ATSU | National Center for Osteopathic Principles and Practice Education

Introduction to OMM for MDs and DOs

- May 19 – 22, 2025, Kirksville, MO
- NCOPPE & KCOM

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FIRST IN WHOLE PERSON HEALTHCARE

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Diagnosis of the Innominates and Pubes

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Background

EXAMINERS' PALPATORY PERCEPTIONS

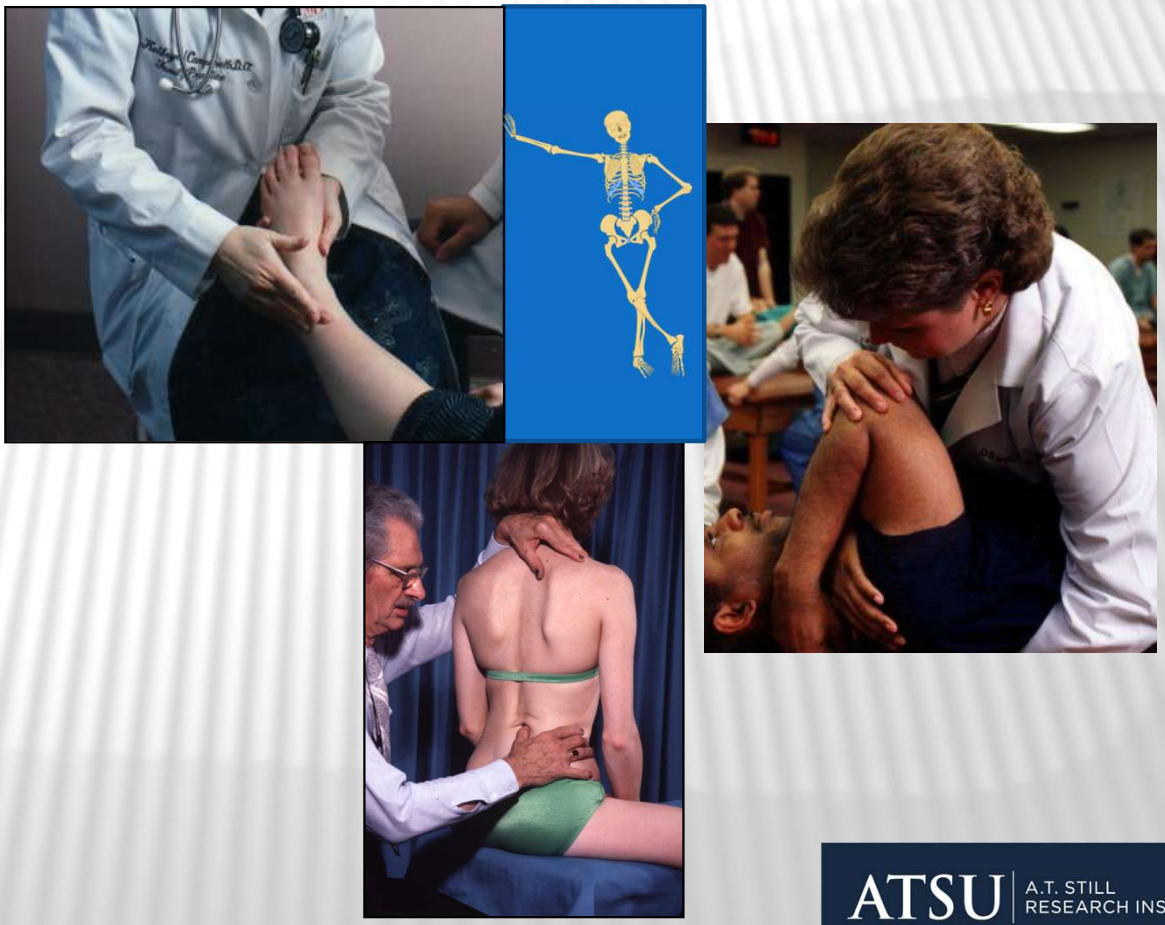
- Density, thickness
- Moisture
- Texture
- Elasticity, turgor
- Temperature, energy
- Tension, motion
- Differentiating anatomy/normal tissue and pathology

EXAMINERS' PALPATORY PERCEPTIONS

- Density, thickness
- Moisture
- Texture
- Elasticity, turgor
- Temperature, energy
- Tension, motion/stiffness
- Differentiating anatomy/normal tissue and pathology

4 CLASSES OF DIAGNOSTIC TESTS

- Asymmetry
- Restricted motion
- Tenderness
- Tissue texture abnormalities



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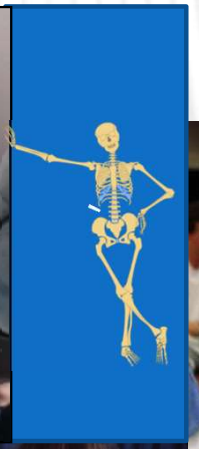

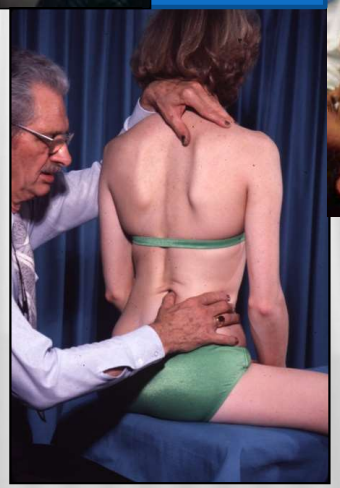

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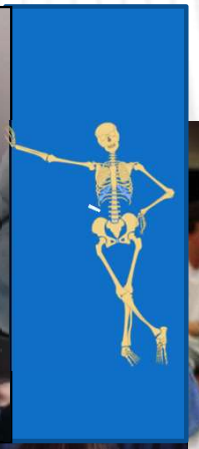

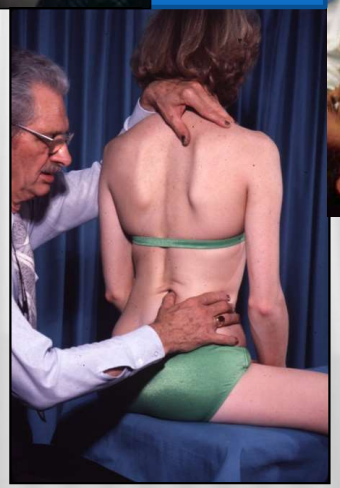

"Before making any attempt at diagnosis, we must first discover the palpable structures of the pelvis that change their position with movement."

Dr. Halladay

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SOMESTHESIS

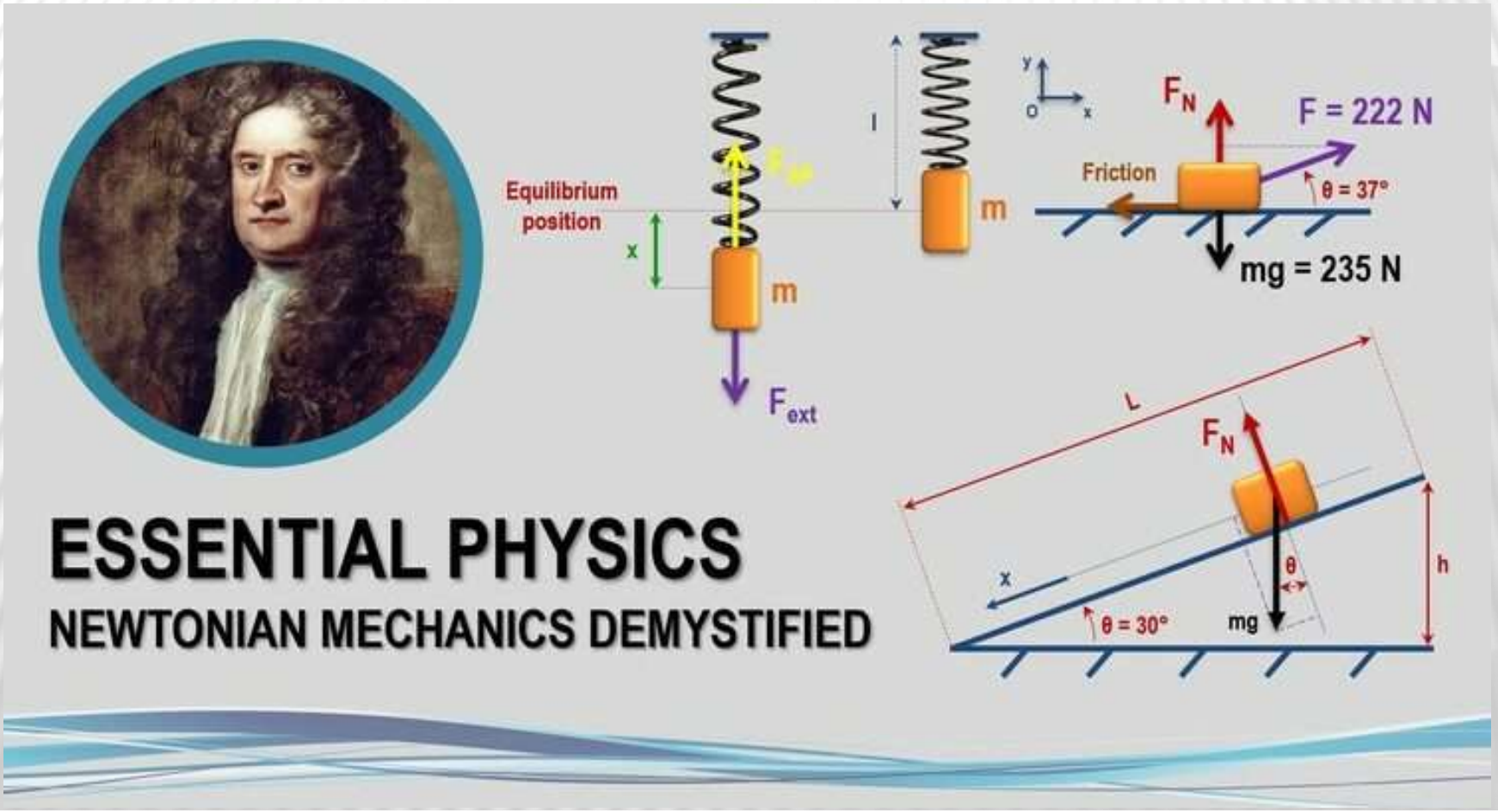
- Somatic sensibility, or somesthesis, refers to the primary qualities of contact or touch-pressure, form, texture and vibration, as well as more complex sensory experiences
  - Spatial pattern, contour, and three-dimensional shape, and the senses of position and movement of the limbs at their joints (Mountcastle 2005)

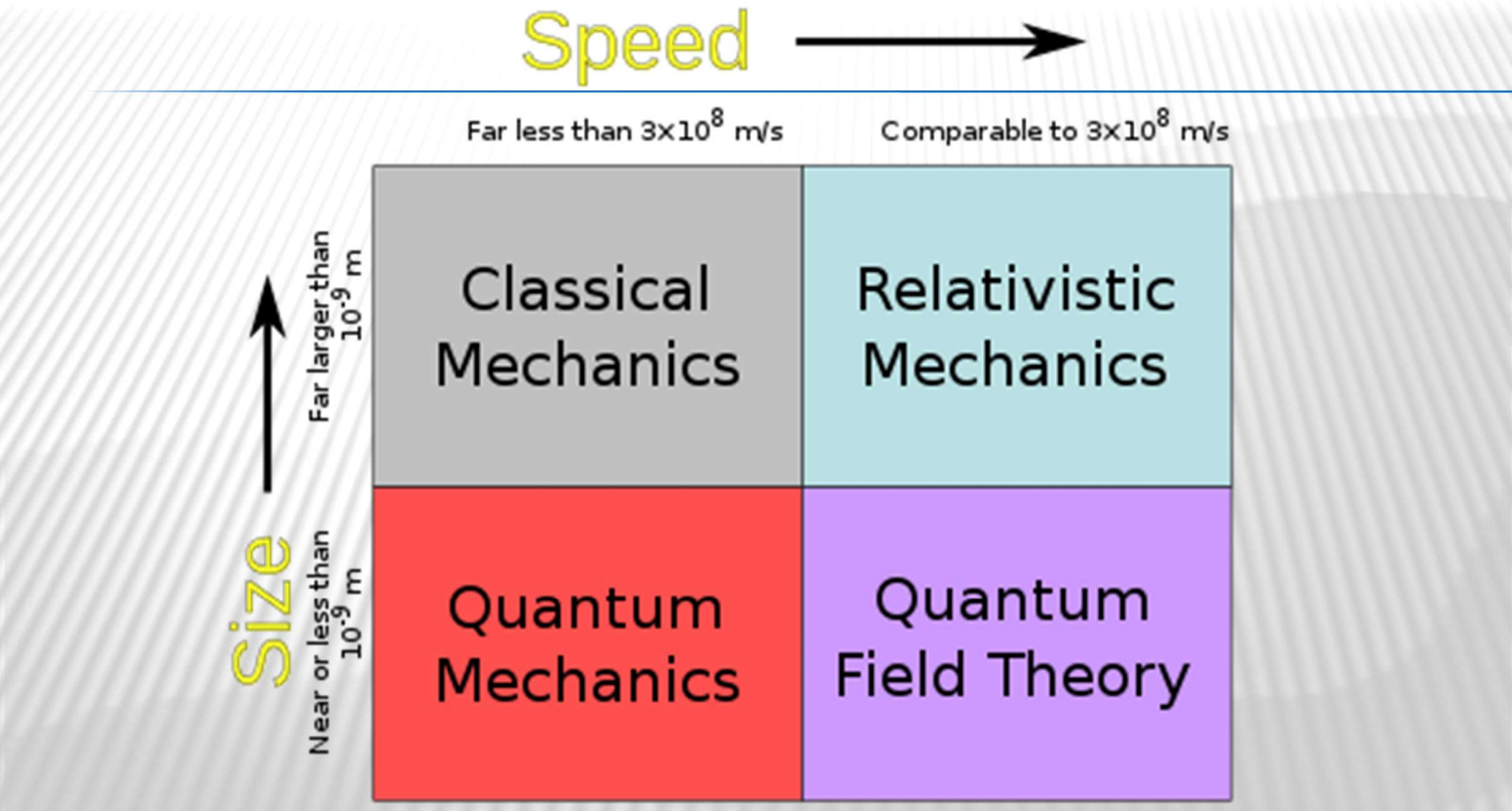
KINESTHESIS

- Awareness of the position and movement of the parts of the body by means of sensory organs (proprioceptors, interoceptors) in the muscles and joints

- Osteopathic Manipulative Medicine = somesthesis + kinesthesis
  - How does your performance of a test influence your test findings
  - How does your own somatic dysfunction, pain, stress, sleep, anxiety, … influence manual skills

MITCHELL MODEL OF THE PELVIS: NEWTONIAN OMM




Speed
Far less than 3x10^8 m/s
Comparable to 3x10^8 m/s
Size
Far larger than 10^-9 m
Near or less than 10^-9 m
Classical Mechanics
Relativistic Mechanics
Quantum Mechanics
Quantum Field Theory

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QUESTIONS?

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DIAGNOSIS OF THE INNOMINATES AND PUBES

Objectives of this session

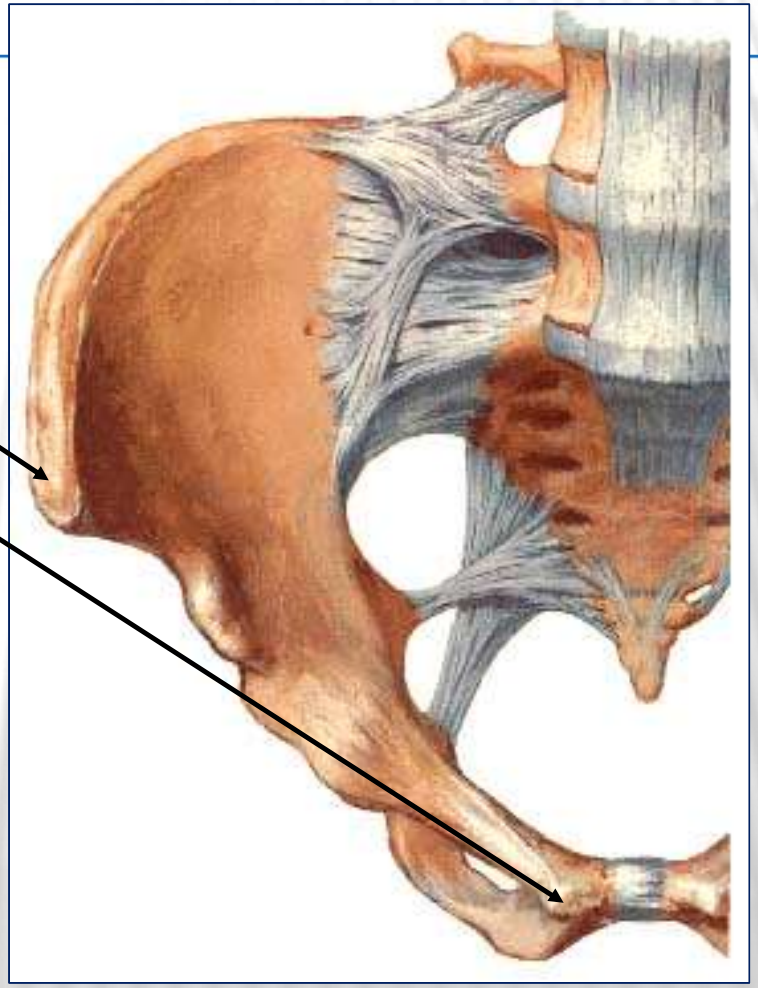
- Describe the lateralization tests used in the diagnosis of pelvic somatic dysfunction
- Be competent in the performance and interpretation of these lateralization tests
- Describe diagnostic findings of somatic dysfunction of the pubes & innominates
- Consider current evidence on accuracy of testing
- Demonstrate method of diagnosing somatic dysfunction of pubes & innominates

LANDMARKS OF THE PELVIS - ANTERIOR

Major Landmarks

Anterior Superior Iliac Spine

Pubic tubercle



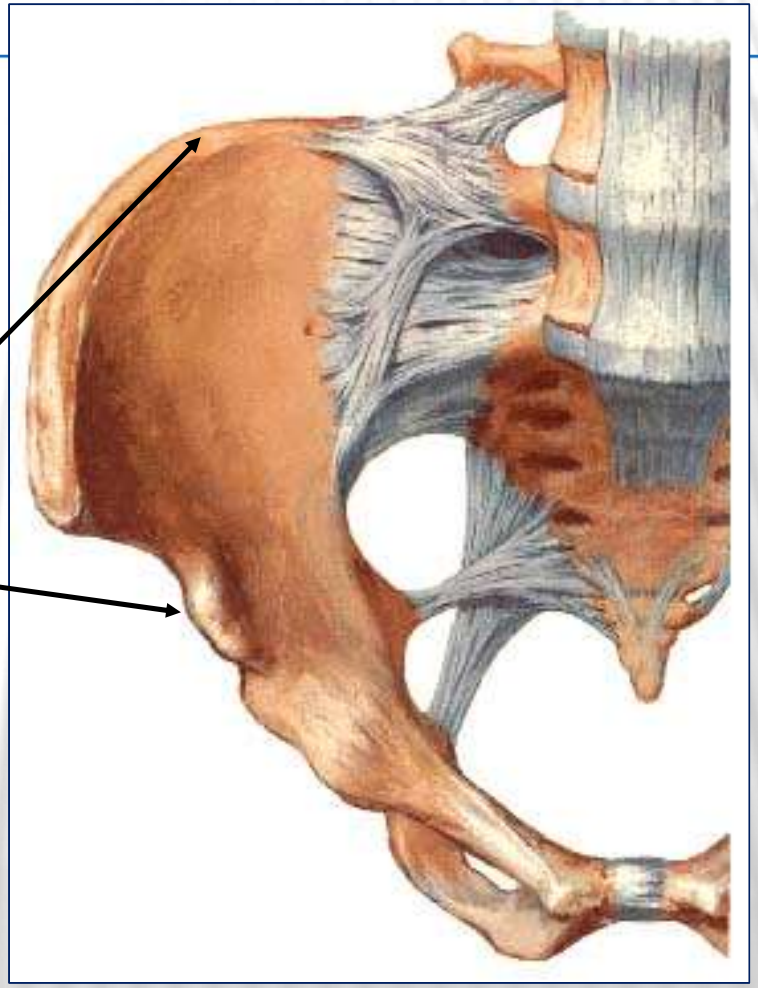
LANDMARKS OF THE PELVIS - ANTERIOR

Minor Landmarks

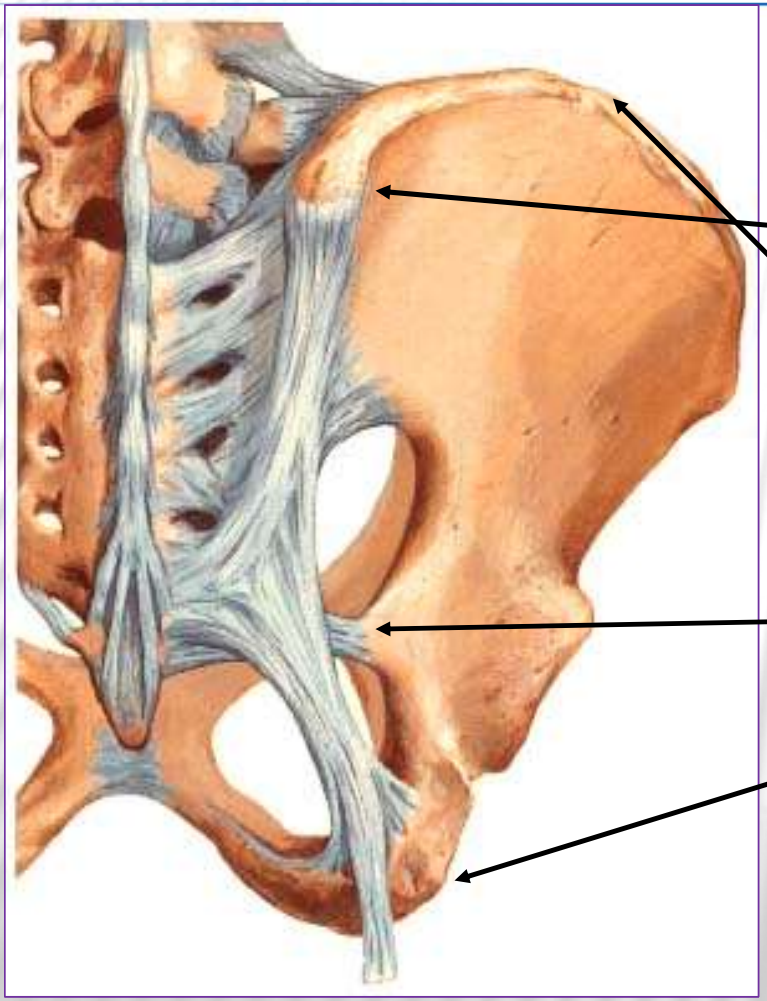
Iliac Crests

Anterior Inferior Iliac Spine (AIIS)

Medial Malleoli



LANDMARKS OF THE PELVIS - POSTERIOR



Major Landmarks

Posterior superior iliac spine (PSIS)

Minor Landmarks

Iliac Crest

Ischial Spine

Ischial Tuberosity

Lateralization Tests

- Standing Flexion Test
- Seated Flexion Test
- ASIS Compression Test

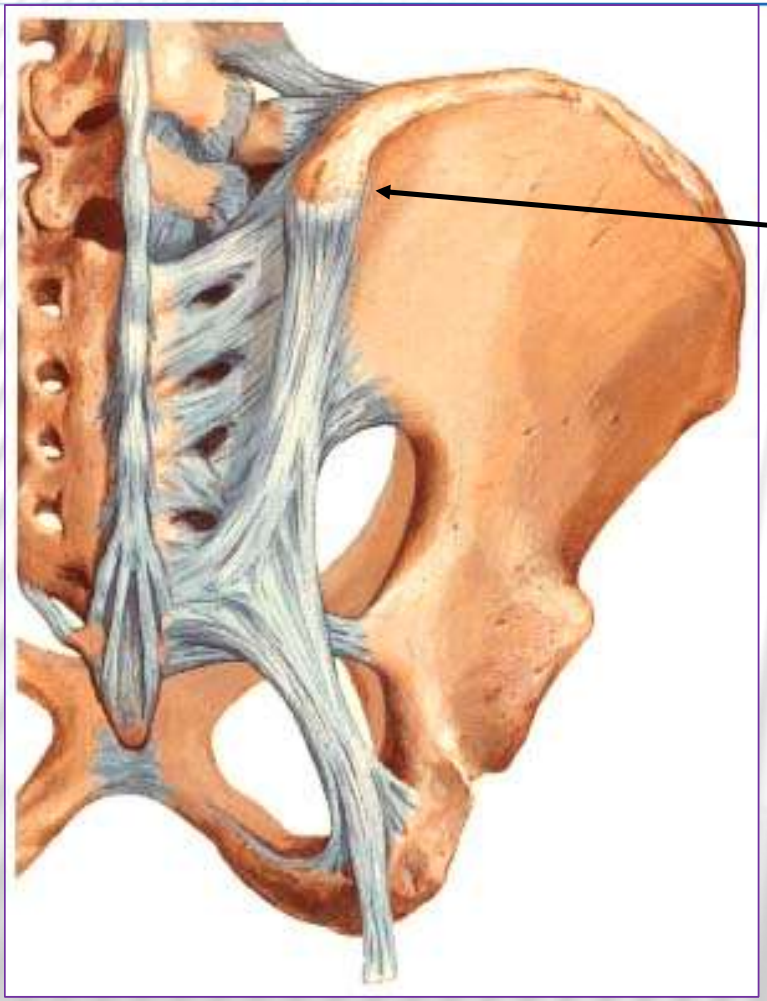
Lateralization Tests

- Standing Flexion Test
- Seated Flexion Test
- ASIS Compression Test

What are the Reasons for Performing Lateralization Tests?

- We primarily perform these tests to identify the restricted side (the reference side) for pelvic and sacral diagnosis and treatment.
- These tests allow us to:
  - determine symmetry (or asymmetry) of motion between the innominates and the sacrum
  - check the resiliency of the sacroiliac joint
  - helps direct treatment to the restricted side of the pelvis

LANDMARKS OF THE PELVIS - POSTERIOR



Major Landmarks

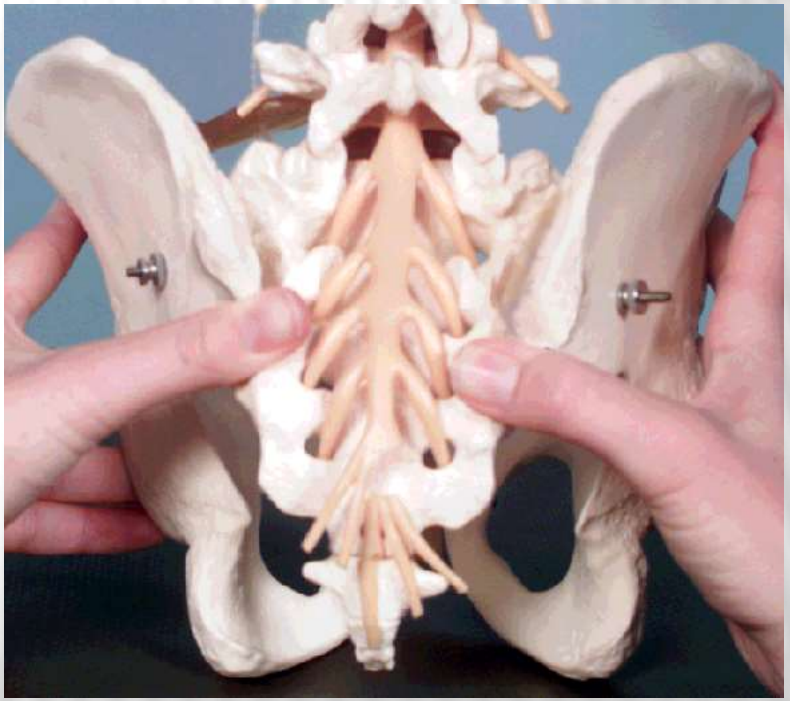
Posterior superior iliac spine (PSIS)

Technique for the ***Standing*** *Flexion Test*

- Patient stands erect with the feet at no more than shoulder width apart
- Physician stands, sits or kneels behind the patient with their eyes at the level of the PSISs

Technique for the ***Standing*** *Flexion Test*

- Physician places thumbs on the inferior slope of the patient's PSIS and maintains a firm pressure to ride with the bony landmarks



Technique for the ***Standing*** *Flexion Test*

- Patient is instructed to actively bend forward and try to touch their toes
- Perform test 2-3 times
- Test is positive when asymmetry of the thumbs occurs (thumb on one PSIS moves at least one thumb breadth more cephalad at the end ROM

Technique for the ***Standing*** *Flexion Test*

- Test is positive when asymmetry of the thumbs occurs (thumb on one PSIS moves at least one thumb breadth more cephalad at the end ROM

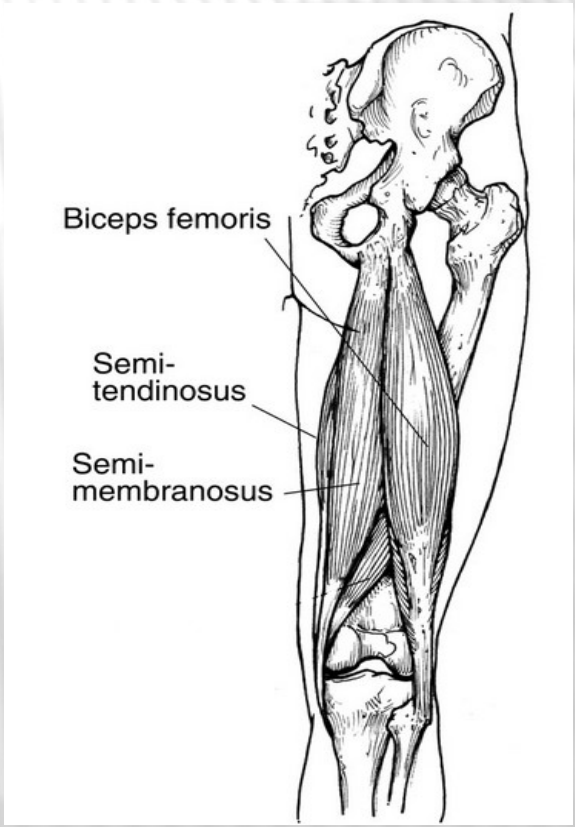
Technique for the ***Standing*** *Flexion Test Summary*

- Patient stands erect with the feet at no more than shoulder width apart
- Physician stands, sits or kneels behind the patient with their eyes at the level of the PSISs
- Physician places thumbs on the inferior slope of the patient's PSIS and maintains a firm pressure to ride with the bony landmarks (shift should not be due to skin, fascial or t-shirt drag!)
- Patient is instructed to actively bend forward and try to touch their toes
- Test is positive when asymmetry of the thumbs occurs (thumb on one PSIS moves at least one thumb breadth more cephalad at the end ROM
- Often needs to be performed several times to get a reliable test

PRACTICE TIME

What if the ***Standing*** *Flexion Test* is positive (mechanics)?

- This might indicate somatic dysfunction of the ipsilateral innominate or of the sacrum
- Note: a positive test tends to reflect *iliosacral* dysfunction (vs. *sacroiliac* dysfunction for the sitting test)
- However, this might indicate tension of the contralateral hamstrings (a *false positive*)
  - So you need:
    - to check for hamstring tightness,
    - treat the hamstrings if they are tight, and
    - then recheck the standing flexion test to see if it changes
- Furthermore, possible *false positive* if anatomic leg-length difference (short leg simulates + ipsilateral dysf)



What if the ***Standing*** *Flexion Test* is negative?

- This might indicate that there is *no* somatic dysfunction of the innominates or of the sacrum
- However, this might indicate tension of the ipsilateral hamstrings on the side of the somatic dysfunction of the innominate or of the sacrum (a *false negative*)
  - so again, check the hamstrings,
  - treat the hamstrings if indicated, and
  - recheck the standing test to see if it becomes positive
- Furthermore, a negative test might also indicate bilateral somatic dysfunction of the innominates and/or the sacrum (a bilateral *false negative*)

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QUESTIONS?

Lateralization Tests

- Standing Flexion Test
- Seated Flexion Test
- ASIS Compression Test

Technique for the ***Seated*** *Flexion Test*

- Patient is seated on a low stool or side of a treatment table with the feet touching the floor
- Physician stands, sits or kneels behind the patient with their eyes at the level of the PSISs

Technique for the ***Seated*** *Flexion Test*

- Physician places thumbs on the inferior slope of the patient's PSIS and maintains a firm pressure to ride with the bony landmarks
- Patient is instructed to bend forward as far as possible

Technique for the ***Seated*** *Flexion Test*

- Test is positive when asymmetry of the thumbs occurs (thumb on one PSIS moves at least one thumb breadth more cephalad at the end ROM

Technique for the ***Seated*** *Flexion Test Summary*

- Patient is seated on a low stool or side of a treatment table with the feet touching the floor and the knees just far apart to allow them to forward bend
- Physician stands, sits or kneels behind the patient with their eyes at the level of the PSISs
- Physician places thumbs on the inferior slope of the patient's PSIS and maintains a firm pressure to ride with the bony landmarks (shift should not be due to skin, fascial or t-shirt drag!)
- Patient is instructed to bend forward as far as possible
- Test is positive when asymmetry of the thumbs occurs (thumb on one PSIS moves at least one thumb breadth more cephalad at the end ROM

PRACTICE TIME

What if the ***Seated*** *Flexion Test* is positive?

- Since the seated position eliminates involvement of the hamstrings or an anatomic short leg, this test assesses *sacroiliac* function (i.e. it is a test for the sacrum moving on ilium) – vs. *iliosacral* function for the standing test
- So, a positive test indicates somatic dysfunction of the ipsilateral innominate or of the sacrum

What if the ***Seated*** *Flexion Test* is negative?

- This probably indicates that there is no somatic dysfunction of the innominates or of the sacrum
- Theoretically, however, a negative test might indicate bilateral somatic dysfunction of the innominates and/or the sacrum, hence a bilateral *false negative*

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QUESTIONS?

Lateralization Tests

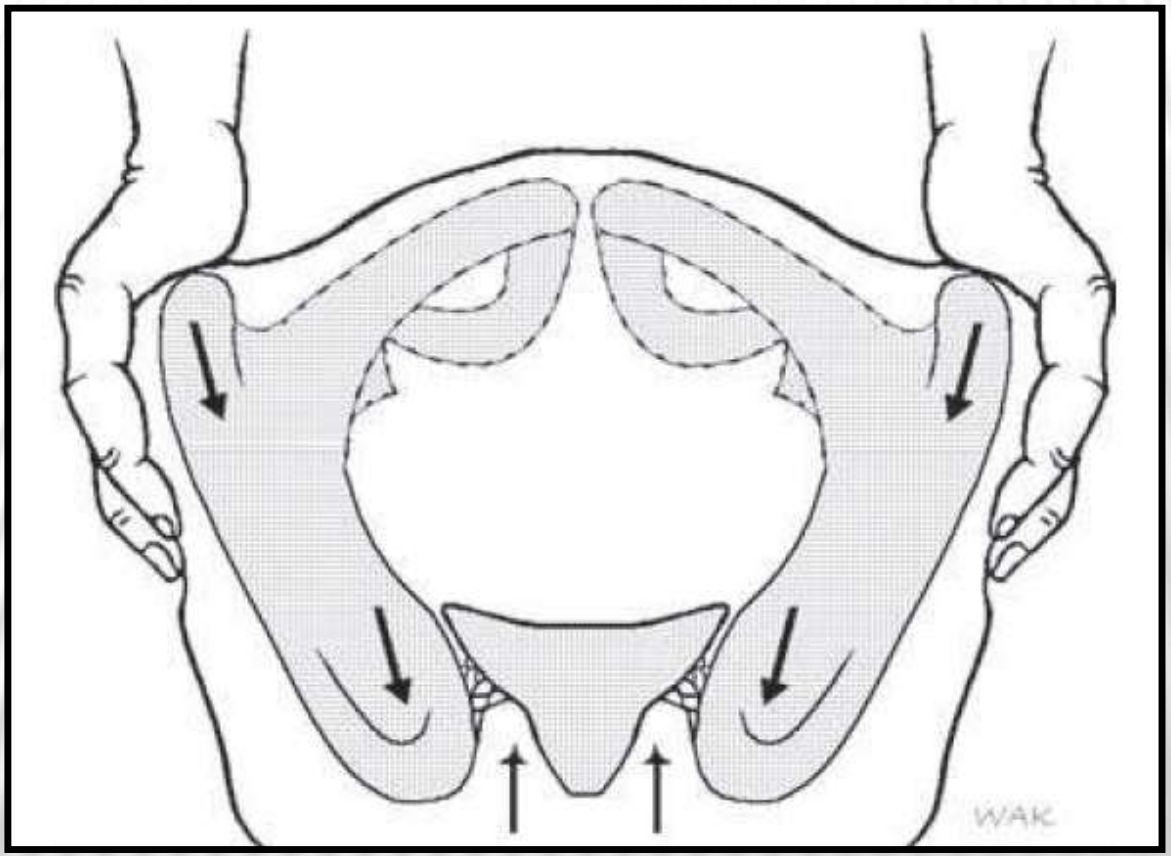
- Standing Flexion Test
- Seated Flexion Test
- ASIS Compression Test

Technique for the ***ASIS Compression Test***

- Patient lays on the table in the supine position
- Physician stands at the side of the table facing the head
- Physician cups the ASIS on each side with their palm

Technique for the ***ASIS Compression Test***

Technique for the ***ASIS Compression Test***



Technique for the ***ASIS Compression Test***

- Physician applies a posterior-medial pressure on one ASIS while stabilizing the other
- Test both sides
- Test is positive when there is noted to be restriction to motion at the ipsilateral sacroiliac joint

Technique for the ***ASIS Compression Test*** Summary

- Patient lays on the table in the supine position
- Physician stands at the side of the table facing the head
- Physician cups the ASIS on each side with their palm
- Physician applies a posterior-medial pressure on one ASIS while stabilizing the other, gliding the ilium along the SI joint
  (note: can “load” both sides to begin with to stabilize the pelvis, and then check compression on each side individually)
- Test both sides
- Test is positive when there is noted to be restriction to motion at the ipsilateral sacroiliac joint

PRACTICE TIME

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Interpretation of the ***ASIS Compression Test***

- Allows evaluation of the pelvis without the influence of the lower extremities or of spinal weight bearing
- There should be give or resilience bilaterally as innominate glides on the sacroiliac joint
- Somatic dysfunction on the side of compression produces resistance to springing and a sense of decreased resilience
- This is a screening test to localize somatic dysfunction to one side or other of the pelvis (innominate and/or sacrum
- It can be used to confirm the findings of the seated flexion test or standing flexion test if questionable
- Bilateral positive test is possible: decreased resilience bilaterally is *not* a negative test

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QUESTIONS?

Important Diagnostic Comments

- Once you have lateralized the patient to one side, other findings are named in relation to the restricted side in comparison to the other side (i.e. you name the dysfunction in relation to the lateralized side) – for example: if lateralized to the right: then *right* ilium with *anterior* rotation vs. *left* ilium with *posterior* rotation
- After you perform your lateralization tests you assume that there is a restriction of motion or dysfunction on the lateralized side. The other side is then assumed to be "normal" in comparison to the lateralized side. The "normal side" is referred to as the non-lateralized side.
- So, basically we are comparing the dysfunctional side (lateralized side) to the normal side (non-lateralized side).

DIAGNOSE PELVIS:
PERFORM LATERALIZATION TESTS

Lateralization Tests			
	Positive		Neg.
	Right	Left	
Standing flexion			
Seated flexion			
ASIS Compression			

	Use Arrows or Abbreviations		
	Right	Left	Equal
Major Landmarks			
ASIS			
Sup./Inf.			
Med./Lat.			
PSIS			
Sup./Inf.			
Pubic Symphysis			
Sup./Inf.			
Ant./Post.			
Tenderness			
Minor Landmarks			
Ischial Tuberosity			
Sup./Inf.			
Lat./Med.			
Iliac Crest			
Sup./Inf.			
Malleoli			
Sup./Inf.			

Innominate (Os Coxae) Dx: _____

Pubic Diagnosis: _____

Sacral Diagnosis: _____

L5 Diagnosis: _____

L5 is uncompensated (maladapted) when L5 and sacral base are rotated in the same direction.

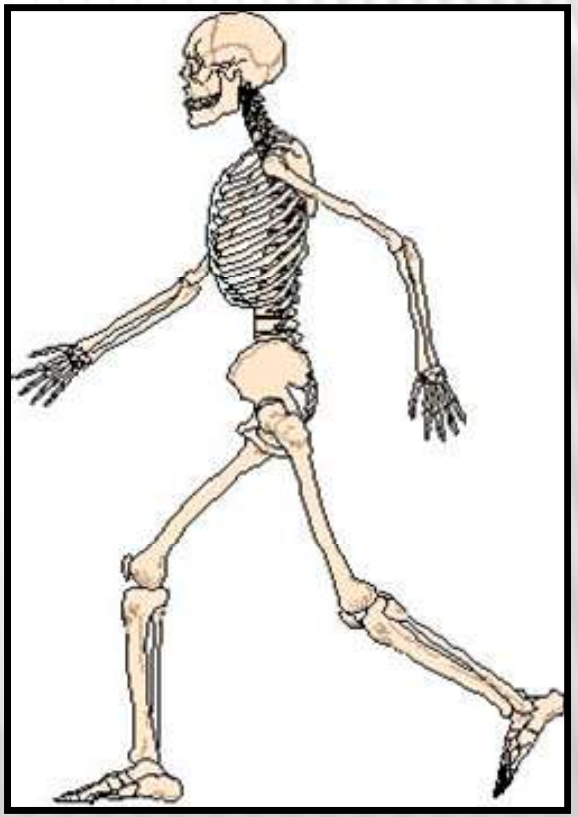
SOMATIC DYSFUNCTION OF THE PELVIS

DIAGNOSIS OF THE INNOMINATES AND PUBES

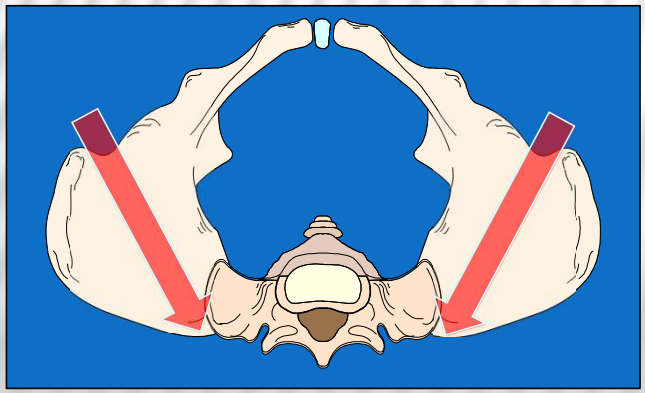
FOM III P 588-89

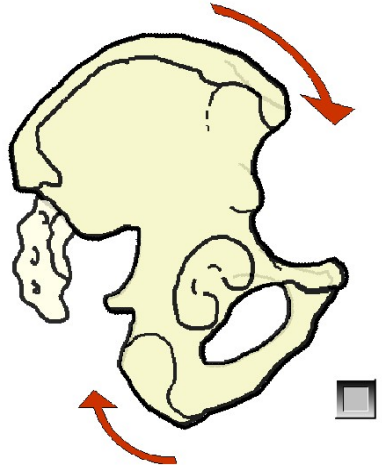
APPRECIATING GAIT MECHANICS – GROUP ACTIVITY

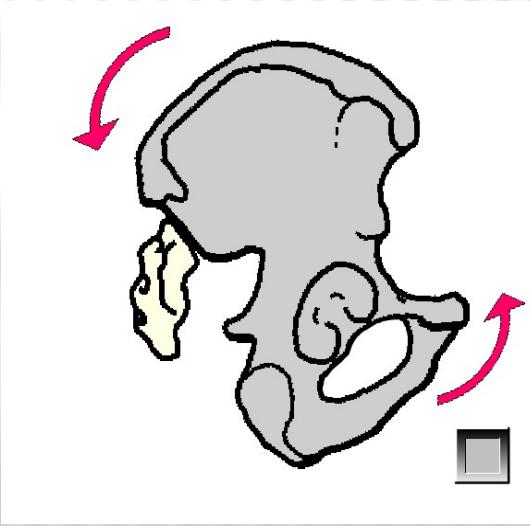
- During gait – as normal, biomechanically expected motions
- The innominates rotate in opposite directions of each other (anteriorly or posteriorly) around a transverse axis through the SIJs (sacro-iliac joints)
  - Posterior rotation normally occurs with hip flexion (hamstrings lengthened & tighter)
  - Anterior rotation normally occurs with hip extension (quadriceps lengthened and tighter)

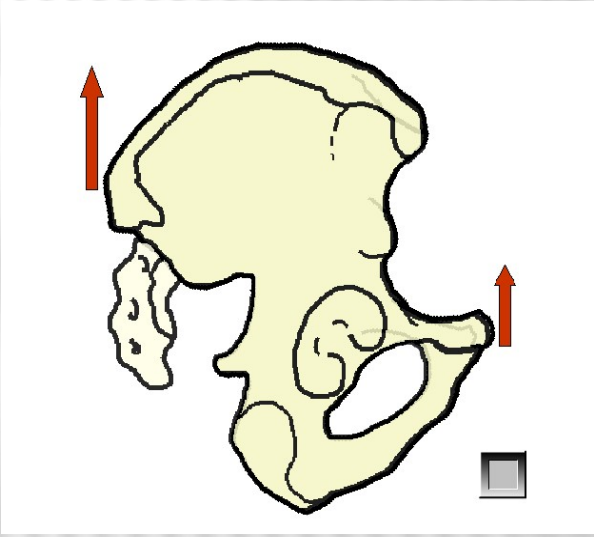


Mitchell Pelvis Mechanics









DIAGNOSIS OF THE INNOMINATES AND PUBES

- Lateralization tests determine the dysfunctional side
  - Use proper posterior medial vectors with motion testing
  - Ensure the patient is symmetrically placed on the table by the use of the hip lift (hip flop) maneuver
  - Ensure your patient does not have the arm or arms over the head but rather arms resting comfortable on the abdomen or along their side in a neutral position

Patient positioning

- Use components of asymmetry, restricted motion, tissue texture abnormalities, and tenderness to make your diagnosis
- In general, obtain all of your diagnostic data before making your final diagnostic conclusions

LANDMARK LOCALIZATION – WORK IN GROUPS OF 3

- Anterior Superior Iliac Spine (ASIS, SAIS)
- Pubic Tubercles (PT, TP)
- Posterior Superior Iliac Spine (PSIS, SIPS)
- Ischial Tuberosity (IT)
- Iliac crest (IC, CI)
- Medial Malleoli

LANDMARK LOCALIZATION – WORK IN GROUPS OF 3

- Anterior Superior Iliac Spine (ASIS, SAIS)
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- Ischial Tuberosity (IT)
- Iliac crest (IC, CI)
- Medial Malleoli

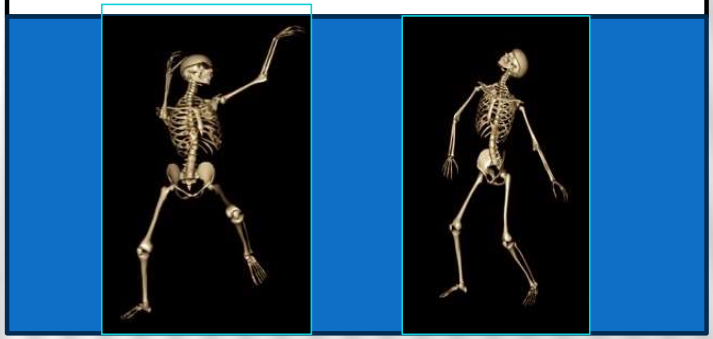
ANTERIOR LANDMARK LOCALIZATION ON MODELS:

Lateralization Tests			
	Positive		Neg.
	Right	Left	
Standing flexion			
Seated flexion			
ASIS Compression			

	Use Arrows or Abbreviations		
	Right	Left	Equal
Major Landmarks			
ASIS			
Sup./Inf.			
Med./Lat.			
Pubic Symphysis			
Sup./Inf.			
Ant./Post.			
Tenderness			
PSIS			
Sup./Inf.			
Minor Landmarks			
Malleoli			
Sup./Inf.			
Iliac Crest			
Sup./Inf.			
Ischial Tuberosity			
Sup./Inf.			
Lat./Med.			

Innominate (Os Coxae) Dx: _____

Pubic Diagnosis: _____



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ANTERIOR LANDMARK LOCALIZATION ON HUMANS:

Lateralization Tests			
	Positive		Neg.
	Right	Left	
Standing flexion			
Seated flexion			
ASIS Compression			

	Use Arrows or Abbreviations		
	Right	Left	Equal
Major Landmarks			
ASIS			
Sup./Inf.			
Med./Lat.			
Pubic Symphysis			
Sup./Inf.			
Ant./Post.			
Tenderness			
PSIS			
Sup./Inf.			
Minor Landmarks			
Malleoli			
Sup./Inf.			
Iliac Crest			
Sup./Inf.			
Ischial Tuberosity			
Sup./Inf.			
Lat./Med.			

Innominate (Os Coxae) Dx: _____

Pubic Diagnosis: _____

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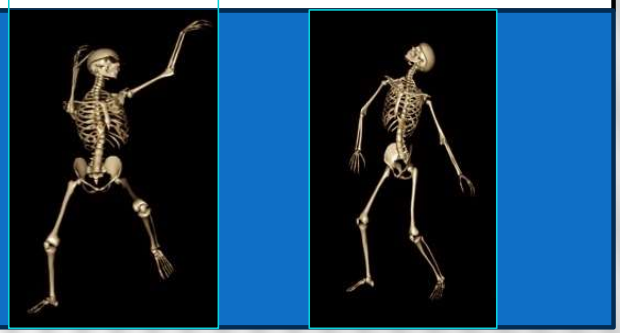
POSTERIOR LANDMARK LOCALIZATION ON MODELS:

Lateralization Tests			
	Positive		Neg.
	Right	Left	
Standing flexion			
Seated flexion			
ASIS Compression			

	Use Arrows or Abbreviations		
	Right	Left	Equal
Major Landmarks			
ASIS			
Sup./Inf.			
Med./Lat.			
Pubic Symphysis			
Sup./Inf.			
Ant./Post.			
Tenderness			
PSIS			
Sup./Inf.			
Minor Landmarks			
Malleoli			
Sup./Inf.			
Iliac Crest			
Sup./Inf.			
Ischial Tuberosity			
Sup./Inf.			
Lat./Med.			

Innominate (Os Coxae) Dx: _____

Pubic Diagnosis: _____



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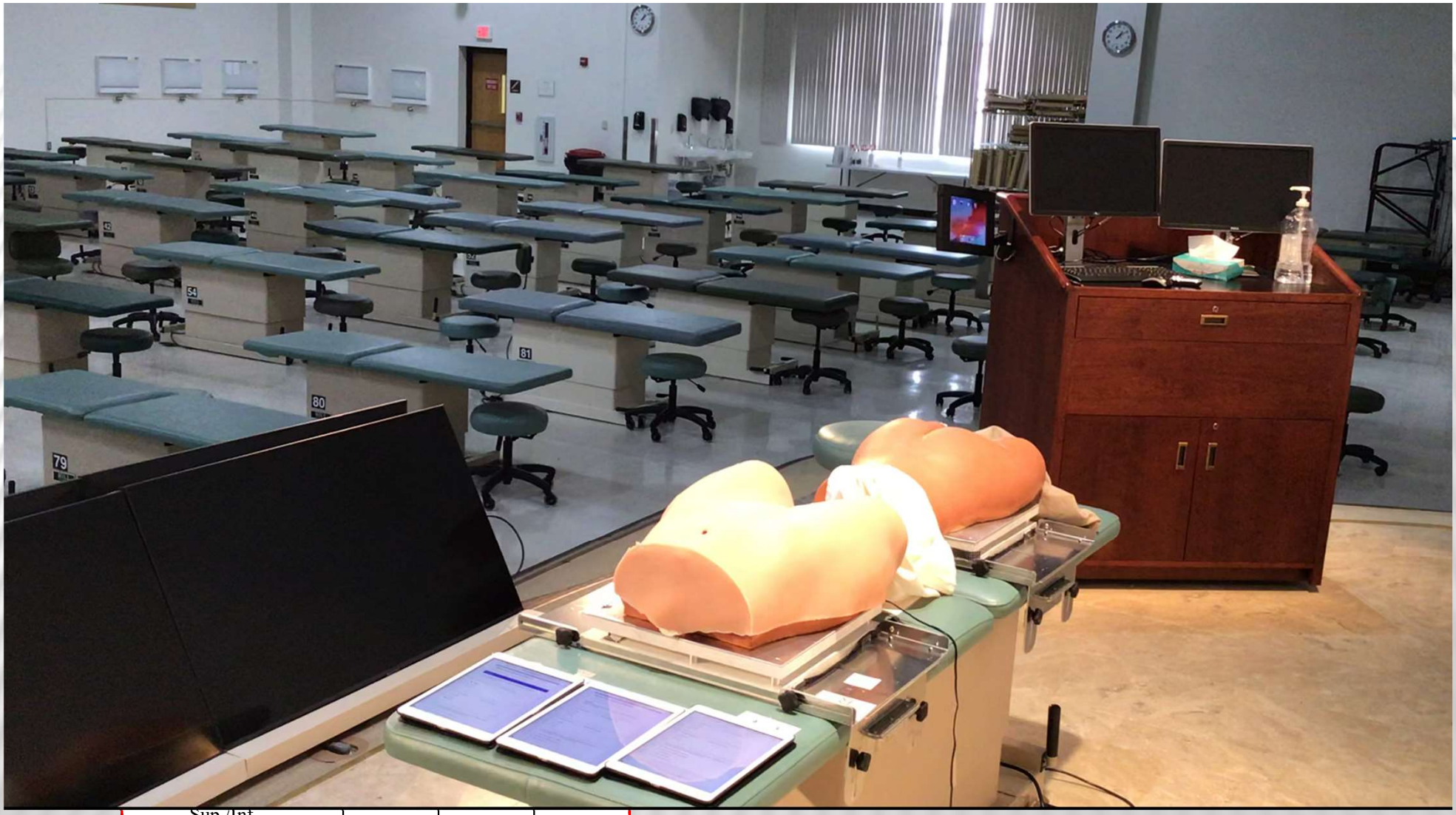


Sup./Inf.			
Lat./Med.			

COMPARE FINDINGS

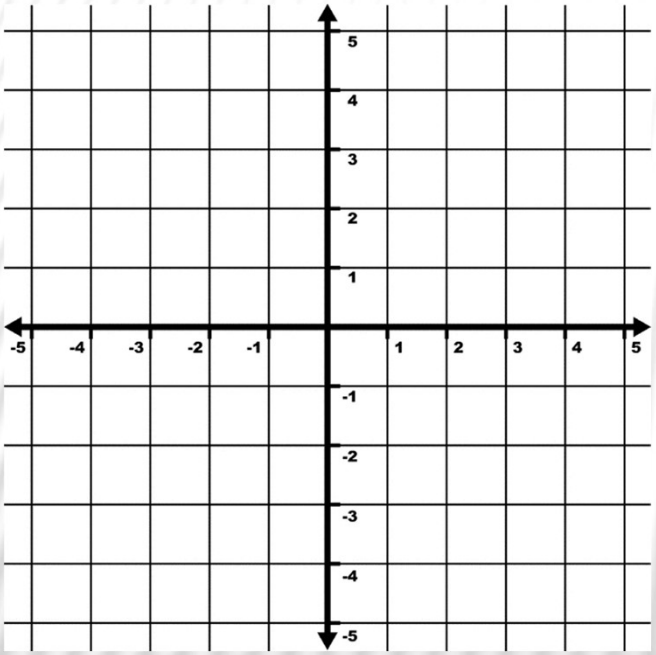
- Lateralization tests on humans
- Landmarks
- Photos

LANDMARK LOCALIZATION – WORK IN GROUPS OF 3

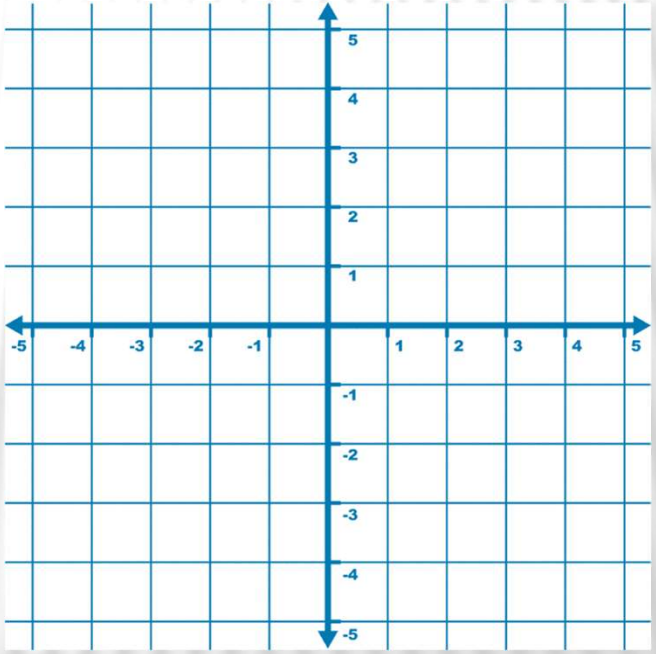
- Anterior Superior Iliac Spine (ASIS, SAIS)
- Pubic Tubercles (PT, TP)
- Posterior Superior Iliac Spine (PSIS, SIPS)
- Ischial Tuberosity (IT)
- Iliac crest (IC, CI)
- Medial Malleoli

OPTIMIZING POSITIONAL ASYMMETRY TESTING OUTCOMES

ALIGNING PATIENT'S AND EXAMINER'S CARDINAL PLANES



Patient on table



Physician above and to the side of the table


00:02:08
Pause
Clear
Back
Jeep
TOTAL DX points=


00:02:08
Pause
Clear
Back
Jeep
TOTAL DX points=


00:02:08
Pause
Clear
Back
Jeep
TOTAL DX points=


00:02:08
Pause
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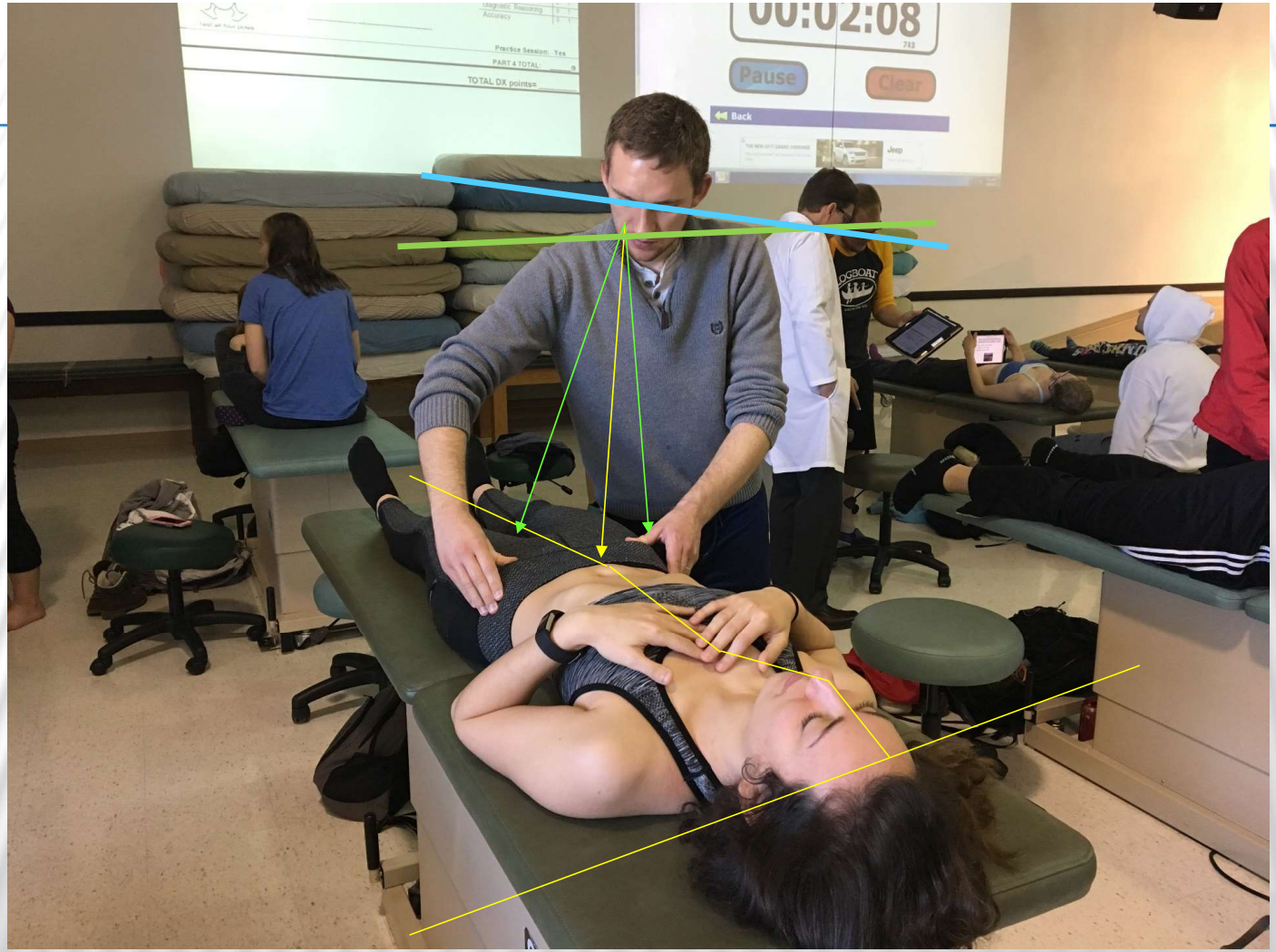
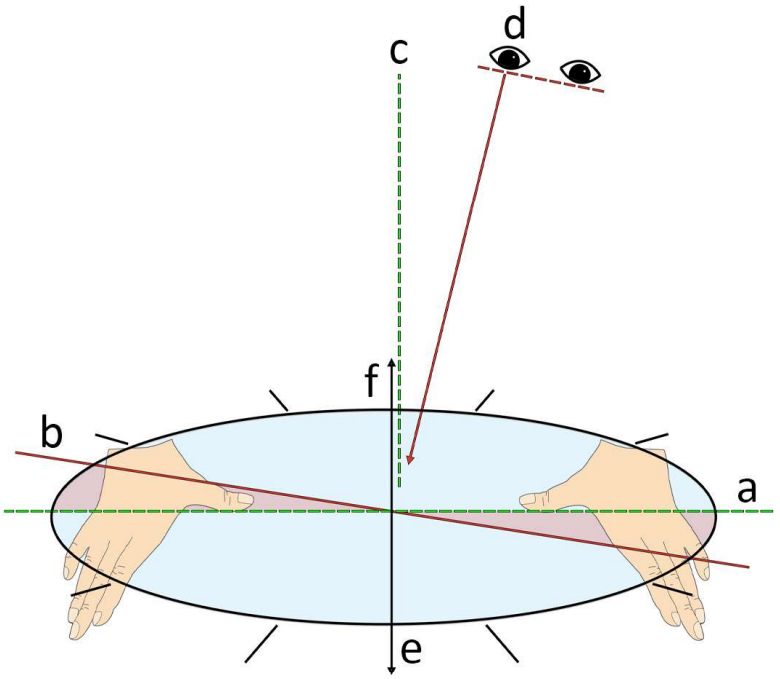
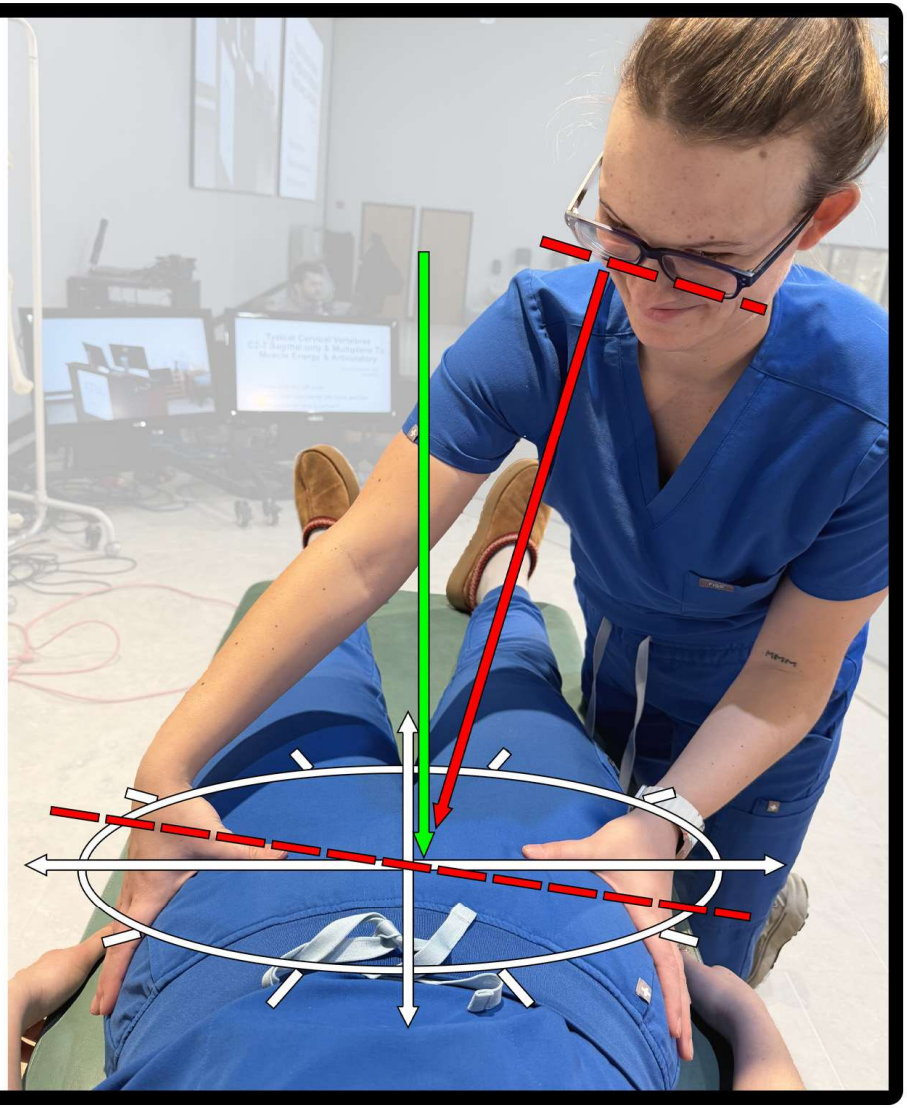
TOTAL DX points=


00:02:08
Pause
Clear
Back
Jeep
TOTAL DX points=

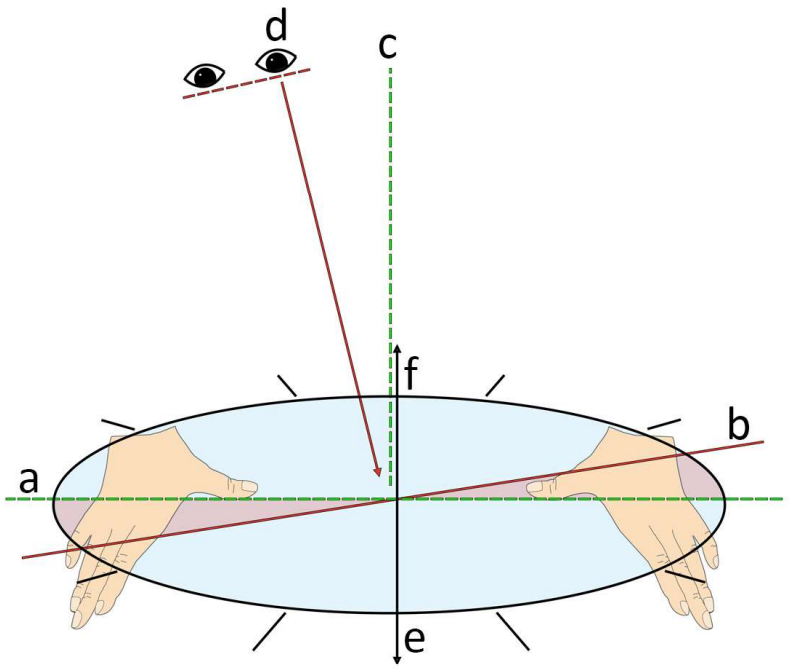

00:02:08
Pause
Clear
Back
Jeep
TOTAL DX points=

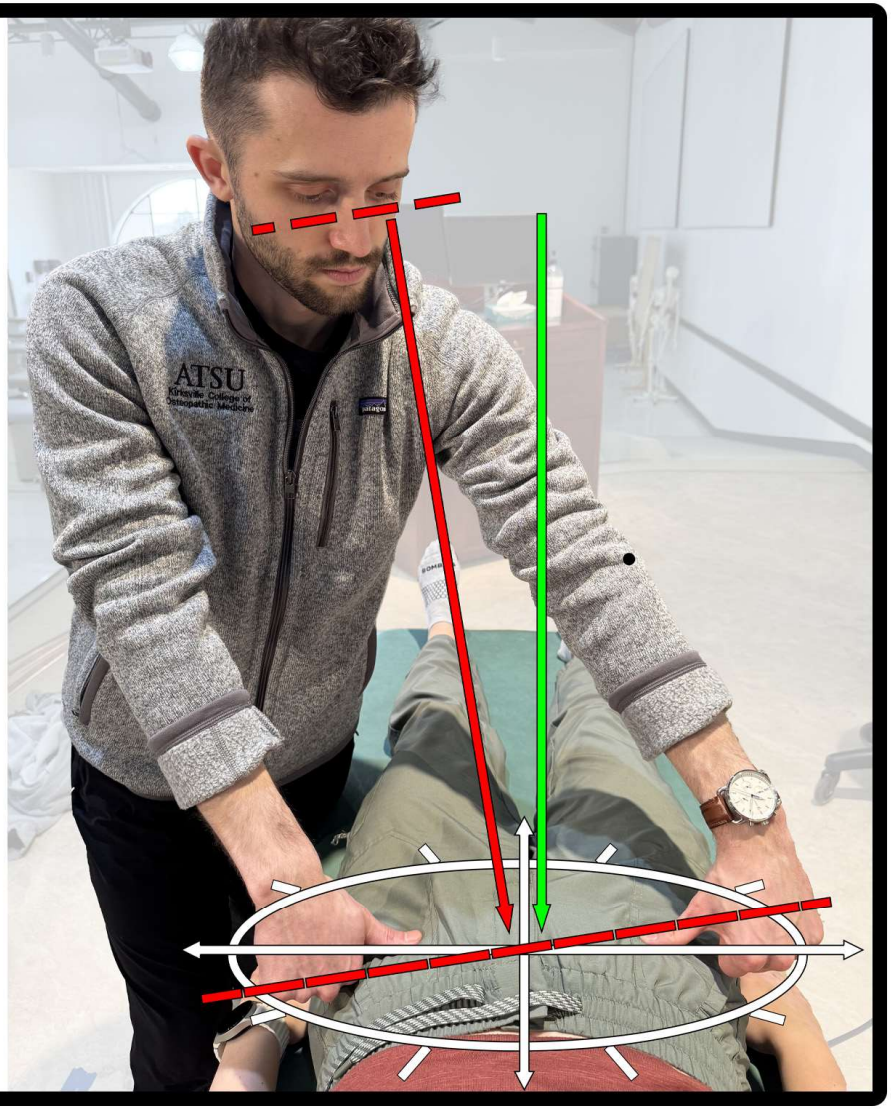
C: Skewed Perception for Right Eye Dominant Examiners



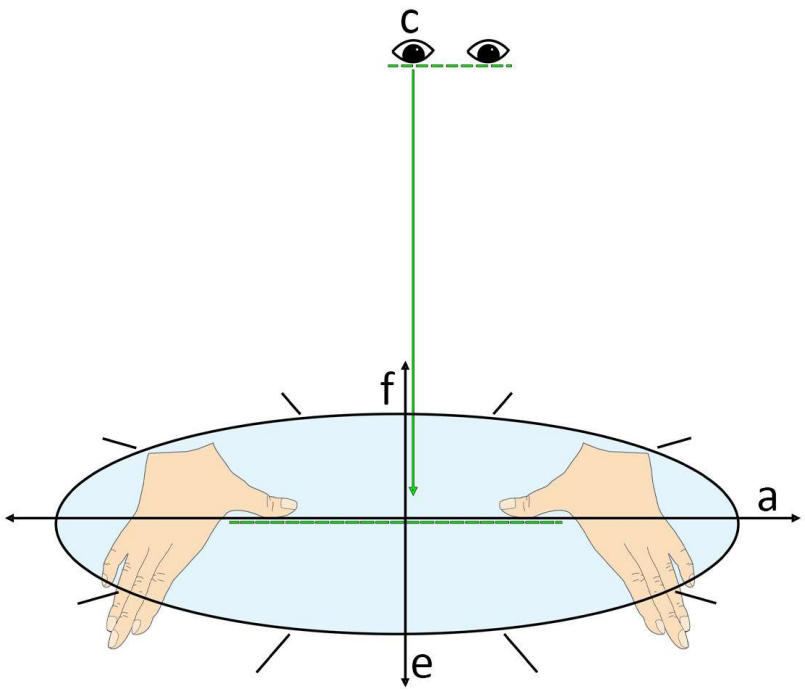


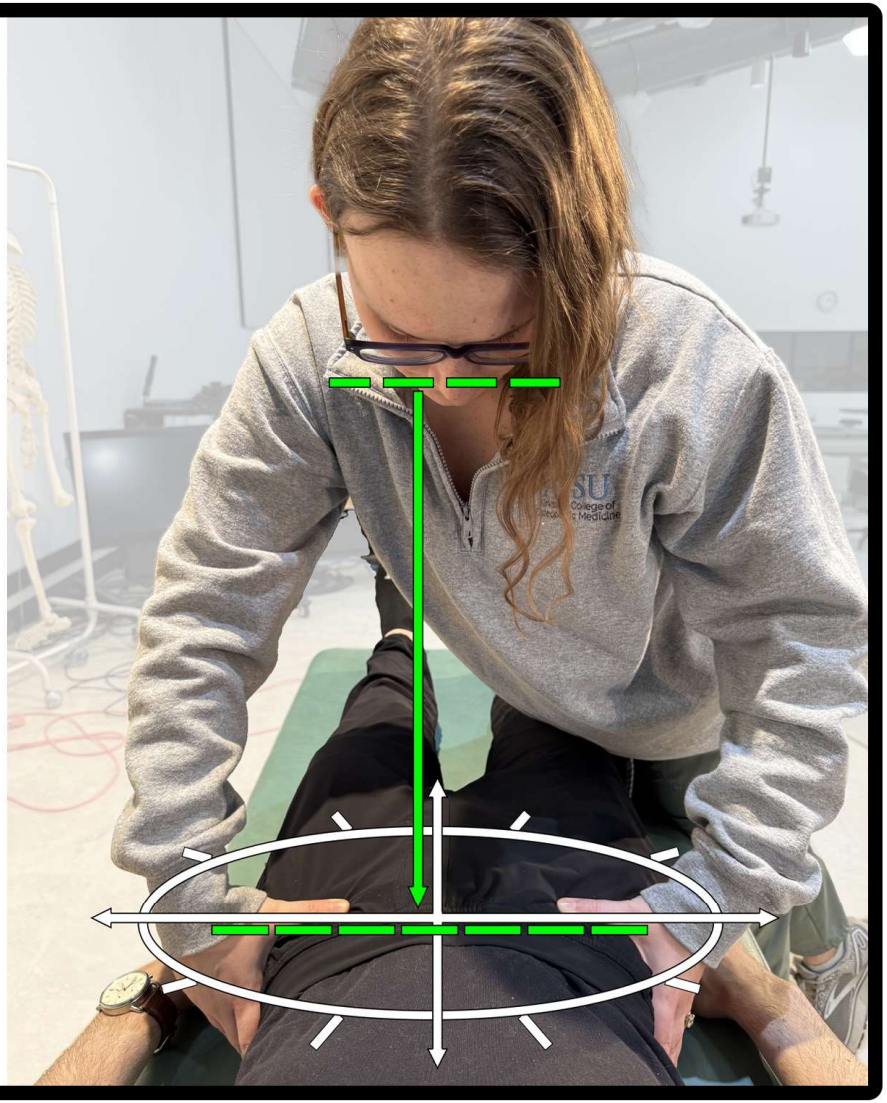
B: Skewed Perception for Left Eye Dominant Examiners



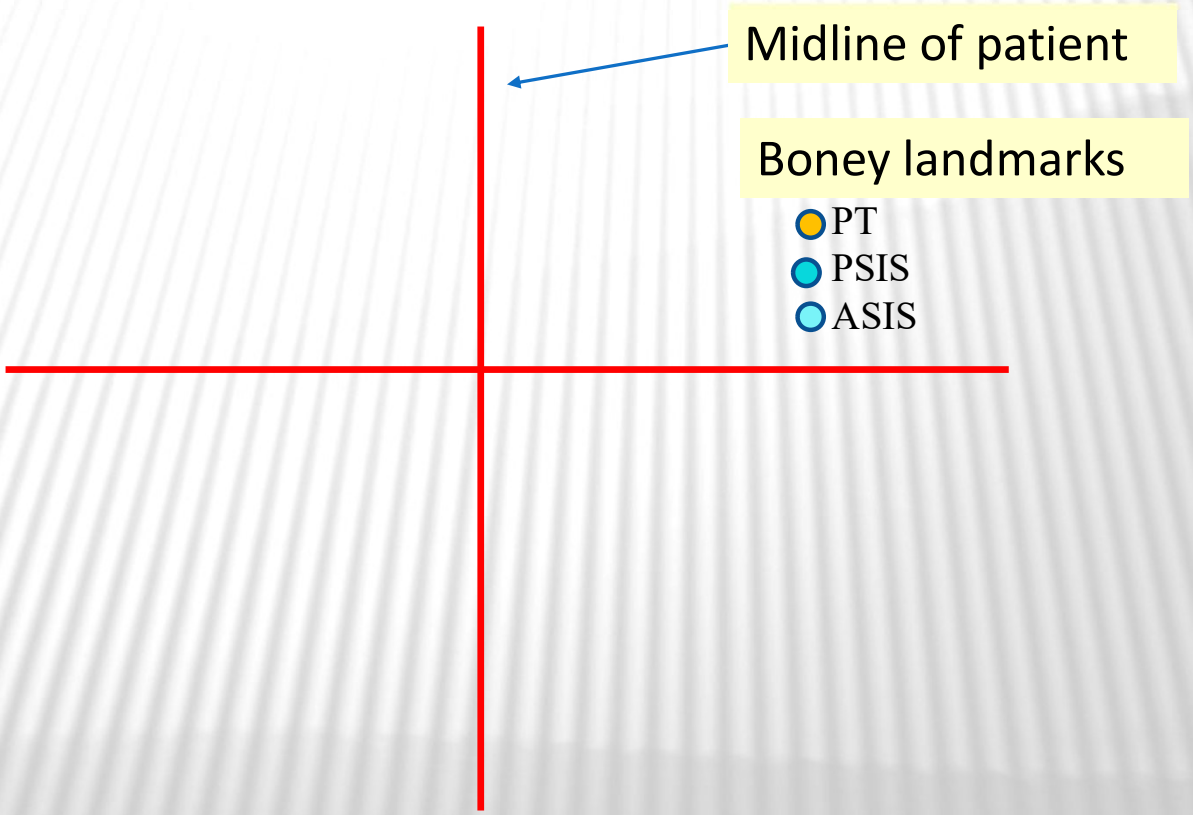


A: Ideal Technique

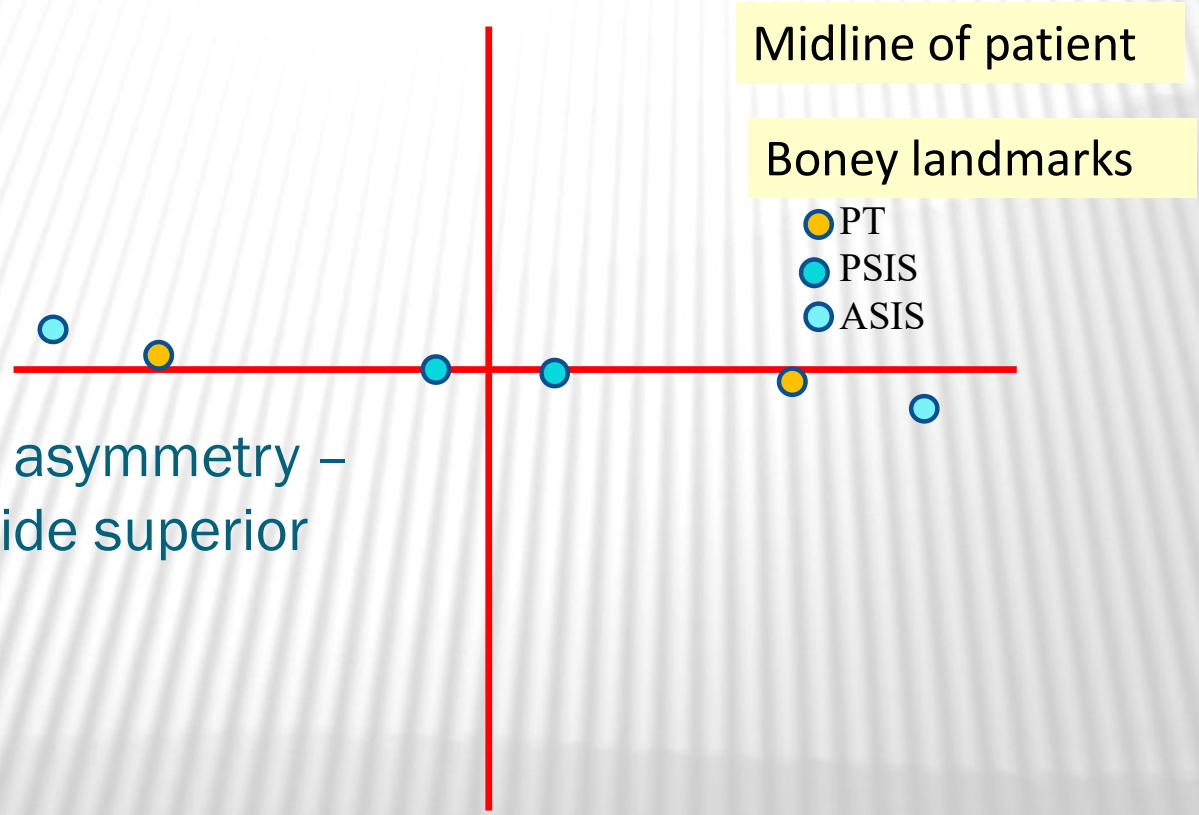




OPTIMIZING POSITIONAL ASYMMETRY TESTING OUTCOMES

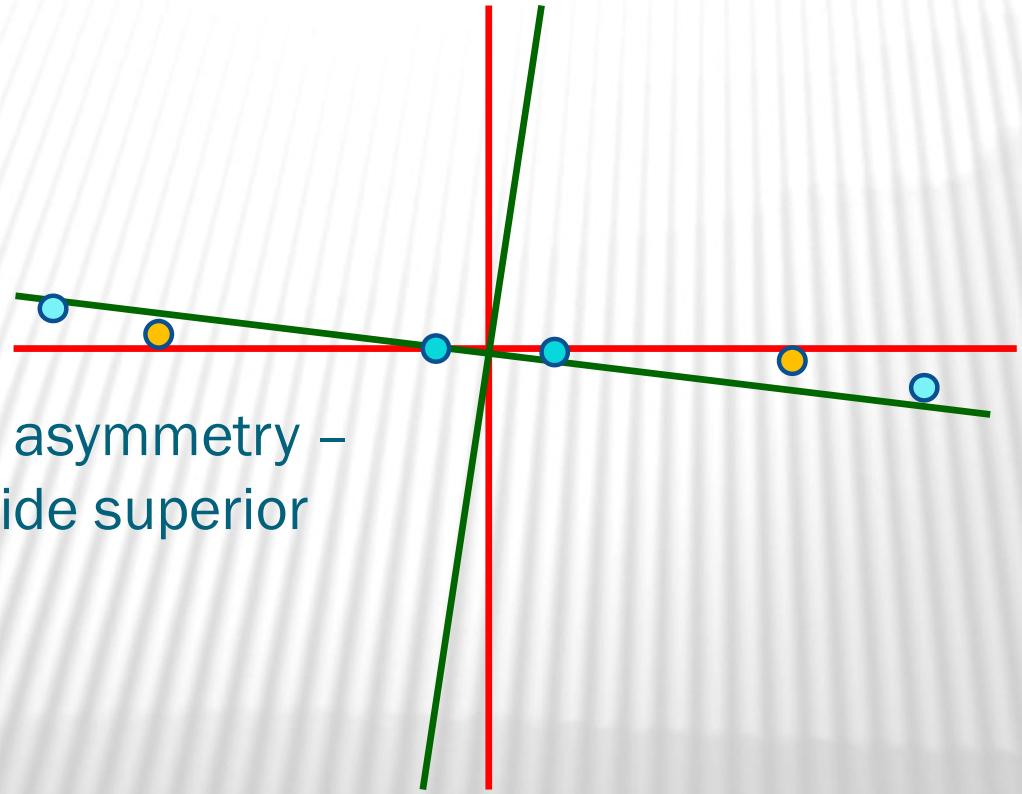


BASED ON LATERALIZATION TESTS POSITIVE ON THE RIGHT



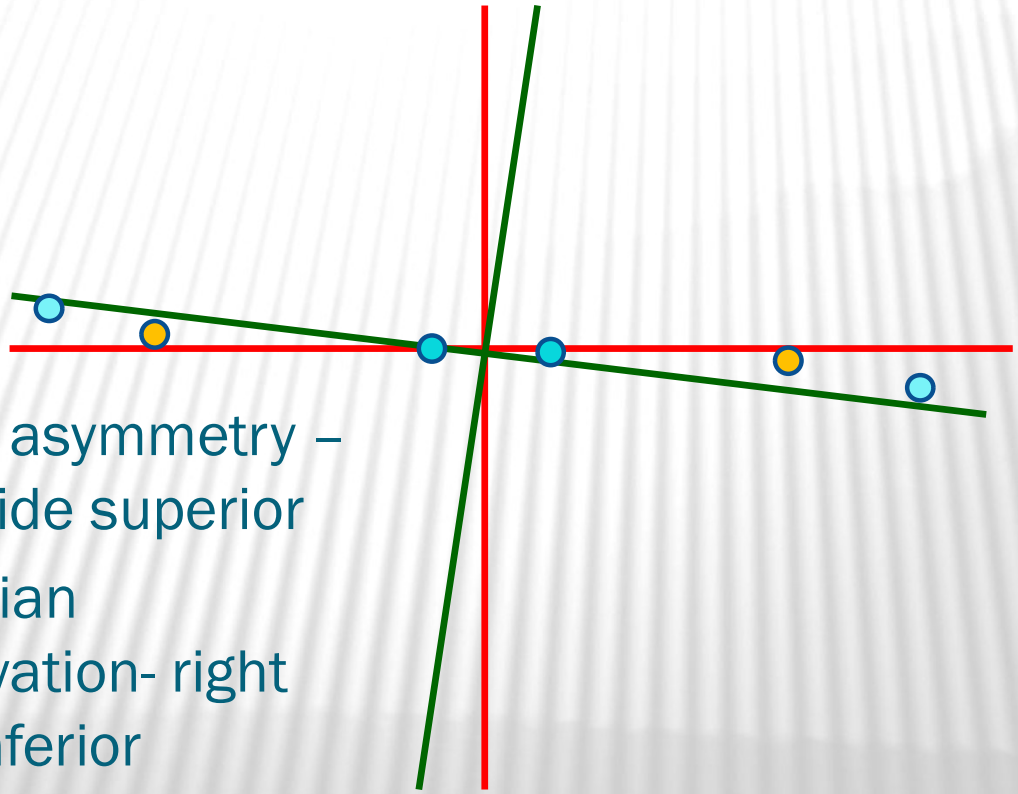
- Actual asymmetry – right side superior

OPTIMIZING POSITIONAL ASYMMETRY TESTING OUTCOMES



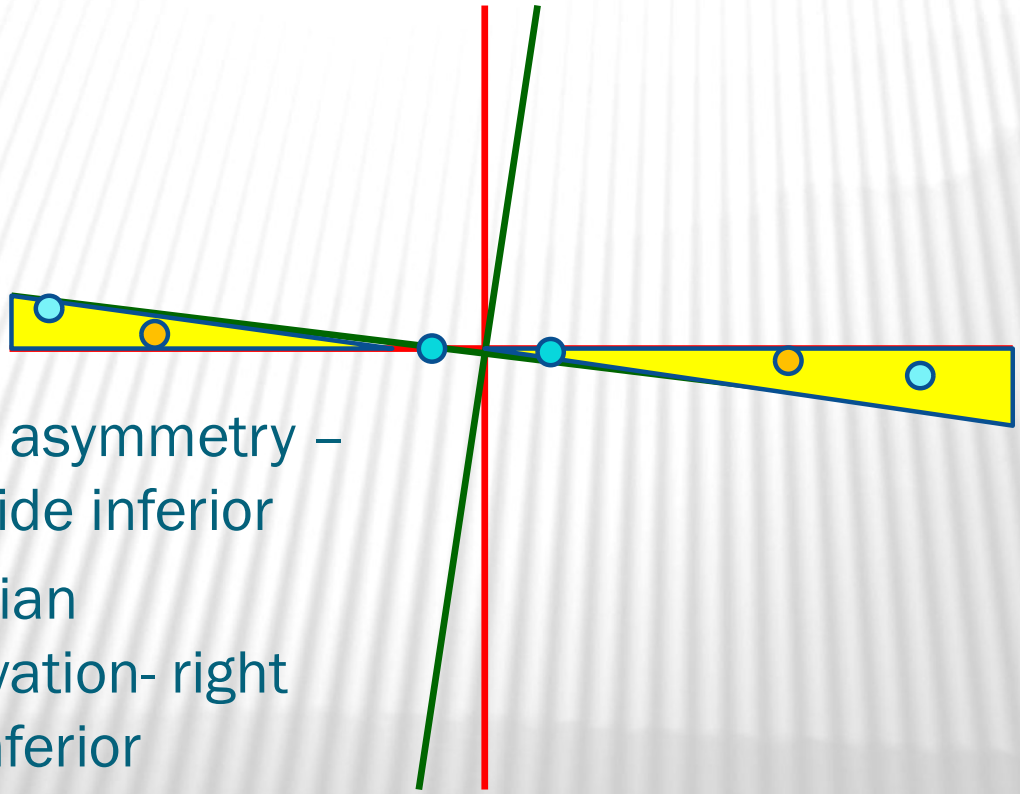
- Actual asymmetry – right side superior

OPTIMIZING POSITIONAL ASYMMETRY TESTING OUTCOMES



- Actual asymmetry – right side superior
- Physician observation- right side inferior

NAMING STANDARD BASED ON PATIENT'S RIGHT SIDE



- Actual asymmetry – right side inferior
- Physician observation- right side inferior

KINESTHESIS

- Awareness of the position and movement of the parts of the body by means of sensory organs (proprioceptors, interoceptors) in the muscles and joints

- Osteopathic Manipulative Medicine = somesthesis + kinesthesis
  - How does your performance of a test influence your test findings
  - How does your own somatic dysfunction, pain, stress, sleep, anxiety, … influence manual skills
  - Accurate localization AND appropriate alignment of frames of reference

Innominate Diagnoses

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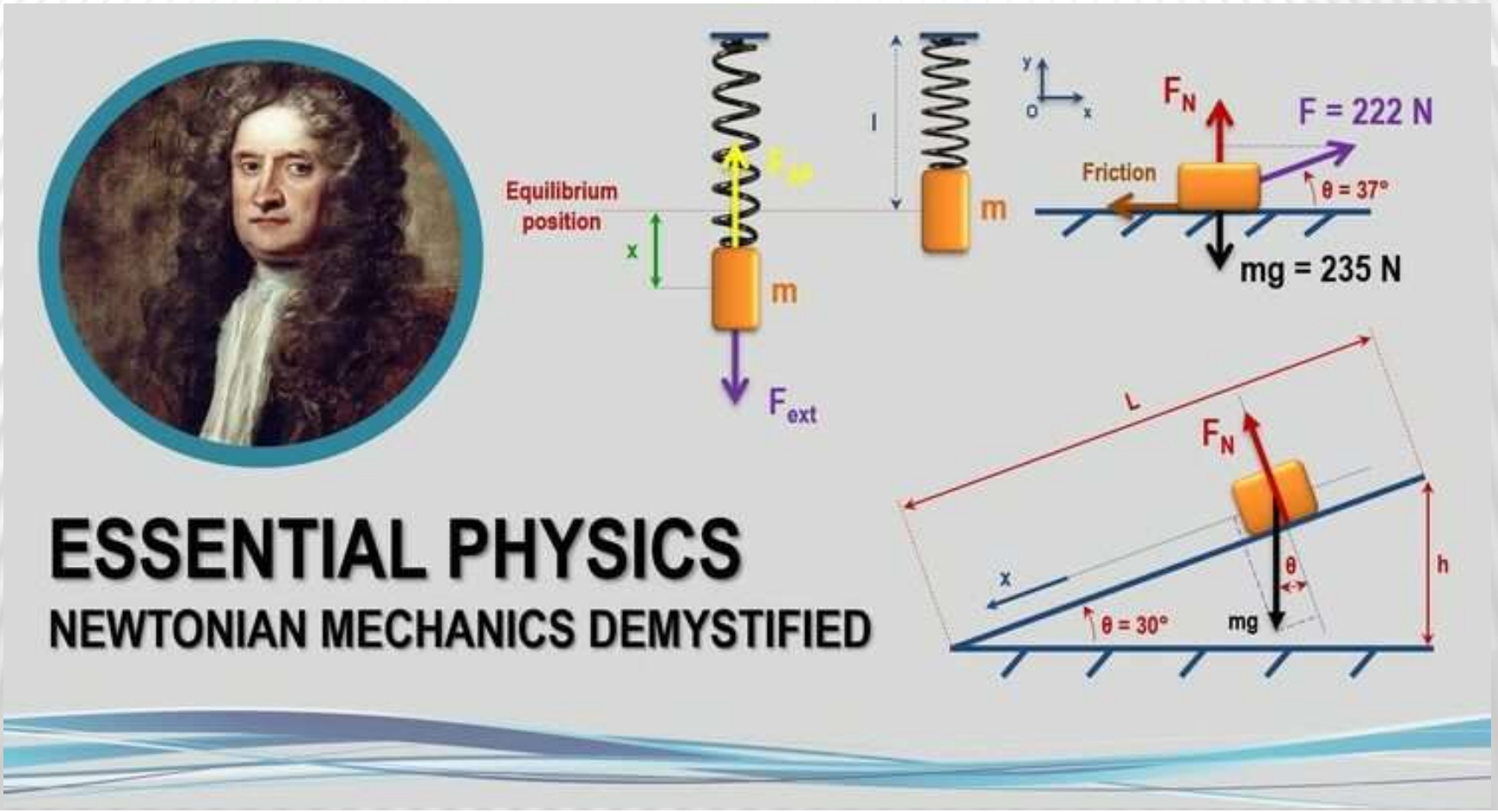
MITCHELL MODEL OF THE PELVIS: NEWTONIAN OMM



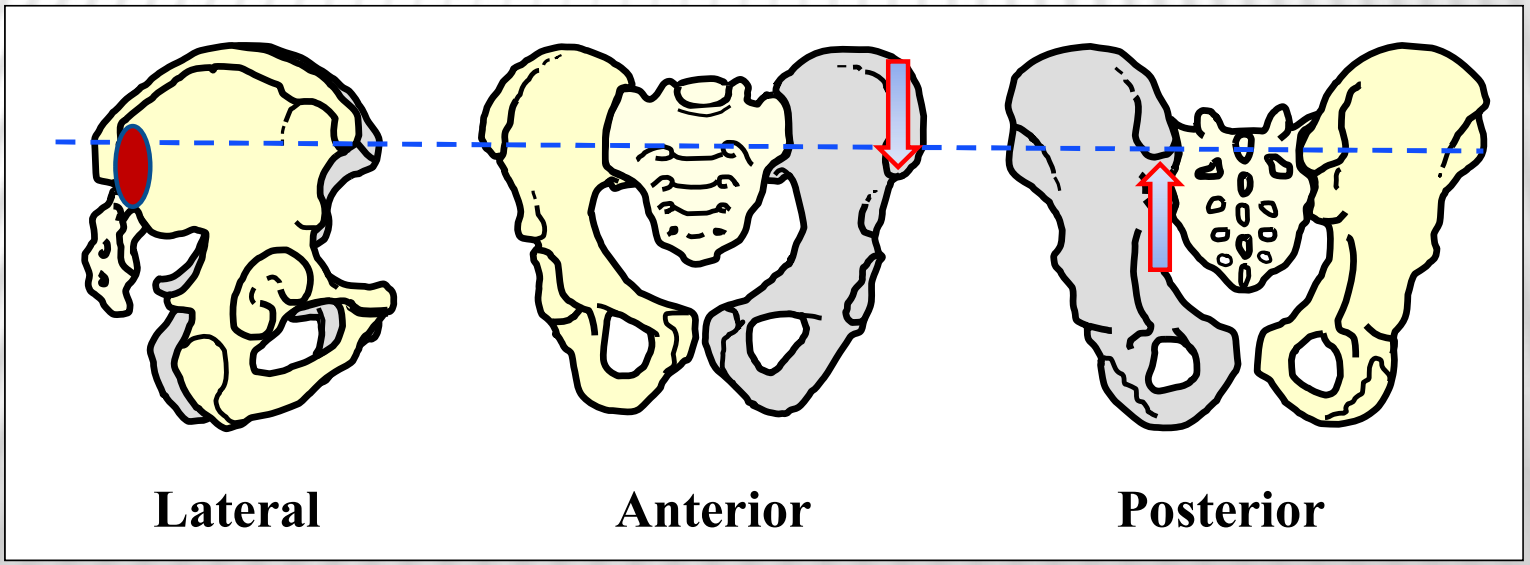
Anteriorly Rotated Left Innominate

Left ASIS anterior

⊕ Left lateralization

Left ASIS inferior

Left PSIS superior



Anteriorly Rotated Innominate Som. Dys.

Clinical Correlations:
✓Complaints may include sacroiliac pain, ipsilateral hamstring tightness and spasm, and sciatica.

Palpatory findings may include:
✓ tissue texture changes at the ipsilateral inferior lateral angle of the sacrum
✓ iliolumbar ligament tightness

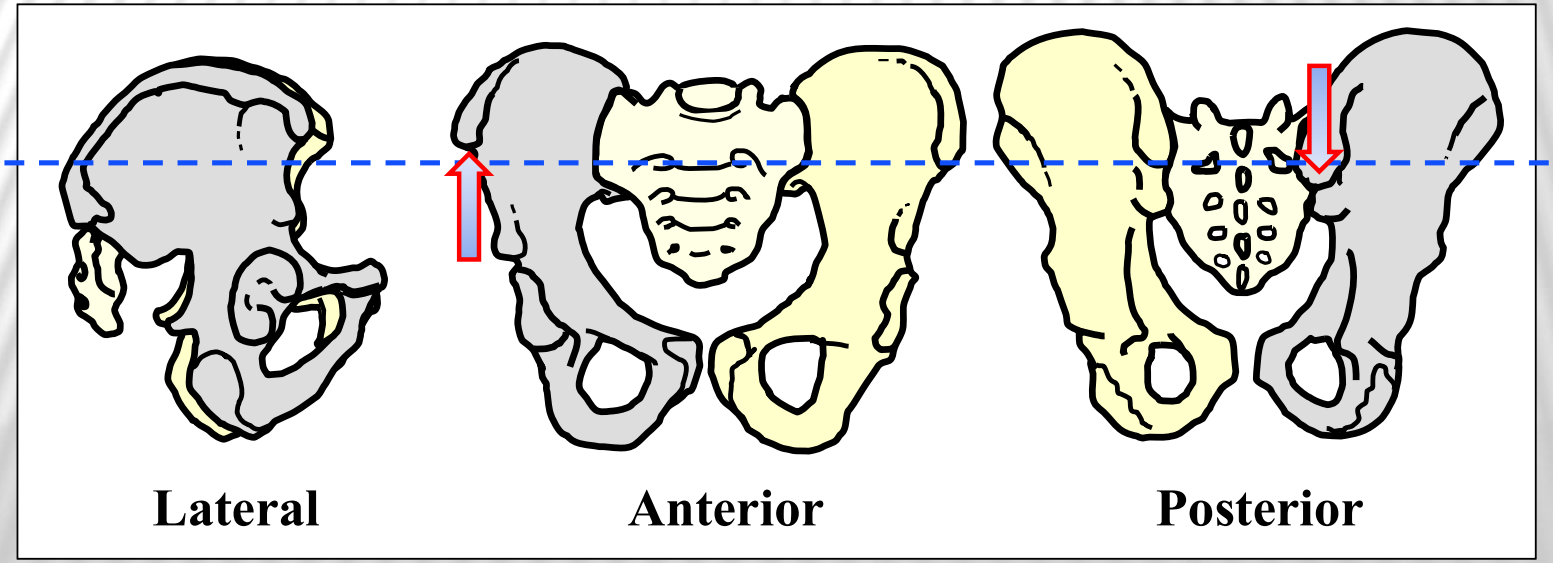
Posteriorly Rotated Right Innominate

Right PSIS posterior

Right ASIS superior

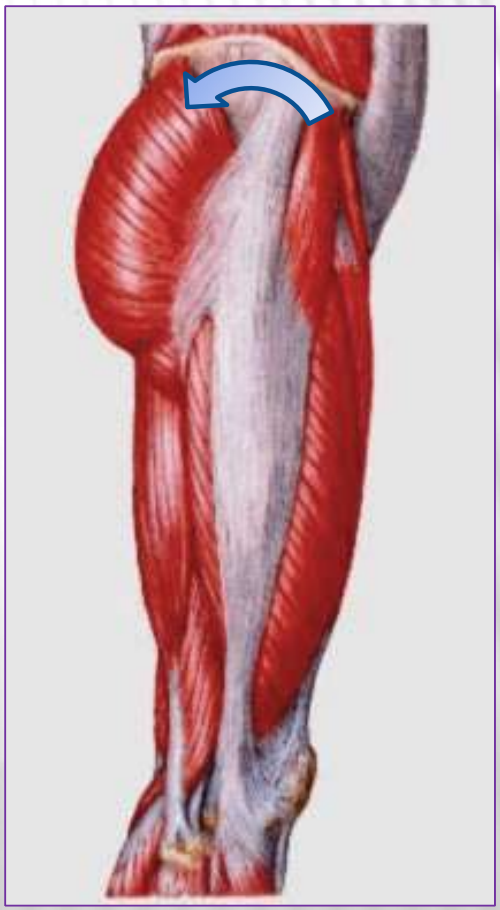
Right PSIS inferior

⊕ Right lateralization



Posteriorly Rotated Innominate Som. Dys.

Clinical Correlations:
✓Complaints may include sacroiliac, inguinal or groin pain secondary to rectus femoris dysfunction
✓ medial knee pain secondary to sartorius dysfunction.
✓Anterior knee pain due to rectus femoris tension
Palpatory findings may include:
✓ tissue texture changes at the ipsilateral sacral sulcus
✓inguinal ligament tenderness.



INTERMEDIATE NEWTONIAN OMM CONSIDERATIONS

Muscular considerations

- Hamstrings
- Piriformis/gluteals
- Iliopsoas
- Erector spinae

Innominate Shears (Upslipped/downslipped Subluxation)

- ✓An entire innominate has shifted superiorly or inferiorly without rotation relative to the sacrum
- ✓ Small amount of sup/inf glide occurs with hip abduction or adduction
- ✓The dysfunction is found on the side on the positive standing flexion test or ASIS compression test

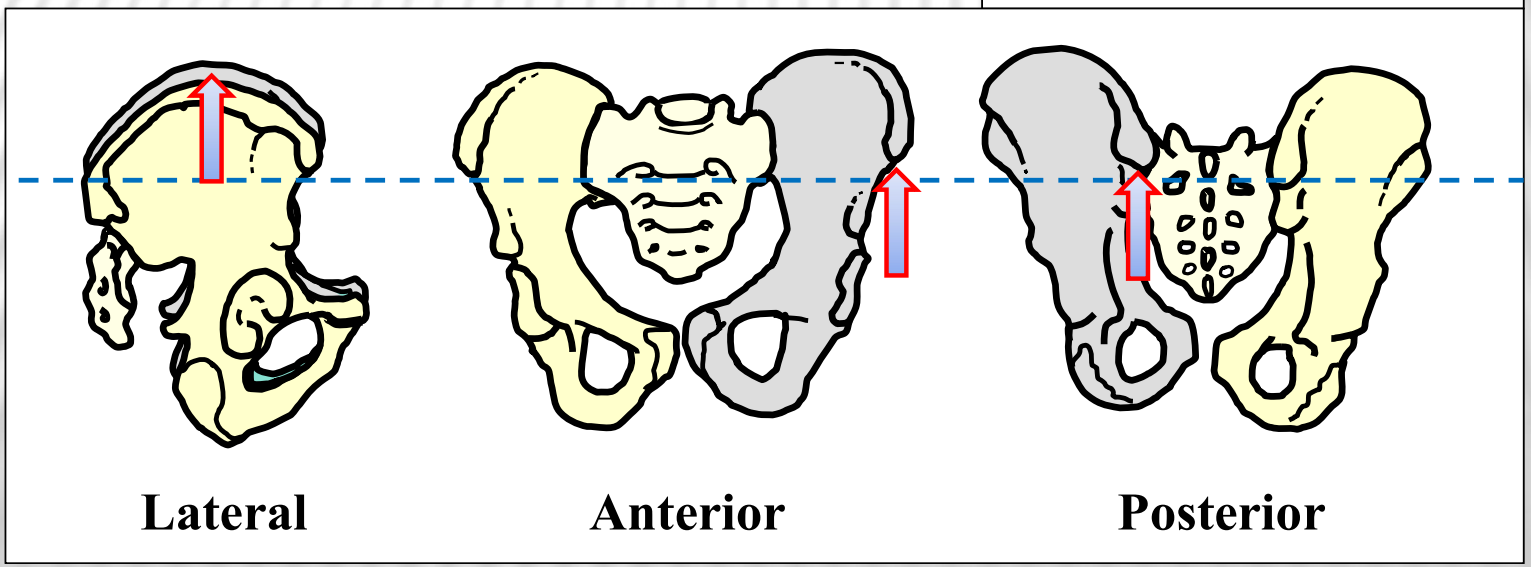
Left Superior Innominate Shear

Left Iliac Crest superior

Left ASIS superior

Left PSIS superior

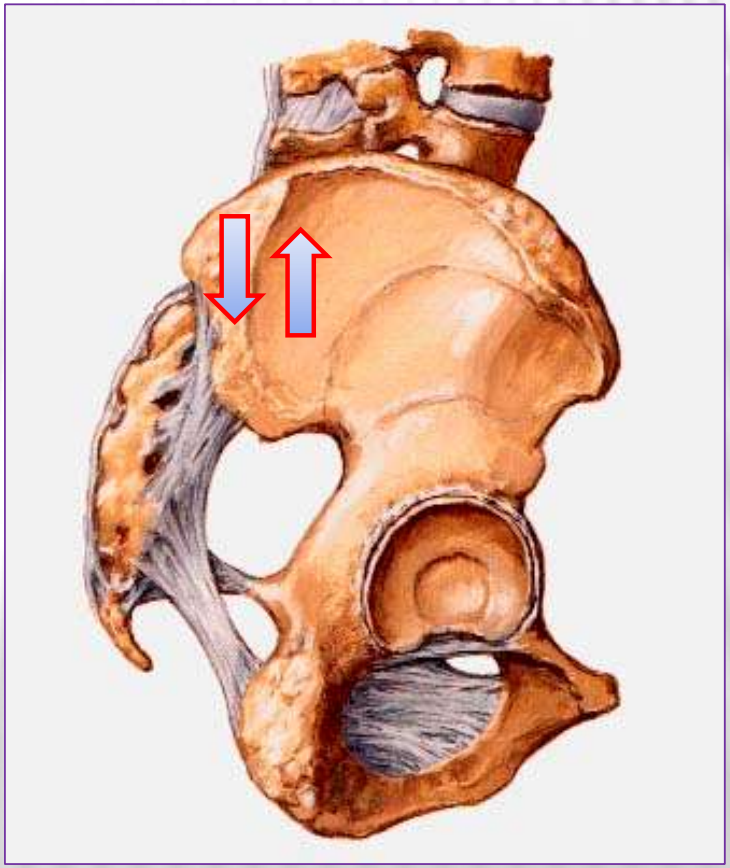
⊕ Left lateralization



Innominate Shears

Clinical Correlations:
✓Complaints may include sacroiliac or pelvic pain.

Palpatory findings:
✓tissue texture changes at the ipsilateral sacroiliac joint
✓Tissue texture findings at the ipsilateral pubes.



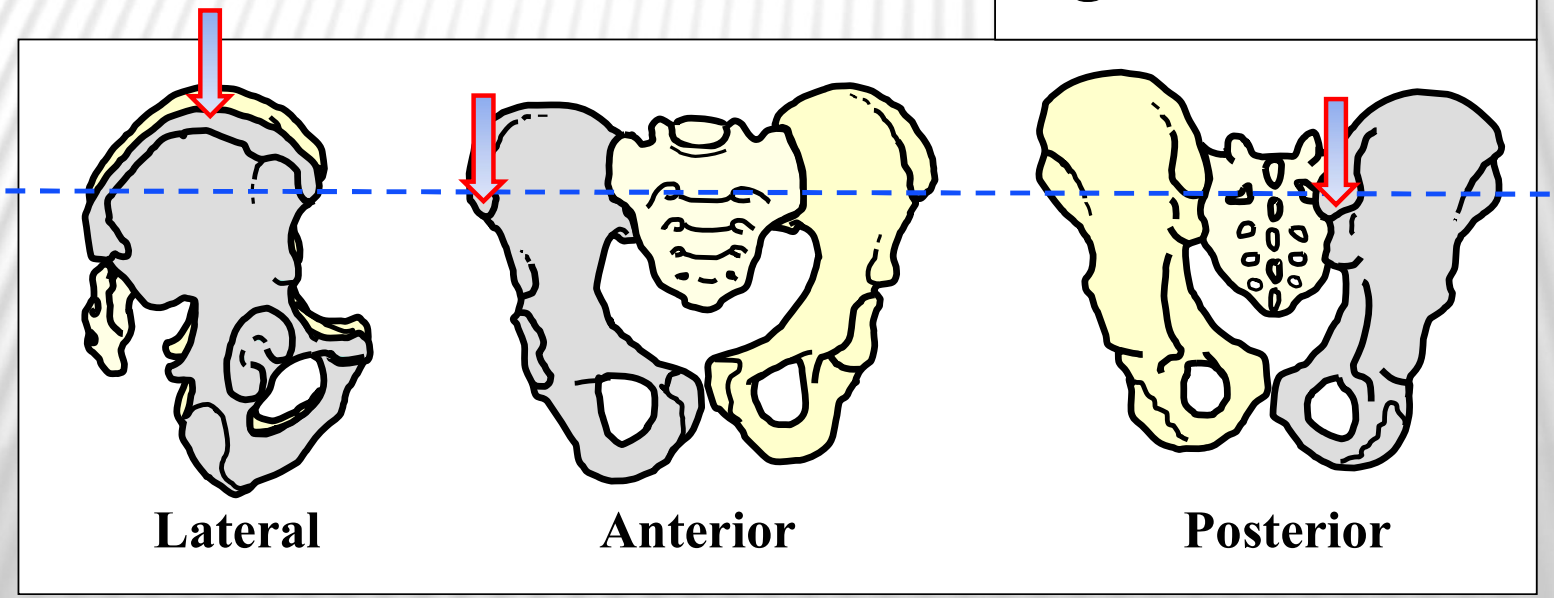
Right Inferior Innominate Shear

Right Iliac Crest inferior

Right ASIS inferior

Right PSIS inferior

⊕ Right lateralization



Innominate Flares

✓During pulmonary ventilation – as normal, biomechanically expected motion

✓As Somatic Dysfunction - An entire innominate is rotated medially (inflare) or laterally (outflare) around a vertical axis relative to the sacrum.

✓Inflare occurs with internal rotation of the hip

✓Outflare occurs with external rotation of the hip

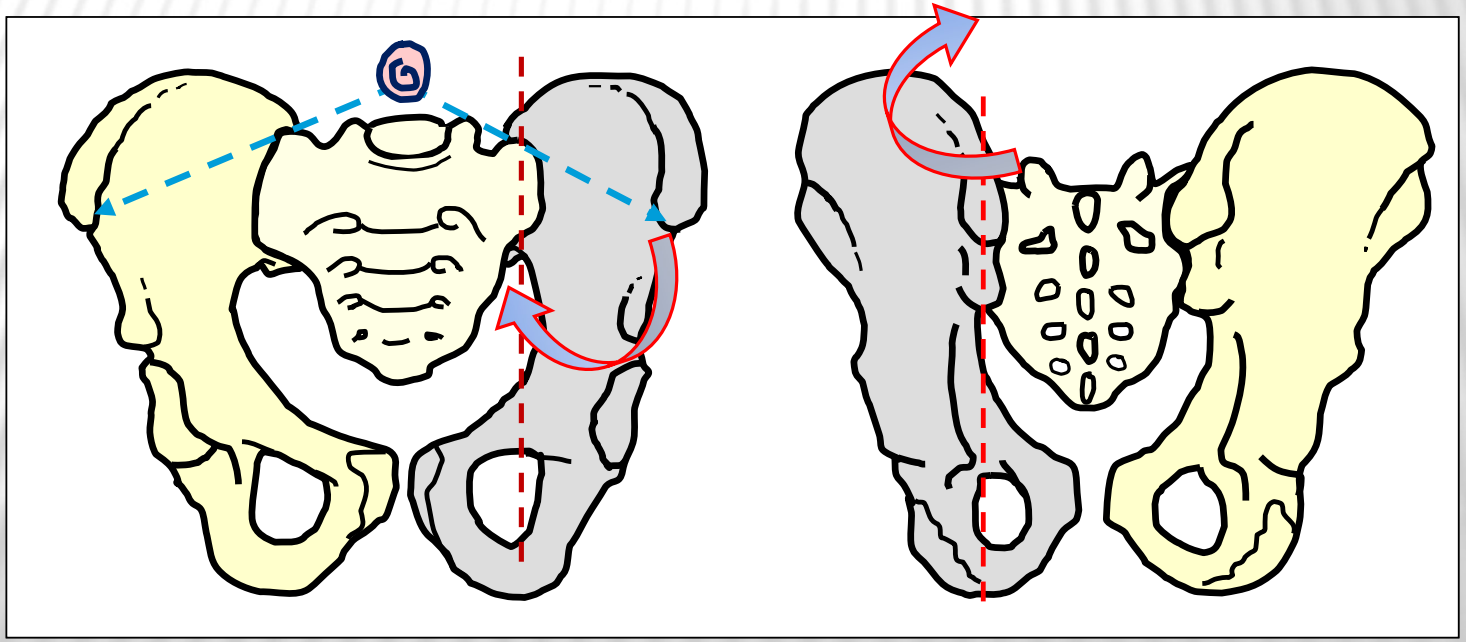
✓The dysfunction is found on the side on the positive standing flexion test or ASIS compression test.

Left Innominate Inflare

⊕ Left lateralization

Left ASIS medial
Medial motion is possible

Left PSIS lateral

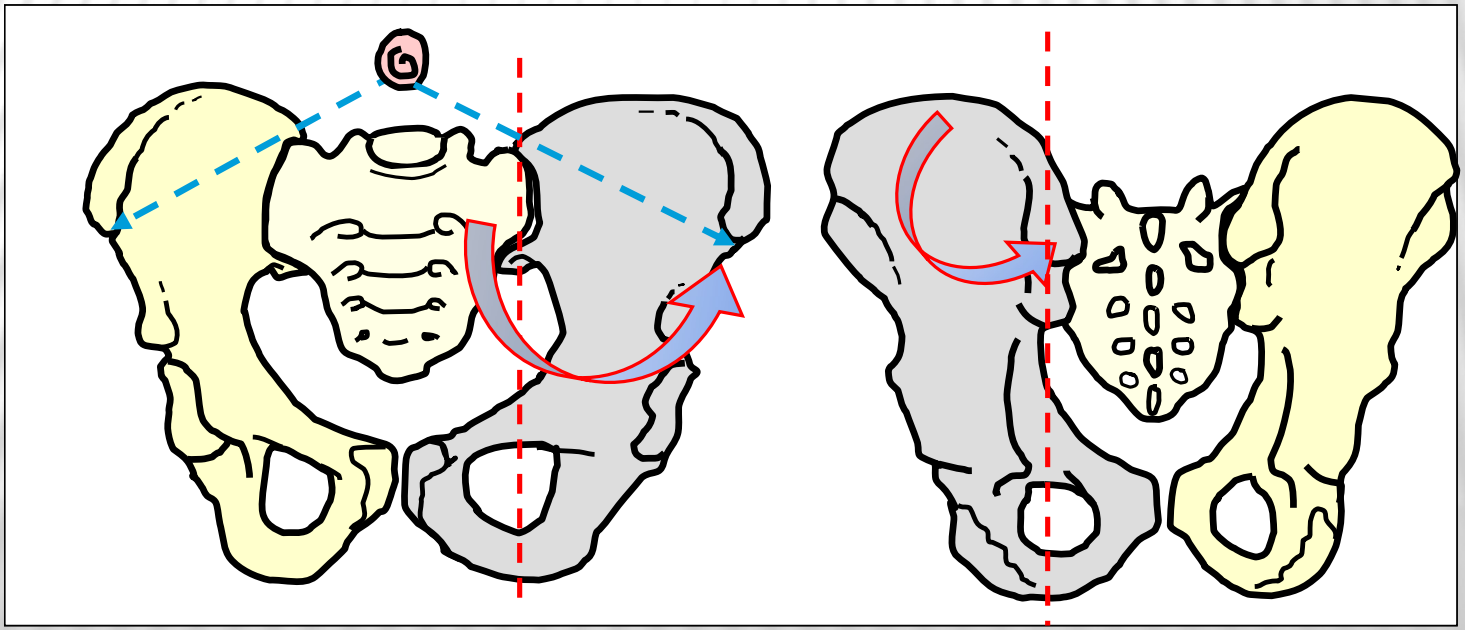


Left Innominate Outflare

⊕ Left lateralization

Left ASIS lateral
Lateral motion is possible

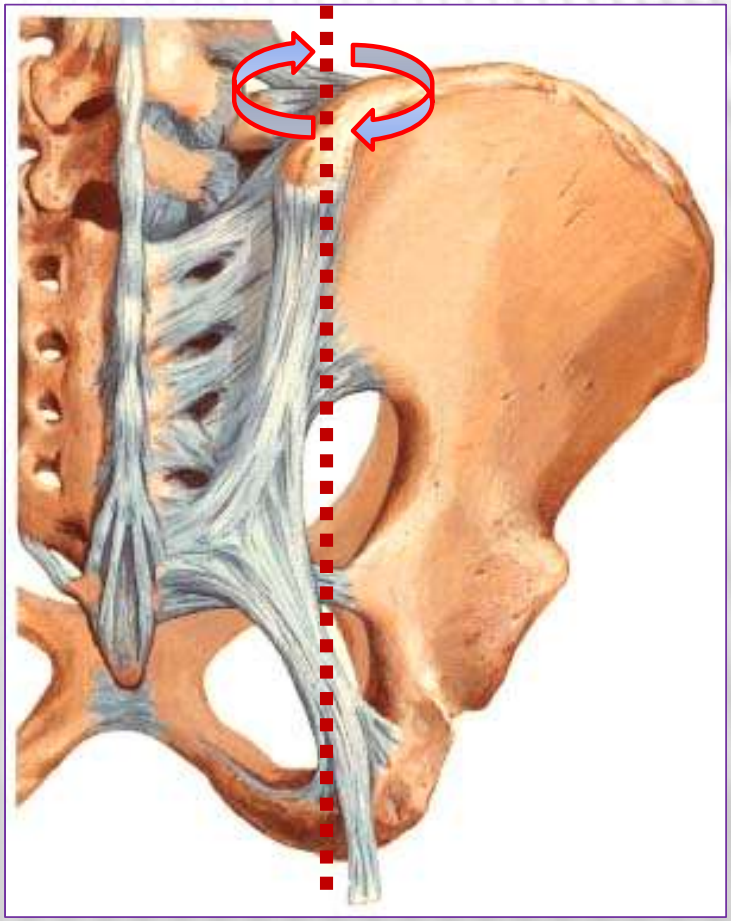
Left PSIS medial



Innominate Flares

Clinical Correlations:
✓Complaints may include pelvic pain or sacroiliac pain.

Palpatory findings may include:
✓ muscular tension anteriorly with an outflare
✓ muscular tension posteriorly with an inflare



BEST DIAGNOSTIC PRACTICE

- Dominate Eye In Center
- Eyes level with the patient
- Shoulder's square
- Arm's symmetric angle

DIAGNOSE PELVIS:
INNOMINATE ROTATIONS, SHEARS, INFLARE AND OUTFLARE

Lateralization Tests			
	Positive		Neg.
	Right	Left	
Standing flexion			
Seated flexion			
ASIS Compression			

	Use Arrows or Abbreviations		
	Right	Left	Equal
Major Landmarks			
ASIS			
Sup./Inf.			
Med./Lat.			
PSIS			
Sup./Inf.			
Pubic Symphysis			
Sup./Inf.			
Ant./Post.			
Tenderness			
Minor Landmarks			
Ischial Tuberosity			
Sup./Inf.			
Lat./Med.			
Iliac Crest			
Sup./Inf.			
Malleoli			
Sup./Inf.			

Innominate (Os Coxae) Dx: _____

Pubic Diagnosis: _____

Sacral Diagnosis: _____

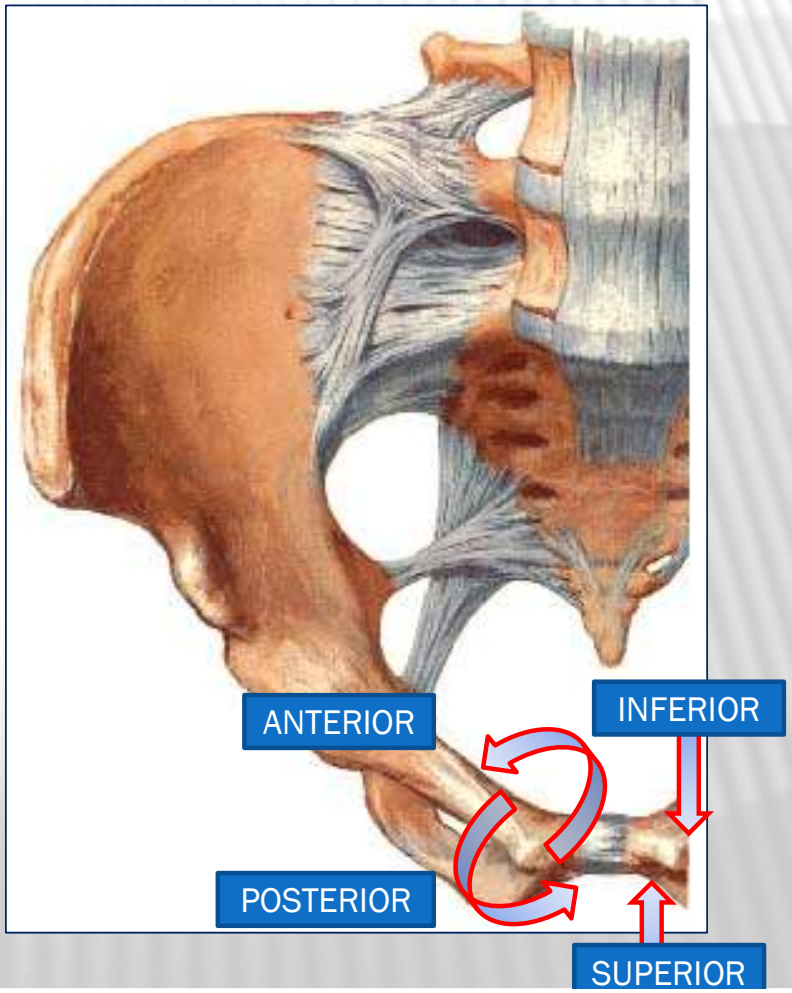
L5 Diagnosis: _____

L5 is uncompensated (maladapted) when L5 and sacral base are rotated in the same direction.

PUBIC SYMPHASIS DYSFUNCTIONS

Clinical Correlations:

- Complaints may include pain at the pubic symphysis or associated structures
- Palpatory findings include tenderness, altered tissue texture and restricted motion of the pubic bone(s)



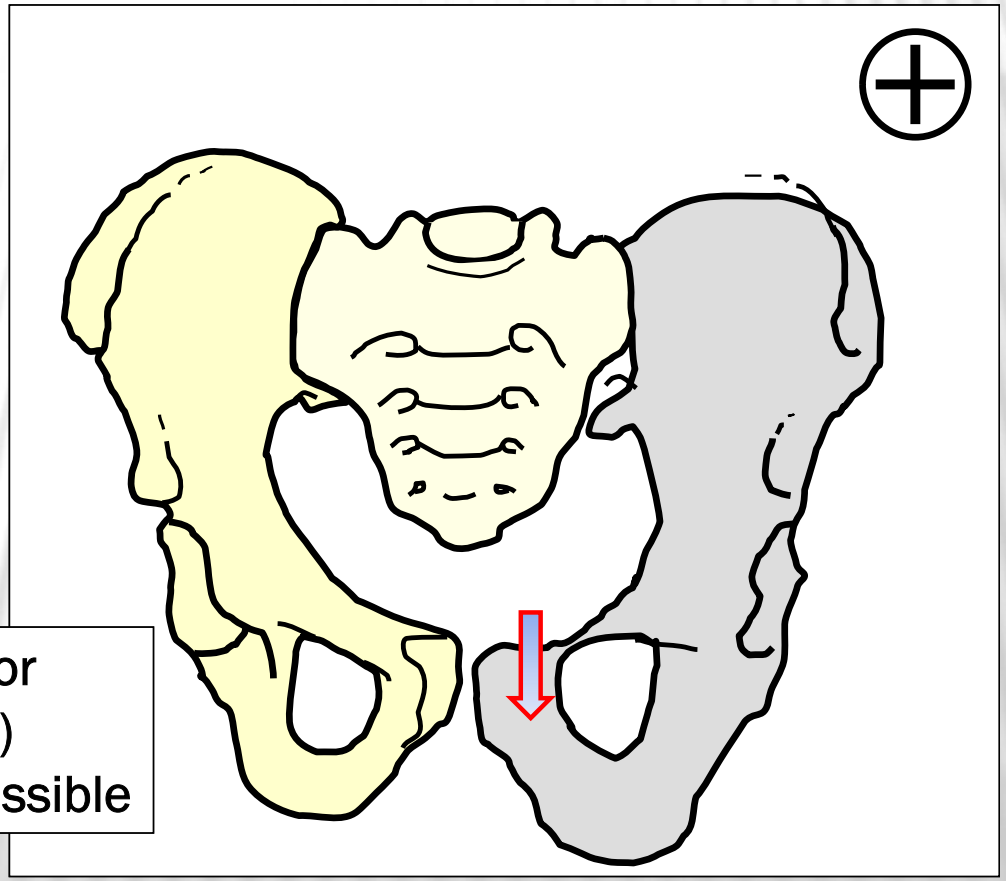
Vertical Pubic Shears

✓One pube or ramus is displaced superior or inferior relative to the other pube
✓The ASIS and the PSIS appear equal

✓The dysfunction is found on the side of the positive lateralization test – seated or standing flexion test or ASIS compression test

Left Inferior Pubic Shear

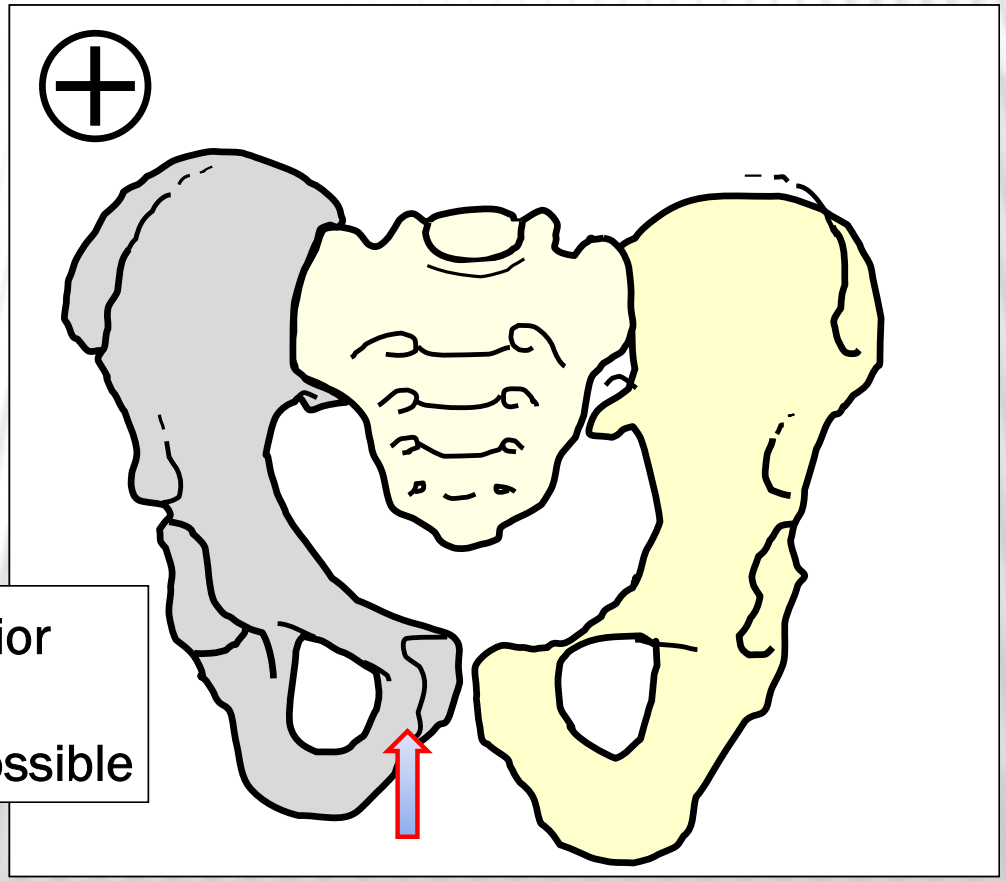
⊕ Left lateralization
Tenderness



Left pube inferior
Step off (down)
Inferior motion is possible

Right Superior Pubic Shear

⊕ Right lateralization
Tenderness



Right pube superior
Step off (up)
Superior motion is possible

Anterior or Posterior Pubic Shears

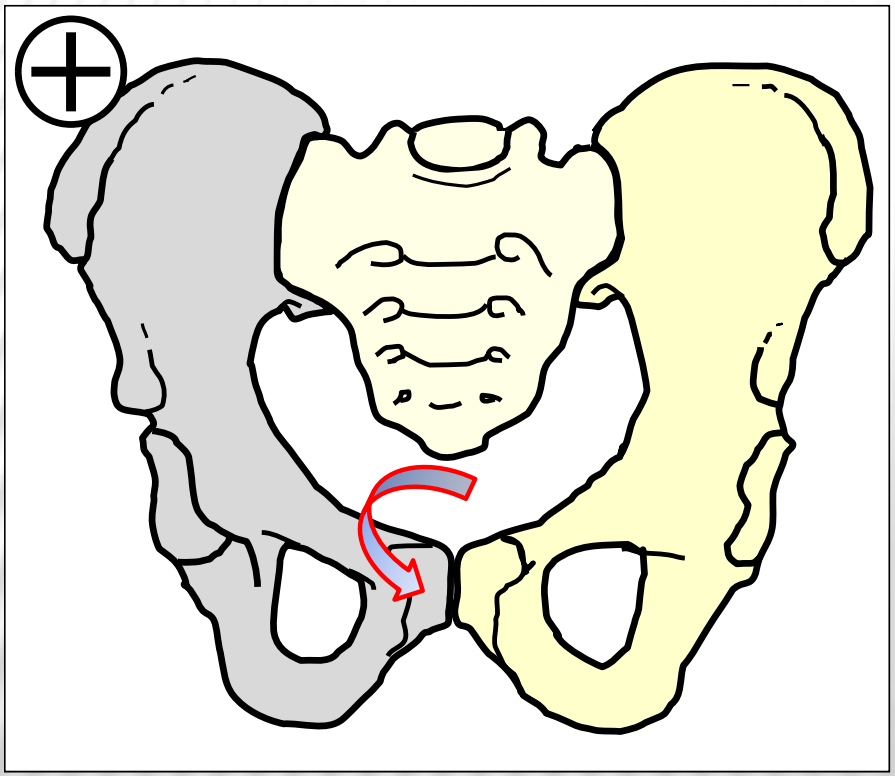
✓One pube or ramus is displaced anterior or posterior relative to the other pube
✓The ASIS and the PSIS appear equal

✓The dysfunction is found on the side of the positive lateralization test – seated or standing flexion test or ASIS compression test

Pubic Symphysis Compression

- ✓Both pubic rami are displaced medially
- ✓Lateralization tests may not be contributory
- ✓The ASIS and the PSIS Iliac Crests and Icshial Tuberosities may appear equal
- ✓Tenderness, tissue texture abnormalities and restricted motion present bilaterally

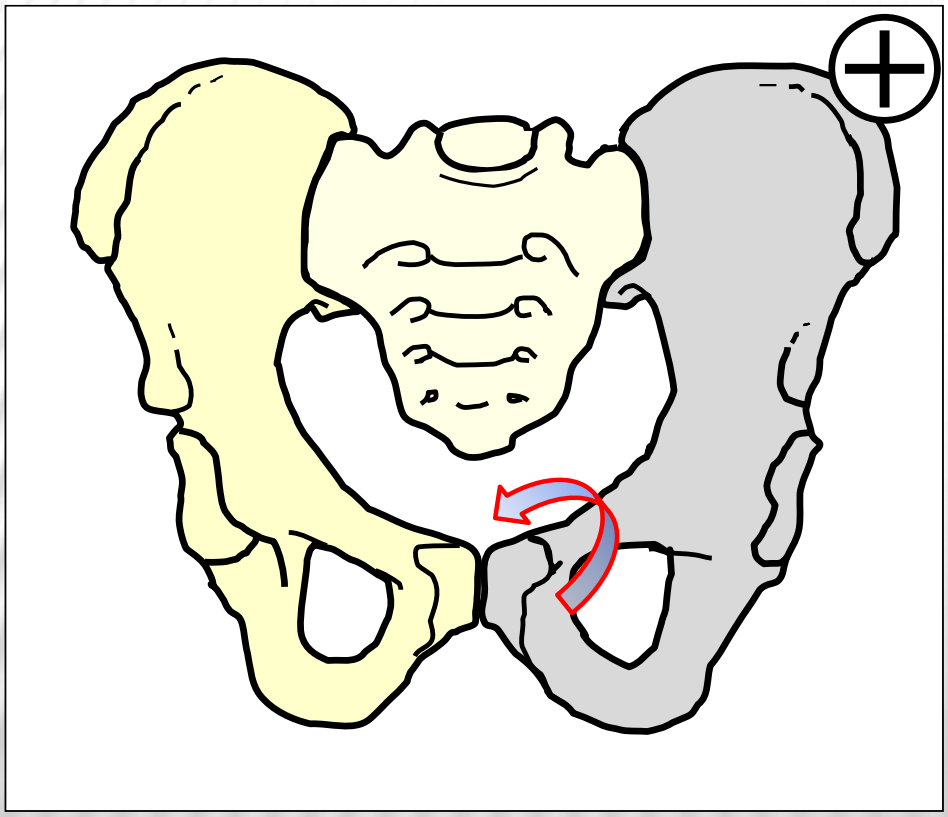
Right Anterior Pubic Shear



Right Pube Anterior
Step off (forward)
Anterior motion is possible

Right lateralization
Tenderness

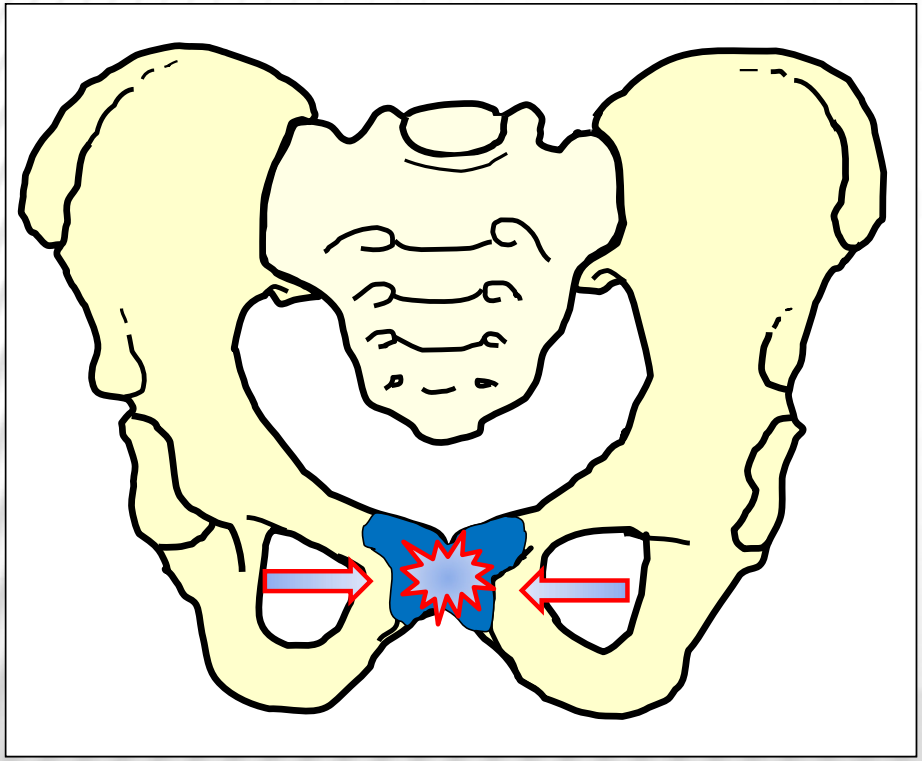
Left Posterior Pubic Shear



Left Pube Posterior
Step off (back)
Posterior motion is possible

⊕
Left lateralization
Tenderness

Pubic Compressions



Bilateral pubic ramus tenderness
Tissue texture abnormalities
Minimal motion in all planes
(May be reflexive evidence of L5 dysfunction, anterior L5 tenderpoint)

PALPATION BEST PRACTICE RECOMMENDATIONS

- Ensure quality data
- Position the patient on table correctly
- Align your frame of reference with the patient (eyes, head, shoulders)
- Minimize strain on your hand. Consider localizing one landmark at a time.
- Utilize both vision and somatosensory stimuli
- Use your digit to align with the horizontal plane
- Remember that each landmark has its unique nuances.

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Questions?

CENTER FOR OMM RESEARCH LAB TOUR

- Task 1:
  - Simultaneously push your thumbs into the pads at what you think is equal pressure for both thumbs.
  - First push, push at a light force
  - Second push, push at a moderate force
  - Third push, push at a heavy push
  - Press stop and evaluate your performance
- Task 2:
  - As if you were testing for a vertebral segment motion, perform alternating forces as if you were testing rotation at a light force for 5 pushes and then another 5 pushes at a moderate level.
  - Repeat task performing side bending forces

REVIEW: DIAGNOSTIC BEST PRACTICES

RELATIONSHIPS BETWEEN THE INNOMINATE AND THE PUBES

INNOMINATE DIAGNOSIS	PHYSIOLOGIC RESPONSE OF THE PUBES	UNCOMPENSATED OR MALADAPTED RESPONSE OF THE PUBES
Anterior Rotation	Equal or Inferior and/or Anterior	Superior or Posterior
Posterior Rotation	Equal, Superior and/or Posterior	Inferior or Anterior
Inflare	Posterior	Anterior
Outflare	Anterior	Posterior

PURPOSE

- Asymmetry indicates less than ideal biomechanics of the system
- The greater the asymmetry, the more dysfunctional is the structure/the system

ASSUMPTIONS

- Know the anatomy –organismal (gross), tissue, cellular, molecular
- Can consistently locate the anatomical structure of interest … with both hands

Innominate Rotations

- ✓As somatic dysfunction
  - ✓An entire innominate is rotated in a direction anterior or posterior around a transverse axis through the SIJ (sacro-iliac joint)
    - ✓It maintains this position at rest
    - ✓T.A.R.T findings are present
  - ✓The dysfunction is found on the side of the positive lateralization test(s) – standing or seated flexion test or ASIS compression test.

ASSUMPTIONS

- Know the anatomy –organismal (gross), tissue, cellular, molecular
- Can consistently locate the anatomical structure of interest … with both hands
- Can I feel/visualize the structures correctly within the correct frame of reference
- Surface area, direction/vector of force, mechanics from one side of the body equilibrated by the mechanics of the other side
- Aware not only of synesthetic but kinesthetic aspects of my palpatory process
- Localize, perceive, interpret

PALPATION: CHARACTERISTICS ACQUIRED BY DIFFERENT HANDS, TRANSFERRED BY DIFFERENT NERVE PATHWAYS, PROCESSED BY UNIQUE YET OVERLAPPING BRAIN REGIONS, INFLUENCE DIFFERENT EFFERENT PATHWAYS

PALPATION: CHARACTERISTICS ACQUIRED BY DIFFERENT HANDS, TRANSFERRED BY DIFFERENT NERVE PATHWAYS, PROCESSED BY UNIQUE YET OVERLAPPING BRAIN REGIONS, INFLUENCE DIFFERENT EFFERENT PATHWAYS

- Primary sensory – exteroceptors (visual, mechanoreceptors, pain) and interoceptors (proprioception and pain)
- Compress:
- Torque:
- Stretch/Strain:
- Shear:
- Subcomponents
  - Magnitude
  - Rate
  - Duration
  - Direction
  - Distance
  - Frequency

ASYMMETRY OF LANDMARKS – COMMONLY USED IN "MITCHELL MODEL" OF THE PELVIS

ASIS - SAIS

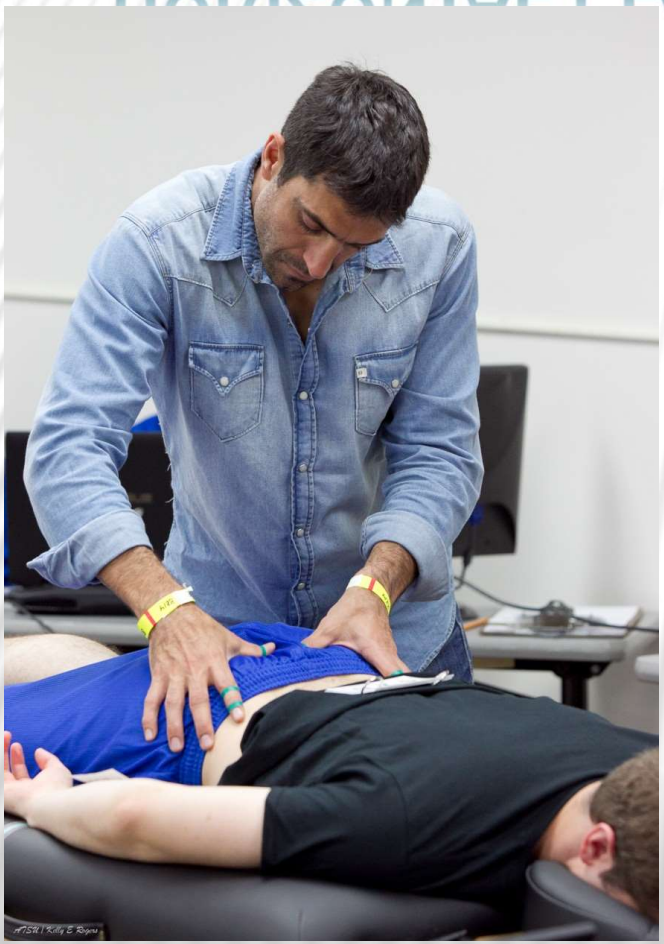
PSIS – SIPS

Pubic Tubercle - TP

Iliac Crest - CI

Ischial tuberosity

OBSERVATION: CORONAL AND HORIZONTAL PLANES



- Levelness
- Pelvis – are landmarks superior, inferior or equal
- Spinal landmarks – is the segment neutral, rotated right of left

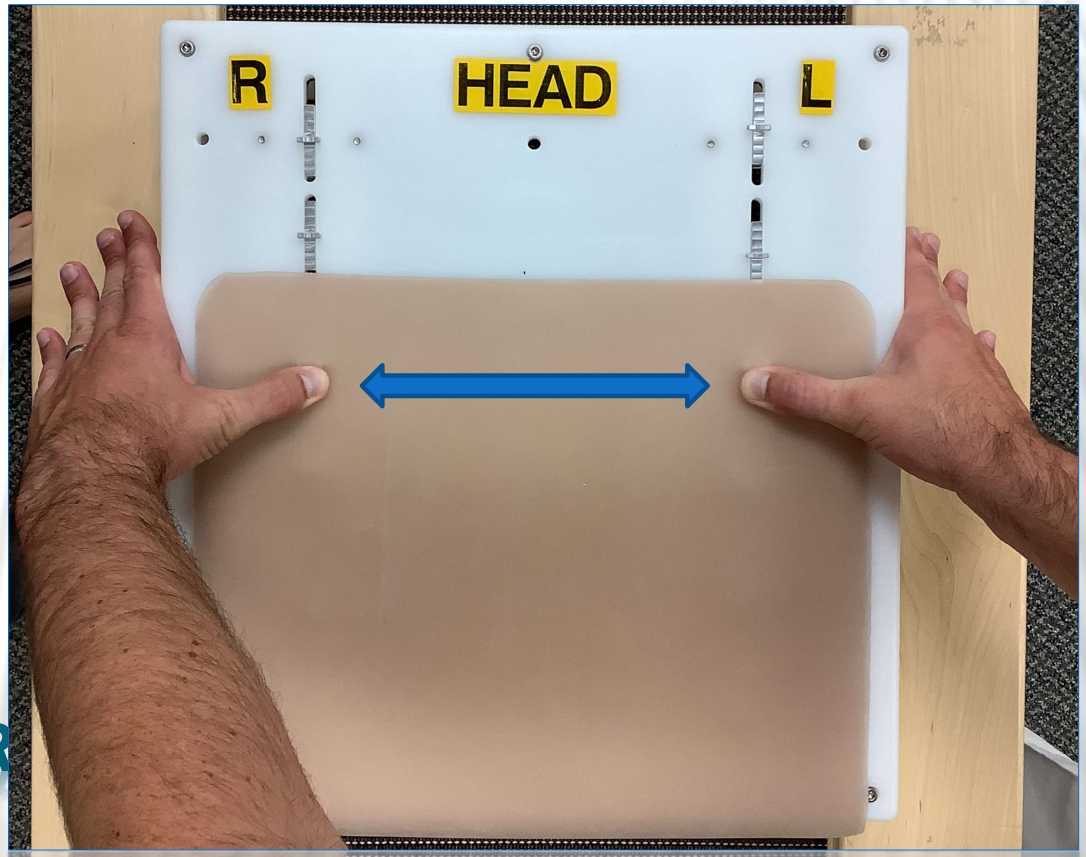
WHEN SOMETHING CAN NOT BE MEASURED DIRECTLY, SCIENCE PROMOTES DEVELOPING MODELS AS A SURROGATE

- Modeling requires understanding the most relevant aspects of the testing to incorporate into the model
- For comparing human bony landmarks, that requires
  - Reasonably shaped structure to evaluate
  - Evaluating positional variation usually occurs in the coronal plane (occasionally sagittal)
  - Can manipulate and control degree of asymmetry (1mm)
  - Soft tissue interface between hand and landmark

Separation distance consistent with most human pelvises

Length of the landmark consistent with bone width.

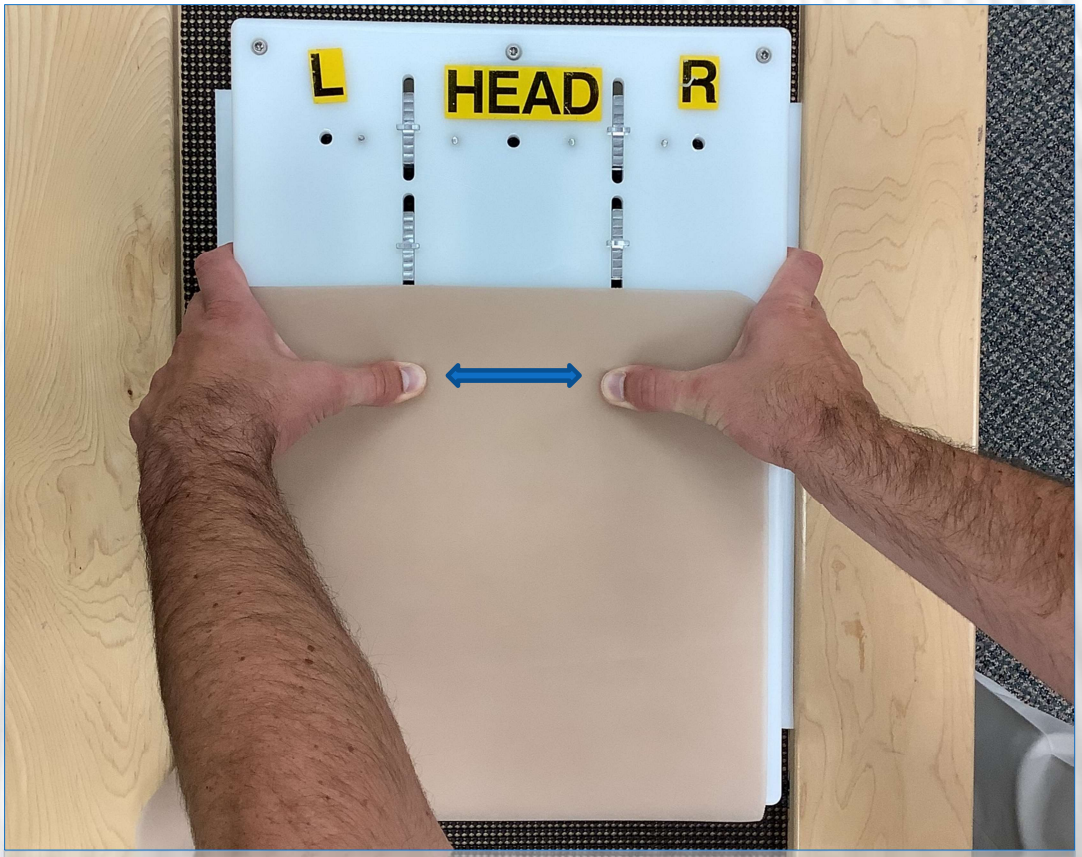
SUPERIOR ANTERIOR



Superior Posterior Iliac Spine/Ischial Tuberosity

Separation distance consistent with most human pelvises

Length of the landmark consistent with bone width.



EQUIPMENT VERSUS INSTRUMENTATION

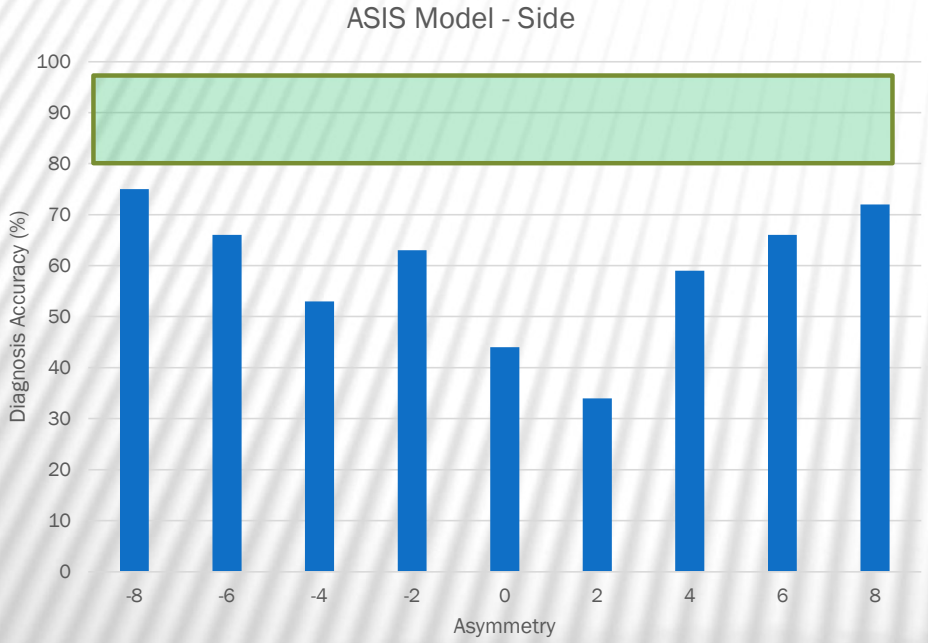
- Instrument makes measurements in specific units
  - Accelerometer
  - Caliper/micrometer - displacement/distance
  - Calorimeter - temperature
  - Durameter - hardness
  - Force/torque –strain (compressive, tensile, shear), stress (tensile, elastic, shear)
  - Inclinometer – shape
- Confidence in those measurements when the instrument is calibrated

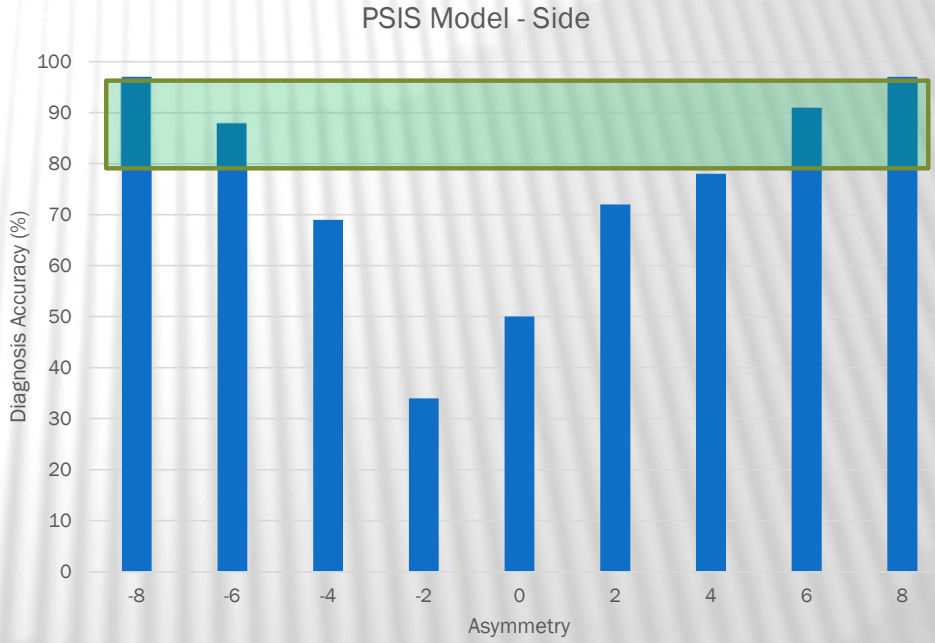
DOES THE POSITION OF THE EXAMINER INFLUENCE RESULTS?

ASSUMPTIONS THAT IGNORE CALIBRATION

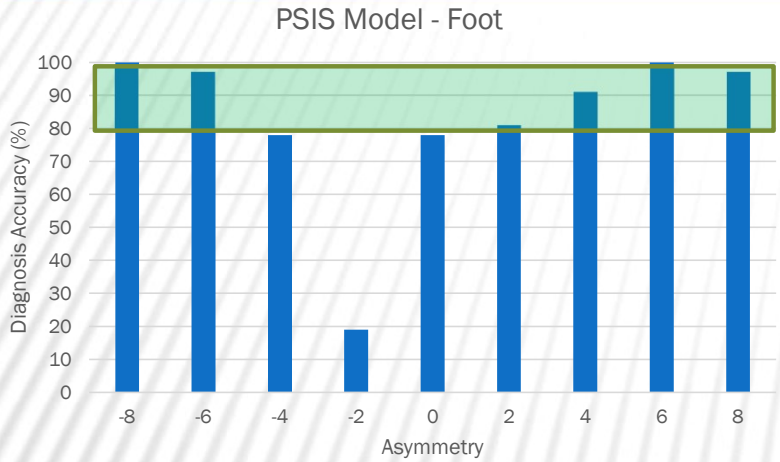
- What is being done with one hand or at one moment is comparable to what is being done with the other hand or at a different moment
- Surface area, direction/vector of force, mechanics from one side can be equilibrated by the mechanics of the other side
- TART

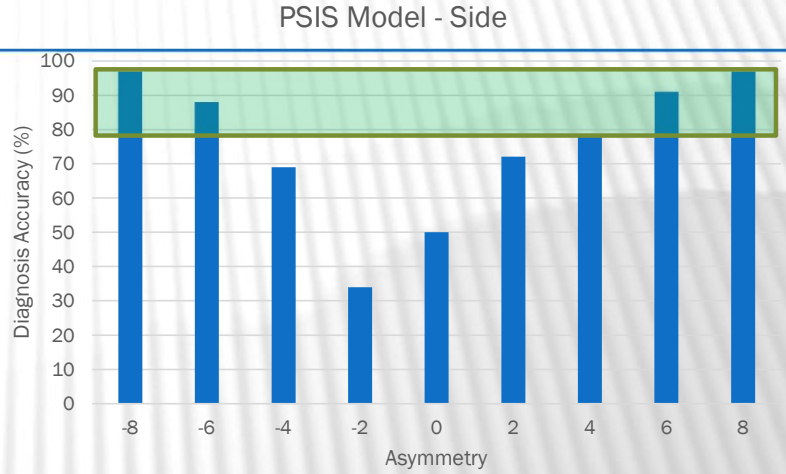
ASYMMETRY TESTING - BASELINE

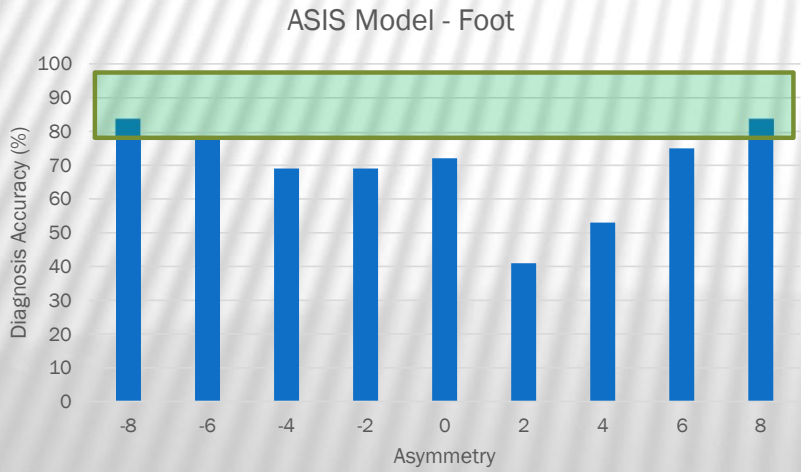


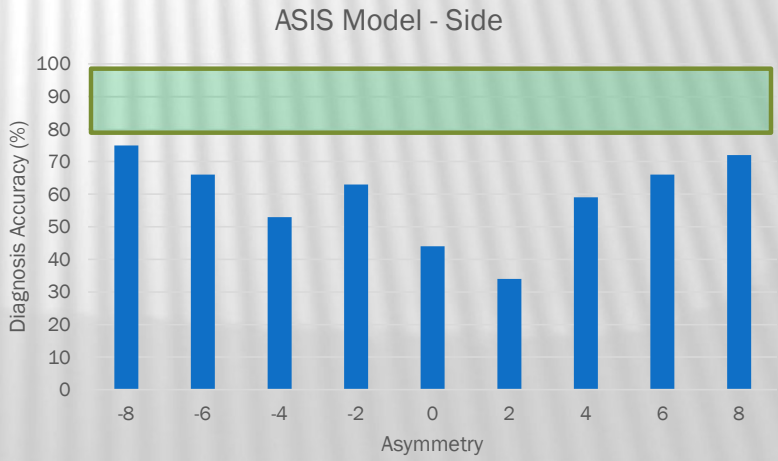


ASYMMETRY TESTING - SIPS



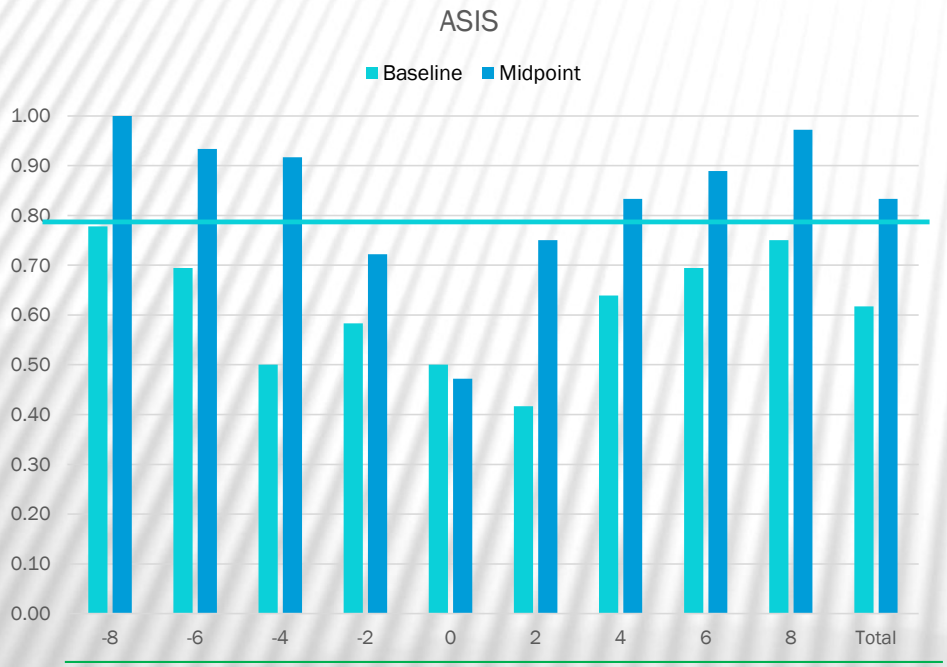


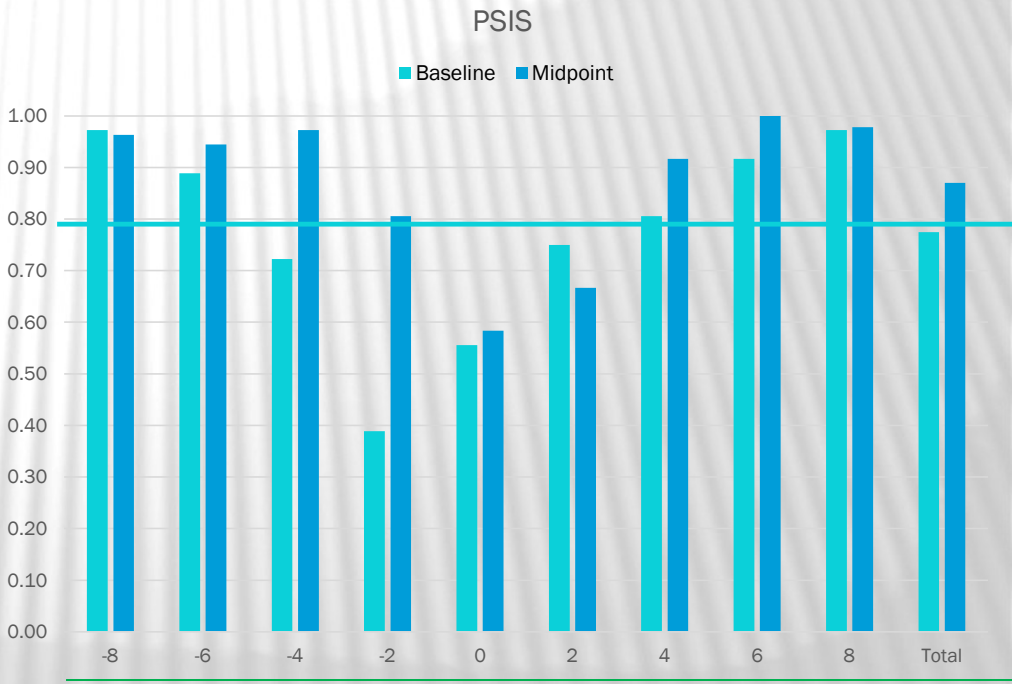




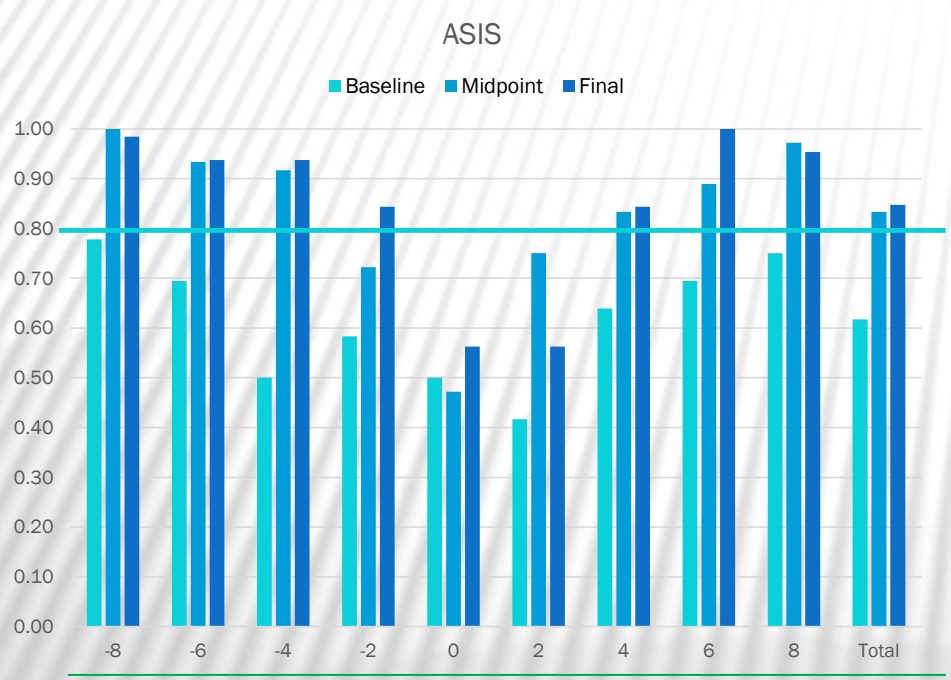
INFLUENCE OF TRAINING ON ACCURACY STANDING AT THE SIDE OF THE TABLE?

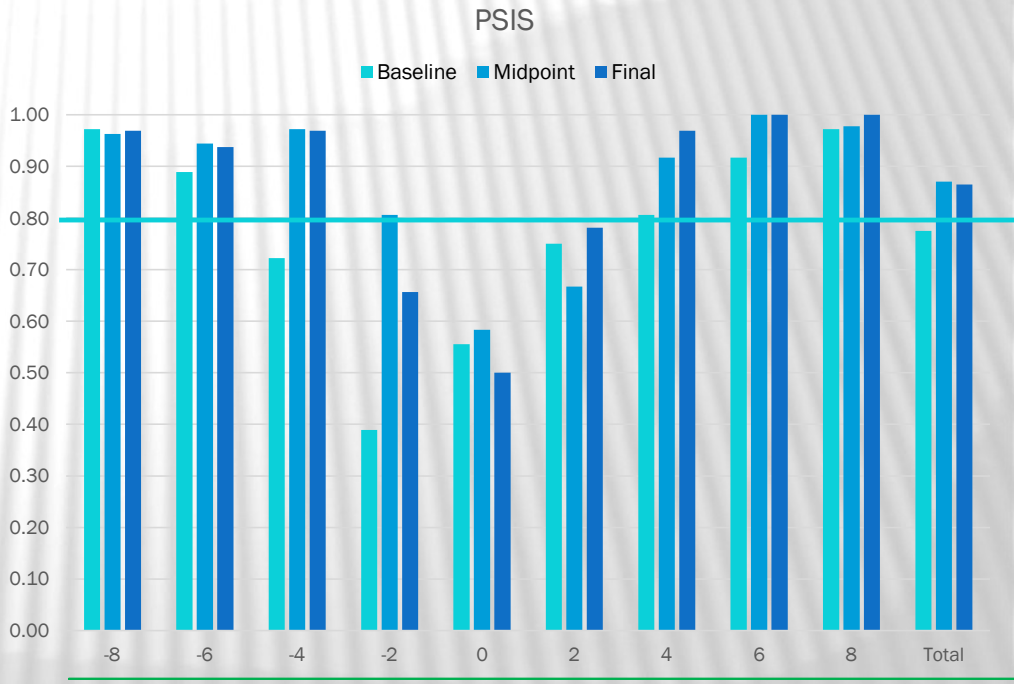
MIDPOINT ASSESSMENT – 1 HOUR OF TRAINING FOR 5 CONSECUTIVE DAYS





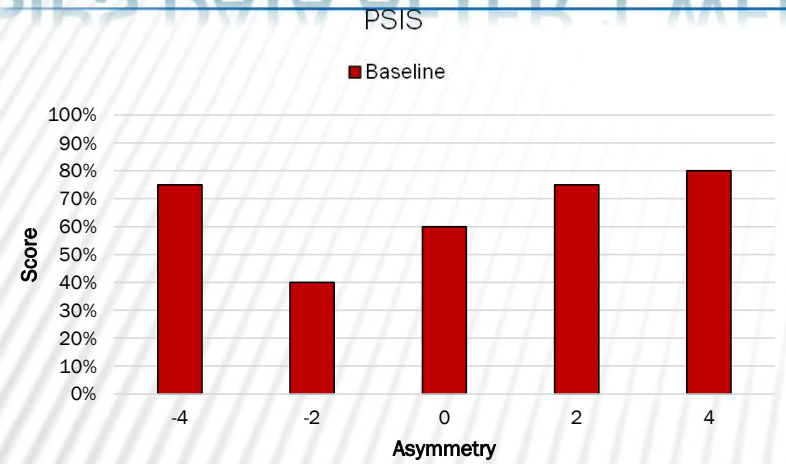
FINAL ASSESSMENT –AFTER 10 DAYS OVER 2 WEEKS WITH PRACTICE

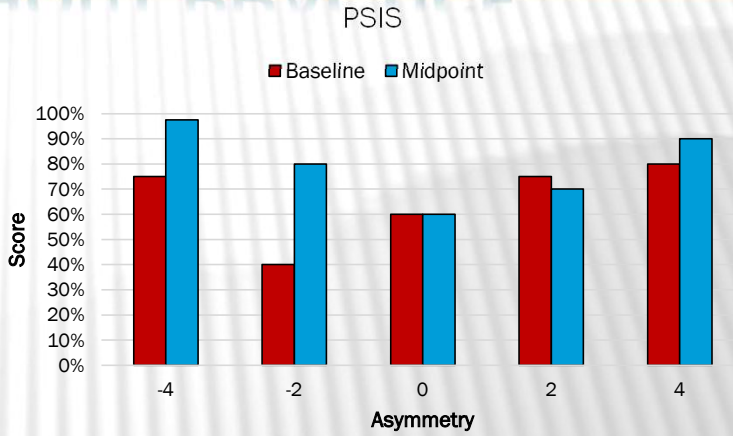


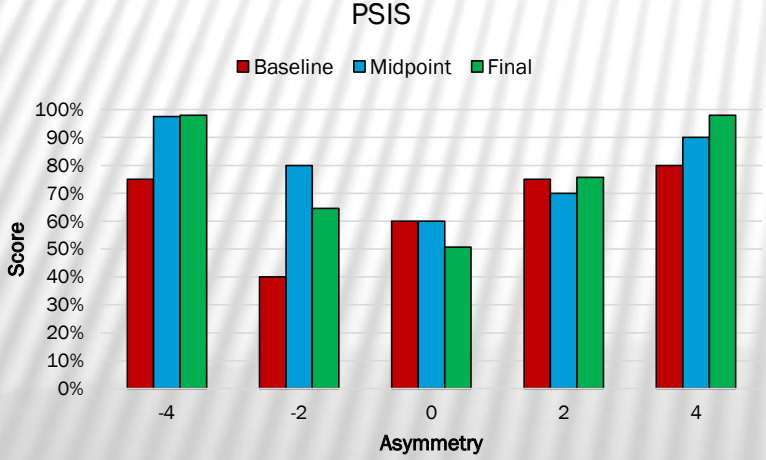


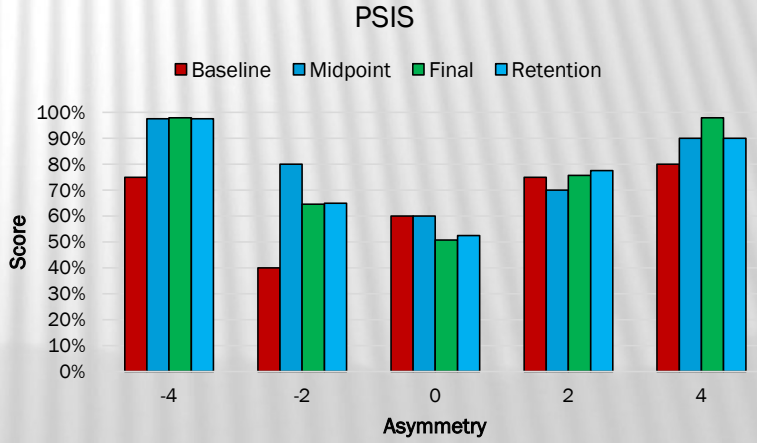
TESTING WITH MORE REALISTIC MODELS

SIPS DATA AFTER 1 WEEK WITHOUT PRACTICE

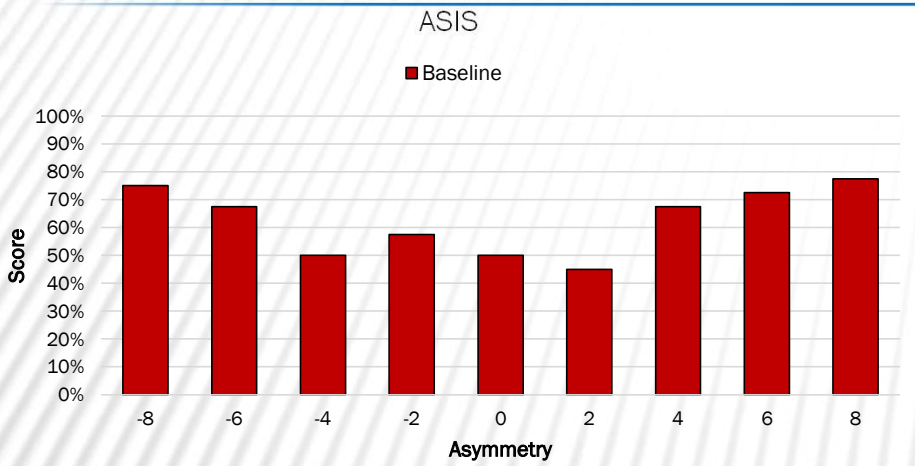


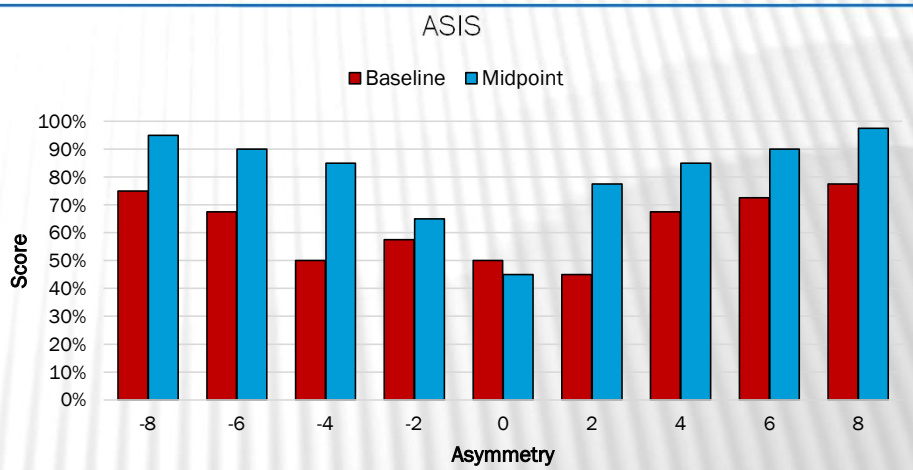


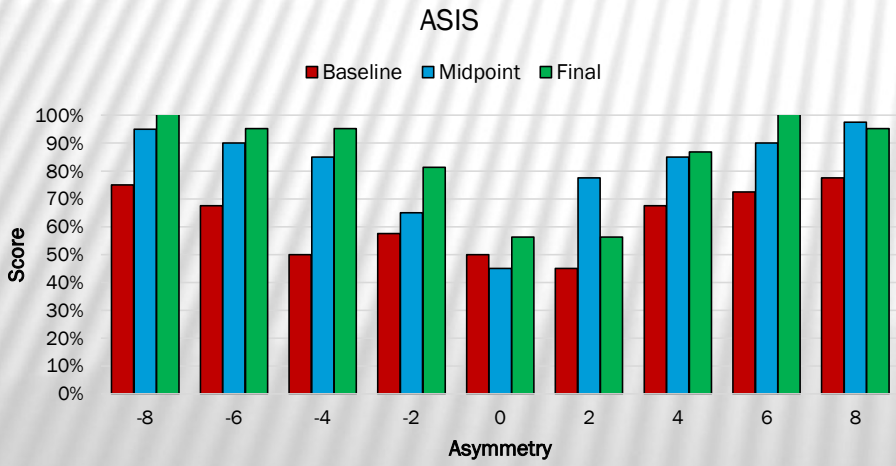


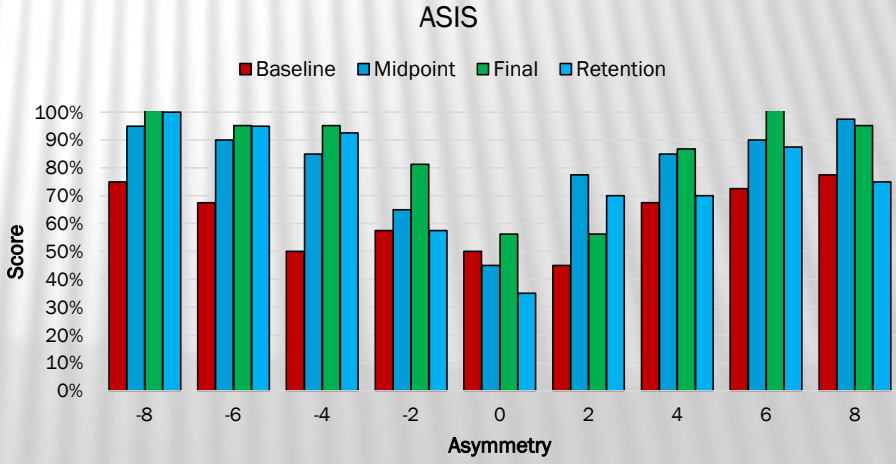


SAIS DATA AFTER 1 WEEK WITHOUT PRACTICE

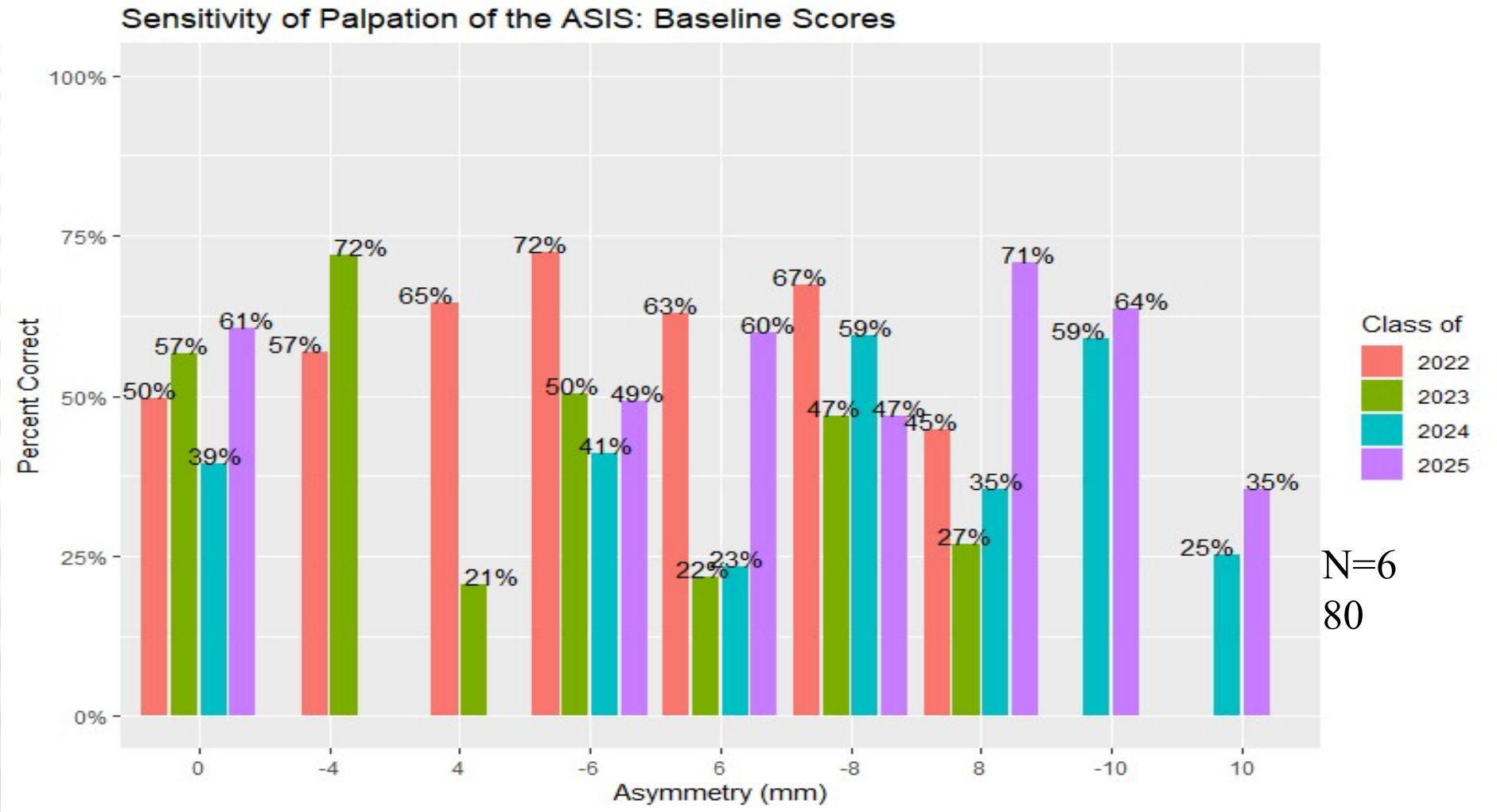




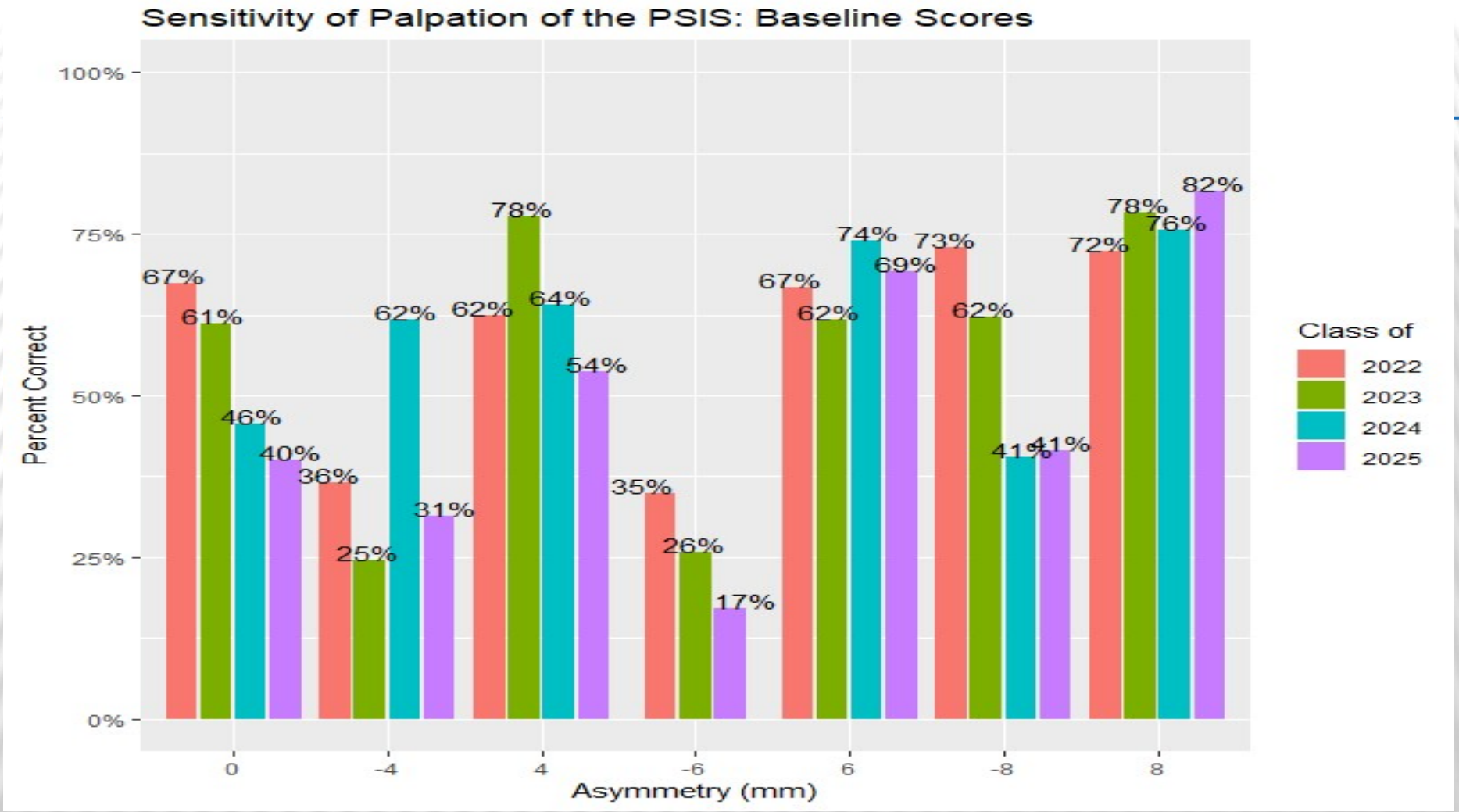


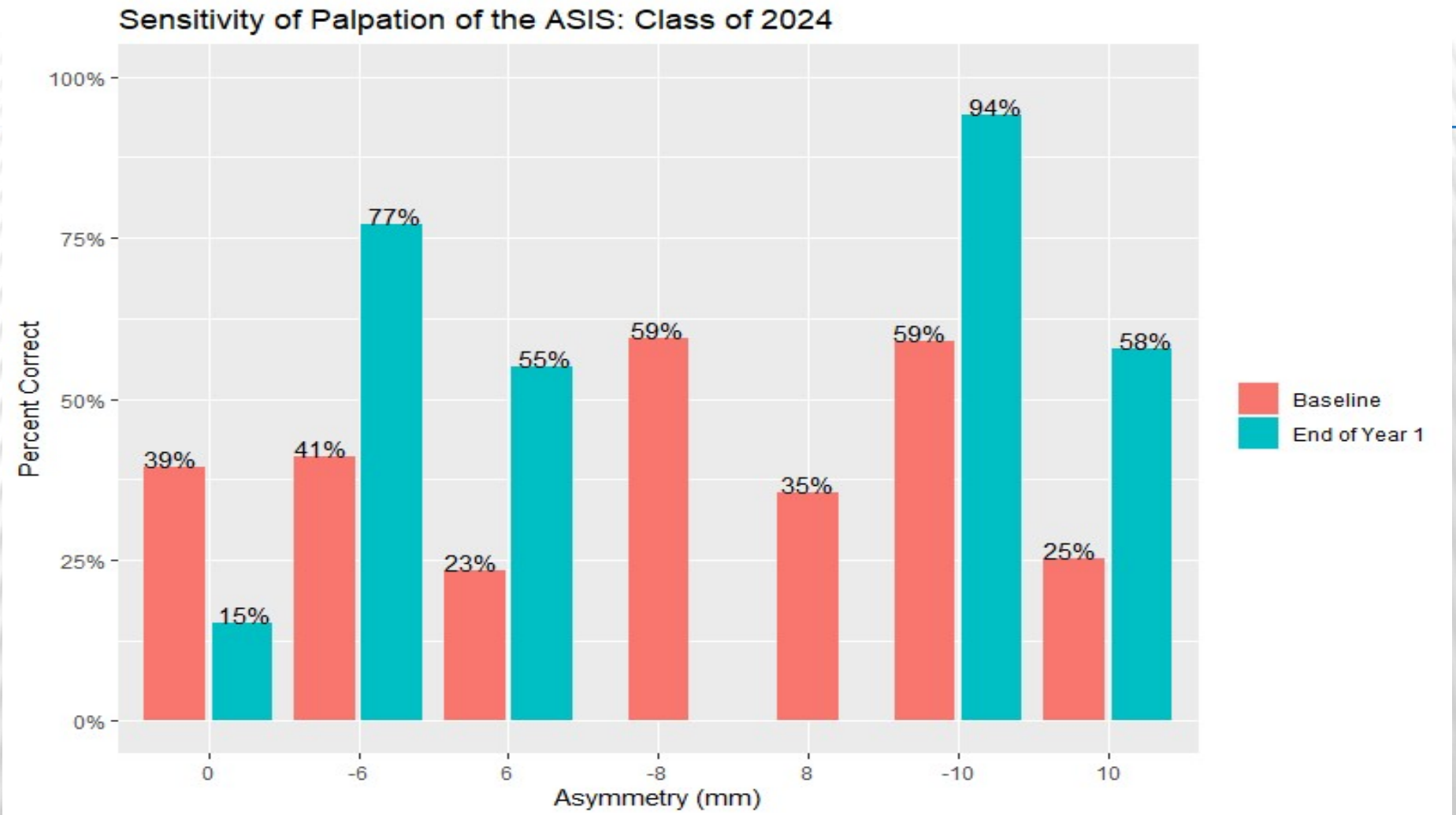


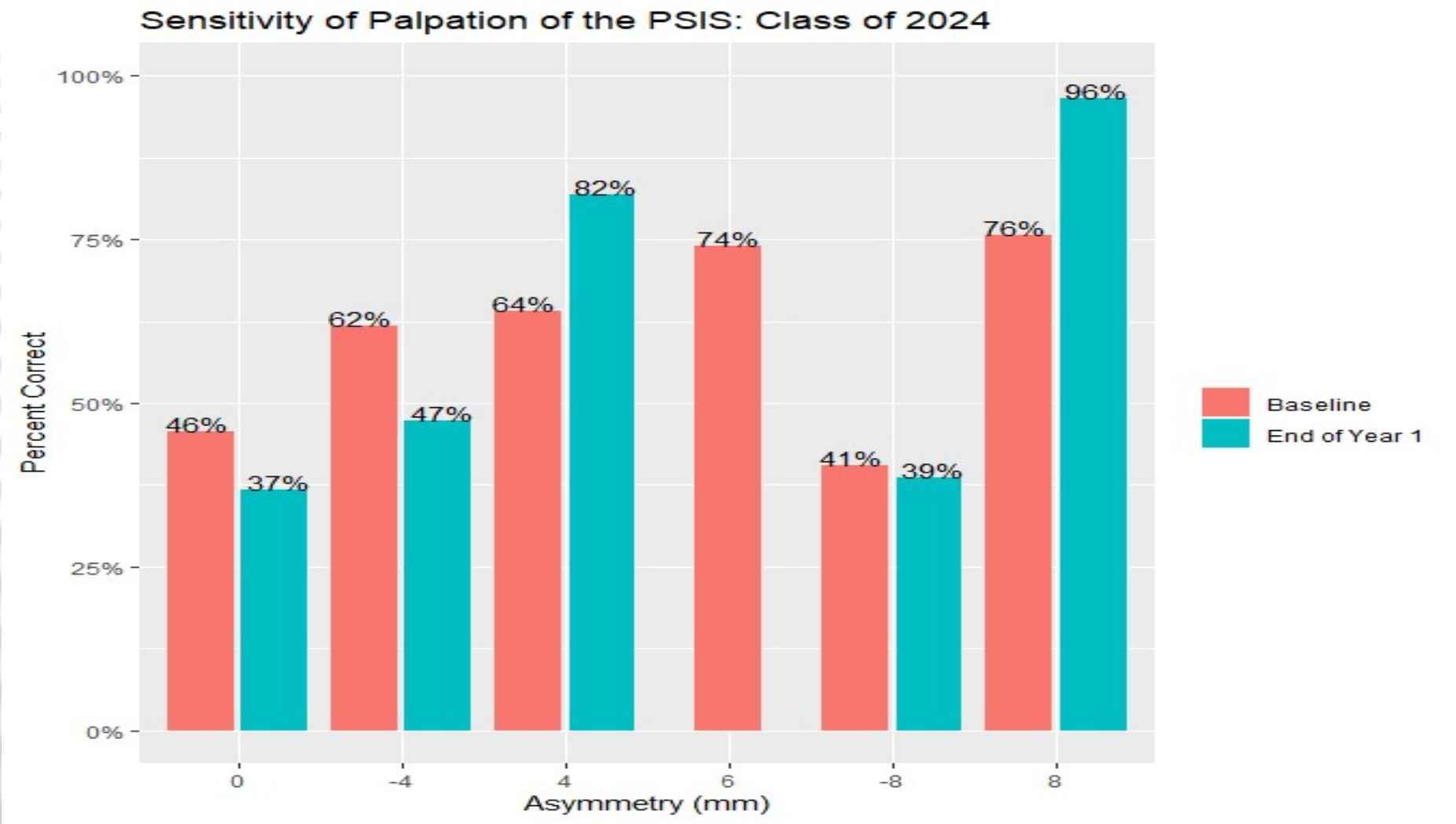
KCOM CLASS SCORES ON ANATOMICAL SIMULATIONS

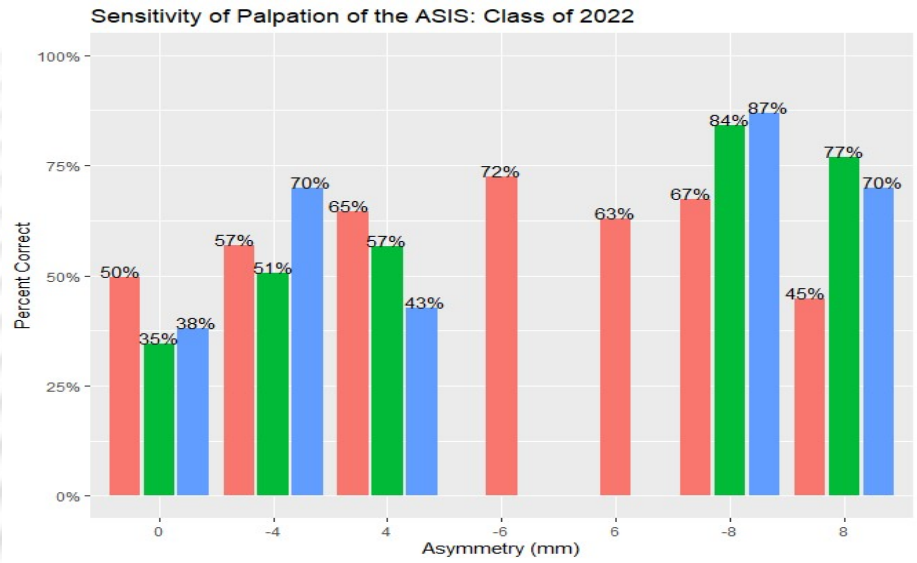

Sensitivity of Palpation of the ASIS: Baseline Scores
100%
75%
50%
25%
0%
Percent Correct
50%
57%
39%
61%
57%
72%
65%
21%
72%
50%
41%
49%
63%
22%
23%
60%
67%
47%
59%
47%
45%
27%
35%
71%
59%
64%
25%
35%
0
-4
4
-6
6
-8
8
-10
10
Asymmetry (mm)
Class of
2022
2023
2024
2025

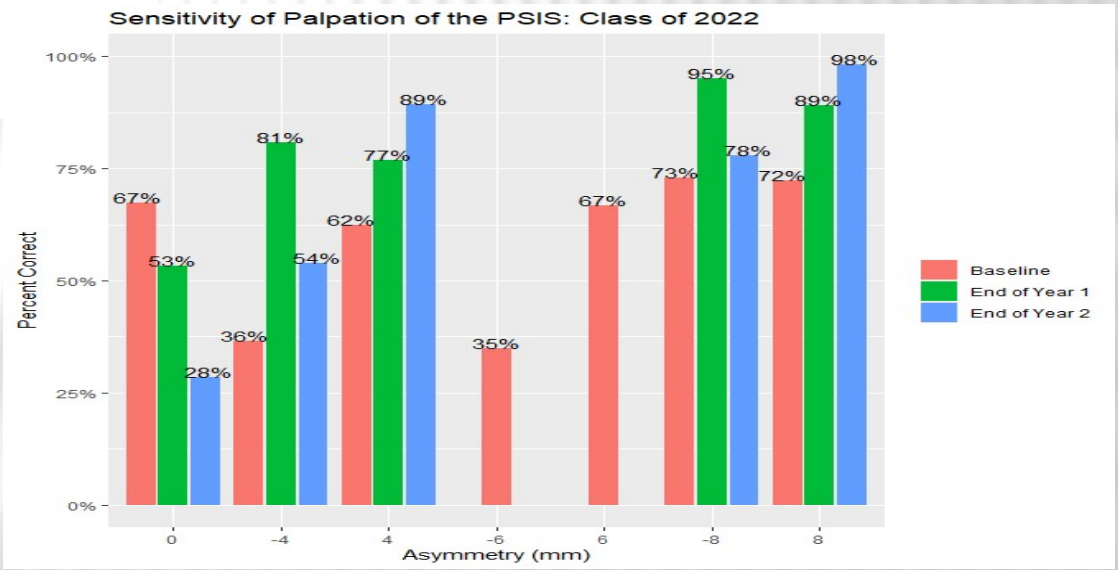
N=6
80


Sensitivity of Palpation of the PSIS: Baseline Scores
100%
75%
50%
25%
0%
Percent Correct
67%
61%
46%
40%
36%
25%
62%
31%
62%
78%
64%
54%
35%
26%
17%
67%
62%
74%
69%
73%
62%
41%
41%
72%
78%
76%
82%
0
-4
4
-6
6
-8
8
Asymmetry (mm)
Class of
2022
2023
2024
2025


Sensitivity of Palpation of the ASIS: Class of 2024
100%
75%
50%
25%
0%
Percent Correct
39%
15%
41%
77%
23%
55%
59%
35%
59%
94%
25%
58%
0
-6
6
-8
8
-10
10
Asymmetry (mm)
Baseline
End of Year 1


Sensitivity of Palpation of the PSIS: Class of 2024
100%
75%
50%
25%
0%
Percent Correct
46%
37%
62%
47%
64%
82%
74%
41%
39%
76%
96%
0
-4
4
6
-8
8
Asymmetry (mm)
Baseline
End of Year 1


Sensitivity of Palpation of the ASIS: Class of 2022
Percent Correct
100%
75%
50%
25%
0%
50%
35%
38%
57%
51%
70%
65%
57%
43%
72%
63%
67%
84%
87%
45%
77%
70%
0
-4
4
-6
6
-8
8
Asymmetry (mm)
Baseline
End of Year 1
End of Year 2


Sensitivity of Palpation of the PSIS: Class of 2022
Percent Correct
100%
75%
50%
25%
0%
67%
53%
28%
36%
81%
54%
62%
77%
89%
35%
67%
73%
95%
78%
72%
89%
98%
0
-4
4
-6
6
-8
8
Asymmetry (mm)
Baseline
End of Year 1
End of Year 2

SUMMARY

- Somesthesis – focus on the outside, the patient, and your mechanoreceptors
- Kinesthesis – awareness of the information your brain receives from your proprioceptors – golgi tendon organs, muscle spindles, nociceptors
- Calibration of the osteopathic instrument (the whole body)
  - Body position
  - Biomechanics
    - Physical
    - Emotional
    - Mental
    - Spiritual

DIAGNOSE PELVIS:

PUBES FOR SUPERIOR INFERIOR, ANTERIOR POSTERIOR SHEARS AND COMPRESSION

Lateralization Tests			
	Positive		Neg.
	Right	Left	
Standing flexion			
Seated flexion			
ASIS Compression			

	Use Arrows or Abbreviations		
	Right	Left	Equal
Major Landmarks			
ASIS			
Sup./Inf.			
Med./Lat.			
PSIS			
Sup./Inf.			
Pubic Symphysis			
Sup./Inf.			
Ant./Post.			
Tenderness			
Minor Landmarks			
Ischial Tuberosity			
Sup./Inf.			
Lat./Med.			
Iliac Crest			
Sup./Inf.			
Malleoli			
Sup./Inf.			

Innominate (Os Coxae) Dx: _____

Pubic Diagnosis: _____

Sacral Diagnosis: _____

L5 Diagnosis: _____

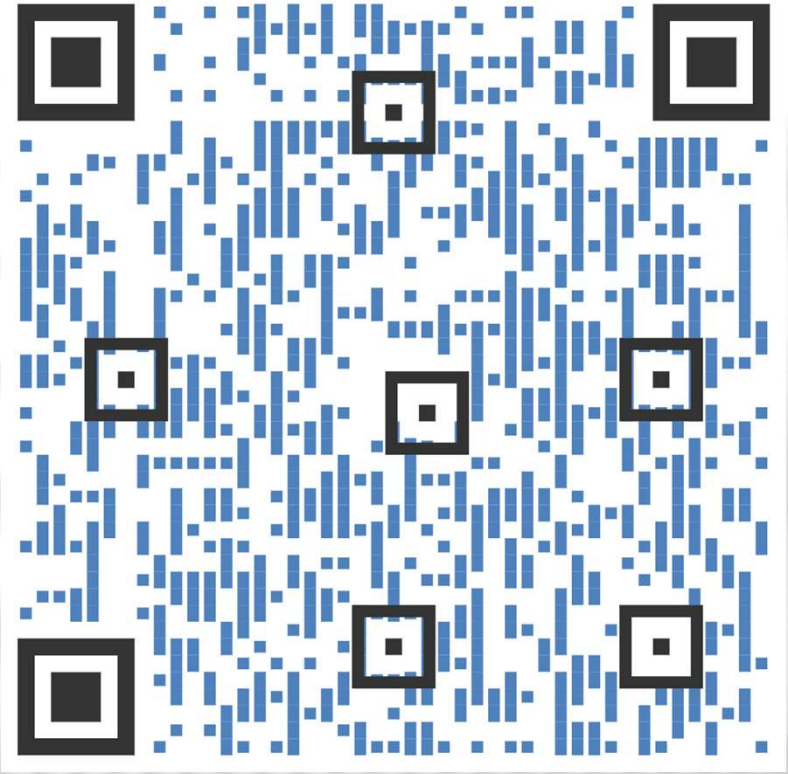
L5 is uncompensated (maladapted) when L5 and sacral base are rotated in the same direction.

IMPLEMENTATION:

- Transition from office chair to table – standing flexion test
- Seated on table – seated flexion test, screen soft tissue and joints for tissue texture changes and pain
- Supine – Diagnostic hamstring stretch, ROM hip/dx. muscle stretch, ASIS compression test, landmark evaluation, evaluate for tender points
- Prone – Diagnostic quad/iliopsoas stretch, ROM hip (internal and external rotation), localization lumbosacral junction, palpation of gluteal muscles, SI ligaments, erector spinae, landmark evaluation, sacral testing

OBSERVE THE WORLD AROUND YOU, VERSUS THE UNIVERSE WITHIN

SESSION EVALUATION



GRIEVANCE POLICY

All grievances should be in writing and should specify the nature of the grievance. Initially, all grievances should be directed to MAOPS Executive Director, who will then forward said grievance to the Education & Convention Committee. All grievances will receive an initial response in writing within 30 days of receipt. If the participant does not receive a satisfactory response, then they can submit a complaint in writing to the Bureau of Osteopathic Education of the AOA at 142 East Ontario Street, Chicago, IL 60611.

Harmony only dwells where obstructions do not exist.

A. T. STILL