Pilates and Scoliosis:  
My Personal Journey  

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Abstract

This paper will outline a personal journey through the causes, symptoms, and effects of scoliosis on the body, and how Pilates counteracts the misalignment, muscular imbalance, and residual pain caused by a curvature of the spine. Scoliosis can cause a moderate to severe curve of the spine effecting the way an individual stands, walks, and uses their muscles. Movement and exercise through Pilates can alleviate the negative effects that scoliosis has on the body. This paper will present a comprehensive training program that can counteract any compensation or negative movement patterns caused by a spinal curve. It will conclude with a personal reflection of the benefits and positive effects Pilates has on an individual with scoliosis.
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Overview of Scoliosis

Scoliosis is a condition of side-to-side spinal curves that measure greater than 10 degrees. On an x-ray, the spine of a person with scoliosis looks more like an “S” or a “C” than a straight line (Scoliosis Research Society). These curves usually cause the shoulders and hips to be uneven, depending on where the curves are located in the spine (Scoliosis Research Society). There are two different types of scoliosis, occurring in both children and adults. Idiopathic scoliosis is the most common type developing in adolescents or teenagers, and continuing into adulthood. The cause of this type of scoliosis is unknown. (Scoliosis Research Society). “De Novo” or Degenerative Scoliosis develops in adulthood as a result of disc degeneration. As the disc degenerates, it loses height. If one side of the disc degenerates more rapidly than the other, the disc begins to tilt. As a result, more pressure is placed on one side of your spine, and gravity tends to cause the spine to bend and curve (UCLA Health).

Congenital Scoliosis can develop because a bone in the spine did not grow properly. Certain diseases, such as cerebral palsy, can also cause scoliosis. If scoliosis develops due to a disease, it is often called neuromuscular scoliosis (CLEAR Scoliosis Institute). Scoliosis is diagnosed when an x-ray, taken of the spine in a frontal position, reveals a Cobb angle over 10 degrees. Cobb angle is the simplest and most common method of measuring scoliosis (CLEAR Scoliosis Institute).
The most common signs and symptoms of scoliosis are uneven shoulders, one shoulder blade that appears more prominent than the other, uneven waist line, and one hip higher than the other (Mayo Clinic). These symptoms can cause muscular imbalances in the shoulder and upper back muscles, the abdominals, and hip and leg muscles. It can also cause chronic back pain in most individuals, noticeable changes in appearance, and in severe cases, lung and heart damage (Mayo Clinic). There are different ways to treat and manage scoliosis overtime, depending on the degree of the spinal curve. Most methods of treating scoliosis revolve around the Cobb angle. Depending on the measurement, bracing or surgery may be recommended. In some case, doctors may recommend no treatment at all. People decide to receive scoliosis treatment for many reasons. The most common reason is they do not like the changes it causes in their posture and appearance. Others seek help because it can cause pain or limitations in physical function and movement (CLEAR Scoliosis Institute). Overall, scoliosis is usually diagnosed a young age with no known cause, and can be treated over time through pain management, exercise, and functional movement.
Case Study

Introduction: Client

This paper explores my personal journey of using Pilates to improve my own scoliosis. My name is Kathrine Muska, and I am a 25 year old Pilates student, personal trainer, and dance teacher in Chicago, Illinois. I am 5’8, slender build, and am strong from many years of dance and fitness training. I first discovered I had scoliosis when I was 13 years old being fitted for a dress for a cousin’s wedding. The seamstress told me to “stand up straight,” and unfortunately I thought I was straight. After noticing my spine was shifted to one side, I consulted a doctor to get a true diagnosis. It was found that I had a 17-degree curve of my spine to the left, resulting in my right hip being higher than the left and rotated inward, my ribcage shifted to the left, and my right shoulder lifted and rotated inward and the right shoulder blade more pronounced. Since I had already gone through puberty and my curve was moderate, the doctor informed me that a brace or any surgery would not be necessary. He advised me to continue to dance and exercise to keep my muscles strong and my spine mobile. I continued to dance throughout college and high school, and ultimately balanced out my curve through the lengthening and muscle control that dance provided. After college I discovered Pilates, and my body has not been the same since.

During a self assessment during a mat class, I realized I had balanced out my spinal curve through side to side muscular imbalances. For example, since my curve went to the left, my right hamstrings, quadriceps, and gluteal muscles were compensating for the weakness in my left leg and hip. My right abdominal muscles were
stronger to compensate for the increased length of the left side of my torso, and my back muscles were stronger on my left side to compensate for the shifting of my spine.

It was time for me to make some changes in my workout routines to relieve pain in my low back, and improve the inconsistencies in the structure of my spine.

As an initial assessment of my posture, I started with a roll down standing against the wall. As I rolled down, I noticed I was collapsed in my right hip and my upper body was shifting to my left. As I rolled back up reaching my spine towards the wall, the right side of my back never touched the wall. Performing a roll down on the wall allowed me to feel the structure of my spine, as well as, the compensation in my movement. Next, I went through the BASI fundamental warm-up. While performing the pelvic curl, I noticed the right side of my back did not imprint the floor as much as my left side. During the spine twist supine, I had fairly good rotation in my torso, but my right hip was lifted towards my ribs to compensate for the weakness in my abdominals. The chest lift and chest lift with rotation was performed well, however my pelvis was tilted slightly posterior. Overall, I knew I needed to strengthen my abdominal muscles, back muscles, and hip muscles to alleviate the discomfort in my back from my scoliosis.

Throughout my Pilates journey I have found certain exercises to be more helpful than others. At first, it was more beneficial to perform exercises that use both sides of my body simultaneously. As my training progressed I was able to perform exercises that isolated one side of my body to work on its own to balance out the strength of my muscles on either side of the spine. The following Comprehensive Training Program uses the BASI Block System to outline a beginning workout that is beneficial to a client with moderate scoliosis.
Body: Exercises

Warm-Up: The fundamental warm-up is perfect for a beginning Pilates student who is learning how to use certain muscles for the first time. For a client with scoliosis it allows them to feel each side of their back on the floor, learn how to isolate the hips from the pelvis, and how to use the abdominal muscles properly in neutral pelvis.

- Pelvic curl
- Spine twist supine
- Single leg lifts
- Leg changes
- Chest lift
- Chest lift w/rotation

Footwork: All footwork will be performed on the reformer in all positions with heavy weight using four of the five springs. This will allow the client to feel length through the heels, legs, and spine.

- Parallel Heels
- Parallel Toes
- V Position Toes
- Open V Heels
- Open V Toes
- Calf Raises
- Prances
- Prehensile
- Single Leg Heel
- Single Leg Toes

Abdominal Work: The abdominal work performed will allow the client to feel the imbalances in their muscles, while also allowing them to correct their alignment. Specifically, the Tilt and Twist on the Short Box will reveal the shift and curve of the spine, the unevenness of the hips, and weakness in the abdominals.

- Hundred Prep
- Round Back (Short Box Series)
- Tilt (Short Box Series)
- Twist (Short Box Series)

**Hip Work:** All hip work will be performed with single leg work on the Cadillac. The Single Leg Supine Series will teach the client to isolate one side of the body, while trying to maintain stability of the opposite side of the body. It will also allow the client to feel the difference in strength from one side to the other.

- Frog (Single Leg Supine)
- Circles Down (Single Leg Supine)
- Circles Up (Single Leg Supine)
- Hip Extension (Single Leg Supine)
- Bicycle (Single Leg Supine)

**Stretches:** It is very important for a client with scoliosis to stretch and lengthen the spine. The stretches with the Pilates Pole are effective because the client is able to maintain correct posture and stability of the shoulders and spine, while also lengthening each side of the body.

- Side Stretch (Pole Series)
- Spine Twist (Pole Series)

**Spinal Articulation:** Most clients with scoliosis have weakness in their hips and hamstrings because of compensation and muscular imbalance. Bridge work on the reformer using the hamstrings shows where that weakness in the lower half of the body lies.

- Bottom Lift
- Bottom Lift with Extensions

**Full Body Integration F/I:** Full body work is very important for a client with scoliosis in order to improve functional full body strength in every day life. The Scooter isolates
each side of the body, while the Reverse Knee Stretch teaches the client to use both
sides of the abdominals as one.

- Scooter
- Reverse Knee Stretch

**Arm Work:** Arm work on the reformer can be a helpful assessment for the client. It
allows them to notice how the ribs shift to one side. Usually, one arm is more likely to
work harder than the other. In this instance, if the curve is to the left, the left arm will be
weaker than the right. The Arm Sitting Series on the reformer shows the client their
personal muscular imbalances.

- Chest Expansion
- Biceps
- Rhomboids
- Hug-A-Tree
- Salute

**Leg Work:** There are two great options for leg work for a beginner with scoliosis. Leg
Press Standing works each leg individually while standing, which is beneficial for
balance, control, and stability. Squats on the Cadillac work both legs simultaneously to
improve functional strength for everyday movement.

- Leg Press Standing (Wunda Chair)
- Squats (Cadillac)

**Lateral Flexion/Rotation:** Lateral flexion is important for strengthening each side of the
body independently.

- Side Stretch (Wunda Chair)
**Back Extension:** Back extension can be difficult for clients with scoliosis because one side of the back is usually stronger than the other. Simple back extension is more effective, making it easier to feel the imbalances in the back and being able to correct the alignment of the spine.

- Swan Basic (Wunda Chair)

**Conclusion: Benefits**

Scoliosis is a structural condition of the spine that can come in a few different forms with no known cause. It occurs in an “S” or “C” shape of the spine usually at a young age, or because of a degenerative or neurological condition. Besides bracing and surgery, the best treatment for scoliosis is functional stretching, exercise, and movement. Throughout my Pilates program, I have noticed many benefits to my posture, gait, and strength. I am now able to stand up straight with no pain or strain in my back, I can control the rotation in my hips with some light stretching, and my shoulders and back muscles have started to balance out from side to side. My gait has become more smooth and controlled because I am able to use both sides of my body correctly and simultaneously. The strength of my muscles on either side of my spine has greatly improved. Everyday activities have become much easier to manage. I still notice some slight rotation and pain after a long period of sitting, but it is easily corrected with a simple Pilates session. I have become more self aware of my movement, and have a deeper mind-body connection while doing my training. Pilates has become a regular part of my life, and has changed the way I move and function in everyday life. I am very happy with my results, and will continue my training program as my results continue to improve.
Bibliography


