Pilates: Impact on the Athlete with Spondylolisthesis -
My Personal Journey

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Abstract:

“The art of Pilates is looking at the body and knowing the most direct way to address it.”

- Joseph Pilates

The Pilates repertoire offers exercises that can strengthen the body enabling it to function within its limits without injury. By practicing Pilates on a regular basis, a diseased body can learn to move without creating instability and thrive with long lasting benefits.

In this paper, I will explore the case study of a female athlete, which happens to be me, with Spondylolisthesis, which has limited me to freely and painlessly teach and participate in exercise formats. Initially, I will present the anatomy of the region of the body affected by Spondylolisthesis (hereinafter “Spondy”), assess what would help strengthen and change the diseased area, and subsequently, develop an agenda applying the BASI Pilates principals and regimen for the female athlete to improve her strength, stabilize her core, and enhance her mobility, thereby relieving her pain.
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Lower back pain is a common occurrence in athletes. “It has been determined that participation in athletics has been linked to specific anatomical changes to the lumbar spine. Athletes are more prone to degenerative and spondylolytic-related injuries when compared with the general population” (Spinal Conditioning for Athletes With Lumbar Spondylolysis and Spondylolisthesis).
Spondylolistic disorders among athletes are generally diagnosed as either Spondylolysis or a Spondylolithesis. “Spondylo” means vertebrae and “listhesis” means forward slippage. Thus, a Spondylolithesis is basically a forward slipping of one vertebrae, typically around L-4 and L-5, (Figure 1 - Photo credit to Primal Pictures Ltd). Spondylolisthesis is generally caused by “degenerative changes and/or a defect in the vertebrae. A spondylolysis occurs when there is a fracture in the region of a vertebrae called the pars interarticularis” (Figure 2 - Photo credit to Primal Pictures Ltd), (Spinal Conditioning for Athletes With Lumbar Spondylolysis and Spondylolisthesis). A spondylolysis defect may initially be unilateral or bilateral and often
progresses to a forward slippage, or spondylolisthesis, over a period of time. “If the stress fracture weakens the bone so much that it is not able to maintain its proper position, the vertebra can start to shift out of place and the bones may begin to press on nerves.” (Ending Back Pain)

Symptoms of spondy may include a dull ache in the low back with pain that is worsened during athletic activities. “Repetitive flexion/extension motion is thought to be a key factor in
the development of spondylolysis and aggravation of painful symptoms.” (For Active Patients with Spondylolysis or Spondylolisthesis, Pain Control Guides Return to Sports)

In this case study, I will concentrate on the lumbar vertebrae L-5 and S-1 area as well as the lumbar nerves. I will keep in mind the health of the spine and abdominals, specifically seeking to strengthen and tighten the core so as to increase stability and flexibility of the lumbar area. Once a body identifies its flaws, it has taken the first step to find a program whereby it can function within its limits without injury. “Pilates brings length to the ‘lines’ while inducing said stability” (Spondylolisthesis She Wrote).

There is not one specific exercise format that works for everyone. For my case study, and in my personal situation, quick jarring, jerking, and/or impact without controlled deceleration causes unbearable pain. I have to stay totally conscious of my body to be able to flex and rotate in a safe manner. I must engage myself before performing a jump, back extension or backbend to tolerate the pain, as seen in the photo above. (Photo credit: Jane Haley)
Case Study

I, Heather McVay, am a 41 year old female athlete who began ballet on pointe, dancing, gymnastics, swimming and competitive cheerleading at a young age. In my late teens, I began running and cycling and raised a 60 pound bulldog that I lifted on a daily basis. All this activity involved twisting, turning, bending, jumping, arching and lunging. In 2013, I sought medical
advice because of an increasing pain in my back as well as a physical abnormality in my lower spine, see photo of back above. (Photo credit: Martha Istueta)

I was diagnosed with grade 2 listhesis. Although probably exacerbated by my athletic activities, my spondy was quite possibly and probably due to an adolescent fracture or congenital weakness which was a precursor to the future progression. At the time of diagnosis, I abruptly stopped running and cycling and sought some other form of exercise in which I could participate without further damage. Ceasing all activity was not an option. I was fortunate to find a fusion of boxing and pilates, The Piloxing Program, which would become a catalyst to help me understand my body’s newfound limitations. In Piloxing, the body works in neutral spine 99.9% of the time throughout the class. I went on to become certified as a master Piloxing trainer and learned the meaning of the word traction. Adding Pilates to my present exercise program has been life changing. “Pilates is a practice. A discipline that leads to mastery over your own unique body, flaws and all.” (Spondylolisthesis She Wrote)

Having a spondy can be an aggravating injury. My main objective is to increase my back flexibility and primarily to strengthen the rectus abdominus muscles, transverses abdominus, obliques, and lumbar spine whereby the abdominal muscles are engaged at all times during my movements. “Stretching and strengthening exercises for the back and abdominal muscles can help prevent future recurrences of pain.” (Ending Back Pain)

BASI Block System Sample Class for the Athlete with Spondy:

Warm Up: Cadillac - Roll down utilizing RU bar starting from neutral spine upright position and articulating through the roll down while incorporating proper breathing to facilitate muscle contraction. Making sure I understand neutral spine in both a suspended position as well as a
grounded position. RU bar roll down on Cadillac mat, tower mat or long box will aid in initiating breathing patterns appropriately to aid in spinal articulation and abdominal engagement as the body is controlling its way to the floor.

**Spine Twist:** It is important for spondy patients to recognize the importance of maintaining traction in the trunk while initiating any flexion or rotation. By warming up with STS, this allows time to let the mind focus in a relaxed position and to connect the abdominals to lift legs to table top, and then breath into the twist of the spine. Although, I cannot go into as deep of a stretch as other more flexible clients, this is a great way to safely warm up my abdominals for the more co-contracting moves to come.

**Foot Work:** Reformer Foot Work - (start on reformer depending on the severity of the listhesis) eventually graduate to chair foot work as the suspended spine is strengthened through core stabilization. Parallel heels, Parallel toes, V position toes, wide v Heels/Toes, single leg (heels and toes).

**Abdominal Work:** Hundred prep, easing into the chest lift based upon my mind/body connection. Goal to graduate to the short box series which challenges in a suspended state, and enforces co-contraction of abdominals and back extensors. Hundred (modification may be necessary) and legs can stay in tabletop if needed. Coordination (emphasizing breathing patterns to further encourage core facilitation and strength); Coordination is a great exercise to continue to encourage the separation and fine-tuning of movements while simultaneously breathing to support the intricate moves.
**Hip Work:** (Frog, circles, openings); Cueing to focus on hip dissociation, and focus on total trunk stability, while controlling range of motion of circles/openings and core stabilization/neutral pelvis.

**Spinal Articulation:** Pelvic curl - graduating to Short Spine depending on my progression. Possibly elevate stable hips in a flat back position, and then depending on comfortability and mobility of spine, initiate pelvic curl and peel up.

**Stretches:** Standing lunge - I have a prominent natural arch, so I need to bias toward an exaggerated pelvic tuck to stay out of my lower back. Spondy patients typically have weakness in the lower core muscles and tightness as a result. Standing lunge allows the body to stabilize the core appropriately, in a more natural manner, to emphasize the hip flexor and extensor stretches. It is a safe way to remind yourself to only deepen as much as you can while maintaining absolute neutral spine.

**Full Body Integration:** Elephant to encourage supported neutral spine co-contraction with weight in back of legs. Eventually, I will become more stable and stronger with abdominal strength to enforce natural co-contraction in torso, and can then move into Up Stretch (1, 2, & 3) exercises.

**Arms:** Supine reformer exercises; extensions, adductions and circles encouraging flattening of the abdominal wall while continuing to bring focus into core stabilization in trunk while executing arm movement. Legs in table top will also enforce abdominal strength and stability (the warm up and reminder of stability in table-top was brought in with spine twist supine), graduating eventually to arm work seated, and then kneeling.

**Full Body Integration:** Reverse Knee Stretch – prepping before moving carriage back, by hollowing and flattening a few times.
**Leg Work:** Skating; set up would be to stand in a slightly set back neutral spine position to make sure the strain is out of the low back; this would put more emphasis on the glutes and outer/inner thighs. Lighter spring may be necessary.

**Lateral Flexion:** Mermaid; emphasis on growing tall before flexing or rotating – eventually working up to side-over on long box as oblique strength and flexibility increases.

**Back Extension:** Depending on the level of spondy: Breastroke prep; cueing to press pubic bone into the box, while squeezing inner thighs together to take strain out of low back. Breast bone at edge of mat, and cueing to push away while reaching crown forward and up (more thoracic concentration). Back extension is not recommended for spondy patients. In my case, limited BE is safe as long as it is executed properly and with more of a thoracic emphasis.
Conclusion:

I have participated in athletic activities that have a high incidence of spondy because of the demands placed on the spine while in positions that load the pars interarticularis. We have all seen the commercials stating that an object in motion stays in motion. This is so true as our bodies change and wear. We must keep the joints and muscles moving. Participating in athletic activities is fun and rewarding, but we must keep our bodies in shape so it keeps working for us. My focus for this Pilates regimen, developed for someone with spondy, is to create a program that offers therapeutic strengthening to stabilize the diseased body, improve the injury and provide the opportunity to continue with the activities without complications and pain.

By concentrating on the injury in the L-4, L-5 area and becoming aware of the importance of stabilizing the lumbar area, I can find a new understanding of how my particular body functions in relation to the different areas engaged during participation the sports I love. Practicing Pilates I can increase flexibility and eliminate tightness and become the master of my body. This BASI regimen listed in this case study will increase flexibility, strengthen the abdominals and lower back muscles, and offer a way to engage the body so that it performs without pain.

I am a teacher at heart, so helping others through my journey gives me pride and satisfaction that we can all do better. Finding the discipline of Pilates has given me the opportunity to not only find my potential, but to motivate others to not let their flaws define them. Pilates will not only be a part of my story, but part of many stories with many chapters to come.
Bibliography


