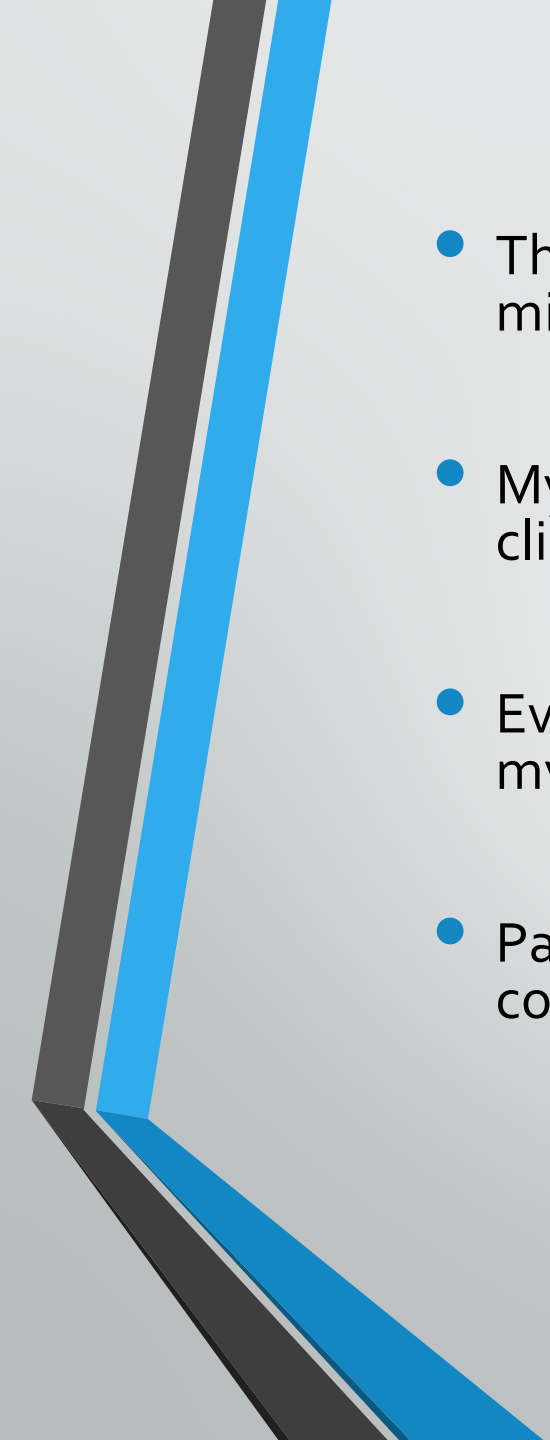


# GLATA Annual Meeting & Symposium

## March 10, 2017

### **Leg length discrepancy: Heel lift or no heel lift**

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- 
- The views expressed in these slides and today's discussion are mine.
  - My views may not be the same as the views of my company's clients or my colleagues
  - Evaluation and treatment recommendations are solely based on my own research and clinical/professional experience.
  - Participants must use discretion when using the information contained in this presentation

# Palpations (landmarks)

- Sacral base
- ASIS
- PSIS
- Malleolus
- Vertebral, thoracic, & lumbar

## Structural Biomechanics



Chasing the pain  
Treat the problem not the  
symptoms



# Ways to evaluate a leg length discrepancy

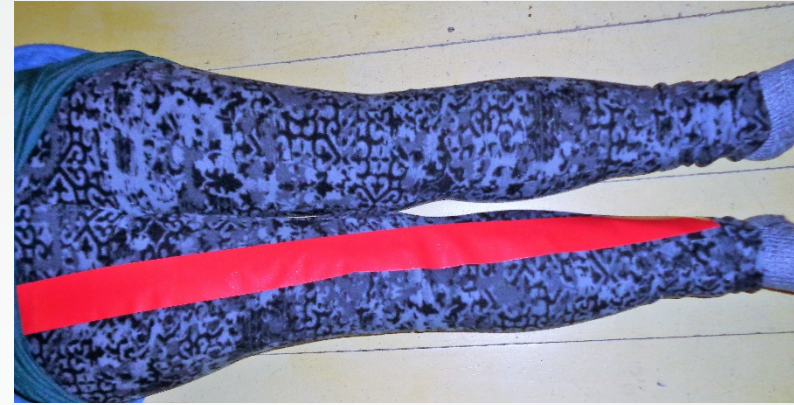
1. X-ray standing AP view
2. Compare medial malleoli
3. Measurements ASIS to medial malleolus
4. Phone book

Evaluate the whole kinetic chain, some literature believes more errors in non-weight bearing position.





X-ray standing AP view




Measurements ASIS to medial malleolus



Compare medial malleoli



Phone book



# Anatomically leg length inequality (Tibial or femoral shortness)

1. Congenital
2. Traumatic
3. Degenerative
4. Cancerous
5. Total joint replacement, functionally short



“Leg length discrepancy obtained in non-weight bearing positions to be unreliable”.

- I disagree unless you are evaluating the sacral base such as a standing AP view.



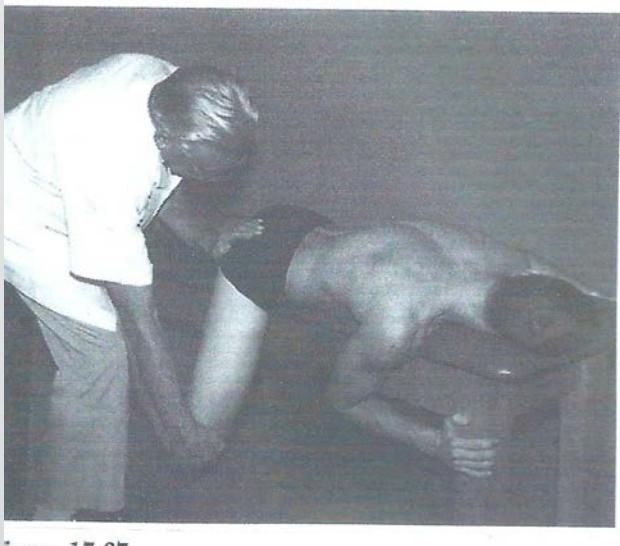
# Case 1 - Traumatized

- 63 year old male at the age of 2 years old had a femur FX

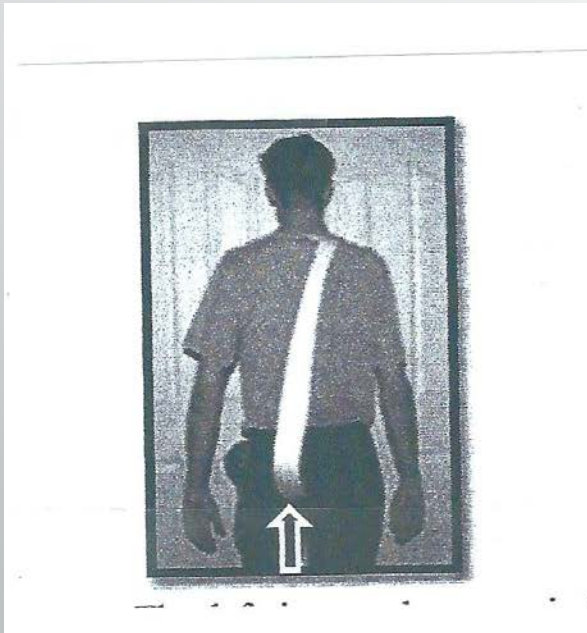


## Case 2 – “Over correction”

- 55 year old cross country coach
- Right ilium upslip – variable
- Conclusion left ilium downslip
- Correction of both and left lumbar vert. fault  
(left rotation; left side bend)



Clinical treatment downslip  
Freeman pg 373



Self treatment downslip  
Hesch Institute Oct 2011  
Pg 156



Voodoo floss strap

## Case 3 – Total joint replacement

- 73 year old with back and hip surgery
- Many patients who undergo total hip replacement find the artificial joint was made to the wrong length.
- HISTORY HISTORY HISTORY





## Case #4 – Total knee replacement 17 yrs ago

- 78 year old “sciatic” nerve pain
- Left hip pain; left knee replacement
- 3/8” lift on left extremity solved all pain



# *"Cliff Note" version of S.W.A.P.*

Dominant eye over patient

## **Supine**

1. Bridge to neutralize S-I joint
2. Evaluate pubic symphysis
3. ASIS palpations
4. Internal hip rotation
5. Leg length
6. S-I joint side glide/hip slide glide

## **Prone**

7. PSIS palpation (inferior) (hug the table – flat)
8. PSIS palpation (superior) (sphinx position on elbows) for torsions.
9. Vertebral rotations faults
10. Check for posterior femoral head
11. Iliopsoas (hip flexor)
12. Check for superior sacrum

## **Sitting**

13. Tibial rotation

**S. W. A. P.**

**Stretching With A Purpose**

**Hip & SI joint assessment  
With stretching program**

**Craig Consulting, LLC**

**David H. Craig, LAT, ATC**

02/10/2

# Stretching with a Purpose

**Rationale:** My program that I titled “Stretching with a Purpose” is a soft tissue enhancement with mechanical corrections to provide symmetry to the kinetic chain from the feet to the forehead. Static and functional stretching can be enhanced by using muscle energy techniques to give symmetry to the joint mechanics.

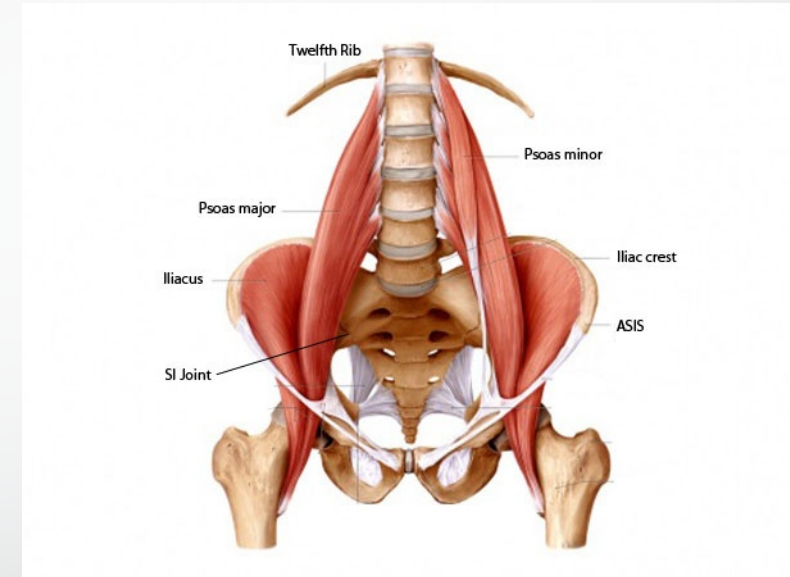
**Objectives:** Symptoms of joint and soft tissue can be traced to mechanical dysfunctions and soft tissue restrictions within the kinetic chain distal and proximal from the symptoms. “Don’t chase the pain” is a phrase derived from this approach.

**Description:** Palpations over the CORE specifically the S-I joint are important. The S-I joint (pelvic area) is the area of the body is the individual’s center of gravity, center of power, and “shock absorber” of the body. The pelvic area has 19 different spring actions. There are S-I joint dysfunctions that correlate with joint pain and soft tissue overuse syndromes. The profession of athletic training should be concerned with prevention of the latter. “Stretching with a purpose” determines those mechanical dysfunctions so corrections can be made to assist in preventing injury. This approach will assist in injury recovery by evaluating and correcting the biomechanical status of joints distal and proximal to the injury site.

**Key words:** kinetic chain, S-I joint, symmetry, functional stretching, muscle energy, mechanical dysfunction, spring testing, symphysis pubis, iliopsoas, “dominant eye”.

# INTRODUCTION

- **SI as a pain generator**
  - Well recognized clinically
  - Controversial
- **Reasons for Controversy**
  - Complex anatomy & biomechanics
  - Nomenclature & terminology inconsistent
  - Unreliable clinical exam tests
  - Lack of effective treatments





# S.W.A.P.

Stretching with a purpose





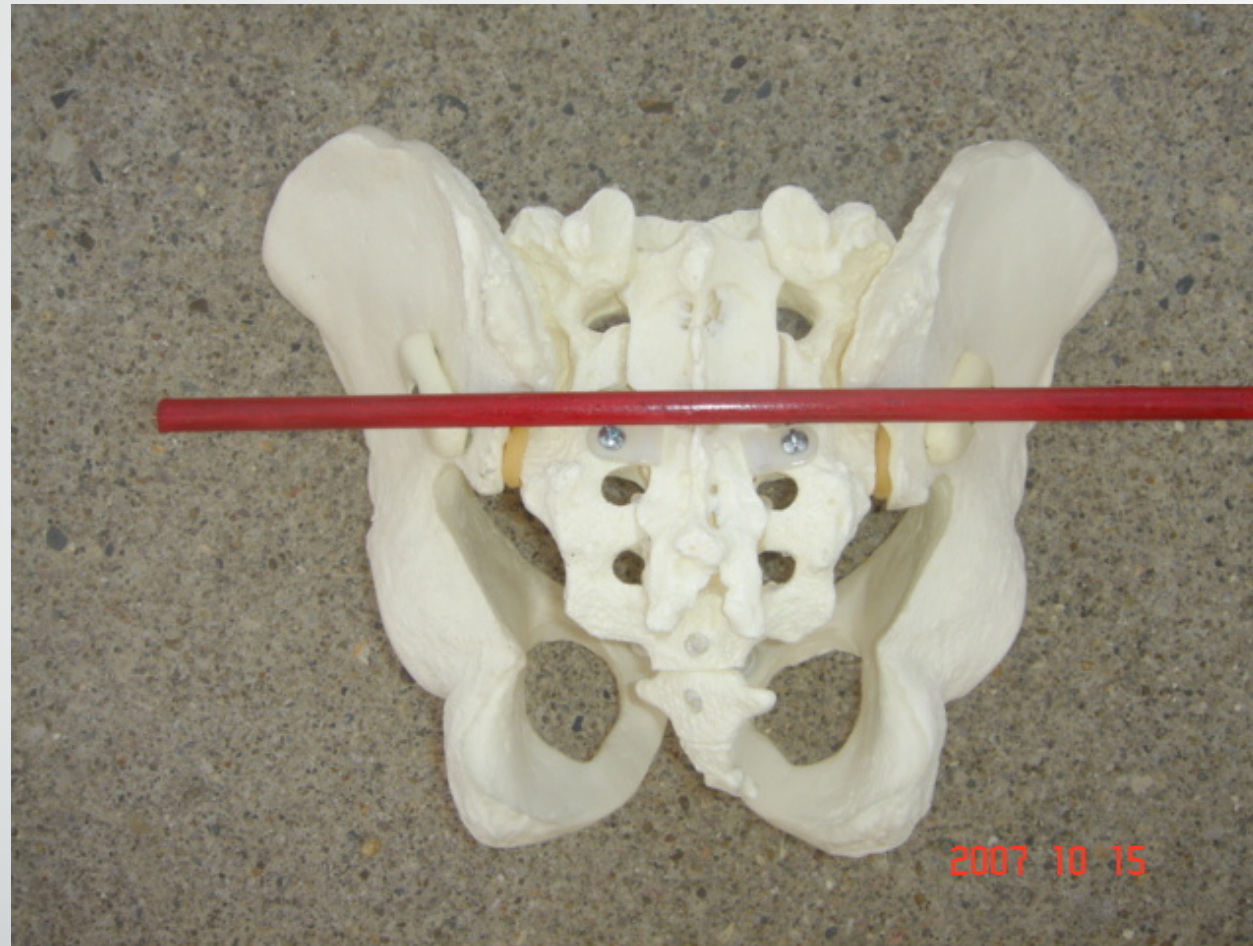


Anterior tilt



Upslip





Forward bent on a horizontal axis

# Spring tests









Bridge to neutralize S-I joint



Drape





ASIS palpations



Evaluate hip internal rotation



Evaluate symphysis pubis



Hip slide glide



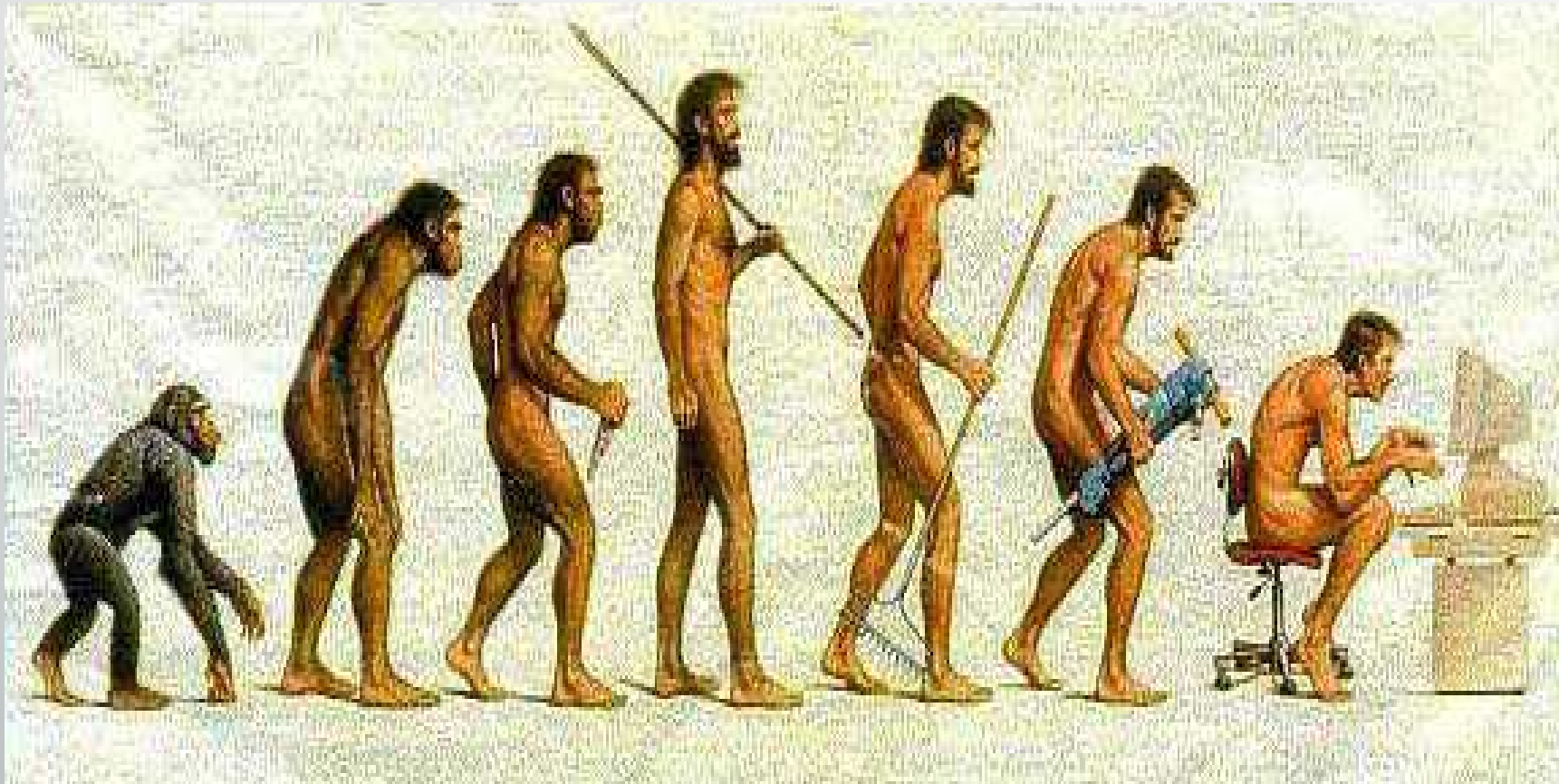


PSIS evaluation

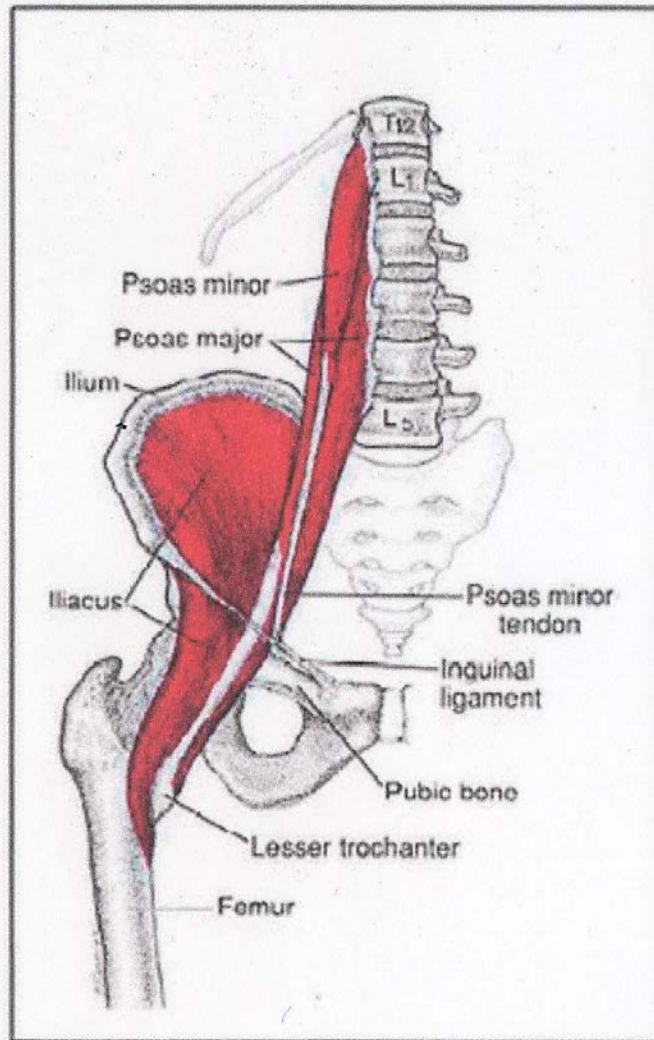


Posterior femur eval

Man's anthropological progression towards the erect posture; therefore the necessity of the elongation of the iliopsoas and now digression.



# The iliopsoas



Tight iliopsoas can create lordotic curvature of the lumbar spine, a superior sacrum, and lack of spring at sacral S-2 horizontal axis.





Hip flex (iliopsoas) evaluation



Spring test for superior sacrum

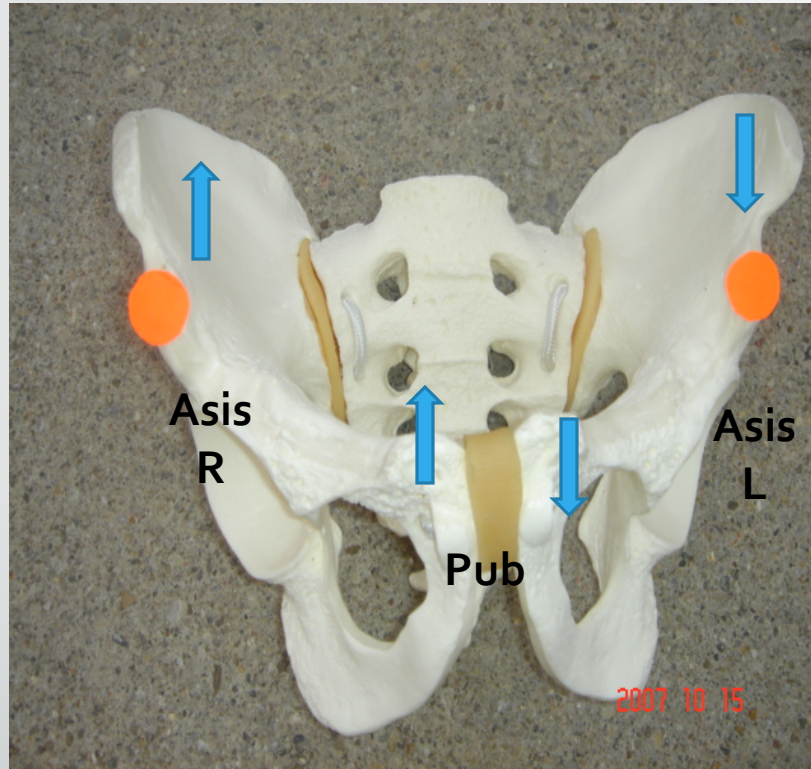


Evaluate spine rotation faults

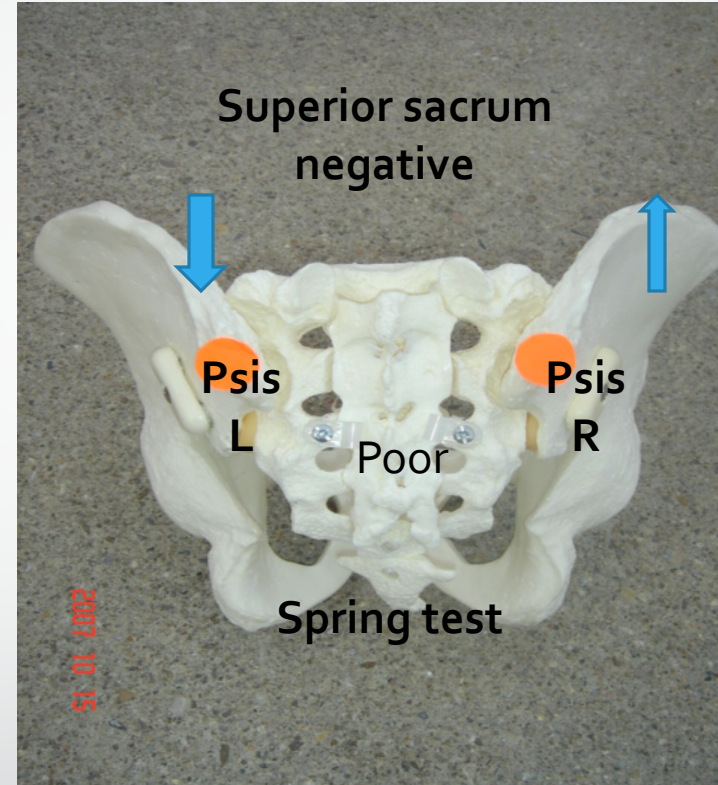


# Class example - S.W.A.P

## Stretching with a Purpose



Anterior view  
Hip (slide glide) – not good (-)  
Leg (hip internal rotation) - OK



Posterior view  
Leg (posterior femur) - R  
Iliopsoas stretch – restricted R > L  
S-2 Horizontal axis spring -  
negative



## Definition of upslip:

- Elevated PSIS
- Elevated ASIS
- Elevated symphysis pubis
- Elevated iliac crest
- May appear to be the shorter of the two extremities

## Characteristics that may follow an upslip:

- Involved side – tight iliopsoas  
posterior femur  
limited hip internal rotation
- Contralateral side – anterior ilium



Clinical correction for superior pub



Self pub correction for right  
upslip



Prone pull for upslip



Prone pull for upslip with towel assistance



Upslip correction



Out flare correction





Anterior ilium correction



Inflare correction



Posterior femur correction



Iliopsoas stretch





Type I rotation stretch



Superior sacrum traction



Shirley Sahrman quad peds





Correction of forward bent on horizontal axis S-2  
Sacral horizontal spring  
Ogasus and Hesch 15 mins



Self correction for hip slide glide limitation





Belt mobs for hip rotation

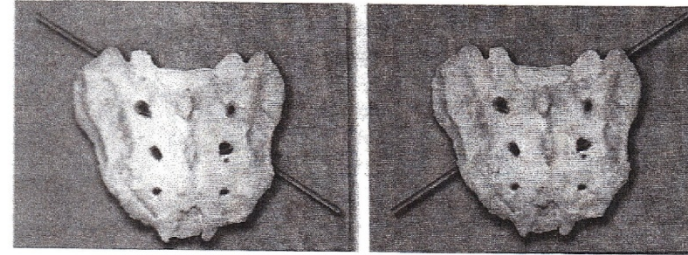
# SACRAL TORSIONS

- Motion about an oblique axis.
- Axis is opposite SeFT
- Deep sulcus & prominent ILA on opposite sides
- L5 rotates opposite of sacral base
- Most common dysfunction

## Hesch Approach #B

### Chapter 12 - SACRAL TORSION ABOUT AN OBLIQUE AXIS

Sacral Torsion about an Oblique Axis (often referred to simply as “torsion”) is a rather complex phenomenon of the sacrum. Fortunately it is much less common than the sacral patterns mentioned earlier, though I know many would disagree with this statement. I have defended this elsewhere (Hesch 1992). Sacral Torsion is a tri-planar behavior of the sacrum about an oblique axis. There are 2 oblique axes. The right oblique axis originates on the superior and anterior portion of the right SI joint and terminates on the inferior and posterior portion of the left SI joint. The left oblique axis is the opposite. See illustrations below.



LEFT SACRAL OBLIQUE AXIS

Note that top of axis is on the left.

RIGHT SACRAL OBLIQUE AXIS

Note that top of axis is on the right.

All anatomical graphics in this chapter are from *Dynamic Body* (Dalton 2011) created or modified by Kardokus B. with permission.

The osteopathic and chiropractic and more recently the physical therapy literature refer to an oblique sacral axis extending from the anterior part of the upper sacral articular surface down to the contralateral inferior and posterior joint surface (S1-S3). The axes are named right oblique axis (begins on the right upper joint) and left oblique axis (begins on left upper joint). Dysfunctions are named for the direction of rotation on the axis, such as Right on Right, meaning right rotation of the sacrum on the right oblique axis. Other dysfunctions are Left on Left, Left on Right, and Right on Left.

Some of the literature regarding sacral motion is confusing. One Osteopathic list of terminology on the internet lists no less than 13 different names for Sacral Torsion about an Oblique Axis! It sometimes seems to ascribe rotation about a vertical axis, yet refers to it as rotation about an oblique axis. Details are inadequate. Rotation about an oblique axis is referred to as Sacral Torsion. I believe that clarity can be established by utilizing more landmarks for palpation, and adding passive Spring Tests. Sacral rotation about a vertical axis and side bending about an anterior-posterior axis are frequently observed when utilizing this evaluation schema. Pure forward and backward bending dysfunctions about a transverse axis are observed, though less frequently. Additionally the Spring Tests can be performed in neutral, though more importantly must be performed in full extension and full flexion. When the oblique axis dysfunctions are present they can be significant (with respect to degree of symptoms) and I can personally vouch



# TREATMENT BACKWARD SACRAL TORSIONS



Left on Right Sacral Torsion

# TREATMENT

## FORWARD SACRAL TORSIONS

- Lateral recumbent with **oblique axis side down** & flex legs to level of L5-S1.
- Rotate upper body in the same direction as the sacrum is rotated & stabilize (i.e "hug table")
- Drop the legs off the table.
- Have patient push feet up toward ceiling as you resist with an isometric force for 5 seconds.
- For an additional assist, have patient **maintain inhalation** while pushing



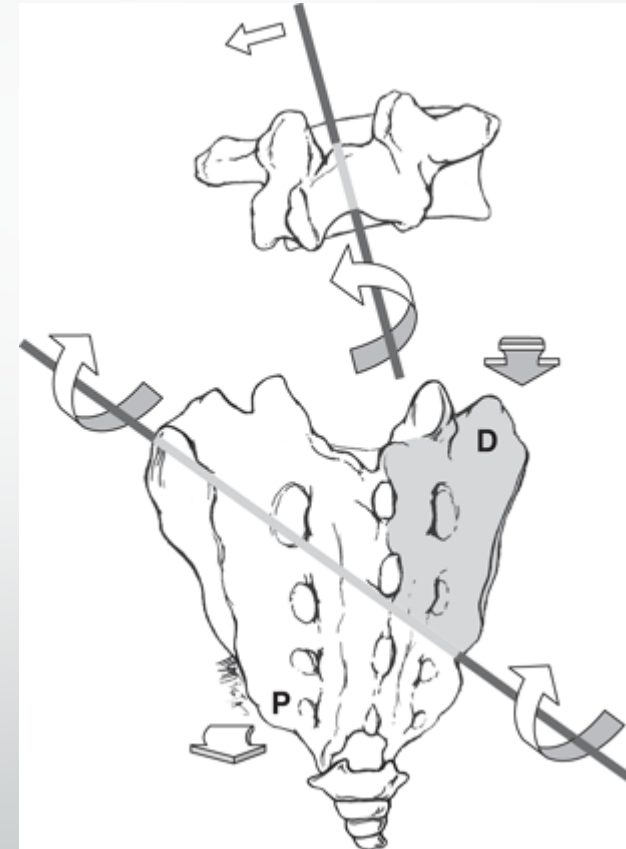
Left on Left treatment

## FORWARD SACRAL TORSION LEFT OBLIQUE AXIS (LEFT ON LEFT)

### Diagnosis:

Seated flexion test: positive right  
Sacral sulcus: deep, anterior  
right Inferior lateral angle (ILA):  
shallow, posterior left (or  
inferior) Spring test: negative  
(good spring) Sphinx test: less  
asymmetry L5NSLRR

***Left-on-Left sacral torsion***







**Dance Kalediscopes**

## Athletic Training in Dance



Pointe shoes complicate biomechanics of ballet | Lower Extremity ...

[jermagazine.com](http://jermagazine.com)

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# NOTES/HINTS

- Remember – One could have a downslip with one ilium and an upslip contra laterally, **nonsymptomatic**.
- The foot that externally rotates more, overall has a great pronation and limit talor glide (posteriorly) when dorsiflexed.

# Correction with an orthotic

- One foot pronates more than the other, over pronation can be a cause of functional short leg.
- Always safe to under correct “cut in  $\frac{1}{2}$ ”.
- Just a pair of custom orthotics may be all that is needed.
- Give it to weeks and reevaluate.
- When orthotics are indicated and a heel lift is provided instead, the symptoms can be exacerbated.



# Thank you

- Thank you for listening to this approach. One can change a person's life by simply removing the heel lift when they do not need it.
- Be cautious
- Patience will build your confidence!
- Mine took 46 years of trial and error.

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