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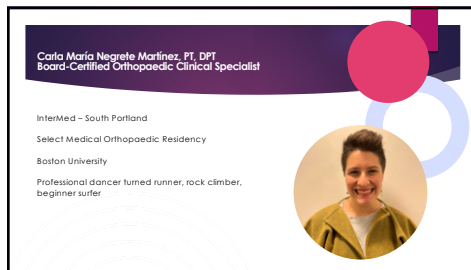
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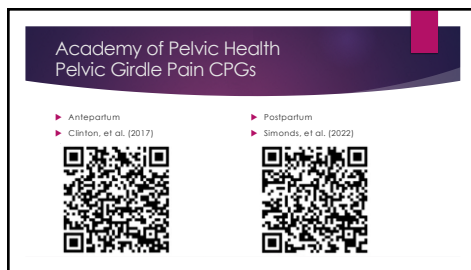
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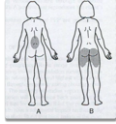
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### What is Pelvic Girdle Pain ?



- ▶ Pain is experienced between the posterior iliac crest and the gluteal folds, particularly in the vicinity of the sacroiliac joint.
- ▶ The pain may radiate in the posterior thigh and can also occur in conjunction with/ or separately in the symphysis. (Vleeming, 2008)

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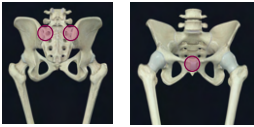
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### Classification System Albert et al, 2009

- ▶ SIJ
  - ▶ Unilateral
  - ▶ Bilateral
- ▶ Pubic symphysis alone
- ▶ All 3 joints (PG syndrome)



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### Outline

- ▶ Review structure & function
- ▶ Antepartum Pelvic Girdle Pain
- ▶ Postpartum Pelvic Girdle Pain
- ▶ Wrap-up
  - ▶ Cases
  - ▶ Questions



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## Learning Objectives

- ▶ Participants will:
  - ▶ Identify patients with pregnancy-related pelvic girdle pain through PT examination
  - ▶ Develop and implement treatment plans that include activity modification to improve function, manual therapy, education, and therapy
  - ▶ Select appropriate patient reported outcome measures
  - ▶ Refer as needed for pelvic health PT if patient is having symptoms that impair bowel, bladder or sexual function



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## Your Goals

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## Live POLL

- ▶ <https://poll.illinois.edu/event/8M3Nw7m7z2FSMortvWjnhF>
- ▶ Slide code: 4165858



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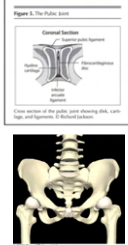
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### Structure

- ▶ 2 innominates along with the sacrum form the pelvis
- ▶ Articulations:
  - Pubic symphysis
  - Sacroiliac joints
- ▶ Functionally, need to consider L4-5, and L5-S1 as well as hip joint



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### Function

- ▶ Load transfer
- ▶ Force generator
- ▶ Primary stabilizer / center of mass
- ▶ House birth canal



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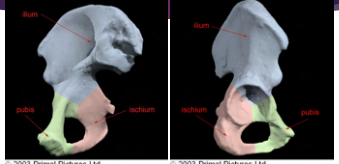
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### Osteology – The Innominate



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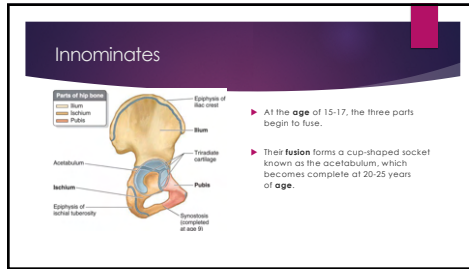
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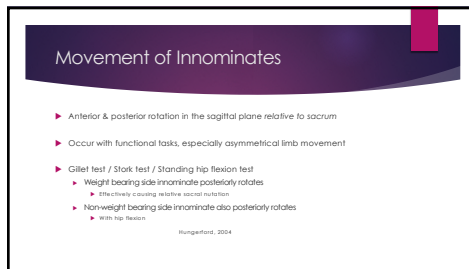
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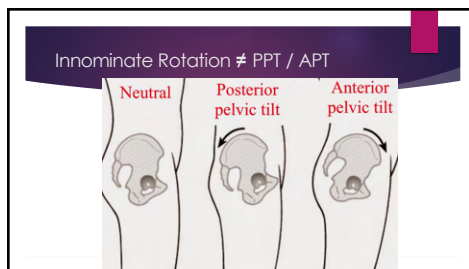
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### Sacrum

- Fusion of S1 – S5
- 1-3° rotation and <1 mm translation
- Motion is always relative to the ilia / innominales
- Note C-/L- shape of articular surface




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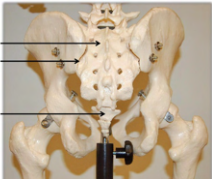
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### Sacroiliac Joint

- Diarthrodial / synovial joint
  - Planar
    - Sacral surface primarily concave
    - Iliac surfaces primarily convex
  - Articular cartilage
  - Capsule
  - Synovial fluid
  - Ligamentous support
- L5/S1 frontal plane




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Taut with counterrotation of sacrum.  
Can be palpated directly below the PSIS and can often be a source of pain.



### Long Dorsal Ligament

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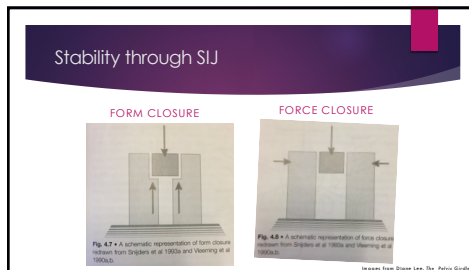
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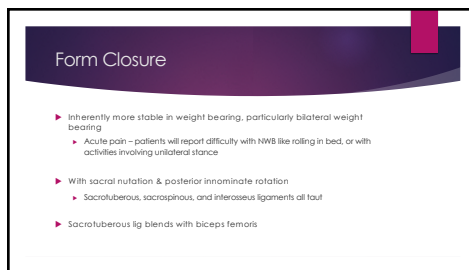
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### Force Closure / Sling Systems

- ▶ Work of Andre Vleeming
  - ▶ 1. Anterior Oblique System
  - ▶ 2. Posterior Oblique System
  - ▶ 3. Deep Longitudinal System
  - ▶ 4. Lateral System



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### Force Closure (Posterior & Anterior)

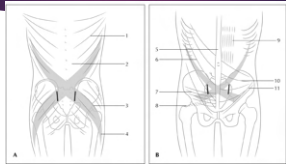


Image from Buckholz & Kaser, 2003

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### Anterior Oblique System

- ▶ Includes TRA, oblique muscles, contralateral adductor muscles and anterior abdominal fascia to stabilize through pubis



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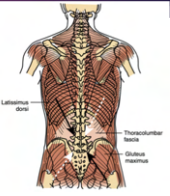
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### Posterior Oblique System

- ▶ Contralateral latissimus dorsi, TLF, and GMax
- ▶ Posterior lumbar fascia



Labels in diagram: Latissimus dorsi, Thoracolumbar fascia, Sacrotuberous ligament

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### Role of PFM in pelvic girdle stability

- ▶ One of four core muscles with the transversus abdominus (TrA), diaphragm and lumbar multifidi.
- ▶ With the TrA compresses the os coxa onto the sacrum to reduce vertical shear
- ▶ Increases stability during higher intraabdominal pressure events
- ▶ Support pelvic viscera
- ▶ Impart sacral extension / counternutation



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### Antepartum Pelvic Girdle Pain

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### Background

- ▶ Antepartum = before birth / prenatal / during pregnancy
- ▶ Population
  - CPG identifies A-level evidence re: risk factors for PGP during pregnancy
  - Prior pregnancies
  - MSK impairments
  - Increased BMI
  - Smoking
  - Work dissatisfaction
  - Lack of belief in the improvement in the prognosis of PGP

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### Live POLL

- ▶ <https://forms.gle/4vzvt1qkM8NwYm7w2G5MndvWbuuF>
- ▶ Slido code: 4165858



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### Initial Screening

- ▶ Leadbetter (2006)
  - History of LBP / PGP
  - Pain with walking
  - Pain standing on one leg (e.g. bathing, dressing)
  - Pain with stairs
  - Pain turning over in bed
- ▶ Should also be asking patients about bowel, bladder, and sexual function.



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### Patient-reported Outcome Measures (Grade A)

**Self-reported Outcome Measures**

- ▶ The Pelvic Girdle Questionnaire
- ▶ Oswestry Disability Index

**Additional**

- ▶ ICIQ – Incontinence screening tool

Pelvic Girdle Questionnaire

This questionnaire is for the clinician to use with the patient. It is not to be filled in by the patient. It is not to be used for research purposes.

Item	Not at all	Slightly	Moderately	Very much
1. Pain in the pelvis				
2. Pain in the hip				
3. Pain in the lower back				
4. Pain in the upper back				
5. Pain in the neck				
6. Pain in the shoulder				
7. Pain in the elbow				
8. Pain in the wrist				
9. Pain in the hand				
10. Pain in the foot				
11. Pain in the ankle				
12. Pain in the knee				
13. Pain in the leg				
14. Pain in the calf				
15. Pain in the heel				
16. Pain in the toe				
17. Pain in the nail				
18. Pain in the skin				
19. Pain in the hair				
20. Pain in the eye				
21. Pain in the ear				
22. Pain in the nose				
23. Pain in the mouth				
24. Pain in the throat				
25. Pain in the chest				
26. Pain in the stomach				
27. Pain in the intestines				
28. Pain in the bladder				
29. Pain in the uterus				
30. Pain in the vagina				
31. Pain in the penis				
32. Pain in the testis				
33. Pain in the scrotum				
34. Pain in the prostate				
35. Pain in the rectum				
36. Pain in the anus				
37. Pain in the perineum				
38. Pain in the buttock				
39. Pain in the thigh				
40. Pain in the leg				
41. Pain in the foot				
42. Pain in the ankle				
43. Pain in the knee				
44. Pain in the leg				
45. Pain in the calf				
46. Pain in the heel				
47. Pain in the toe				
48. Pain in the nail				
49. Pain in the skin				
50. Pain in the hair				
51. Pain in the eye				
52. Pain in the ear				
53. Pain in the nose				
54. Pain in the mouth				
55. Pain in the throat				
56. Pain in the chest				
57. Pain in the stomach				
58. Pain in the intestines				
59. Pain in the bladder				
60. Pain in the uterus				
61. Pain in the vagina				
62. Pain in the penis				
63. Pain in the testis				
64. Pain in the scrotum				
65. Pain in the prostate				
66. Pain in the rectum				
67. Pain in the anus				
68. Pain in the perineum				
69. Pain in the buttock				
70. Pain in the thigh				
71. Pain in the leg				
72. Pain in the foot				
73. Pain in the ankle				
74. Pain in the knee				
75. Pain in the leg				
76. Pain in the calf				
77. Pain in the heel				
78. Pain in the toe				
79. Pain in the nail				
80. Pain in the skin				
81. Pain in the hair				
82. Pain in the eye				
83. Pain in the ear				
84. Pain in the nose				
85. Pain in the mouth				
86. Pain in the throat				
87. Pain in the chest				
88. Pain in the stomach				
89. Pain in the intestines				
90. Pain in the bladder				
91. Pain in the uterus				
92. Pain in the vagina				
93. Pain in the penis				
94. Pain in the testis				
95. Pain in the scrotum				
96. Pain in the prostate				
97. Pain in the rectum				
98. Pain in the anus				
99. Pain in the perineum				
100. Pain in the buttock				

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**ICIQ**

**How often do you leak urine? (Check one box)**

never  1

about once a week or less often  2

two or three times a week  3

about once a day  4

several times a day  5

all the time  6

**We would like to know how much urine you usually leak.**

**How much urine do you usually leak (whether you wear protection or not)?**

(Check one box)

none  1

a small amount  2

a moderate amount  3

a large amount  4

**Overall, how much does leaking urine interfere with your everyday life?**

Please circle a number between 0 and 10 (0 is great and 10 is great deal)

0 1 2 3 4 5 6 7 8 9 10

not at all  a great deal

ICIQ score sum scores 3+4+5

**When does urine leak? (Please check all that apply to you)**

never - urine does not leak

leaks before you can get to the bathroom

leaks when you cough or sneeze

leaks when you are awake

leaks when you are physically active/exercising

leaks when you have finished urinating and are dressed

leaks for no obvious reason

leaks all the time

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### Objective Examination

**Function**

- ▶ Active Straight Leg Raise (ASLR)
- ▶ Hip ROM & MMT

**Provocation**

- ▶ Laslett Cluster
- ▶ FABER

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### ASLR – with and w/o manual assist

For each leg score difficulty:  
0 = not difficult at all  
1 = minimally difficult  
2 = somewhat difficult  
3 = fairly difficult  
4 = very difficult  
5 = unable to do



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### Laslett Cluster

Remember must FIRST rule out lumbar spine, if suspected, via neuro screen and repeated movement testing

Thigh Thrust      Distraction

Compression      Sacral Thrust      Goensien



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### Treatment Options – Mixed Evidence

Mechanical Interventions  
▶ Manual Therapy – Grade C Recommendation

Exercise  
▶ Grade D recommendation, but not re: specific exercise prescription

Function  
▶ Support Belts – Grade D Recommendation



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### Antepartum CPG - Manual Therapy (Grade C)

- ▶ "Clinicians may or may not utilize manual therapy techniques including high velocity, low amplitude manipulations."
- ▶ This evidence is emerging and treatment could be considered, as there is little to no reported evidence of adverse effects in the healthy antepartum population."



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### Exercise (Grade D)

- ▶ Stay active!
- ▶ Motor control & muscle performance per findings
  - ▶ Core nm including PFM
  - ▶ Anterior & posterior slings
  - ▶ Hip nm (typically ext, abd, ER)



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### Antepartum CPG – Support belts

- ▶ "Should consider" use of support belt
- ▶ Further research needed to clarify initial application, duration, and specific patient population who will benefit



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Worth reviewing re: antepartum population

- ▶ Recommended to use Borg RPE (vs. heart rate)
- ▶ Blood pressure should be monitored
  - ▶ Preeclampsia / pregnancy-induced HTN
- ▶ Don't fear supine during PT exam
  - ▶ Left side-lying is the recovery position
  - ▶ If someone is sleeping supine at home, they are fine
  - ▶ Do not prescribe intense or prolonged supine exercises for HEP

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Postpartum Pelvic Girdle Pain

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Postpartum

- ▶ Typical postpartum period is considered 12-months
  - ▶ Lasts as long as parent is breastfeeding and / or pumping due to hormonal changes that persist
- ▶ There is not natural resolution of all changes, though
- ▶ Good way to think about it: "once postpartum, always postpartum"
  - ▶ Consider history
    - ▶ 45-year-old person with 3 kids who developed their symptoms during first pregnancy (12-years ago) and they never fully resolved, for example – still need to consider pregnancy, labor, and delivery in history

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### The Fourth Trimester



- ▶ First 12 weeks following birth
- ▶ There is strong evidence to suggest that individuals with PP-PGF who present to PT beyond 3 months after delivery may experience minimal to no gains with intervention.
- ▶ PTs should advocate for initiating care in early postpartum (before 3 months postpartum) to reduce likelihood of chronic PP-PGF. (Per CPG)

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### Postpartum PGP

- ▶ pain location in the posterior pelvis
- ▶ pain with rolling in bed
- ▶ pain with weight-bearing



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### Risk factors – Moderate evidence (CPG)

- ▶ multiparity
- ▶ cesarean delivery
- ▶ presence of depressive symptoms
- ▶ higher body mass index (BMI) pre-pregnancy
- ▶ work factors
- ▶ breastfeeding position



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### Objective Examination

<b>Function</b>	<b>Provocation</b>
▶ Active Straight Leg Raise (ASLR)	▶ Laslett Cluster
▶ Hip ROM & MMT	▶ Especially P4 / Thigh Thrust
	▶ FABER



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### A word re: Diastasis Recti Abdominis

- ▶ From the CPG:
  - ▶ There is weak evidence to support the examination of diastasis recti abdominis (DRA) in people with PP-PGF.
  - ▶ There is moderate evidence to suggest that the presence of DRA impacts the function of the abdominal wall and pelvic floor muscles.
  - ▶ Pfs may perform DRA assessment for PP-PGF. Future research should investigate a potential relationship between DRA and PP-PGF.

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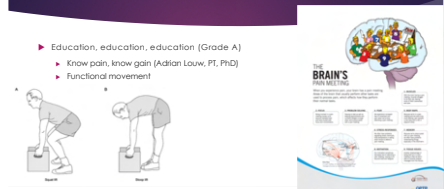
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### Interventions: Education (Grade A)

- ▶ Education, education, education (Grade A)
- ▶ Know pain, know gain (Adrian Louw, PT, PhD)
- ▶ Functional movement



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### Interventions: Support Belt (Grade A)

- ▶ Support belt, but not as isolated intervention



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### Interventions: Manual Therapy (Grade A)

- ▶ Manual therapy, but not as isolated intervention
  - ▶ Short term benefit, but longer term not superior to stabilization exercises



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### Interventions: Exercise (Grade A)

- ▶ Exercise (Grade A)
  - ▶ There is strong evidence to support the use of exercise to improve performance of pelvic floor, back flexors, back extensors, and hip extensors



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**Worth reviewing re: postpartum population**

- ▶ Blood pressure should still be monitored
  - ▶ Preeclampsia / pregnancy-induced HTN
- ▶ History re: labor & delivery
- ▶ Screening for depression
- ▶ Remember should inquire re: bladder, bowel, and sexual function
- ▶ Return to running recommendations

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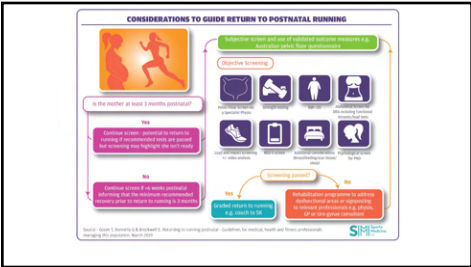
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**Lab Skills to Practice**

- ▶ ASLR
  - ▶ With IC compression
  - ▶ With DFA approximation
- ▶ Lowest Cluster
- ▶ Palpation long dorsal lig.
- ▶ External PFM palpation
- ▶ Diaphragmatic breathing
- ▶ Graded mobilization - Sacrum
- ▶ Exercise prescription for anterior sling & posterior sling

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### Patient Cases: Subjective

<b>Antepartum</b> <ul style="list-style-type: none"><li>▶ 28 y.o. nurse presents 26 weeks pregnant with left glut pain after receiving treatment for left LBP. Pain comes on with</li><li>▶ Sitting for 2hrs while watching theater shows with their mother. It will resolve on it's own, but comes back every time they sit for &gt;2hrs</li></ul>	<b>Postpartum</b> <ul style="list-style-type: none"><li>▶ 34 y.o. psychotherapist presents 2 weeks post-partum with "tailbone pain" -&gt; aka sacrum pain while<ul style="list-style-type: none"><li>▶ Sitting</li><li>▶ Standing</li><li>▶ Bending</li><li>▶ Lifting</li></ul></li></ul>
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### Patient Cases: Initial Exam Findings

<b>Antepartum</b> <ul style="list-style-type: none"><li>▶ No pain with repeated lumbar movements</li><li>▶ Equal hip PROM and strength</li><li>▶ Left long dorsal ligament TTP</li></ul>	<b>Postpartum</b> <ul style="list-style-type: none"><li>▶ Sacrum pain with lumbar flexion, extension and S SB, pain in right lumbar region with L SB</li><li>▶ Equal hip PROM</li><li>▶ Feels hamstring activation with hip extension on the R and glut max on the left</li><li>▶ TTP at S TFL, piriformis, R long dorsal ligament</li></ul>
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### Antepartum Case: Treatment

- ▶ R Unilateral PAs to sacrum grade 2
- ▶ Split squats with contralateral shoulder extension
- ▶ Psoas with PFM activation

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### Postpartum Case: Treatment

- ▶ Initially PAS to lumbar spine and sacrum grade 1-4 depending on pain and stiffness
- ▶ STM to R QL
- ▶ STM and DN of 8 piriformis and TFL
- ▶ Overhead shoulder flies for TrA muscle activation with adductor squeeze
- ▶ Clamshells
- ▶ Hamstring bridges with shoulder extension

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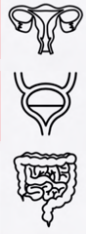
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### How'd we do?

- ▶ Participants will:
  - ▶ Identify patients with pregnancy-related pelvic girdle pain through PT examination
  - ▶ Develop and implement treatment plans that include activity modification to improve function, manual therapy, education, and therapeutic exercise
  - ▶ Select appropriate patient reported outcome measures
  - ▶ Refer as needed for pelvic health PT if patient is having symptoms that impair bowel, bladder or sexual function
- ▶ [PT Locator - Find a Practitioner for Pelvic and Abdominal Health - APFA Pelvic Health](#)



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### Questions

WHAT QUESTIONS DO YOU HAVE?



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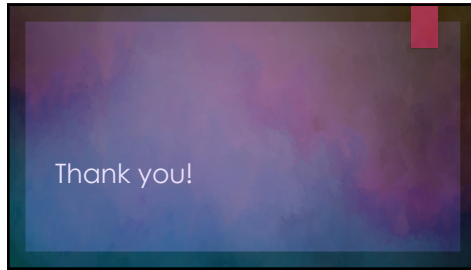
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