1. **Specific treatment for the SI joint**

Jenny Arey, PT, DPT, OCS, CMPT
SPORTS Physical Therapist
Cook Children's Rehabilitation Services

2. **Objectives**
   - Describe the connection between the low back, pelvis, and lower extremity that can have impairments that promote sacroiliac joint dysfunction
   - Demonstrate postural assessments and cluster tests to determine type of sacroiliac dysfunction
   - Perform an initial treatment technique for the most common sacroiliac dysfunction and differentiate when to refer to a physical therapist.

3.

4. **Assessment**
   1. Mechanism of Injury
      - Pain Location
      - Posture
      - Special tests
        - Primary Stress tests
        - Secondary Stress tests
        -
   2. Kinetic Tests
      - Positional Tests
      - Sacral positioning
      - Palpation
      -

5. **Posture**
   - Visual Observation/palpation
   - Plum Line
   -
   -

6. **Special Tests**
   1. Primary Stress Tests
   2. Secondary Stress Tests
   3. Anterior Gapping
      - Posterior Gapping
      - Rotary Stress
      -
      -

4. Stoddart's
   - Rotary stress x 20 second hold
   - Superoinferior stress
   - Sacral corner stress
   - Sacrotuberus ligament palpation
   - Long dorsal ligament palpation
7.
8.
9. **Kinetic Testing**
10. **Positional Tests**
    - Assessment of Landmarks
      - Standing
      - Sitting flexed
      - Supine
      - Prone propped on elbows
    - Supine to sit
    - FABER
    - Active SLR
    - Sacral torsion
11.
12. **Can't forget the…**
    1. Pubic Symphysis
    2. Supported by ligamentous structure
    - Impacted by instability
      - Pain is Local, disabling, and aggravated by unilateral weight bearing

13. **Treatment Techniques**
14. **Treatment**
    - Refer to Physician
    - Strengthening
    - Muscle Energy Techniques
    - Joint Mobilization / Manipulation
    - Joint Stabilization
    -
15. **Strengthening**

- Engage the core
- Dynamic lumbar stabilization progression
- Hip strengthening
- Flexibility
- Functional skills
- Balance control

*Focus on neutral pelvis/reduce drop
*Coordination of core/pelvis strengthening
*Incorporate pelvic floor

16

Engage the Core
-Add Bridge
-Dynamic Lumbar stabilization progression
-Add abduction resistance at knees
-Progress to planks

17

18

Piriformis stretch
Hamstring stretch
Hip flexor/ iliopsoas stretch

19

1. Functional Skills
2. Balance

20 **Muscle Energy Technique (MET)**

- Hip abduction/adduction (belt/ball)
- Hip flexion/extension (push/pull)
- Sacral rotation correction
  - Iliopsoas
  - Piriformis
- Prone hamstring isometric contraction for posterior innominate rotation
-

21

22 **Joint Mobility**

1. Pelvic Rocking
   - Anterior

- Posterior
-
- Sacral mobilizations
- Lumbar mobilization

2 - HVLT
  - Distraction Manipulation
  - Rotation: Posterior / anterior
  - Lumbar flexion / extension

23 **Mobilization**

1 Anterior Rotation

2 Posterior Rotation

24 **Distraction Manipulation**

25 **Joint Stabilization**

- Force vs Form Closure
  - Force: Stability from muscles supporting pelvis
    - Very vulnerable to shear forces
  - Form: Stability from self locking of pelvis
- Stabilization through exercise

- Stabilization through external support (belt)

26 **Other Treatment Techniques**

- Shoe Inserts
- Postural Re-education
- Functional Re-training

27 **Case Study**

- 16 year old Female with reports of low back pain and hip pain ~ 10 months

- History of (R) L5 Spondylolysis with TLSO wear –at time of eval wearing 8 hours per day

- Radiographic evidence of spondy being stable, but not healing

- Competitive soccer player
-
-

28 **Pain**

- 3/10, achy, constant
- Central low back

- Worst: 7/10
- Best: 0/10
- Aggravating: sitting on hard chair, stair ascend/descend, prolonged walking
- Relieving: rest, laying down, soft chairs

29 **Impairments**

- Tenderness to palpation (L) PSIS and ILA of sacrum, spasm (L) lumbar paraspinals
- Posture:
  - PSIS High on (L)
  - Rounded shoulders
  - Sacral sitting/posterior rotation
- ROM
  - Lumbar: flexion limited 10%, Extension : not tested
  - Hip and knee: WNLS bilaterally
- Flexibility:
  - Popliteal angle -10 degrees bilaterally
- Leg Length: (L) 85cm, (R) 84cm
- Strength: Reduced hip abduction/extension, pain (L) low back/hip with flexion/abduction resistance

30 **Special Tests**

- Nutated sacrum
- Primary Stress tests (+)
- Secondary Stress Tests (+)
- Supine to sit: (L) equal to short translation
- Standing flexion: (L) positive
- Gillet's test: (L) Positive, posterior rotation
  - Shuttering in SIJ noted during movement
- Repetitive flexion: no peripheralization
- Slump test: Negative
- Joint play:
  - Hypomobility T8-12, L1-2

31 **Assessment**

- (L) sacroiliac joint anterior innominate rotation
- Reduced muscular stability in bilateral SIJ
- (L) hip abduction/extension weakness
- Core weakness

32 **Treatment**

- MET
  - Hip abduction/adduction
  - Hip flexor on Right

- Hip flexion/extension
- Mobilization/Manipulation
  - Posterior innominate mobilizations Grade III-IV
  - Thoracic posterior anterior mobs Grade III-IV
  - T12-L1 grade V with above and below flexion locking
- Strengthening
- Stabilization Belt

33 **Results**

- Discharged TLSO without back, hip, or LE pain
- 1 occurrence of mild hypomobility in 6 weeks with ability to self correct and strengthen
- Progressed out of SIJ stabilization belt for all activities: Jog x 10-15 mins, soccer scrimmages
-
-
-
-

34 **Questions?**

35 **References**

- Adhia D, Tumilty S, Mani R, Milosavljevic S, Bussey M. Can hip abduction and external rotation discriminate sacroiliac joint pain? Manual Therapy 2016; 21.
- Arumugam A, Milosavljevic S, Woodley S, Sole G. Effects of external pelvic compression on form closure, force closure, and neuromotor control of the lumbopelvic spine – a systemic review. Musculoskeletal science and practice 2012; 17(4): 275-284.
- Asgaonkar B, Angal N. Effects of muscle energy technique (MET) versus MET with shoe insoles in pain and functional leg length discrepancy in patients with sacroiliac joint dysfunction. Indian Journal of Physiotherapy and Occupational Theapy 2017; 11(1): 90-5.
- Bernini, PM. Spine. *Netter's Orthopaedics*. By Walter B. Greene and Frank H. Netter. 1st ed. Philadelphia: Saunders, 2006. 252-81. Print
- Bhushan V, Sahay P, Alam S, Equebal A. Efficacy of maitland mobilization and lumbar segmental exercises as compared to lumbar segmental stabilization exercises in subjects with mechanical low back pain: A randomized controlled trial. Indian Journal of Physiotherapy and Occupational Thearpy 2016; 10(4): 113-8.
- Bogduk N. Pain provocation tests for the assessment of sacroiliac joint dysfunction. J Spinal Disord 1999;12(4):357-8.
- Brolinson PG, Kozar AJ, Cibor G. Sacroiliac joint dysfunction in athletes. Current Sports Medicine Reports 2003: 47-56.

- Ditton M. Manual Therapy of the Spine: An Integrated Approach: McGraw-Hill; 2002.
- Hoppenfeld, S, Hutton, R. Physical examination of the hip and pelvis. *Physical Examination of the Spine and Extremities*. New York: Prentice Hall, 1976. 144+.
- Lucido, M. Level II Lower Quadrant. NAIOMT 610 Certification Course. Texas Woman's University, Dallas. 2012. Lecture.
- Magee, D. Orthopedic physical assessment. Canada: Saunders Elsevier; 5th Edition: 2008.
- Panjabi MM, White AA. Biomechanics in the musculoskeletal system. New York: Churchill Livingstone; 2001.
- Richardson C, Snijders C, Hides J, Damen L, Pas MS, Storm J. The relation between the transverse abdominis muscles, sacroiliac joint mechanics, and low back pain. Spine 2002; 27(4):399-405.
- Schwarzer AC, April CN, Bogduk N. The sacroiliac joint in chronic low back pain. Spine 1995;20(1):31-7.
- Slipman CW, Patel RK, Zhang L, Vresilovic E, Lenrow D, Shin C, et al. Side of symptomatic annular tear and site of low back pain: is there a connection? Spine 2001;28(6): 165-9.
- Stoev I, Powers AK, Puglisi JA, Munro R, Leonard JR. Sacroiliac joint pain in the pediatric population. J Neurosurg Pediatrics 2012; 9: 602-7.
- Stupansky, Kathy. Level III Lower Quadrant. NAIOMT 710 Certification Course. Texas Woman's University, Dallas. 2013. Lecture.
- van Wingerden, J.P., Vleeming, A., Buyruk, H.M. et al. Eur Spine J (2004) 13: 199.
- Zhao U, Qi L, Yang J, Zhu X, Yang C, Li M. Factors affecting pelvic rotation in idiopathic scoliosis: Analysis of 85 cases in a single center. Medicine 2016; 95: 46