Rehabilitating Sacroiliac Joint Dysfunction with Pilates

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Abstract

The Sacroiliac Joint is a strong, typically stable, joint that is located in the pelvis between the ilium and the sacrum. It is surrounded by several supporting muscles and ligaments. The joint is responsible for shock absorption and transferring weight between the spine and the legs. Sacroiliac Joint Dysfunction refers to pain in the Sacroiliac Joint that occurs due to abnormal movement of the joint. It can be caused by a number of reasons, but is generally the result of instability in the pelvic area. Treatment can include non-invasive methods such as heat/ice, rest, anti-inflammatory medications, stretching, exercise, or in more serious cases physical therapy, injections, and surgery. Pilates has shown to be particularly effective in alleviating pain caused by Sacroiliac Joint Dysfunction because of the focus on building stability and strength in the surrounding muscles, correcting imbalances and compensatory patterns, and stretching muscles that have become too tight.
Table of Contents

1. Title Page
2. Abstract
3. Table of Contents
4. Anatomical Description of the Sacroiliac Joint
5. Sacroiliac Joint Dysfunction
6. Case Study
7. BASI Pilates Conditioning Program
10. Conclusion
12. Bibliography
Anatomical Description of the Sacroiliac Joint

The Sacroiliac Joint (SI Joint) lies within the pelvis next to the bottom of the spine, and is formed between the sacrum and the ilium bones. There is an SI Joint on either side of the sacrum, and the articular bony surface of the bones interlock to provide stability and minimize movement of the joint. The joint is supported by several surrounding ligaments that provide additional stability. Muscles around the joint also effect its mobility and movement. They include the abdominal muscles, iliopsoas, erector spinae, multifidus, gluteal muscles, piriformis, hamstrings, and quadratus lumborum. A healthy SI Joint should only be capable of small amounts of motion (about 2 to 18 degrees) and its functions are to provide shock absorption during weight-bearing activities, and to keep the hips and pelvis stable while effectively transferring load between the spine and the legs (Vleeming et al, 2012).
**Sacroiliac Joint Dysfunction**

Sacroiliac Joint Dysfunction (SIJ Dysfunction) refers to improper movement of the SI Joint due to either hypermobility, in which the joint moves too much, or hypomobility, in which it moves too little. The two sides of the SI Joint generally work together during movement, so when one side becomes too stiff or too lax, the sides will not move together and result in pain or stiffness in the area. About 10 to 25% of patients with low back pain are diagnosed with SIJ Dysfunction (American Physical Therapy Association, 2017). Common symptoms include low back pain, upper leg pain, joint inflammation, sharp or stabbing sensations in the low back and groin area, numb/tingling sensations, muscle tightness/tenderness, and spasms. These symptoms can be made worse with bending/twisting movements, rolling over in bed, standing up from a sitting position, walking, and standing or sitting for long periods of time. SIJ Dysfunction can be caused by a number of reasons, both structural and functional. Scoliosis, leg length discrepancies, arthritis, ankylosing spondylitis, pregnancy, prolonged vigorous exercise, muscular imbalance, and injury can all contribute to SIJ Dysfunction.

The goal of treatment is to correct the underlying pathology and alleviate the symptoms. Treatment can consist of heat/ice, rest, anti-inflammatory medications, physical therapy, exercise, injections, and surgery (Driver, 2017). Pilates is particularly effective in treating SIJ Dysfunction because of its focus on pelvic-lumbar stabilization and the development of correct body alignment and muscle recruitment. Strengthening and stretching muscles around the joint, particularly the
abdominals, pelvic floor, and gluteals, help to provide support for the joint and assist in maintaining its proper position.

**Case Study**

I chose to write this study on my personal experience with SIJ Dysfunction. I am a healthy female, 28 years old, and have been active my whole life. I experienced an SI Joint injury two and a half years ago while doing a back bend during a yoga class. I did not feel anything at the time of the injury, but started to feel a dull ache in my low back throughout the day afterwards. The next morning my back was in excruciating pain and I could not get out of bed. Following my injury, I experienced severe chronic back pain and muscle spasms, and was so limited in my daily functioning that at I was unable to walk or roll over in bed on the worst days.

I attribute the injury to being hypermobile and overly flexible, while not having the core strength to support my structure. According to Isacowitz, “it is often these imbalances that directly or indirectly lead to injury... for example, a [person] may be very flexible, yet lack the strength to support the extreme ROM that the activity demands and her joints are able to achieve. A joint that is hyper-mobile is by nature not as stable as a tight joint” (2013).

I went through several rounds of physical therapy, massage, anti-inflammatory medications, and one steroid injection, though none of it made a difference. Within the last year I found a new physical therapist who utilizes manual therapy to realign my pelvis, and through a combination of that and Pilates the results have been extraordinary.
BASI Pilates Conditioning Program

This is the program I created for myself in November 2017, once I had started to experience significant improvement from the manual therapy. At that point, my physical therapist suggested I focus on my Pilates work to build up my core strength and stability in order to maintain the changes that he was making to my body.

My program focused on working primarily in neutral spine in order to minimize any movement of the SI Joint and to avoid deep flexion and low back extension, as they were contraindicated. I thought it was important to build up abdominal strength, particularly that of the transversus abdominis (TA), as it is “the most important of the abdominal muscles in terms of stabilization” (Isacowitz, 2013). Other areas of focus were strengthening my pelvic floor muscles and gluteals, which are also important for stabilization, and stretching my hip flexors and back extensor muscles which had become too tight. This program was done a minimum of three times per week for 6 weeks.

Goals were to get my deep stabilizing muscles to fire and to strengthen muscles surrounding my SI Joint in order to provide support for the joint and minimize movement. My back extensor muscles, particularly the QL, and hip flexors had become overly tight as they were compensating for the underactive stabilizing muscles, so I sought to re-educate those movement patterns to restore the relationship between my agonist and antagonist muscle groups. I hoped that once my back muscles were not being over-activated, it would help to reduce spasms and low back fatigue. The ultimate goal was to restore balance between all stabilizing
and core muscles in order to support proper movement in my SI Joint, and achieve a healthy, pain-free state of being.

**Warm Up on the Mat**

_Pelvic Curl, Spine Twist Supine, Chest Lift, Chest Lift with Rotation_

**Footwork on the Reformer** - 2 red springs, 1 green, 1 yellow

_Parallel Heels, Parallel Toes, V-Position Toes, Open V-Position Heels, Open V-Position Toes, Calf Raises, Prances, Prehensile, Single Leg Heels, Single Leg Toes_

- Focus was on pelvic lumbar stability and TA engagement.

**Abdominal Work on the Reformer**

_Short Box Series: Round Back, Flat Back, Tilt_

- Focus was on the co-contraction of abdominals and back extensors to get those muscle groups working together to provide support for the spine.

Round Back and Tilt provided a nice stretch for tight low back and side body.

**I skipped Twist, Round About, and Climb-A-Tree in the beginning as the rotation and ROM caused pain. Once I gained the strength to support myself I gradually added the exercises in.**

**Hip Work on the Reformer** – 1 red and 1 blue spring

_Frog, Circles Down, Circles Up, Openings_

- Focus was on maintaining neutral spine and pelvic lumbar stabilization, hip adductor and hip extensor control.
Spinal Articulation on the Reformer – 2 red springs

*Bottom Lift, Bottom Lift with Extensions*

- Focus was on spinal articulation and hip extensor strength/control.

** On days when my low back was in pain I would modify by keeping my hips lower during Bottom Lift with Extensions, or would skip it.

Stretches on the Reformer – 1 red spring

*Standing Lunge*

- Focus was on stretching hip flexors and hamstrings to alleviate low back tightness

Full Body Integration (F/I) on the Reformer – 1 blue and 1 yellow spring

*Reverse Knee Stretch*

- Focus was on recruiting deep abdominal muscles to initiate movement while stabilizing my trunk. I used lighter springs in the beginning so as not to compensate with other muscle groups, and worked my way up to 1 red.

Arm Work on the Cadillac

*Arms Standing Series: Chest Expansion, Hug-A-Tree, Circles Up, Circles Down, Punches, Biceps*

- Focus was on trunk stabilization while working arm, shoulder, and back muscles. I had the tendency to grip my glutes so trained myself to recruit my TA for more stability.

Leg Work on the Mat – 2 lb ankle weight

*Gluteals Side Lying Series: Side Leg Lift, Forward and Lift, Forward with Drops*
- Focus was on maintaining pelvic lumbar stability in neutral spine while strengthening hip abductors.

**Lateral Flexion on the Wunda Chair** – One spring on 4

*Side Stretch*

- Focus was on strengthening oblique muscles and keeping my hips stacked in neutral while stretching my side body.

**Conclusion**

Through consistent practice over a 6 week period, I noticed a remarkable difference in my body. My pain level decreased, as well as the frequency of my back spasms. I noticed I was able to maintain the adjustments my physical therapist made for longer periods of time, and moved from seeing him once per week to once per month. I was able to add in other activities such as hiking and cycling, which I had completely stopped doing after the injury.

I found the BASI approach to be particularly effective as BASI focuses on working the body as a whole and restoring balance. The block system ensures each area of the body is exercised in every plane of motion. I was also able to modify my workouts depending on how my body was feeling each day by either adjusting spring tension or selecting different exercises within the same block so that I could work on varying objectives. As I built up stability and strength, I was able to progress to more advanced exercises and add in blocks such as Full Body Integration at the Advanced/Master level, and Back Extension. I continue to practice
Pilates at a minimum of three times per week, receive manual therapy treatments only on an as needed-basis, and am living generally pain free.
Bibliography


