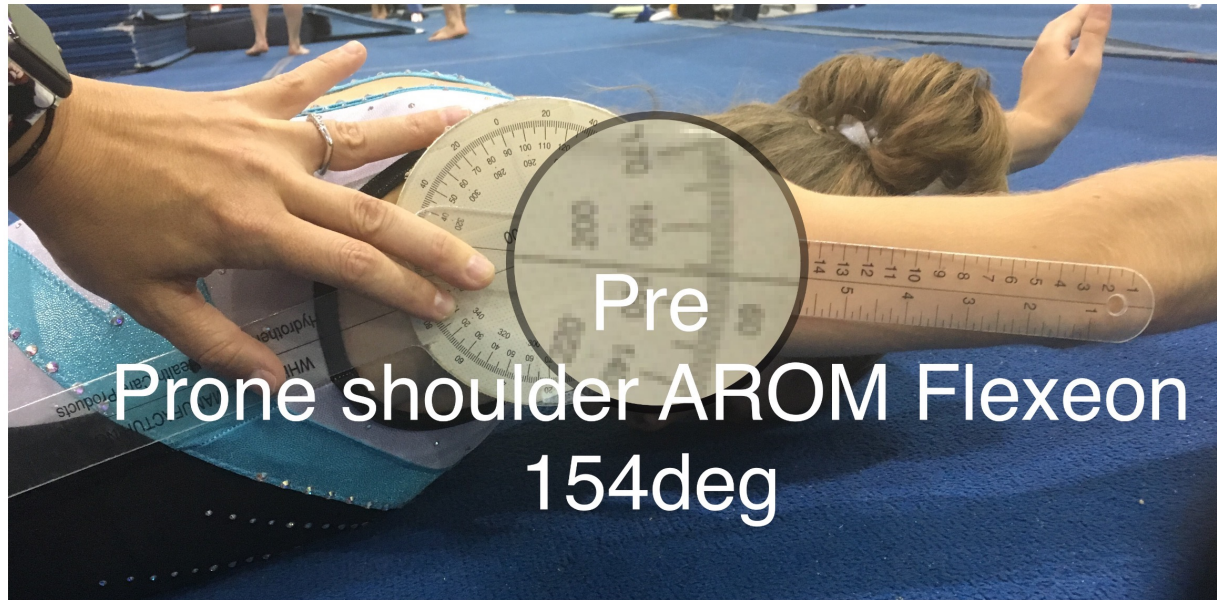
Axillary opening- post



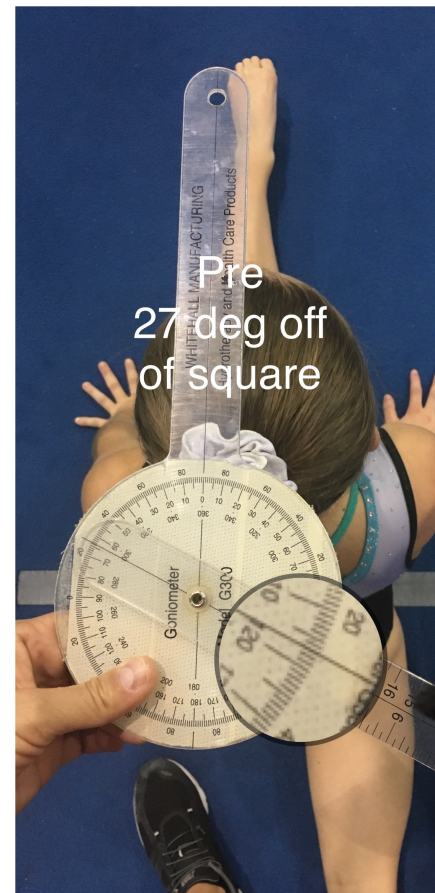
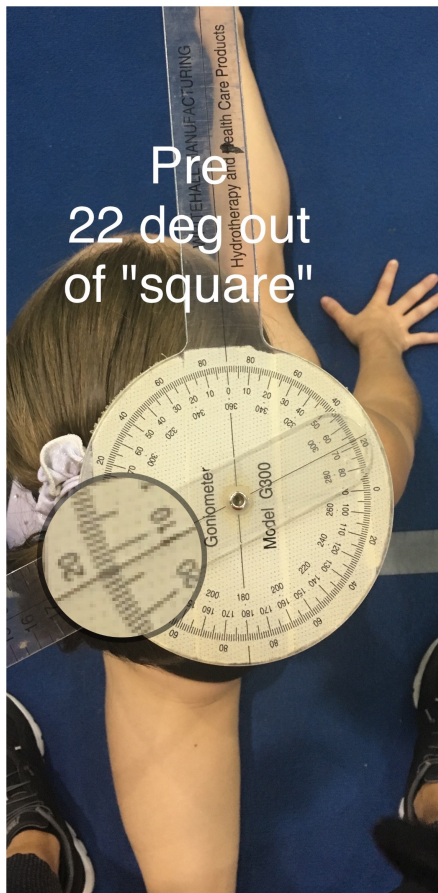
Arch and Axillary Opening- Post



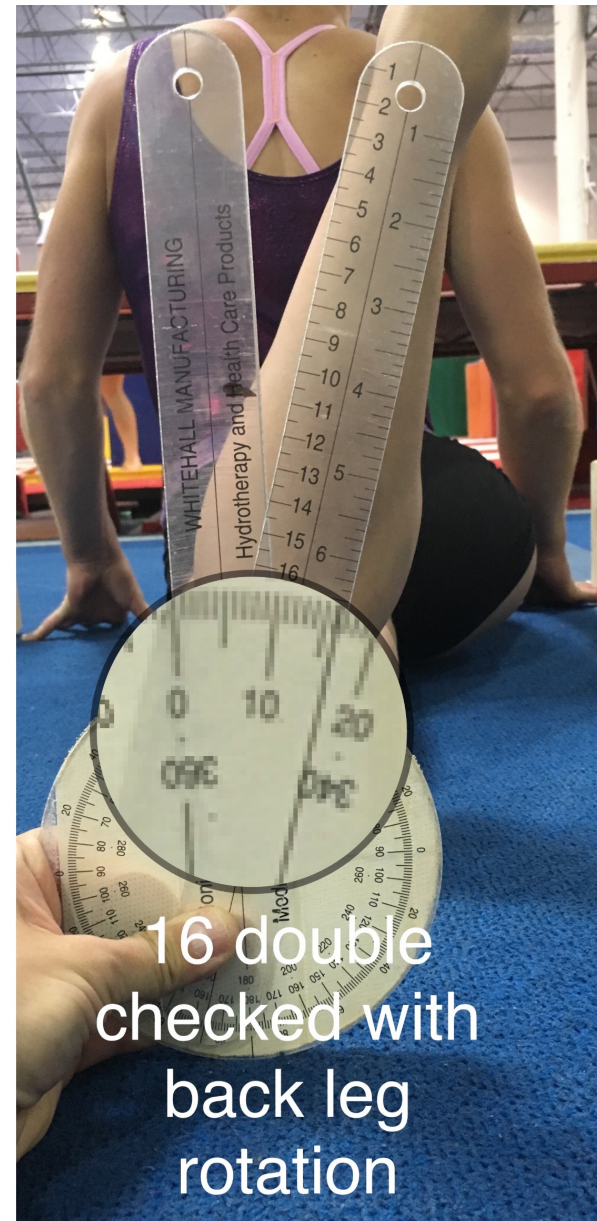
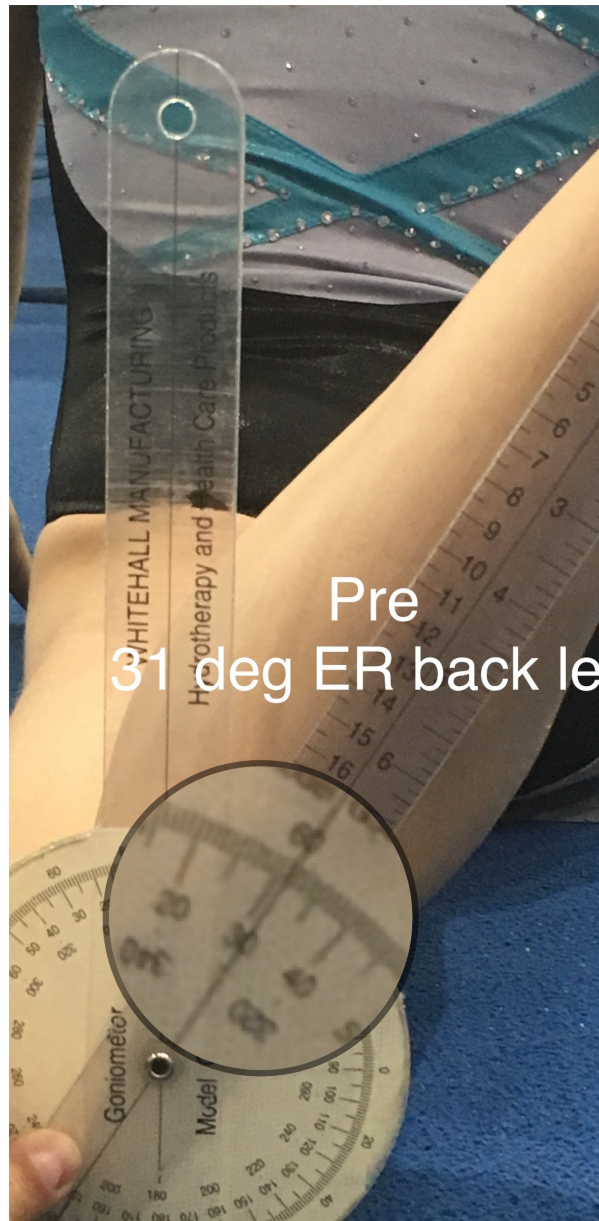
AROM Shoulder Strength and Flex- Post



R and L Split- Non square- Post



Unsquare Split- Leg band/Back Hip ER- Post



Theory Summary

- Combination of a lack of shoulder flexibility, challenged hip mobility and flexibility, a hyperkyphotic spine, decreased understanding of rib tilting and transverse abdominus, as well as come technical challenges with twisting take off position, bar handstand positioning. After overall assessment, first take a look at performance; analyze specific skills subject is doing incorrectly that can cause pain or stress on each apparatus. Observe posture consistently throughout each movement. Next, make sure to assess choreography such as movements that require arching and dance skills. Conditioning positions and flexibility stretches should also be assessed for correct form.

Treatment Application

- Manual therapy includes ART; joint mobilization; hip capsular mobility; segmental motion, nutation, and cavitation of thoracic spine; TP dry needling; and fascial release. Use blood pressure cuff, transition to standing/vertical posture, transition to inverted/handstand posture, and surface EMG for biofeedback. Stretch hip flexors into extension, abdominals into spine extension, shoulder extensors into shoulder flexion, and focus on square position for neuro-reprogramming. For strength, focus on control, weighted, velocity for functional training, and newly achieved range of motion. Continue assessment of current strength program for compensation. Self myofascial release and joint work is encouraged with horizontal foam roll archovers, double ball straddling spine, and stress ball. Other treatments include medication per MD, proper nutrition, and MD reassessment. For return to sport following all treatment, gradually increase skills as well as quantity, keep diary of arch counts, and observe progression overall.