Spondylolisthesis

Management of Condition Through Pilates Exercises

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Abstract:

One of the most common physical ailments people experience in life is low back pain. This ailment is usually accompanied by impeded physical activities and a negative shift in the quality of life. Often, back pain can be attributed to weak abdominal muscles, poor posture or ergonomically incorrect movement patterns. Pilates is known within the exercise community to be of great benefit to improve many conditions of the back. In the medical community, Pilates is also recognized as a tool for pain management and rehabilitation for many conditions of the spine. This paper will focus on a common condition affecting the low back called spondylolisthesis. Through the use of a regular Pilates routine that focuses on core strength the subject in this case study has reported both a minimizing of pain which increased his quality of living.
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Spondylolisthesis is the forward slippage of a vertebra on the vertebra. This condition usually involves the lumbar vertebra, most commonly at the level between the 5th lumbar vertebra and the 1st sacral vertebra and ranges from mild to severe. The etiology of the condition is mainly attributed to a congenital defect in 5th lumbar vertebra, stress fractures, traumatic fractures, and bone diseases. The individual with spondylolisthesis may develop the following conditions/symptomology: lordosis, chronic low back pain, pain in thighs and buttocks, stiffness, muscle tightness, tenderness in slipped area, paresthesia and sciatica due to nerve root compression. (McGraw-Hill)

There are five degrees or stages of spondylolisthesis:

1. Grade I: up to a 25% vertebral slippage. Often there can be no symptoms experienced or minimal discomfort.
2. Grade II: 26%-50% vertebral slippage. Symptoms experienced can be pain in low back, numbness and tingling down legs, muscle spasms, and tight hamstrings.
3. Grade III: 51% to 75% vertebral slippage. Symptoms experienced can be same as grade I and II but more intense, and can also include difficulty walking, protruding abdomen, numbness and pain down one or both legs.
4. Grade IV: 76% to 99% vertebral slippage. Same symptoms of grade III but more intense.
5. Grade V: Complete slippage of vertebra. Grade III or higher may require surgery.
http://www.physio-pedia.com/Spondylolisthesis
Core stabilization is important to the management of spondylolisthesis. Pilates in particular, helps to manage the symptoms, such as pain, weakness and limited movement patterns. Low back pain and weakness attributed this condition are felt through daily activities and symptoms can worsen with increased levels of activity. Pilates instructors know that a strong and safe movement originates from the core. The core is the foundation for other segments of the body to “piggy back” off of, in a functional and safe manner. A strong abdominal presence lends to an appropriate posture and a cascading effect throughout the entire body. This is evident to those suffering from low back pain where simple functional movements, such as reaching up to grab an item from a shelf causes pain by placing stabilization on a weak back and not on a strong core. Core stabilization allows all areas of the body to experience balance, coordination, control and function. Spondylolisthesis creates a deficit at the foundational level of movement. As with a house, the foundation must be solid and well build in order for the framing, walls and roof to stack properly and function. This analogy fits well with how to look at a client with spondylolisthesis. Give the abdominals what is needed to stabilize the vertebra and allow for more functional movement without pain and limitation.

**Case Study:**

My case study is Michael. He is 38 years old. In 2006 he developed spondylolisthesis in his L5, S1, while serving in the United States military. His job was in construction both in civilian life and in the Navy. He experienced daily discomfort and mild to moderate pain as well as intermittent numbness and tingling down his left leg. Michael eventually left his career in construction, which reduced the back pain he was experiencing. He said however, that if he
started to push himself into anything moderately physical in nature, he would get low-grade symptoms, and that the symptoms would increase with the level of activity.

Developing a Pilates routine for him required what most beginning routines require: Beginner level routine with a strict focus on form. Within the BASI block system, all blocks were utilized except for the back extension block. Back extension of any sort is contra-indicated for this condition. Within the initial instruction phase it was important to identify movements that exacerbated the condition. This was evident where prep work such as swan prep on the Ladder Barrel, proved to aggravate his condition. I am unsure if this was due to the grade of the disc slippage, which is a “grade 2”, and if a lesser percentage of slippage could handle a small degree back extension work. This is why I spent a considerable amount of time focusing on his feedback. He communicated that he felt it was best to keep back extension work out of our routine. In order to strengthen his back extensor muscles but not go into extension, I had Michael do spine stretch. This movement not only helped him to connect to and strengthen his back extensors, but was also a good stretch for his hamstrings and low back. What we did include was all other blocks within the BASI system. The following routine proved to be a great beginner/intermediate course for him to follow. Michael reported feeling “stronger” and “more stable” which relieved his intermittent low back pain after eight sessions over the course of four weeks.

One added bonus and fulfilling feedback was that he felt “good” and experienced little discomfort after a twelve-hour shift in his current occupation, which had not always been the case.
BASI Block System - various apparatuses

Warm Up:

Chest lift

Chest lift with rotation

Spine twist supine

Leg changes (not in initial warm up due to the nature of it being an open kinetic chain movement, but was added as he progressed.)

Roll up (added on as he progressed. Slight bend in knees, in order to keep the lower back from moving into posterior tilt)

Reformer

Footwork:

Parallel heels

Parallel toes

V position toes

Open v heels

Open v toes

Calf raises

Prances

Single leg heel

Single leg toes
Abdominal Work:

Hundred prep

Hundred with legs at around a 90 degree angle (minimize lumbar region stress)

Hip Work: (work in an imprinted spine and keep range small)

Frog

Circles up

Circles down

Spinal Articulation:

Bottom lifts (not bottom lift with extension)

Stretch:

Standing Lunge

Full Body Integration:

Cadillac

Sitting Forward

Arms:

Arms standing series

Legs:

Wunda Chair

Leg press standing

Lateral Flexion/Rotation:

Kneeling side stretch

Back Extension - leaving out of routine due to contraindication.
Conclusion:

Things to avoid and do for spondylolisthesis:

- avoid back extension
- stretch the low back, gluteal, hamstring, and hip flexor muscles
- strengthen core

With appropriate care, most people with spondylolisthesis (grades I and II) can remain active and experience few to no symptoms. Those with grade III and IV can also have a relatively active life but will need to have more lifestyle modifications, such as avoiding high impact sports.

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Before Michael started this routine, he got the okay from his doctor, which is an important aspect to emphasize. It gave him confidence that Pilates was a good route to try, and also gave me permission to move ahead in trying to help him with his spondylolisthesis.

Michael is encouraged by the results he has seen in his body and in particular his low back. He looks forward to continuing success with his routine. Starting any routine from a point of pain or injury can be daunting for anyone. A good rule of thumb is to take it slow, listen to you client’s feedback and ask questions. For years he lived with the pain and would simply “muscle through” activities, with fingers crossed. Now, he sees that he can be helped and credits Pilates as a major source of his progression.
1. For McGraw-Hill Concise Dictionary of Modern Medicine:

