



## MOVEMENT AND LEARNING BASED APPROACH TO WORKING WITH SCOLIOSIS

By Anat Baniel

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In this article I would like to introduce a new approach, both theoretical and practical, to working with scoliosis.

**Scoliosis understood as a neuromuscular disorder:** A healthy spine can move in all directions: it can twist, bend forward, backward and sideways, and any combination of these four directions. When in

action, the spine repeatedly moves out of the midline and then comes back to it.

“Scoliosis is defined, in the simplest way, as a side-to-side deviation from the normal frontal axis of the body. In reality the deformity occurs in varying degrees in all three planes: back-front, side-to-side, and top-to-bottom. In more than 80% of the cases, a specific cause is not known. Treatment options include observation, bracing or surgery. The primary goal of brace management is to stop curve progression. Any amount of curve correction at the end of brace treatment must be considered a "bonus."

•Surgical correction and stabilization are done to prevent curve progression.

•Spinal deformity is common and often severe in patients with neuromuscular disease especially in those patients who do not walk because of their underlying neurological disease.

•There is no scientifically documented role for exercises, manipulation or electrical stimulation in the management of scoliosis.”

(Excerpts taken from the Scoliosis Research Society, [www.srs.org](http://www.srs.org))

The spine is a live system, not an inanimate object. It is an integral part of a complex system, ultimately controlled by the most complex physical object on the earth - the brain. The live, functioning spine is much more than a skeletal system or even a muscular and skeletal system. It is also a profoundly neurological system.

The spine of a person suffering from scoliosis never comes fully back to the midline. Since it is in the nature of the brain to always seek to achieve the optimal, scoliosis is an expression of how the brain is best able to organize the spine, based on the history of what it has learned so far, the health of the person, and on current input. Over time this failure creates a persistent curvature. If we want to help the brain better optimize the organization of the spine, then we must provide the brain with new and useful information.

**The subjective versus objective perception:** People suffering from scoliosis *feel* “normal”, “in the middle” and hence cannot correct themselves. Visual cues and verbal instructions, like: “sit straight”, or “bring your head to the middle”, will be of no help since the person has no clue where those places are. What they need is new kinesthetic information that will change their perception of “the middle” and “straight” in order to reorganize themselves to fit more into the objective midline.

**Organizing the spine in the midline is learned through movement:** It is through movement that healthy babies gradually learn how to control their back. The brain goes through a kind of apprenticeship, learning by experimentation and variation how the musculature can be best organized to be able to hold the head up, to move the spine in all directions, to carry the head successfully, and to create an accurate sense of the midline. In order to reduce the curvature in the spine, at any age, a person needs to re-engage in the same kind of learning process that occurs spontaneously in healthy infancy.

In Emily's words (now 15 y/o):

**In a different life, I was a ten year old girl terrified of her future. When the orthopedist diagnosed me with an S-shaped scoliosis curve, I sat in his office and absorbed as many blurred words as I could. He held up chunks of plastic and metal and talked of possible surgery if necessary in the distant future. I left the office confused, upset, vulnerable, and wearing a more flexible back brace made of plastic, stretchy fibers, and snaps. In the eyes of a child, such a restriction is punishment.**

**For the next two years, I continued to adapt my life to meet the limitations of my body. Around this time, I began to take a few dance classes a week to hopefully help my back. I expected success, but only in dreams did I ever make any progress with my technique. As my parents and I grew more concerned about my health and well-being, my curvature and rotation increased. (cont'd)**

In Emily's words (cont'd):

**Then, in June of 2001, fate brought me to Anat Baniel. When a mutual friend of Anat and my family learned of my condition, she excitedly urged me to participate in a seminar to be held in Chicago. I now had a tough decision to make. Did I still have enough faith in the conventional treatment for scoliosis, or could I find the courage to start a journey with an unknown outcome? Frustrated that my brace was only adding to the existing curve, I grasped the opportunity.**

**I began seeing Anat every eight weeks in California for lessons. The change during and after each lesson was immediate and enormous. I discovered parts of my body that I never knew could move so freely. My breathing became much steadier as my rib cage and chest learned to be free. Anat also showed my back how to lie flat and twist with full range of motion, as well as my hips how to be loose to allow for better walking. I continue dance more than ever and started to make tremendous improvement when I began the Anat Baniel Method. With all of these physical changes come emotional changes to follow. With Anat's work, I am more confident, happy, and ready to seize opportunities I might never have considered before. I am proud to say my life began at twelve.**

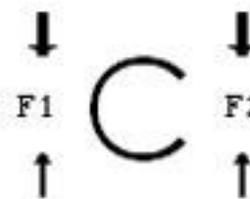
**The need for increased mobility:** With scoliosis come great limitations in movement. The ability to bend, arch, and twist the back is restricted, even in the direction of the curvature. The curved shape stays constant, irrespective of the movement that is performed. The spine, ribs, clavicle, sternum, shoulder blades and hip joints need to be able to move in many different directions in order for the brain to have an opportunity to reorganize the spine in new and better ways.

**Reduction in the curvature requires whole body participation and reorganization:** The muscles, the joints, and the skeleton are all organized by the brain to function successfully with the curved spine *the way it is*. The curvature of the spine needs to be seen in full context of the entire person: the way the hip joints are organized, in the distribution of weight on the feet, in the way the eyes are organized to look to the horizon, and in everything else the person does. Any reduction in the curvature of the spine needs to happen in conjunction with reorganization in the rest of the body. Otherwise, as soon as the person begins to move, they would have to revert back in order to be able to function.

**Going with the system:** Stretching of the spine, or manipulating the spine in the opposite direction of the curvature in an attempt to straighten it, applies force in opposition to the way the brain is currently organizing and optimizing the functioning of the spine. Unbeknownst to the practitioner, the force that they are applying will be creating an outcome opposite from the one they desire.

For simplicity purposes, we'll look at a schematic model of a C-shaped curve.

The spine in the diagram is shorter on the right side. For that to occur, the muscles on the right side contract more powerfully than those on the left side. The greater force pulling on either end of the curve on the right side creates the curvature. For the spine to begin to straighten, the contraction of the muscles on both sides needs to be more equal. That can be done by reducing the muscular contraction on the right side and by increasing the contraction of the muscles on the left side of the spine.



When we pull on the spine on either end in an attempt to lengthen it, or when we push directly on the spine in the opposite direction of the curve, we create a force that will affect the short muscles on the right side more than the long ones on the left side. When the pull on the short, chronically contracted muscles on the right side is strong enough, it will activate the stretch reflex that protects the muscles from tearing. The stretch reflex will shorten these muscles even more. At the same time the muscles on the left side are long and under-contracted to begin with, so the pull on this side will not be sufficient to activate the stretch reflex and these muscles will remain as long and as weak as before. The outcome is increased, rather than decreased, curvature.

Suzi M, an adult client, describes her subjective experience when getting this kind of treatment:

*"I have scoliosis and I know what people have tried to do on me. Whenever they've worked into the side that curves, it felt horrible. It's like: I'm holding my breath, there's pain, there's an attempt to try to force me into a rotation. Then, when I stand up I have absolutely no sense of where I am at all. I mean it's hard for me, for a minute, to even get my balance and figure it out-- it's horrible."*

**Sample techniques working with scoliosis in the Anat Baniel Method:**

1. We initially place the person lying down in order to alleviate the vertical pull of gravitational force on the spine. We then gently find ways to *help the spine move in the direction of the curvature*. It can be as simple as having the person lie on their side while the practitioner supports the spine from below in the direction of the curve, moving gradually along the curve. By doing so, *the practitioner takes over the chronic, habitual work of the muscles in that area*. Any time we take over the work that the muscles do in order to hold the body in the gravitational field, the brain stops sending the signals to contract those muscles. (Skilled mimes such as Marcel Marceau use this phenomenon to indicate to their audience when an imaginary support is present. For instance, when Marceau wants to show that he is leaning forward over the back of a chair, he will drop his body slightly forward, put his arms straight forward, and let his hands dangle from his loose wrists. The "supported" arms go limp.)

When the practitioner supports the spine just like that imaginary chair back, for the first time in years these muscles can begin to let go. Once they do, the practitioner takes the opportunity of lessened tension to gently guide the client's spine and back to move in ways and directions that were not available before. The client's brain then has the opportunity to shift its perception of what the midline might be to something closer to the external reality.

2. An important movement in the process of reversing the curvature is the movement of twisting the spine: Imagine for a moment a piece of garden hose lying on the floor in an "S" shape. Imagine two people taking a hold of this hose at either end, one slowly twisting it to the right and the other slowly twisting it to the left. Without pulling on the hose, it will gradually straighten. With scoliosis, we have the client gently twist their spine in different positions while doing many different movements. That, again, bypasses the automatic resistance of the brain/body to an up/down pull on the curvature, and helps straighten the spine to a surprising extent.

**The child with Cerebral Palsy and scoliosis:** When a child has Cerebral Palsy, which is a neuromuscular disorder, the cause of scoliosis is obvious: the uneven contraction of the muscles of the back, and the inability to move freely enough in order for the brain to learn to organize the spine into the vertical and the midline.

The same principles and techniques discussed above apply to these children. It is through movement that they will learn to organize the spine and the back in relation to the rest of their body. Any technique used to try and reduce the curvature needs to adhere to these principles.

Most of what is done with these children, such as braces or surgery, is geared to stabilize the spine and stop it from getting worse. A brace replaces the necessary work of the back muscles, which tends to weaken even more the ones that are already weak, and does nothing to recalibrate the brain's ability to organize the entire system. (This discussion does not apply to the child whose curvature has reached a degree that puts the child's health at risk, at which time more drastic measures have to be taken).

When the child is unable to sit, or lists to one side while sitting, it is often necessary to put a brace on the child so he or she can participate in classroom activities. However, the use of braces should be kept to a minimum. The child needs to be down on the floor with as many opportunities to move as possible. (For information about schools that promote this approach, you may log on to [www.stepbystepcec.org](http://www.stepbystepcec.org)). The brace limits the child's movements, desensitizes him, and as a result, if used for long periods of time, aggravates the problem.

*"Seating modification and bracing in the vast majority of cases have no long-term effect on the natural, i.e., untreated course, of spinal deformity in neuromuscular disease. Such techniques may improve sitting ability but do not alter curve progression. Surgical correction and stabilization are done to prevent curve progression."* (Excerpts taken from the Scoliosis Research Society, [www.srs.org](http://www.srs.org))

A healthy infant learns to coordinate the spine and the back muscles, with the movements of the head, arms and hands long before he or she can sit, crawl or stand. For a child with CP, it is important that they also have the opportunity to move in new ways, even when the customary milestones of sitting or

standing have not yet occurred. The practitioner working with the child can find many different ways to have the child move their spine in relation to other parts of the body so that the brain can improve its recognition of the spine's midline.

In Diane's words (Emily's mother):

**My daughter Emily was diagnosed with an S-type idiopathic scoliosis when she was 10 years old. Her orthopedic surgeon put her in a soft brace, allowing some movement for her body. She wore that brace 20 hours each day. She was monitored every quarter and became progressively worse over the course of 2 years. When Emily turned 12, the doctor felt she should wear the more traditional hard brace (23 hours per day) which would have restricted her movement substantially. He also felt that surgery might be necessary in the future. It was at this time I met Anat Baniel and Emily was introduced to her method of Feldenkrais. We threw away the brace and continued to see Anat every other month for lessons. Emily's orthoped continued to monitor her in terms of taking X-rays and measuring her curvature. Emily's thoracic curvature remained the same over the next 2 and a half years and her lumbar curve decreased by 5 degrees. The method not only arrested the curvature, but improved Emily's posture and breathing. It is hard to tell Emily has scoliosis because the work has taught her how to make her body work more efficiently. She stands straighter, no longer has trouble breathing and is able to dance without any difficulty. She did not have to wear a brace, which would have inhibited her from accomplishing so many physical achievements, not to mention the psychological effect it would have had on her. Anat Baniel's method of Feldenkrais has given Emily a new life and for that I will always be grateful.**

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For more information on the Anat Baniel Method in Saskatoon and area visit:

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