Physical Therapy for Spinal Conditions

by

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Second Reader: Off campus sponsor – Paul M DeFelice MS PT and Dr. Mark R. Weigle

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Introduction

Physical Therapy represents treatment for the preservation, enhancement, and/or restoration of movement and physical function impaired or threatened by disease, injury, or disability that utilizes therapeutic exercise, physical modalities (such as massage and electrotherapy), assistive devices, and patient education and training (Physical Therapy, 2018). It helps patients reduce pain and improve or restore mobility, allowing for achievement of long term health benefits. Physical therapists examine each individual as individual cases, and develop a plan, using treatment techniques to promote the ability to move, reduce pain, restore function, and prevent disability. In addition, physical therapists work with individuals to prevent losses of mobility before this occurs by developing fitness- and wellness-oriented programs for healthier and more active lifestyles (Bellamy, 2018).

It is a common misconception to think that physical therapy is only suitable for the needy, post-surgery, for sports-related injuries and/or for replacements, which even I assumed. The reason I became interested in physical therapy is in December 2014, at the age of 62, my father suffered a brain aneurysm that lead to a subarachnoid hemorrhage, a life-threatening stroke that causes bleeding in the space between the brain and the skull (Ringer, 2018). This caused a massive stroke. He was admitted to the inpatient Burke Rehabilitation Hospital after spending twenty days in neuro-intensive care, with just the ability to feel his toes when touched without any voluntary motion. Through daily sessions (two sessions per day during the week and once a day during the weekend) of physical therapy, occupational therapy and speech therapy, he was slowly beginning the process of relearning everything that was lost, but he was still not able to move his legs. After a week, my father was then placed on an electric stimulation bike that had electrodes placed on the front and back of his legs, while the bike

stimulated and moved his legs. That night itself, he began to move two of his right toes. With all these therapeutic modalities and my assistance with various exercises at night, he was able to go from a wheelchair, to a walker and then to a cane, currently barely depending on his cane now at the age of 66.

I focused on common types of pain management for spinal conditions, through the use of physical therapy. Physical therapists develop individualized therapeutic plans that address pain management for possible nerve injuries to maximize mobility through various modalities, such as muscle strengthening exercises, transcutaneous electrical nerve stimulation (TENS), ultrasound and lumbar support, such as a brace, cane and walker.

Materials and Methods

The physical therapy, including pain management, of various spinal conditions was observed and followed, via patients at Dr. Weigle's office in New Rochelle (letter attached after bibliography). By following and observing three specific case studies, I better understood the physical therapy efforts – in particular, the methods and therapeutic modalities used to treat an assortment of spinal conditions. How does the human body adapt and cope with these bodily affronts?

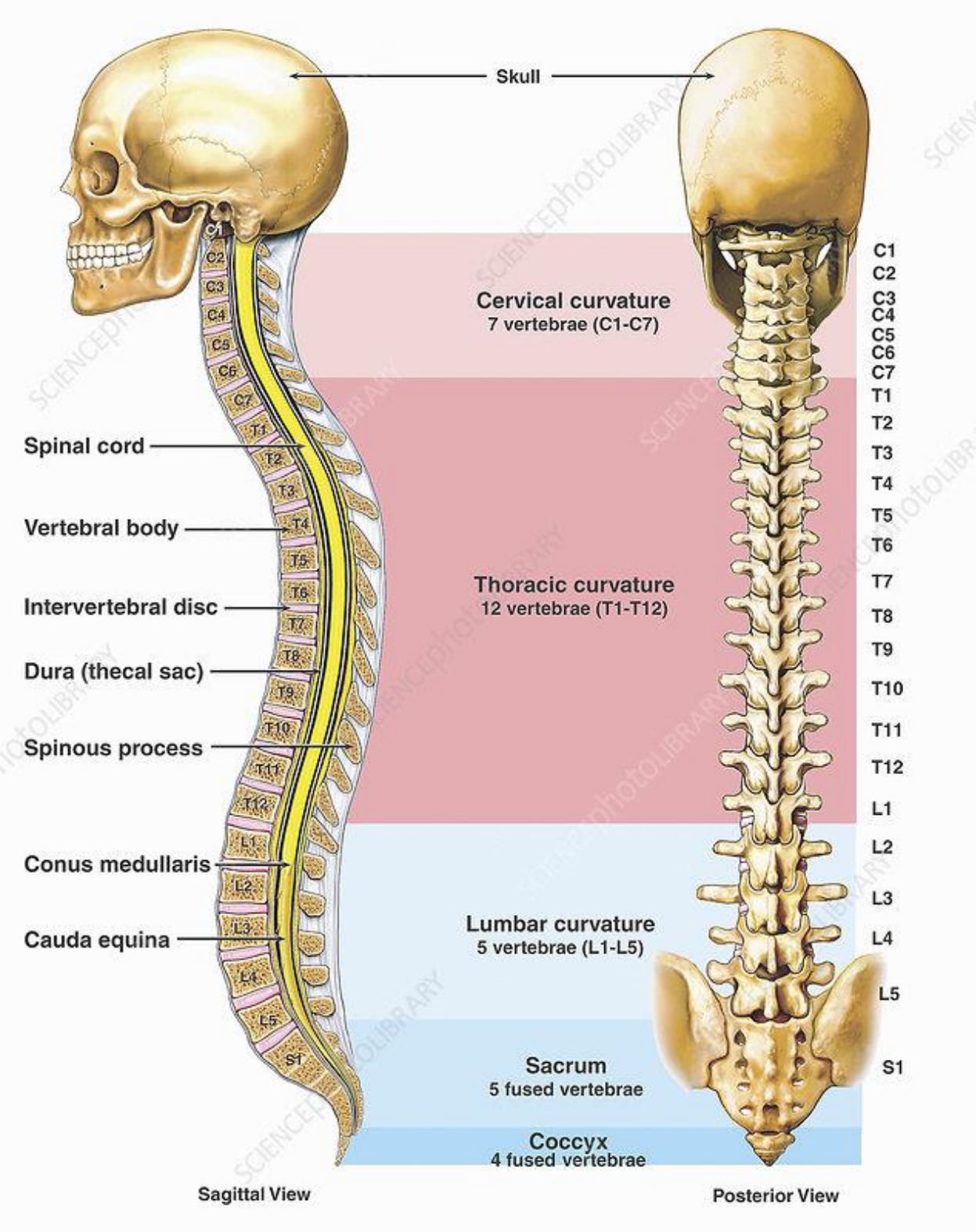

Figure 1: *Normal Human Spine* (Science Photo Library, 2019).

Case Studies

Case 1: Patient has lumbar spondylosis, as shown in Figure 2, a spine condition that concerns the natural deterioration of the lower spine due to age and compression occurring in the lowest portion of the spine, where the lumbar spine meets the sacrum, coccyx (Fish and Middleton, 2009).

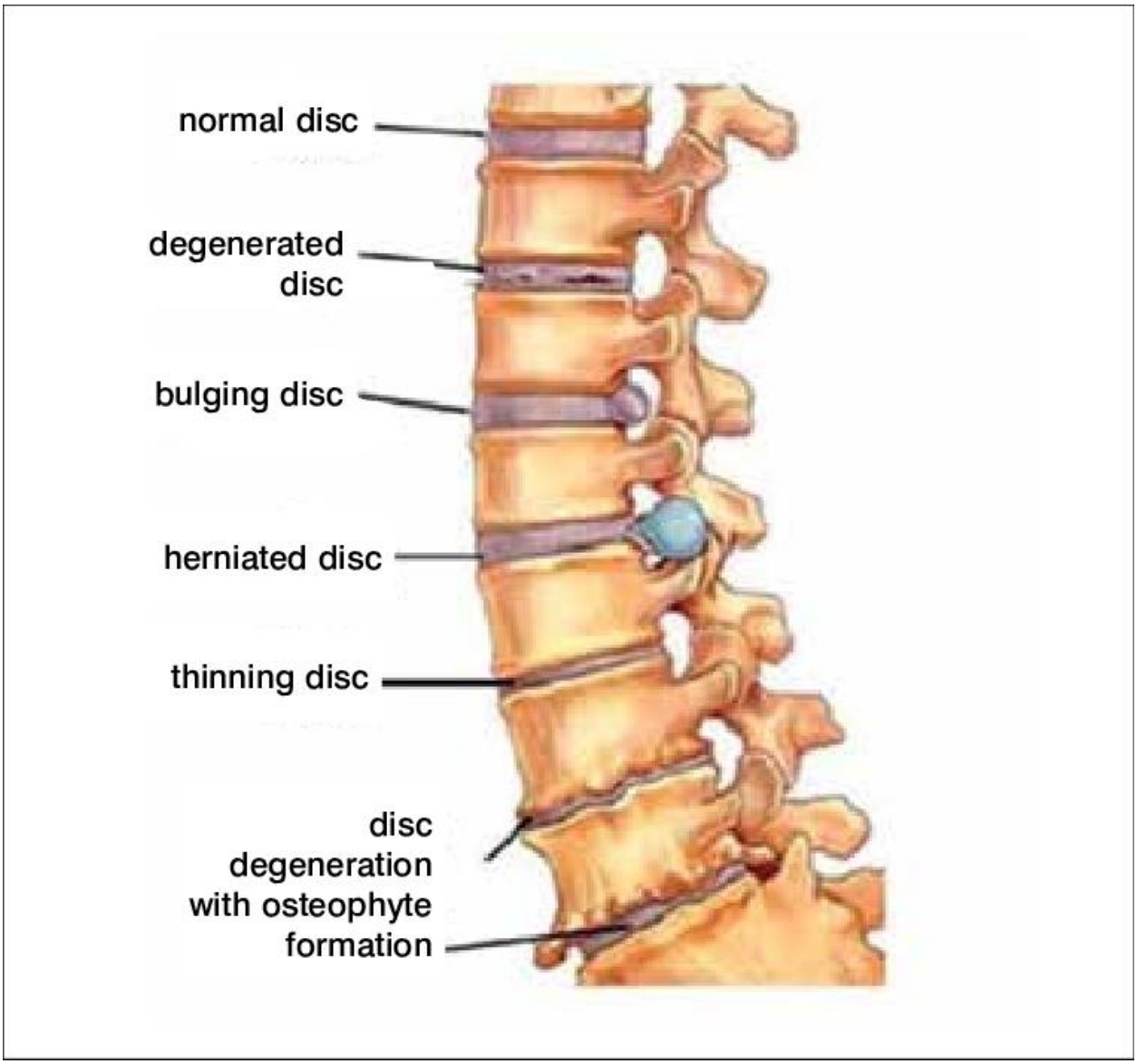

Figure 2: *Lumbar Spondylosis* (Physiopedia, 2019).

Case 2: Patient has spondylolisthesis, as shown in Figure 3, a spinal condition that affects the lower vertebrae, where it causes one of the lower discs of the vertebrae of the lumbar spine to slip forward onto the vertebra directly beneath it (Physiopedia, 2019).

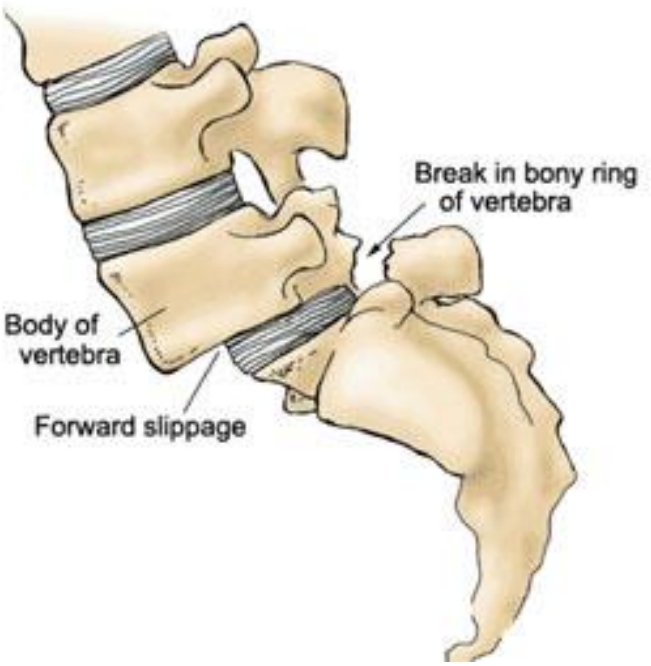

Figure 3: *Spondylolisthesis* (Massachusetts General Hospital, 2019).

Case 3: Patient has lumbar spinal stenosis, as shown in Figure 4, a narrowing of the spaces within the neural spinal canal, which can put pressure on the spinal cord and nerves that travel through the spine (Atlas and Genevay, 2010).

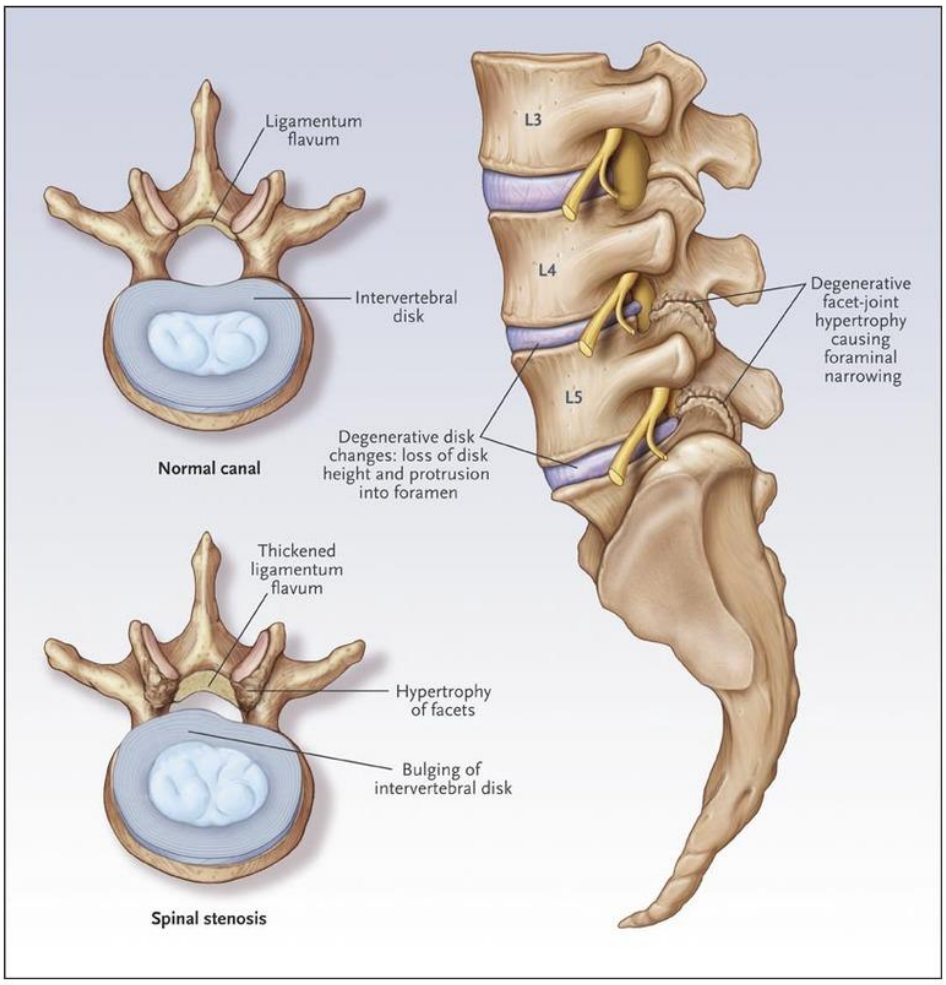

Figure 4: *Lumbar spinal stenosis* (Harris and Katz, 2019).

Treatment

For each of the cases, the therapy was quite similar as applied. Therapy began with electric stimulation pads placed on affected areas in cases on the lower back, with hot packs placed on top with a towel for a few minutes of electric stimulation. This is to be able to warm up or ease any pain or agitation in the affected area. An ultrasound is done with polysonic lotion for four minutes to loosen any tightness or spasms that exist in that area of skin over spine, as well as to increase circulation and relieve nerve pinching. By doing this, the patient is then able to perform the exercises later. Biofreeze, a menthol-based formula used as a pain relieving gel that is useful for treating sprains, sore muscles, arthritis and other types of joint pain, is then applied to the area; this is a gel that helps to soothe any pain in muscles or joints (Moramarco Chiropractic, 2013). After this is applied, a series of exercises are undertaken, such as pelvic tilts and leg crunch ups while sitting. This is done to strengthen the hips and muscles surrounding the lower back, as well as to relieve pain, since most weakness and pain arises when in standing positions. These exercises relieve some pain, as well strengthen surrounding areas to provide cushions for affected lower backs.

Physical therapy can be stopped if the patient achieves maximum progression or there is stagnancy in their progress. The effectiveness of physical therapy in individuals can be observed in how they walk and, in their postures, as physical therapy is utilized to manage their pain. In the presented cases, pain relief, heat/cold therapy, swimming, and walking are all effective methods. The patients are continuously evaluated and medications are modified to ensure their safety and to see if physical therapy is an effective method for their current issue.

Conclusion

The goal of physical therapy, illustrated by these three cases, is meant to provide effective treatments fostering pain management, because even though pain cannot be completely relieved, it can still be made more manageable, so that normal physiologic activities may still be undertaken. Future recommendations include walking and swimming to strengthen the muscles through resistance and provide pain relief. Doing these activities, as well as knowing the techniques of heat/cold therapy and maintaining muscle-strengthening exercises, helps to augment physical therapy and provide pain relief.

Acknowledgments

First, I would like to thank Dr. Lee Ehrman and Purchase College, State University of New York for helping me with my Senior Project.

I would also like to thank Dr. Weigle's office for permitting me to work on my project and especially to the two physical therapists I worked the most with, Desha and Paul, for allowing me to observe, shadow and sit in with them and their patients through countless amount of hours and days, explaining the conditions and the treatments and being patient with me with all my questions and confusions.

Last and most importantly, I would like to thank my family for always supporting and believing in me, who I really and truly couldn't have done any of this without their love and support. I especially want to thank my father, who was my inspiration for this project and has motivated me to pursue a career in rehabilitation therapy.

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May 13, 2019

To whom it may concern,

Judy Mathew was a student of mine and she observe all phases of care for my patients, from initial evaluation, treatment and discharge from our office.

I have reviewed her senior project and discussed several additions to her descriptions of modalities and diagnoses.

On a side note Judy was very mature and made the most of her time here, asking appropriate questions and researching items she was not familiar with. It was a pleasure getting to know her.

Sincerely,

Paul M DeFelice MS PT

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