

Manual Therapy Treatment for a 15-Year Old Tennis Player: Case Report

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Introduction

- Spinal alignment of the vertebral column and pelvis is balanced by muscles and ligaments. Proper posture aids to maintain this balance. Postural abnormalities can lead to changes in lumbosacral and hip mobility (McGill, 2002).
- Research shows that pelvic alignment allows for efficient movements of the hip and allows for effective muscle recruitment (Abutaleb et al, 2015).
- Pelvic abnormality can alter the neutral position of the pelvis. This results in an imbalance between the muscles, ligaments and fascia that effect the pelvic joints (Janda, 1983).
- Muscle Energy Techniques (MET's) are techniques used to correct an asymmetry by targeting specific contractions of muscles to correct alignment.
- Research shows that MET's can help to alleviate low back pain (Selkow et al, 2009). Based on this information the patient in this case study received MET's as an intervention.
- The purpose of this case report is to discuss the effects of using MET's alongside with standard physical therapy interventions on a youth female tennis player on pain level, pelvic alignment and functional mobility.

Patient Information

- A 15-year old female high school tennis player reported having low back pain following tennis practice for the last 2 weeks. She was referred by her physician to outpatient physical therapy for treatment.
- The patient had just started training for her tennis season and has been working out for several hours every day and continued to play and practice while having pain.
- Her primary pain symptoms were around the left pelvis.
- She described the location of her pain in her left lower back surrounding her Posterior Superior Iliac Spine (PSIS) and upper left gluteal region

Clinical Impression

- Differential diagnosis included acute low back pain, lumbar instability, hip pathology and pelvic dysfunction.
- Pelvic dysfunction was the principal hypothesis. There have been many prevalent referring pain patterns in the literature which include pain surrounding the PSIS and gluteal region on the affected side of the pelvis (Slipman et al, 2000).

Intervention

- The patient was seen in physical therapy twice a week for 3 weeks.
- During the patient's initial evaluation MET's were performed. First the MET was performed to realign the pubic symphysis. Following the pubic symphysis technique, MET to correct the anteriorly rotated innominate was performed.
- For the remainder of the patient's physical therapy visits, the patient began each session with a warm up on the bike for 10 minutes. Following the warm up, the patient's pelvic alignment was assessed and an MET was performed if necessary. Soft tissue mobilizations consisting of effleurage, skin rolling, and foam rolling were performed to the patient's lower back, gluteal and hip flexors. Hip joint mobilizations were performed to help improve range of motion. The patient then performed therapeutic exercises targeting core musculature



Examination

- Postural examination and observation were key in identifying the patient's pathology. Upon, postural analysis the patient presented with slight forward head posture, increased lumbar lordosis, and asymmetrical pelvic landmarks. Postural examination revealed that the left ASIS was shifted down and the left PSIS was shifted up relative to the right side. Following the postural analysis a leg length discrepancy test or the long sitting test was performed. In the supine position, the patient's left medial malleolus was slightly longer than the right and upon going into the long sitting position the left malleolus shortened indicating that there is malalignment of the pelvis. The long sitting test is commonly used as an indicator for pelvic dysfunction (Bemis & Daniel, 1987).
- Other examination tests included the Gillet or Stork test which was positive-the left PSIS did not move down as the patient performed standing unilateral hip flexion, which is a positive test for indicating pelvic hypomobility (Lee, 2004). A cluster of sacral provocation tests were performed including the sacral compression, sacral gapping, Gaenslen's, sacral thrust and thigh thrust test.

Examination	Initial	After treatment
Posture	L PSIS elevated L ASIS depressed	L & R ASIS and PSIS level
Long Sit Test	+	-
Gillet's Test	+	-
Sacral special tests	Sacral Thrust + Sacral compression + Thigh Thrust + Sacral gapping - Gaenslen's Test -	Sacral Thrust - Sacral compression - Thigh Thrust - Sacral gapping - Gaenslen's Test -
ROM	Slightly Limited L hip ER Slightly limited L hip Extension	L hip ROM WNL

Outcomes

- The patient had 6 physical therapy visits over three weeks and was able to perform progressive resistance exercises without aggravating her symptoms.
- The patient showed improved postural alignment with her pelvic landmarks, following the use of MET's.
- Subjectively, the patient reported that her pain significantly decreased after the initial evaluation and she felt like she was progressing.
- Significant improvement was made on the NPRS as the patient's pain level following activity went from 7/10 to 0/10. Research shows that the NPRS is a valid and reliable tool for determining clinical change for patients with low back pain (Childs, Piva & Fritz, 2005).
- The patient had significant improvements in her ODI improving from 21% which indicates moderate disability to 0% disability.
- The ODI is a well-accepted measure of disability in patients with back pain and has been used in many studies (Fairbank & Pynsent 2000). The ODI is also shown to be a valid instrument to measure of change in the SIJ health (Copay et al, 2016).



Discussion

- The interventions were chosen to reduce the patient's pain, improve her pelvic alignment and to restore the patient's ability to play tennis.
- The patient received soft tissue mobilizations, joint mobilizations and progressive therapeutic exercises targeting her core and tennis activities in conjunction with the MET's.
- The MET's used in this case report along with the soft tissue mobilization and exercises demonstrated positive clinical outcomes for a young female tennis athlete.
- It is difficult to separate out one component of the interventions, but we felt the pelvic alignment and stabilization exercises contributed in the positive outcomes of this case report.