Spondylolisthesis

CREATING HEALTH THROUGH MOVEMENT

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Yoga Teacher Training Class 2011-2012

The movement of our bodies makes us feel alive. Our spine, upper and lower limbs, fingers, toes, head and neck……automatically it seems, move us in a way of least resistance throughout our day. Most of us live our lives without much thought to the movements our bodies make. Yet our muscles don't automatically keep our bones aligned properly. Our habitual movements can create unhealthy patterns that we don't consciously pay attention to. Healthy muscles are both strong and flexible. Moving in a way that is healthful can be an ever-changing process. In order to begin improving the health of our movements, our minds must begin to play an integral part of the process. Realizing the connection between mind and body is usually a slow process because often our minds fight and resist what our bodies are telling us. And then, when we finally realize that we need to make changes, we often have a body that now has limitations and/or pain. Overcoming our patterns both mentally and physically can be quite a challenge.

But first, how can we define a healthy spine? I searched for a working definition, one that would be relevant to the average person. Finding such a definition was not as easy as it seemed. Many define a healthy spine by describing its anatomy. I was looking for a description of a healthy spine; one that optimally described the role my spine plays within my body. I found a definition that resonated with me on the chiropractic website of Dr. Saatkamp owner of Saatkamp Healing Arts, a chiropractic office located in Sheboygan, WI. Through Dr. Saatkamps reading and research, he developed a working definition that incorporates all the parts necessary for optimum spinal health. The definition is simple. "The spine is the vertebrae column in the body that has the components of: stability, awareness, flexibility and energy."[1] These characteristics integrate the many different components of the spine, including the muscles, bones, blood vessels and the nervous system. It also expands our thinking about the spine and can mentally challenge the person who chooses to explore it. This definition encompasses the

massive role our spine plays in our bodies, prodding our thoughts to understand how vital and central it is to our health.

The word "awareness" in this definition suggests that a joining of the mind is necessary in understanding one's own personal spinal health. This is exactly what yoga teaches us as well. As Gary Kraftsow writes: "Because the spine is the core of all movement, linking our awareness to the spine brings a deeper level of awareness to all our movements. In short: instead of moving mechanically, we begin to move consciously".[2] Becoming aware and educated about our own body and accepting the current state of health is the first step in making improvements. With this knowledge we can begin to discover the complexities of our bodies and honor how interrelated our systems are. We can then move forward and learn what is available to us to make this improvement, incorporating movement, diet and spiritual work. We have many ways to learn about ourselves and our own personal health conditions, yet our most important teacher is ourselves. We need to learn how to listen to our bodies and the inner wisdom within.

In regards to spinal health, one way to begin this process is to ask yourself some questions. Do I feel stable in my movements? Am I aware of how I move? Am I flexible, able to move my joints within their healthy range of motion? Do I have the necessary energy required to move myself throughout my daily requirements? Answering these questions and realistically looking at the answers starts the process of internal change.

The Spine:

"Yoga will be accepted by the body when it is done without resistance. The wave along the spine is like the melody in music. When the beautiful flow of extension is in action, this wave will help the body find the right adjustment in the performance of the various movements."[3]

Vanda Scaravetti, Awakening the Spine

A perfectly aligned spine enables the human body to move with ease and agility. Properly aligned vertebra sit one on top of the other to keep our bodies erect as surrounding muscles work in concert together to support our bones. Unfortunately very few people live a lifetime with a properly aligned spine. Trauma or injury or poor habitual habits cause the spine to misalign, leading to

pain. Current statistics suggest that an increasing number of people in our population suffer from some level of back pain. Those who suffer are unable to naturally find the "magical balance" of their spine in their daily movements. Their back pain restricts their movements, creating less mobility. With less movement the muscles become tight, some being overworked while others underworked. All this leads to an imbalance which can affect many other areas of the body.

Yoga provides the tools necessary to explore, strengthen and balance the body into its highest state of physical and mental health. A consistent practice can help to reduce pain and improve the function and mobility of the spine. The focus is to retrain muscles to perform to their optimum function in the healthiest way for the spinal condition of the student.

Spondylolisthesis Study:

When a yoga teacher becomes aware of a medical condition of a student it is enormously helpful if the teacher researches the condition. It is my desire in this thesis to study and learn what spondylolisthesis is, learn related medical terminology and then apply yoga to help the student.

The application of yoga to a student suffering with spondylolisthesis has unlimited potential benefits. Yoga can provide relaxation to the overworked muscles of the back, lengthen the shortened muscles (in this case mainly the psoas), and strengthen the surrounding muscles. Practicing these movements on a daily basis increases the muscle memory and therefore can help to provide stability to the spine and a lessening degree of pain. Health benefits come with relaxation of the spinal muscles when it is in proper alignment. The improvement is more deeply seen when the student is able to work from the inside of the body, feeling how the body is responding. Linking breath to these movements brings our attention inward enabling this connection. Gary Kraftsow defines the body–breath connection in this way, "the mind should control the breath, staying aware of how the spine is moving through the breath and how we are allowing the breath to guide our movements. In this way our postures are developed from the inside out."[4]

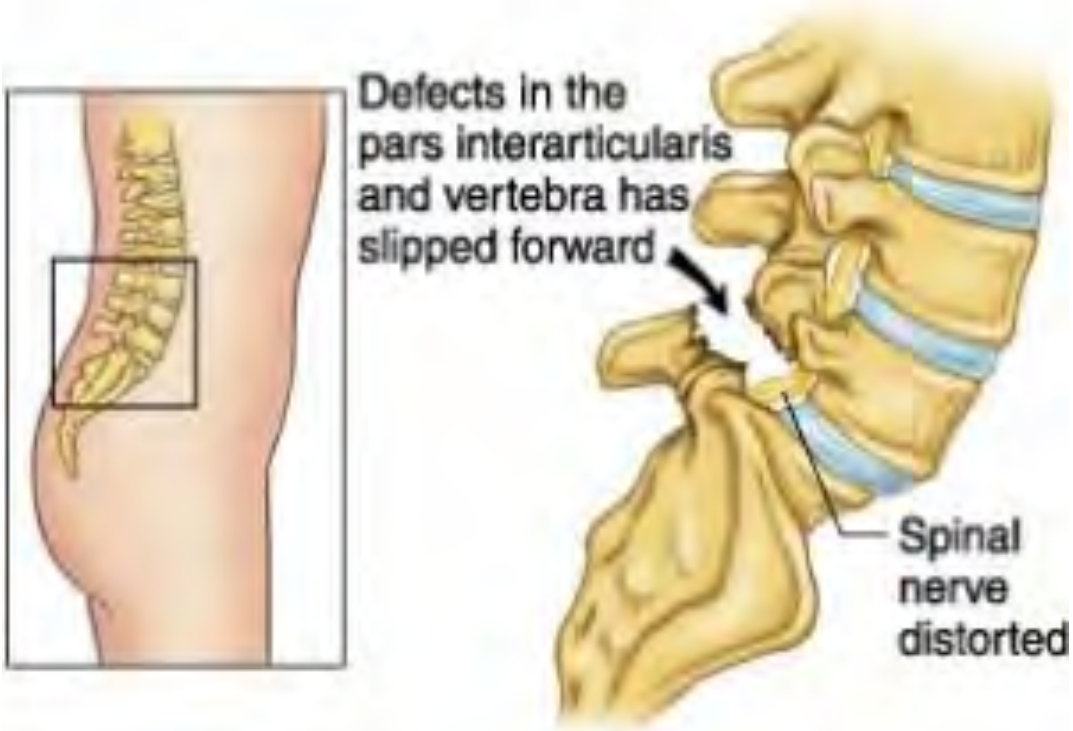
What is Spondylolisthesis?

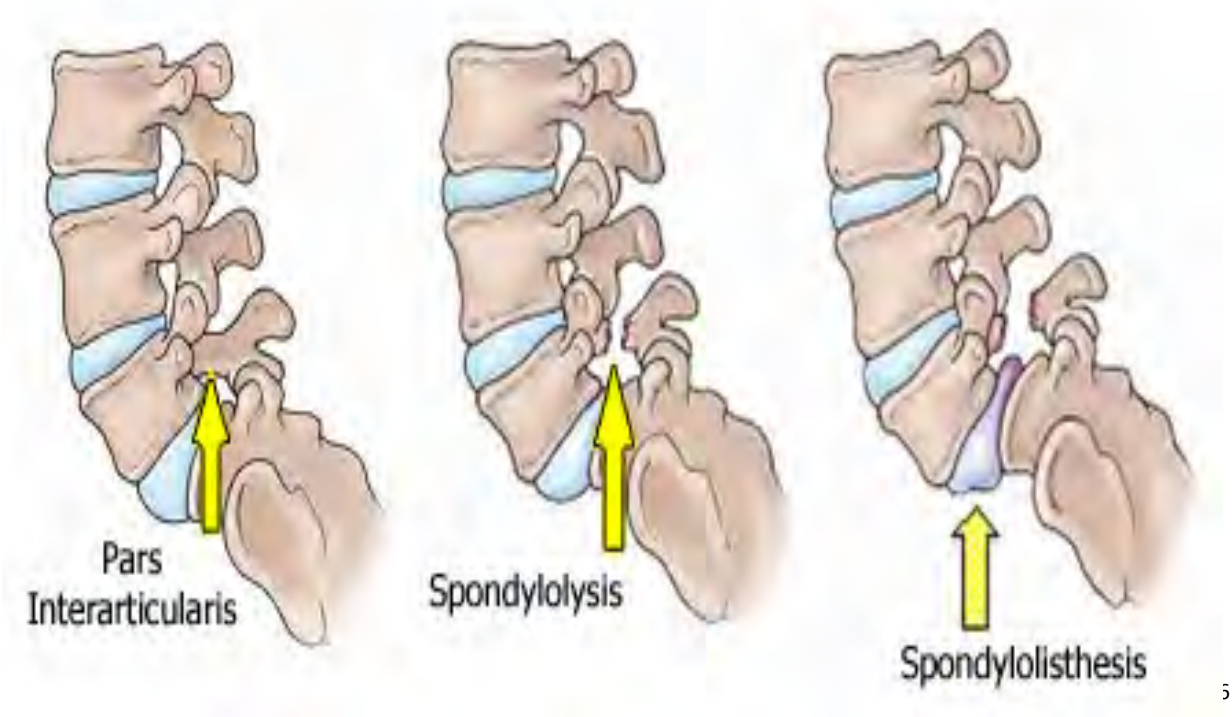
Spondylolisthesis is a term used to describe vertebral slippage. It is a ""medical condition wherein one of the vertebras of the patient's spine shifts forward or backward in regards with the adjoining vertebras."[5] It is characterized by the displacement of one vertebra over another. Slippage can occur in any direction. Spondylolisthesis is found most frequently within the lumbar region of the spine. This is due to the fact that this area is exposed to a great deal of pressure. It can be caused by the movements associated with lifting heavy objects and twisting the torso. It is typically seen in gymnasts, weightlifters, football and hockey players, as well as other athletes. Spondylolisthesis can also be present at birth (congenital), a result of an injury or trauma to the spine, or an effect of aging.

The symptoms of spondylolisthesis include tightness or stiffness of the back muscles, pain in the thighs and buttocks, and pain in the area of the spine where the slippage has occurred. In describing the amount of slippage a grading system is used. Grade 1 spondylolisthesis signifies the least amount of slippage and Grade V represents 100% slippage. The larger the degree of slippage, the greater likelihood of increased pain. Pain and stiffness are most common at the site of the vertebral slippage but a displaced vertebra can compress on a nearby nerve root. Radiating pain, tingling, numbness and weakness can occur. If the spondylolisthis is located in the lumbar spine, the legs, feet and toes can all be affected.

Treatments prescribed for spondylolisthesis vary, there being many factors that are taken into consideration. A program of exercises, stretching and modification of activity are typically the first recommendations made by the doctor. Other potential treatments include a back brace, nerve-block injections, or spine surgery. It is important that a patient follow the recommendations closely so that the condition does not worsen. The condition can lead to a deformity of the spine along with a narrowing of the spinal canal. A narrowing of the spinal canal is called spinal stenosis or compression.

To understand better what exactly has happened to the spine the following pictures can help. The actual portion of the spine damaged in the lumbar region is called the pars interarticularis. It is a portion of the bone at the rear of the vertebrae, and it joins together the upper and lower joints of the spine.





Below is an x-ray of a grade 1 isthmic spondylolisthesis at L4-5[7]

Student History, Karen:

Karen is a 56 year old woman who is a very active yogi. In high school and in college she participated in gymnastics. During these years she was introduced to yoga and continued to intermittently practice yoga. After college she became a dancer and long distance runner.

At age 40 she began to see a chiropractor and was diagnosed with two old stress factors. She attributes them to her gymnastics years. They are located in the L3-L4 and L4-L5 regions of the spine.

In 2002 she began to practice yoga more consistently, especially the vigorous Ashtanga style. In 2006 she was in an Ashtanga yoga class in the position of Parivrtta Parsvakonasana and her teacher aggressively adjusted her (attempting to "deepen" her twist). Karen felt a pop and sharp pain. Without saying anything to the teacher she left the class. The pain became more severe and her chiropractor sent her to a neurologist who ordered an MRI. It was at this time she was diagnosed with spondylolisthesis. According to her most recent exam it was found she had a Grade 1 spondylolisthesis at L4/L5 and Grade 2 L5/S1.

Since that time Karen has been exploring ways to keep her body healthy and avoid potential surgery. She stopped running and began to practice yoga in a

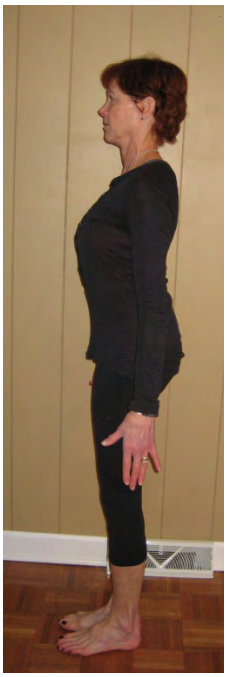
more conscious and healthy way, paying close attention to what her body is telling her. She also sees an acupuncturist regularly. More recently Karen has also been diagnosed with osteoporosis of the spine and therefore needs to further protect her movements. She is an extremely conscious student and her aim in practicing yoga is to keep her body as healthy as possible. It was in going to Yoga Circle and working with Gabriel Halpern, that she realized there were even more possibilities in strengthening and protecting her spine. Karen continues to be open to adjusting her practice to serve her body's ever changing needs.

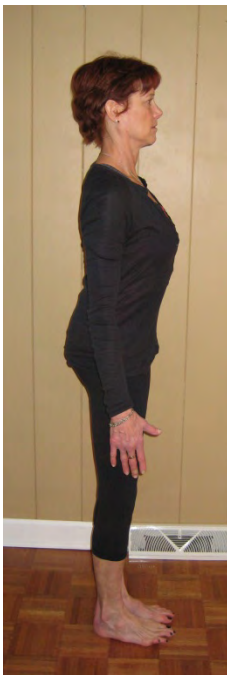
In beginning to work with Karen I saw that her lower erector spinae muscles were overly protruding in her lumbar spine area. There is an indentation of the spinous processes. In choosing poses for Karen I felt it very important to release the overworked muscles along the spine. Providing the opportunity for her muscles to relax and lengthen each day can provide some relief from pain.

Tadasana:

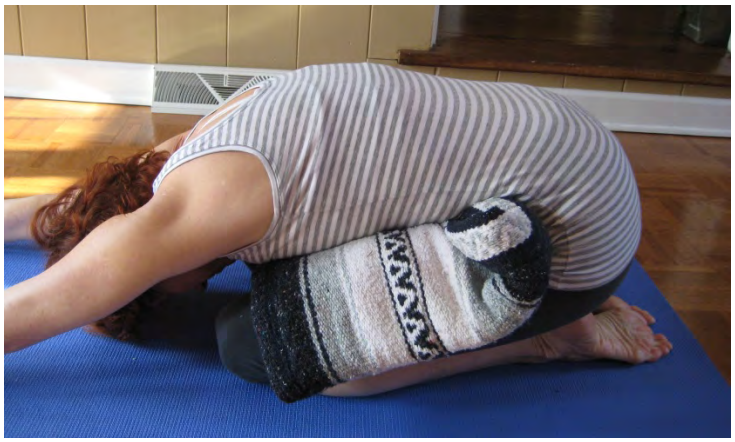
On the next page are pictures of Karen standing in Tadasana. In observing Karen in this asana, I see that her pelvis is rotated forward increasing her lumbar curve. This creates compression on the back side of her intervertebral discs. The muscles running behind the spine are chronically contracted. I noticed as well that she leans slightly to her right. Looking at her feet I notice that they are externally rotated.

Karen's psoas muscle is extremely tight. The psoas, along with additional supporting muscles, is overcompensating to provide the supplementary stability that her back requires because of the spondylolisthesis. Also, the external rotation in her feet and hips adds to the compression in her low back. When Karen stretches the psoas, or works to strengthen the muscles, she needs to work mindfully and consistently.



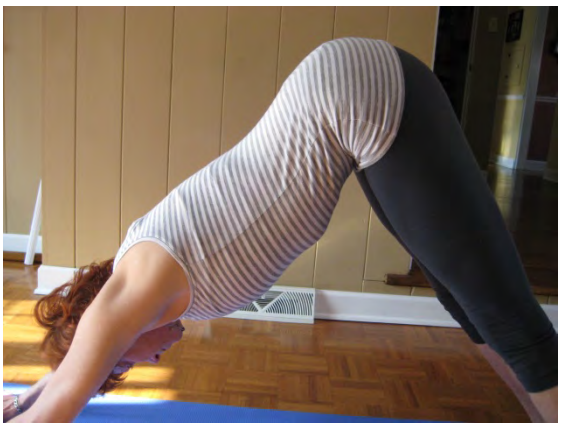
Adho Muka Virasana

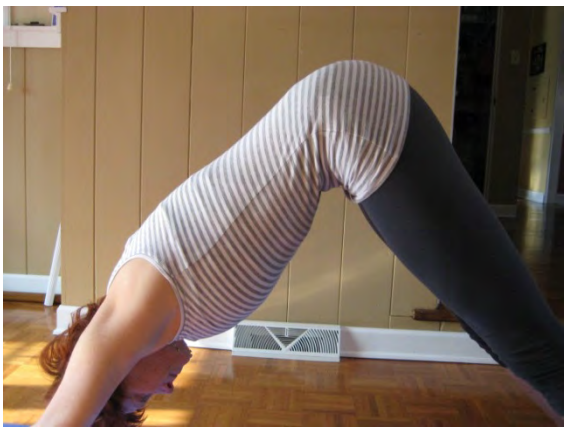


Before forward folding Karen placed a rolled blanket across her hip area. She lengthens up through her spine and strongly draws her low belly in and up. She then brings the blanket in firmly to her abdominal area. This allows the blanket to hold the space being created between her low ribs and ASIS. She then forward folds, working mindfully to bring breath into her lumbar area. You can visually see the flattening of the lumbar spine, moving in the direction of a convex curve. Adho Mukha Virasana releases the grip of the erector spinae muscles and allows them to soften. You can feel the difference on her back, as the spinous processes become flush with the erector spinae muscles.

Adho Mukha Svanasana

Karen has dramatically improved this pose over the last year. As you look closely at the pictures below, the lumbar area of her spine is elongated in the second picture. This requires tremendous work in her lower abdominals, working to move her pelvis in the direction of creating a posterior tilt. Placing my hand on Karen's back I can feel the difference in her lumbar spine. This asana used to be extremely difficult for Karen, but now she finds it provides a release in her lumbar spine and feels good.





Proposal Pose:

The simple "proposal" pose taught by Julie Gudmestad surprised Karen during a workshop in Oct. 2012. The adjustment provided in the pose was a huge release in Karen's lumbar spine. Standing on her knees, Karen brings her right leg into a 90% flexion with her foot flat on floor. She mindfully moves her pelvis in the direction of posterior tilt. She is reaching her tailbone to the floor and drawing her abdominals in and up. On the right

is a picture of the adjustment Julie did to Karen. Here I pressed my thumbs into the ASIS, pushing them up as I took my fingers to the posterior pelvis and moved it forward. It is a small and very subtle adjustment that requires strong hands from an adjustor. This adjustment released the strong grip of her psoas muscle. Karen instantly felt a sensation of release in her lumbar spine.

Navasana: (supported with chair)

It is extremely important that Karen have safe strengthening poses. The first picture below shows a supported version of Navasana. In this version a chair is used to support both legs. Karen's legs are very long and the lever created in leg lifting makes many poses very difficult, especially while also concentrating on keeping the pelvis in proper position. Supporting the legs in this way takes some of the work away, allowing her to focus on drawing the abdominals in while moving her sacrum down. This pose then becomes very beneficial because Karen is creating strength in the back and abdominal muscles while in proper alignment.

This next example of supported Navasana shows a more difficult variation. The strap is looped around her upper back and center of her feet. This provides some support to her legs, but not as much as the chair. You can see that Karen is working extremely hard to keep her body's alignment. Without the work that she has done this past year, this pose would not be accessible for her. Karen pays

close attention to how her body is responding in poses and stays in them only for a breath or two if that is what her body is telling her.

Supported Navasana with strap

Psoas Stretch:

There are many different ways to stretch the psoas muscle. This restorative version is good for Karen because it allows her to release more deeply and at the same time enjoy a slight backbend and chest opener. Two chairs are used with the seats touching each other. A mat on top is placed to prevent slippage Two bolsters with a block between provide the correct height for reclining. Additional blankets, 1 behind her lumbar spine, and one under her head are further used to support her.

Karen reclines slowly back with a lifted chest, strongly concentrating to lift up as she reclines back. This is also beneficial because Karen has difficulty isolating the thoracic spine for chest opening asanas while keeping the lumber spine safe. If properly supported this pose provides that for Karen. A year ago Karen would not have been able to benefit from this pose; it would have been too intense and painful. But, by working consistently and mindfully in all her poses this past year, Karen has strengthened her lumbar spine. She has also become aware when a pose is no longer benefiting her. Now, she finds she likes to stay in this asana for 10 minutes.

Adho Mukha Virasana (hanging with wall ropes)

This pose is very restorative for Karen. Here gravity is providing traction to her spine. It is releasing the pressure and strain in her lumbar area that she typically feels. Because Karen is tall, her forearms can softly touch the floor while her head hangs freely. She can relax and let the pose do the work, allowing gravity to release the grip on the anterior tilt of the pelvis. The blanket is used to create a comfortable sling around the straps. Karen moved into the pose very mindfully, drawing her tailbone down, lifting in and up in the front abdominal area of the body before bending forward.

Summary:

Karen is a wonderful example of a hardworking and mindful yoga student. She has moved in the direction of creating health for herself. She successfully has joined her body, breath and mind and this dedication and work has lessened her pain. She performs each asana with mindful attention to the subtle for the benefit of creating a healthy body. This was confirmed to her recently by her acupuncturist. Karen was told that there was a definite softening in her psoas muscle. Her thoracic spine was not jetting forward as much and that there was less of an anterior tilt to her pelvic bowl. All this reinforces her commitment to continue on this healthy journey. Congratulations Karen!

Last year at the completion of the weekly classes for the 200 hour teaching training program, I started to attend Gabriel's yoga classes. I was invited to stay and apprentice with him in his gentle yoga class. I encouraged Karen to come and to find out how working with Gabriel could help her. It was when I was watching Gabriel work with Karen that I decided to pursue this topic as my thesis. It was so interesting to watch Karen during these classes. She discovered new ways to release the pain she was feeling and also to strengthen her back while better supporting her lumbar spine. I began to learn how to look at a student and to notice where an imbalance occurs.

Further reading and observing Karen work in the many yoga classes we take together, has provided me with a better understanding of a spinal issue. I look forward to transferring this knowledge into helping others who are suffering with lumbar spine issues. I thank Karen for all she has taught me by allowing me to work with her for this thesis.

Bibliography

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2. YOGA for Wellness, Gary Kraftsow copyright 1999 p 12

3. Awakening the Spine: The Stress-Free New Yoga that Works with the Body to Restore Health, Vitality and Energy by, Vanda Scaravelli (Oct 11, 1991)

4. YOGA for Wellness, Gary Kraftsow copyright 1999 p 12

5. http://www.laserspineinstitute.com/back_problems/spondylolisthesis/

6. google images spondylolisthesis

6. http://en.wikipedia.org/wiki/File:SpondylolisthesisL5S1.jpg

Additional Resources

Yoga Circle, Gabriel Halpern's Gentle Yoga class June of 2012

Julie Gudmestad workshop, Prairie Yoga October 2012