Pilates for Sacroiliac Joint Dysfunction Hypermobility
A Case Study

Martha Hartz
December 31, 2015
Body Intellect Studio
Pretoria, South Africa May 2015
Abstract:
Sacroiliac Joint Dysfunction (si joint dysfunction) is a result of strain or injury to the Si joint causing lower back and leg pain. Patients suffering from Si Joint Dysfunction with hypermobility often experience sharp and intense pain in the lower back and legs making day to day functioning difficult (Yeomans, 2010) Treatment for Si Joint Dysfunction typically involves a tedious regime of steroid injections, medications, and physical therapy (Yeomans, 2010). As the Pilates method has begun to rise in popularity it has begun to be used as more than just exercise. More and more people are turning to Pilates as a form of rehab and an alternative treatment after physical therapy. Research has shown that Pilates can reduce pain in patients with nonspecific lower back pain (Antonino, 2015). For a patient with si joint dysfunction, disciplined Pilates programs, like physical therapy, can consist of exercises focused on strengthening the si joint while also keeping the movement of the joint under control, thereby potentially reducing chronic pain. In this paper we will look at one patient suffering from si joint dysfunction with hypermobility and develop a Pilates program to best suit the patient's needs.
Table of Contents

Abstract.........................................................................................................................2
The Sacroiliac Joint and Dysfunction.................................................................4
Treatments for Sacroiliac Joint Dysfunction......................................................5
The Client with Si Joint Dysfunction .................................................................6
Creating a Pilates program for the Client.........................................................8
BASI Method Pilates Program Designed for the Client...............................9
Conclusion............................................................................................................15
Resources.............................................................................................................16
The Sacroiliac Joint and Dysfunction

The sacroiliac joint, or si joint, is located at the base of the spine where the pelvis joins the sacrum. The pelvis consists of the bones on either side of the lower spine that connect to the hip joint, also known as the iliac crest. The sacrum is the triangular bone at the base of the spine comprised of the last five fused vertebrae (Yeomans, 2010). This sacroiliac joint distributes weight evenly across the hips and acts as shock absorption to protect the spine during the impact of walking. Surrounding the Si joint are several major muscle groups that work to protect the bone structure and the joint itself while also aiding in the body's balance and movement. These muscles include gluteal muscles, erector spinae, quadratus lumborum, piriformis, transverse abdominus, oblique abdominals, and hamstrings. Typically, the si joint only moves a small amount in order to keep the pelvis and hips stable (Yeomans,2010). Si joint dysfunction with hypermobility, however, occurs when there is too much movement in the joint causing the joint to become loose and unstable. This can occur in many circumstances, but is more common when the major muscles surrounding the joint are weak. It is also more prevalent in young to middle aged woman and commonly occurs during or after pregnancy when the body's ligaments are more lubricated due to hormonal increases. Symptoms often involve sharp pain in the lower back and buttocks, at times extending down through the hip or legs. Often times pain is limited to one side of the body, but can occur in both (Yeomans,2010).
There are a variety of treatments for si joint dysfunction. Typical treatments for hypermobile si joint dysfunction include a tedious combination of medications, joint injections, and physical therapy and exercise. (Yeomans, 2010) Medications such as ibuprofen and anti-inflammatory joint injections can help to alleviate swelling and pain around the joint, however alone neither is a long term cure for joint dysfunction. Medication in combination with controlled physical therapy sessions can strengthen the muscle around the joint itself and help in returning the patient to normal activity levels (Miller, 2015). Often these routines can become tedious for patients and if they are not covered by insurance they can become prohibitively expensive. A controlled Pilates regime can offer an alternative treatment for many patients. Pilates has been used for years in the treatment of nonspecific lower back pain, and in many other rehabilitation treatments (Antonino, 2015). According to Physical Therapist, John Miller, when treating si joint dysfunction the first step is controlling the pain, then once the pain is controlled the next focus is strengthening the muscles around the si joint and building range of
motion. Once ROM is restored, the focus can turn to restoring full function and preventing recurrence (Miller, 2015). The goal of the Instructor would be to tailor a Pilates routine aimed at strengthening the muscles around the si joint. There are about 35 muscles that provide support to the joint and that region of the body. Some of the major muscles include the abductors, adductors, gluteus (maximus, medius, minimus), erector spinae, external obliques, quadratus group, and the hamstring group. (Nester, 2015)

**The Client with Si Joint Dysfunction Hypermobility**

Heather is a 37 year old woman who suffers from hyper mobility si joint dysfunction. Diagnosed as a teenager, she began by seeing a chiropractor to adjust her SI joint back into place. Her pain began to worsen after suffering from an injury to her lower spinal discs in the fall of 2011. The pain is primarily in the SI Joint, however Heather also suffers from spasms in her piriformis muscle causing irritation and additional pain in her sciatica nerve (Wilson, H, Personal Communication, November 19, 2015). “The piriformis muscle is a small muscle located deep within the buttock behind the gluteus maximus” (Rivord, 2012). Spasms to this muscle are often common with si joint issues and can cause further pain in the buttock and down the sciatica nerve (Rivord, 2012).
The combination of these conditions leaves Heather with constant pain in her lower back and thigh that will also at times run down to her feet, causing numbness to occur. Over time her SI Joint has also become more mobile, resulting in an increase in overall pain. Her condition was ruled out as needing surgical treatment at this time and she has instead been living on a routine of pain relievers, physical therapy, and steroid injections. She’s even sought out alternative treatments including the use of essential oils, massage, yoga, and acupuncture, but states that none of these treatments have made any significant impact (Wilson, H, Personal Communication, November 19, 2015). Heather came to try Pilates after going through a series of muscle injections and feeling like her pain was at a manageable place; she felt like she could start to exercise once again. Her doctor suggested she start strengthening her core and abdominal muscles to help with her back issues. After living with back pain for so long, the rest of Heather’s
body has begun to suffer as well. Her pain has limited her ability to do many forms of exercise, resulting in the weakening of her center core muscles that has adversely affected her posture (Wilson, H, Personal Communication, November 19, 2015). The Pilates method of exercise emphasizes core strengthening, posture correctness, and coordination of breathing with movement. For patients with lower back pain, several studies have shown that people who have committed to a weekly routine led by a Pilates professional have seen vast improvements in their pain management (Antonino, 2015). For Heather, her goal in using Pilates was to strengthen the muscles in her central core, lower back, and gluteal regions that surround the SI joint with the hope of gaining a stronger body and, in turn, less pain.

Creating a Pilates Program for the Client

When working with a client like Heather there are a lot of factors to take into account. First of all, an instructor has to keep in mind the contraindications of the client. In order to avoid any exercise that will further irritate the injury or cause more pain (Isacowitz, 2013). For Heather, exercises involving deep flexion from the waist appear to cause more pain in her lower back and legs. Deep flexion puts pressure on her lower back, causing more irritation to the piriformis muscle and the sciatic nerve. Also, due to her weak central core, exercises in which she needs to suspend her legs in the air (like the hundreds) also cause more lower back pain because she is unable to engage her abdominal muscles properly. She therefore anteriorly tilts her pelvis, putting more strain on the lower back. With hyper mobility in the SI Joint it is important that during exercises the joint is kept stable (Miller, 2015). An instructor would want to avoid exercises in which the legs are in turnout position and in which large hip circles are done. This
position externally rotates the hips, and for a client with hypermobility in the si joint the
hip can rotate too far causing more strain on the joint. The following is a Pilates
program tailored for Heather specifically. It takes into account her injuries, but also how
to make her body stronger as a whole.

**BASI Block Method Program Designed for the Client**

**Basic Warm Up:**

- **Pelvic Curl**: Pelvic and lumbar stabilization, and Hamstring Control. This gets
  Heather to start thinking about engaging other muscles to support the back.
  Adding a block between her legs for this exercise helps to focus more on the
  hamstrings as she squeezes the block to raise the pelvis off the mat.

- **Spine Twist Supine**: Abdominal control with oblique emphasis. This exercise
  helps to teach using breath to engage the core muscles. With Heather’s lower
  back issues we keep the twist within her range of movement, making sure we
  aren't straining the lower back and instead initiate the core.

- **Chest Lift/ Chest Lift with Rotation**: The goal here abdominal strengthening
  and pelvic stability. Adding a block between Heather’s legs with this exercise
  assists in keeping her pelvis steady so that it does not rock while she is lifting her
  chest. As abdominal strength increases, the block can be removed.

Using the basic warm up on the mat with Heather is best for her needs. She is in the
supine position to take pressure off her lower back.
Footwork:

- **Reformer: Footwork Series**

  Foot work on the reformer was chosen because lying supine alleviates the pressure on the lower spine that one might experience while sitting on the wunda chair. Sitting for footwork on the wunda chair also creates a co-contraction between the abdominals and the spinis errectus muscles that Heather may not be able to hold for the entire series. Also, reformer was chosen over cadillac for this client due to the leg positioning. When doing footwork on the cadillac, the gluteal muscles are stretched more as the knees of the client come further toward their chest. That positioning can causes irritation to the piriformis and sciatica. The goals for this series include hip extensor strength, knee extensor strength, and ankle plantar flexor strength. Overall, the client is working their Hamstrings and Quadriceps and working to strengthen the muscles around the si joint.

  - Parallel Heels
  - Parallel Toes
  - V position Toes
  - Open V Heels
  - Open V Toes
  - Calf Raises
  - Prances
  - Single Leg Heels
  - Single Leg Toes

Abdominals:

- **Reformer: The Hundred prep:** Goals in the exercise include abdominal strength and shoulder extensor control. Keeping the legs at stable table top position adds an additional challenge for the client. Placing a block between the client's legs helps the client to keep legs at table top position.
- **Mat: Leg Lift/ Leg Changes:** The goals of using this exercise are Pelvic lumbar stabilization and hip disassociation. This exercise works to strengthen the transverse abdominis muscle, a key stabilizing muscle. Strengthening this muscle is key to pulling the abdominal wall inward and keeping the spin in a neutral position. When the pelvis tilts forward or back more lower back pain can occurs, work to strengthen these muscles will in turn reduce pelvic tilt and lower back pain. This exercise also works to strengthen the hip flexor muscles, which are key muscles in supporting the hip joint.

**Hip Work:**

- **Cadillac: Single Leg Supine:** In a client with hypermobile si joint dysfunction it is important to keep the hips stable during exercises, and avoid any exercise in which the hip would be in an outward rotation position. The single leg supine series keeps the hips straight and allows focus on one leg at a time. The entire series is done in parallel position, unlike other hip work series in which the foot and hip are turned outward. This series also works on abdominal control, as it’s preferred that the client maintain a neutral spinal position throughout. For Heather, it will not only work on strengthening her hamstrings, and Adductors, but also on building her pelvic lumbar stabilization and hip extensor control.

  - Frog
  - Circles (Down, Up)
  - Hip Extension
  - Bicycle

**Spinal Articulation:** Due to Heather’s piriformis and sciatica issues, any spinal articulation in which the client is in deep flexion or in which the lower spine and pelvis
are in a deep posterior tilt are to be avoided. Both exercises below focus on spinal articulation while avoiding deep flexion. Spinal articulation should be avoided in the first 10 sessions, then gradually added into the routine.

- **Reformer: Bottom Lift**: Objectives include spinal articulation, and hip extensor control while focusing on hamstrings and the abdominals.

- **Wunda Chair: Pelvic Curl**: As Heather’s core strengthens, the pelvic curl on the wunda chair becomes a good next step. While it continues to focus on spinal articulation, and hip extensor control it also begins to focus on abdominal control.

**Stretches:**

- **Pole Series**: The pole series focuses on stretching the shoulders, chest, and obliques while also focusing on the trapezius, pectorals, and abdominal muscles. This series can be done standing or sitting on a ball. The muscle focus and objectives of these exercises make them ideal for people with weak abdominals and scapulae. For Heather, this is is a good series for stretching, continuing to build abdominal strength, and aligning posture.

**Full Body 1:**

- **Cadillac: Side Reach**: The muscle focus being the abdominals with oblique emphasis. The exercise objectives are abdominal control, oblique stretch, shoulder adductor stretch, maintaining flexion in lumbar, and a stable pelvis when reaching back.

**Arms:**

- **Cadillac: Arms Standing Series**: Heather tends to have more pain with exercises in which her feet or legs are in the air. The Arms Standing Series is an
alternative to the arms supine on the reformer. While major arm muscle groups are the primary focus of this series, the abdominals and back muscles (erector spinae) for a co contraction also work together in trunk stabilization. It’s emphasized to maintain ideal posture throughout.

- Chest Expansion:
- Hug - A - Tree
- Circles (Up and Down)
- Punches
- Biceps

**Full Body A/M:** At this time Full Body 2 is left out of Heather’s program. Over time, as her body gains strength and she has less pain A/M exercises can be added or replaced with a second Full Body F/I exercise.

**Legs:**

- **Wonder Chair: Leg Press Standing:** Done with light weight, one spring top loaded. This exercise focuses on hamstrings, with the objectives being hip extensor control, knee extensor control, and balance. For Heather, we are working on strengthening the muscles around the si joint, working the hamstrings, and focusing on balance and body awareness.

- **Reformer: Single Leg Skating:** Muscle focuses are two key muscles surrounding the si joint, the Gluteus medius and Abductors. While keeping a neutral pelvis the key objectives are hip abductor strength, knee extensor strength, and pelvic lumbar stabilization.

**Lateral Flexion:**
- **Ladder Barrel: Side Over Prep:** Working the abdominals with oblique emphasis. The obliques are one of the many muscles that support the hip and the si joints, strengthening these muscles is important for the patient with si joint dysfunction. It’s important to emphasize that the trunk lifts and arcs over the barrell, objectives include trunk lateral flexor stretch and strength.

**Back Extension:**

- **Mat: Basic Back Extension:** Main muscle focus is the spinal extensors, with additional focus on the anterior spinal stabilizers, hip extensors, shoulder adductors, and elbow extensors. The goal of this exercise is to strengthen the spinal extensors, specifically the erector spinae, while using abdominals to protect the lower back. Starting with the basic back extension is good for heather because when done correctly, this exercise protects the pelvis from overly tilting, which keeps the lower back from arching and causing pain. This exercise is the stepping stone in progressing to more challenging exercises that use spinal extension.
Conclusion:
The BASI Pilates program focuses on strengthening the entire body, both physically and mentally. For a patient like Heather who has been limited in her ability to exercise regularly for many years, Pilates is a perfect fit. Each class can be tailored specifically to her needs of enhancing physical strength, flexibility, and coordination, as well as reducing stress and improving mental focus. A consistent and individualized Pilates routine will strengthen the muscles around her sacroiliac joint. Over time, the exercise routine can be adjusted to become harder as her muscles becomes stronger. The key concept will also be to maintain the strength in the muscles so that pain does not recur or become severe again. As Pilates programs continue to grow worldwide it will not be surprising to see more people using it as an alternative rehabilitation tool in conjunction with physical therapy and medicine. “Pilates is not just exercise. Pilates is not just a random choice of particular movements. Pilates is a system of physical and mental conditioning… Pilates can be for anyone and everyone”. (Isacowitz, 2011).
Antonino Patti, MSc, Antonino Bianco, PhD, Antonio Paoli, MD, Giuseppe Messina, MD, Maria Alessandra Montalto, MD, Marianna Bellafiore, BSc, Giuseppe Battaglia, PhD, Angelo Iovane, MD, and Antonio Palma, MD (January, 2015). Effects of Pilates Exercise Programs in People With Chronic Low Back Pain A Systematic Review. Medicine, 94 (4). Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/25634166


