

# Pilates and Scoliosis

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## **Abstraction**

All humans strive for balance in their daily lives. We as movers, athletes, and Pilates practitioners, strive for balance and symmetry in our bodies as well. When one is affected by scoliosis, balance and symmetry is sometimes nonexistent. However, using the BASI Pilates Method, balance and symmetry can be created and made to be a permanent change. With trying to correct the unwanted curves in one's spine, Pilates hopefully helps other issues in the body like hip or neck pain. Many exercises in the Pilates repertory can help create more balance in the scoliotic spine and keep it healthy.

I currently have one client with scoliosis. Her spine has two S shaped curves. She suffers from hip and neck pain. After every session she feels a positive difference in her back and is aware of different parts of her spine that she could not feel before. My client was the typical "meat head" gym go-er. If my client wasn't sore or depleted after working out, she "must have done it wrong" or "not worked hard enough". Pilates has taught her that working out can be subtle and therapeutic, not just tiring.

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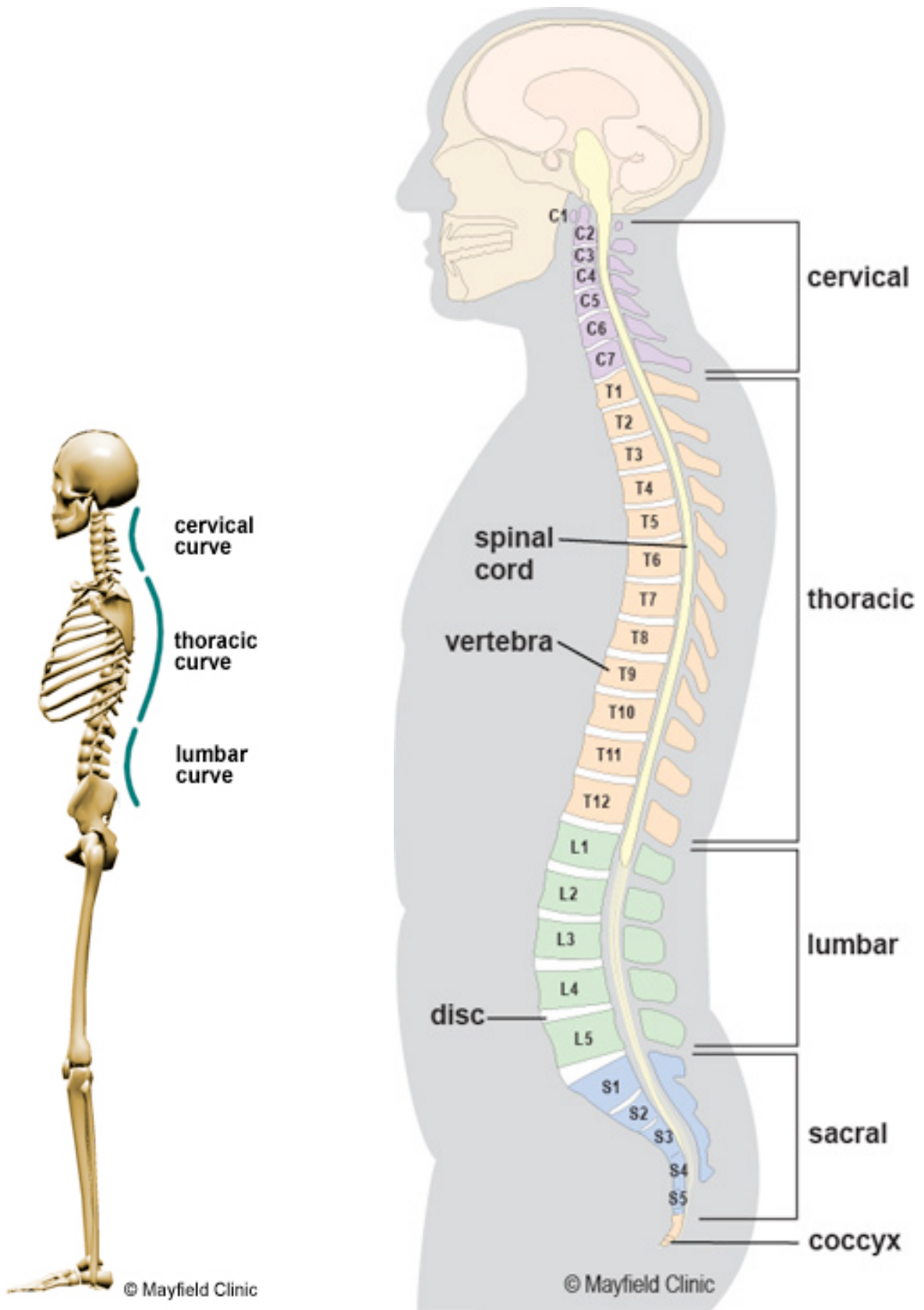
## **The Spine**

The spine has 33 individual bones stacked on top of one another. Many different spirals of groups of muscles and tendons keep the bones of the spine together which allow you to flex, extend, and rotate. Deep inside of the bones is the spinal cord, which connects your body to your brain. Keeping your spine healthy and flexible also helps protect the spinal cord.

The spine should have an S shape curve to it when viewed from the side. The curves work like a coiled spring to absorb shock, maintain balance, and allow range of motion throughout the spinal column. Good posture involves training your body to walk, sit, stand, and lie so that the least amount of strain is placed on the spine during weight-bearing activities.

The two main muscle groups that act on the spine are extensors and flexors. Extensor muscles allow us to stand; they are attached to the back of the spine. Flexors are in the front of the body and allow us to bend forward. They are important in controlling the pelvis.

The cervical part of your spine or neck has seven vertebrae, thoracic or mid back has twelve, and lumbar or low back has 5. Your sacrum is the big flat triangular bone below your lumbar, and your coccyx or tail bone is just below the sacrum, the most southern part of your spine.



As we strive for the balance in our lives and in our bodies, there are many obstacles we have to overcome. For the scoliotic client, that obstacle is nature. A gene, somewhere in the chromosomal map was mutated to create the curves in the spine. Some are spirals, some are S shapes. Some curves are hardly noticeable and some are dramatic and drastic. Pilates can and will help these unwanted curves.

In an interview with Physical Therapist Cathy Stephenson, I learned that flexion and rotation are big components in helping the scoliotic client feel good. Extension, depending on the client, can bring on pain.

When the spine is S shaped (like from left to right), it puts unwanted stress on the pelvis, which then translates into hip and back pain. It also puts stress on the rib cage and shoulder girdle, which can make neck and shoulder pain.

## Case Study

Wendy is a 50 year old woman who has been active all her life. She cycles, lifts weights, and swims. She is a lawyer, so sitting is a major part of her day. She does her best to get up and move around after long periods of sitting. Wendy has scoliosis, 2 major S curves in her spine. They have been there all her life. She never wanted corrective surgery. Wendy has been seeing a massage therapist, but recently the pain in her hips, neck, and back has increased. She sought help from a Physical Therapist, Cathy Stephenson. Cathy recommended Pilates immediately. Cathy told her that she could only do so much with her hands; Wendy's body would have to neuromuscular-ly re-pattern to help her spine- which is exactly what Pilates does.

Observed from the frontal plane, standing, Wendy's right shoulder is elevated higher than her left. Her head compensates for this; her head (right ear) is slightly pulled toward her right shoulder. When observed from the side, she is hyper extended in her knees, and her pelvis is in an anterior tilt. The imbalance in Wendy's lumbar spine (spiral) makes her left leg shorter than her right, creating hip pain. The other imbalances in her spine create her shoulder and neck pain.

When Wendy rolls down reaching mid to lower back flexion, her left sit bone shifts back behind her left heel, her right sit bone stays forward creating a slight spiral in her pelvis. Her shoulders are tight as her palms face her body. Her neck is difficult to release; her chin wants to stay lifted through the roll up. Her right foot wants to externally rotate after two roll downs. Her feet slightly invert.

## **Pilates Conditioning Program**

### **BASI Block Mat, Reformer and Tower/ Cadillac Exercises**

**Warm Up** Mat Work: Pelvic Curl, Spine Twist Supine, Chest Lift and Chest Lift

with Rotation (If Wendy's neck and shoulders are bothering her we eliminate chest lift and chest lift with rotation and keep her head down. Working leg changes and variations on double and single leg stretch.) **GOAL:** to warm Wendy's spine and abdominals for her session.

**Footwork** Reformer: Parallel Heels, Parallel Toes, V Position Toes, Open V Heels, Open V Toes, Calf Raises, Prances, Prehensile, Single Leg Heel, Single Leg Toes (making sure Wendy's ankles remain neutral) **GOAL:** Keep Wendy's pelvis in neutral, feet in neutral.

**Abdominals** Tower/ Cadillac: Pelvic Curl with the Roll Up Bar **GOAL:** to have Wendy find balance, control, and freedom in her spine.

**Abdominals** Reformer: Coordination, Legs in straps, Legs in straps with rotation (if Wendy's neck is irritated we keep the head down for Coordination and NOT do legs in straps.) **GOAL:** improve strength in Wendy's abdominals to help with her tight spine and anterior pelvic tilt.

**Hip Work** Supine Leg Series on Reformer or Tower/ Cadillac: Frog, Circles Down, Circles Up, Openings (Depending on how her hips feel- the reformer does not "give" to the leg length difference, the work on the tower does. The two legs work independently of each other. **GOAL:** to improve R.O.M. in Wendy's hips as well as work deep abdominal muscles to stabilize pelvis while legs move.

**Spinal Articulation** Reformer: Short Spine (Wendy is active and can handle intermediate spinal articulation). **GOAL:** Short Spine opens up her lumbar spine in a way she cannot re create on her own.



**Stretches:** Standing lunge on the Reformer and also add gluteus stretch. **GOAL:** Gain more flexibility in her hip flexors and hamstrings/ glutes.

**Full Body Integration F/I:** Reformer: Down stretch. **GOAL:** Stabilize spine and also work shoulder stabilizers. Tower/ Cadillac: Sitting Forward and/ or Side Reach **GOAL:** Gain more flexibility in her spine and rotation R.O.M.

**Arm Work:** Arms Standing Series on the Tower/ Cadillac **GOAL:** Disassociating arms from spine and rib cage, keeping rib cage soft as arms move.

**Full Body Integration A/M:** None to date – Client is not ready for these exercises

**Leg Work:** Mat Side Lying Glute Series **GOAL:** Strengthen glutes to help support pelvis and spine AND knee/ankle function.

**Lateral Flexion/Rotation:** Side over on the Step Barrel OR (even though it is not typically in this block and if we didn't do it before, we could also do Side Reach) **GOAL:** Increase rotation to the Right side since rotation to the left is where she is due to scoliosis, we can do more reps to the right to help with this imbalance.

**Back Extension:** Due to Wendy's scoliosis, back extension bothers her lumbar spine. The physical therapist suggested (instead of breast stroke prep or basic back extension on the mat) to just lift Wendy's arms, concentrating on stabilizing the scapula and widening her collar bone. For example, on the long box, hands are placed on the foot bar as usual. Instead of pressing away and extending back, Wendy lifts her arms off of the foot bar holding the same shape, working on the external rotators of the shoulder and hip extension (thighs off the box like in the "true" breast stroke prep). **GOAL:** Gain hip extension, scapula control and easy glide.

Ultimately, Wendy is a great candidate for Pilates work. She feels a positive change to her whole body after a session. As her instructor, I have to remember to increase or decrease reps to one side or the other depending on the curves to her spine. I hope eventually she will gain more flexibility and strength where she can do back extension. Under the guidance of Cathy Stephenson MSc, we take baby steps and as Wendy's R.O.M. increases so can the resistance and level of exercise, although, the fundamental work is very beneficial.

I'm excited to be on this journey with Wendy and I'm thankful she trusts me to help with the balance and symmetry of her body.

## **Bibliography**

### Website:

“Anatomy of the Spine”

<http://www.mayfieldclinic.com/PE-AnatSpine.htm#.VW9iA0uIzHg>

January 2013

### Interview:

Cathy Stephenson M.S.W., M.Sc. Physical Therapy, Certified Pilates Instructor, Homeopathic Medicine

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### Books:

Isacowitz, Rael. *Study Guide: Comprehensive Course*. Costa Mesa, CA: Body Arts and Science International, 2013

Isacowitz, Rael. *Reformer Book: Comprehensive Course*. Costa Mesa, CA: Body Arts and Science International, 2013

Isacowitz, Rael. *Cadillac Book: Comprehensive Course*. Costa Mesa, CA: Body Arts and Science International, 2013

Isacowitz, Rael. *Auxiliary Book: Comprehensive Course*. Costa Mesa, CA: Body Arts and Science International, 2013