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## Outpatient Physical Therapy Treatment of Patient with Spondylosis: A Case Study

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CASE REPORT: OUTPATIENT PHYSICAL THERAPY TREATMENT OF  
PATIENT WITH SPONDYLOSIS

by

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Bachelor of Science, University of Minnesota Crookston, 2020

A Scholarly Project

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of the

Department of Physical Therapy

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This Scholarly Project, submitted by Paige Kropuenske in partial fulfillment of the requirements for the Degree of Doctor of Physical Therapy from the University of North Dakota, has been read by the Advisor and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

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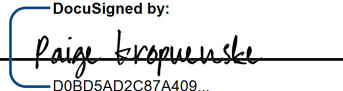
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TREATMENT OF PATIENT WITH SPONDYLOSIS

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## ABSTRACT

**Background and Purpose:** In the United States low back pain (LBP) is one of the leading causes for individuals to reach out to health care professionals. LBP is often associated with a diagnosis of spondylosis. Spondylosis is present in about 80% of peoples in the United States. The prevalence of spondylosis continues to increase without a definite cure or form of treatment. Overall, exercise and intervention have proven to decrease symptoms of pain of those with spondylosis. However, success of treatment may see large variables in success. Further research into specific treatment interventions may be warranted to decrease chronic spondylosis in the United States. **Case Description:** This case involves a 72-year-old male diagnosed with spondylosis. The patient is a retired Top Gun Pilot for the United States Airforce and he participates in regular golf tournaments for recreation. He lives in a home with his wife. He began to feel pain in his low back when playing golf, walking up an incline, and bending over to carry groceries inside his home. He received imaging and was given the diagnosis of spondylosis and degenerative disc disease. Shortly after, he was referred to physical therapy for treatment of his symptoms. **Intervention:** Following evaluation and examination, directional preference was identified as well as mobility and strength deficits. Interventions and treatment were designed and implemented to compliment directional preferences and address strength

and mobility deficits. Interventions included, but were not limited to, increasing thoracic and lumbar mobility, posterior chain strengthening, core stability interventions, manual therapy techniques and modalities. **Outcomes:** The patient felt significantly better following the eight weeks of treatment. Following the plan of care, the patient expressed he felt equipped to continue with his home exercise program to eliminate or decrease a return of symptoms. He expressed noticeable differences in his symptoms as well as noticeable increases in his strength and abilities within his normal daily activities following his treatment plan of care.

**Discussion:** While interventions and manual therapy techniques were appropriate and delivered results for this patient, some research does not support or suggest just one approach being successful for all patients diagnosed with spondylosis. Further research should be done specifically on lumbar spondylosis as well as specific interventions to treat symptoms.

## **CHAPTER I**

### **BACKGROUND AND PURPOSE**

Spondylosis is often defined as a condition of abnormal deterioration on the cartilage and bone within the vertebrae of the spine.<sup>1</sup> In addition to abnormal deterioration, there is typically increased bone formation in areas where the annular ligament is stressed.<sup>2</sup> A typical patient who is diagnosed with spondylosis presents with pain and stiffness in the spine, and in some individuals will cause radicular nerve symptoms. Spondylosis often worsens with age and is often associated with osteoarthritis of the spine.<sup>1</sup> While many, if not all people experience degeneration and breakdown of the vertebrae as they age, only some individuals experience pain or discomfort associated with these changes. It has been estimated that 25% of individuals with spondylosis experience at least one episode of significant back pain at some point in their lifetime.<sup>3</sup> Fortunately, for the large majority of individuals, symptoms are mild and transient, with 90% subsiding within 6 weeks.<sup>1</sup> Typically, conservative treatment is sought after first, however, some will proceed with surgical interventions if conservative treatment fails. There is currently no concrete, gold-standard treatment approach to the diverse range of patient presentations despite large amounts of research performed on both conservative and invasive treatment methods to manage symptoms and slow the progression decline.<sup>1</sup>

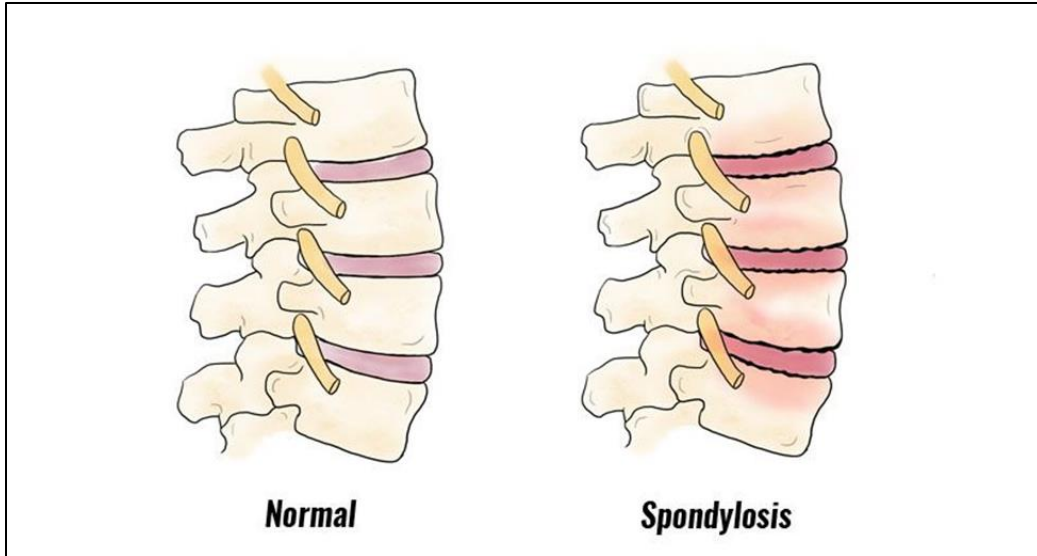


Figure 1: Normal spine and a spine with spondylosis.<sup>8</sup>

In the United States, more than 80% of individuals older than 40 years have lumbar spondylosis, increasing from 3% of individuals aged 20-29 years. Lumbar osteophytes have been found to be present in about 20% of men and 22% of women aged 45-64 years and in 30% of men and 28% of women aged 55-64 years.<sup>3</sup> Given the limited ability to isolate causative sources, there is a small consensus with regard to a definitive treatment approach.<sup>1</sup> Substantial variation in management by both conservative and invasive treatments exist among providers all over the country.<sup>1</sup> Exercise therapy remains the most common form of conservative treatment which may include, but not limited to aerobic exercise, muscle strengthening, and stretching exercises. Among those suffering chronic pain symptoms, which accounts for a small amount of people statistically significant improvements were made regarding pain management and an increase in functional mobility.<sup>1</sup>

A physical therapist's role when treating patients with spondylosis is to strengthen supporting musculature of the spine including the glutes and abdominals and to improve range of motion and mobility within the spine. Stretching activities would include musculature of the low back and thoracic spine, and specifically the quadratus lumborum. The goal of therapy is to combine the use of strengthening, stretching, and manual techniques to reduce or manage the pain associated with spondylosis as well as improve functional mobility. Manual techniques and additional modalities may include but are not limited to traction, massage, soft tissue mobilization, superficial heat, and joint mobilization.

While surgical procedures are mainly saved for patients who fail conservative treatments, there is limited research to support strictly exercise interventions.<sup>1-3</sup> Conservative treatment refers to the act of participating in physical therapy with or without the use of additional modalities as supplementation.<sup>3,4</sup> Research supports the use of traction, manual therapy, transcutaneous electrical nerve stimulation (TENS), injections, medications, massage, superficial heat, and back supports but not strengthening.<sup>4</sup> While the addition of many of these techniques are valuable and complement exercise well when treating spondylosis, these techniques are often utilized first, before the use of exercise. The utilization of exercise with the addition of one or a few of the techniques listed above will likely provide the best results, even though little research has been done with this combination. Massage therapy was a technique widely used and used specifically with the patient being discussed in

the case study. Weighed against other interventions, it proved less efficacious than TENS and manipulation, comparable with corsets and exercise regimens, and superior to acupuncture and other relaxation therapies, when followed over a 1-year course.<sup>1</sup> In regard to TENS, while a small study identified immediate reduction in pain symptoms, there remains little evidence of long-term relief.<sup>1</sup>

As a profession, physical therapists are responsible for educating patients on the importance of attempting conservative treatment before seeking out alternative treatments such as surgical interventions. In a research paper published by the Journal of Neurosurgery, after receiving 121 surveys, 33% of patients believed back surgery was more effective than physical therapy in the treatment of back pain without leg pain.<sup>5</sup> Nearly one-fifth of the survey group (17%) also believed that back injections were riskier than back surgery. The conclusion of this study shows the high percentage of patients who have misconceptions regarding the diagnosis and treatment of lumbar spondylosis, and that these misconceptions persist in patients with a history of spine surgery.<sup>5</sup> Physical therapists and doctors alike are responsible and need to improve upon communication and patient education during surgical consultations for patients with lumbar spondylosis. The purpose of this case report is to present effective conservative treatment using exercise and intervention to treat a diagnosis of lumbar spondylosis and degenerative disc disease.

## **CHAPTER II**

### **CASE DESCRIPTION**

The 72-year-old male patient presented to physical therapy with a diagnosis of spondylosis and degenerative disc disease from his primary care physician (PCP), with the use of x-ray and MRI. This patient reported to physical therapy with complaints of low back pain when bending over to pick up groceries off the ground, putting on the golf course, and walking at an incline. Upon evaluation and examination, the patient demonstrated poor core control, hypomobility within the lumbar and thoracic spine, poor postural control and body mechanics when bending over, and poor activation of the gluteus musculature. The patient also presented with a slight bilateral Trendelenburg gait, suggesting poor glute medius activation with walking. With palpation, the patient ~~also~~ presented with hypertonicity in the right paraspinals as well as the right quadratus lumborum. When palpating these areas, the patient mentions he had increased sensitivity to these areas. The patient was not experiencing radicular symptoms, just pain covering the low back. The patient was asked to describe his pain on a zero to ten scale, (0 = no pain, 10 = worse pain ever experienced). The patient rated his pain an 8/10 pain with activity and 3/10 pain at rest. Finally, a full systems review was performed, and no other notable observations or reports were relevant to the current plan of care.



The patient had been experiencing pain for a few weeks upon initial evaluation. He had no other pertinent diagnoses or medical history in relation to back pain. He lives with his wife in a single-story home. Patient was a United States Air Force Top Gun Pilot and now works as a mortgage loan officer. The patient's main hobby is playing golf with his friends. He did not use an assistive device and considers himself relatively active. The patient had not sought out other treatment options besides therapy to this point for this incident. The patient's main goals include returning to daily activities and golfing without pain or needing to take frequent breaks due to pain.

The patient wanted to focus on two main goals during his plan of care. His short-term goal was to be able to lift objects heavier than ten pounds from the floor, so he was able to assist his wife with carrying the groceries inside without causing increases in symptoms. His long-term goal was to increase his mobility and strength to be able to participate in recreational activities, such as competing in golf tournaments.

### **Examination, Evaluation and Diagnosis**

Upon evaluation, the patient presented with an extension preference, decreased range of motion within the thoracic and lumbar spine, and muscular tightness/tension along the quadratus lumborum and paraspinal regions. With decreased mobility, overactive and sensitive musculature, and a consistent flexed posture, the patient experienced frequent pain. The patient previously saw his PCP before coming to physical therapy for his initial evaluation. He had prior imaging done which revealed degenerative disc disease

and spondylosis in most of his lumbar spine, however, was the most severe in the areas of L4 and L5. He only had x-rays; however, MRI is the most commonly used imaging modality for the diagnosis of degenerative disc disease and spondylosis.<sup>6</sup> He was screened for hip involvement, which was all within normal limits for mobility, thus mobility not likely contributing to the episode of back pain.

Given the patient's medical diagnosis as well as his clinical presentation, it was determined he was a good candidate for physical therapy. The patient was a good candidate for therapy due to his ability to create a consistent schedule and attend regular appointments, and his motivation to improve in functional abilities with no pain. His primary care physician suggested physical therapy as the first solution to address pain, and if failed, then surgical intervention or corticosteroid injections would be the next best option. The main contributing problems which the patient was experiencing were related to areas of the physical therapy scope of practice. He was an appropriate physical therapy patient because he needed increased mobility, increased strength and stability, and education in proper body mechanics which were likely all contributing to his back pain.

Clinical tests which were performed during the initial evaluation included observation in gait, active range of motion of the cervical, thoracic, and lumbar spine, joint mobilization and manual therapy, palpation, and soft tissue mobilization. The patient was asked to describe his movement preference, flexion or extension with movement and sustain positioning. He explained he had increased pain with flexion and mild relief with extension. With the following tests

and measures completed during the evaluation, the patient was experiencing musculature imbalance, decreased activation, spinal hypomobility, as well as some degree of spinal canal narrowing. It was determined the patient's physical therapy diagnosis was spondylosis, with an ICD code of M47.9.

Table 1. Special Tests Performed

Hip Scour	Negative
Slump Test	Negative
Trendelenburg Sign	Positive

After evaluation, the interventions which were implored for this patient include thoracic and lumbar mobility, core strengthening, postural musculature endurance training, and glute activation activities. All treatment interventions used in the clinic were categorized as conservative forms of treatment, as requested by the PCP as well as the patient. The patient was educated on the list of interventions which would be addressed in the clinic as well as the ways in which they would address his current pains and main complaints. The patient was also educated on a timeline in which he could expect to see changes in his condition as well as the importance of compliance with his home exercise program to aid in the rehabilitation process. He was able to schedule physical therapy for six weeks, which is the timeline determined to likely be adequate for the condition of the patient. He was ensured additional visits may be added after six weeks if needed.

Table 2. ICF Model of Patient

Health Condition:	Thoracic/Lumbar Spondylosis/DDD
Body Functions/Structures:	Decreased mobility of the thoracic and lumbar spine, hypertonicity within the paraspinals and quadratus lumborum, decreased postural musculature endurance, inadequate and decreased gluteal activation with activity, poor stability and strength of the core/abdominal musculature.
Activity Limitations:	Walking at an incline, standing for long periods of time, sitting for long periods of time, picking grocery bags off the ground, and carrying heavy objects.
Participation Limitations:	Pain with golfing, walking up on the green way, and providing care for his sick wife.
Environmental Factors:	The patient lives with his wife who was recently hospitalized and requires increased care. The patient is retired, with no mention of other family in the area other than his wife.
Personal Factors:	The patient is 72 years old with a background in the United States Air Force. The patient has a long past medical history of heart conditions and complications following open heart surgery which occurred 14 years ago. The patient's current medical status is stable and the patients seems motivated to participate in therapy in and outside of the clinic.

### **Prognosis and Plan of Care**

After conducting a full evaluation, and analyzing the extent of his limitations and impairments, his prognosis was good. His plan of care would entail mobility and strengthening exercises for the core, glutes, and low back. He would also receive manual therapy and modalities such as posterior-anterior glides and heating packs within his plan of care. The patient had two main goals which would be addressed within each treatment session. He wanted to be able to pick up an object from the floor heavier than ten pounds to assist his wife with carrying in groceries, as well as increase mobility and strength to be able to return to his recreational activities, such as competing in golf tournaments.

The patients plan of care was designed to target areas of deficit to enhance movement patterns and decrease pain with desired movement. It was designed specifically for this patient and was adjusted as needed throughout the episode of care. The patient was made aware of the plan and interventions which would be implemented into his home program in hopes of progressing towards his goals in therapy. The patient's deficits were within reasonable limits, in which conservative treatment was appropriate.

### **CHAPTER III**

### **INTERVENTION**

The interventions that were selected for this patient included activities which promoted extension, rotational movement patterns, as well as strengthening of back and hip musculature. Interventions were targeted to include functional movement patterns in which the patient was already using before becoming injured to promote proper body mechanics with these movement patterns to eliminate present and future reinjury. The patient valued playing golf, so his interventions and functional activities included movement patterns which are required to play a game of golf. The patient was also concerned about his ability to carry heavy objects, which were also replicated in his intervention program. Research suggests thoracic mobility, motor control, and strength are required to optimize performance in sport and minimize excessive load/stress on other components of the kinetic chain.<sup>6-8</sup> All components including thoracic and lumbar mobility, motor control, and strengthening were implemented within interventions provided to this patient in the clinic as well as within his home exercise program. This patient was not seeking other forms of treatment in regard to his back pain at this time.

The patient was receiving therapy services within the clinic twice a week for an hour each time for a total of 8 weeks. The patient was encouraged not to engage in his home exercise program on days he was seen in the clinic.

He was educated on the frequency in which to complete the home exercise program which consisted of performing mobility exercises five to seven times a week and strengthening exercises three to five times a week, at once a day. He would often ask of ways he could implement or replicate what we were doing in the clinic while he was at home, and education was provided appropriately.

Please refer to Table 3 for further information.

Table 3. Interventions

<p><b>Week 1</b> Prone on elbows progressing with prone press-ups</p>	<p>Isometric hold for 2-3 minutes, 10 reps</p>	<p>Patient would lay prone on plinth table while maintaining an extensions position with upper body supported by elbows and forearms flat on the table. Press-ups were performed with hands flat on the table, resembling a normal push-up movement pattern while leaving the hips on the table.</p>	<p>This intervention assists in counteracting the pressure placed on the lower back with poor posture.</p>
<p>Overhead extension with 6# medicine ball</p>	<p>2 sets of 10 reps</p>	<p>Patient was instructed to hold a medicine ball with both hands while fully extending the elbows and leaning backwards into extension of the spine. Patient used wall behind him as a reference point and safety precaution.</p>	<p>This intervention assists in counteracting the pressure placed on the lower back with poor posture. The medicine ball and overhead motion require increased demand from the abdominal musculature.</p>

Cat/Cow in quadruped	20 reps	Patient was instructed to assume a quadruped position while “rounding” out his spine and “letting his spine hang and sticking the buttock out” for exaggerated lordosis.	This intervention assists in increasing mobility within the neck, shoulders, and spine.
Low trunk rotations (described as “windshield wipers”)	10 reps to each side	Patient was instructed to assume a hook lying position while letting the knees “fall out” to each side.	This intervention assists in increasing mobility and within the lumbar spine.
<b>Week 2</b> Open books	10 reps to each side	Patient was instructed to lay on his side with his arms full extended in a prayer position and bringing the top hand across his body as far as possible to “open the book”.	This intervention assists in increasing mobility within the thoracic spine.
Dynamic QL stretch	15 reps each side	Patient was instructed to hold onto a stationary object on the ipsilateral side while reaching overhead with the opposite side making a “C” shape with his spine.	This intervention assists in increasing mobility within the thoracic spine and pelvis.
<b>Week 3</b> 3D mapping with golf club	5 reps each direction in all 3 movement patterns	Patient was instructed to perform movement patterns demonstrated by SPT following treatment interventions of 3D mapping.	This intervention assists in functional mobility and rotational movements within neck, shoulder, hips, knee, and ankle.



Medicine ball swings/putting stance variation	10 reps in each direction	Patient was instructed to perform his “putting” motion with a weighted medicine ball, ensuring proper mechanics with every swing.	This intervention assists in functional strength of the thoracic/lumbar and proximal musculature.
<b>Week 4</b> Bird dogs	8 reps each side	Patient was instructed to assume a quadruped position while lifting opposing upper extremity and lower extremity and alternating.	These interventions assist in stability and strengthening of proximal and core musculature.
Chops/lifts with pulley machine	10 reps each side	Patient was instructed to start with the pulley machine overhead, while crossing midline and pulling the resistance to the opposite hip. Described as drawing a diagonal line.	
Pallof press with pulley machine	10 reps each side	Patient was instructed to walk out until reaching appropriate tension and perform “presses” with both upper extremities while resisting rotational forces.	
<b>Week 5</b> Bridges with hip abduction	2 sets of 10 reps	Patient was instructed in hooklying position to bridge and to “bring his knees apart and back together” before lowering his hips back down onto the table.	This intervention assists in strengthening of the gluteal and hip musculature.

Glute kickbacks with shuttle	10 reps each side	Patient was instructed to perform “donkey-kicks” in an upright position pushing with one lower extremity into extension without compromising with back musculature involvement.	This intervention assists in strengthening of the gluteal musculature.
<b>Week 6</b> Modified single leg deadlift	10 reps each side	Patient was instructed to perform a single leg deadlift with a slight bend and contact with the back leg for stabilization.	This intervention assists in strengthening musculature within the posterior chain.
<b>Week 7</b> Donkey kicks in quadruped	10 reps each side	Patient was instructed to assume a quadruped position while keeping knee bend and extending at the hip.	This intervention assists in stability and strengthening of proximal and gluteal musculature.

Given the patients presentation, all contributing factors, other than degenerative changes to the structure of the spine, could be addressed with physical therapy. Physical therapy would focus on strength, mobility, manual therapy, superficial heat, and massage techniques to address the patients' complaints of back pain. Each intervention listed above was discussed with the patient during the initial evaluation. Improving strength and mobility will increase the patient's ability to move with greater range of motion and correct his increased lordotic posture, which may be causing him pain. Manual therapy,

superficial heat, and massage techniques will be additional skilled therapy techniques to aid in gaining increased mobility and strength.

One of the first suggestions given to the patient to complete at home was superficial heat. This was a technique used to relax and “warm-up” the back musculature. Superficial heat is used for relaxing musculature, warming up tissues, and helping with pain reduction. The American College of Physicians recommends nonpharmacologic treatments such as superficial heat in patients with acute or subacute low back pain.<sup>6</sup>

The patient’s spine mobility was addressed during every session. Every session began by providing manual therapy techniques including posterior-anterior glides of the lumbar spine and soft tissue massage/mobilization of the quadratus lumborum and paraspinal musculature. A double-blind randomized control trial suggests the use of manual therapy is more effective with pain and functional parameters as compared to spinal stabilization exercises.<sup>8</sup> Spinal stabilization exercises and manual therapy proved to be equally effective in quality of life and compliment each other well as forms of treatment.<sup>8</sup> Another systematic review suggested massage is an ineffective treatment for low back pain in the long term. However, this study used strictly massage techniques without supplementation of exercise and other manual therapy approaches, which was used with this patient.<sup>9</sup> After performing manual therapy techniques, the patient’s spine mobility was observed during functional strengthening and exercises during the session. The patient was making obvious improvements in range of motion with his ability to perform and advance his exercise program.

In addition to spine mobility, the patient was also seeing improvements in his strength. His program was based around incorporating both McKenzie interventions as well as spinal stabilization exercises. The McKenzie interventions addressed the patient's directional preferences, while the spinal stabilization exercises addressed postural and core musculature. A study comparing conventional exercise and stabilization exercises suggests stabilization exercises are more effective than conventional exercise in reducing pain during activity and improving core stability regarding functionality and endurance.<sup>10</sup> When comparing each group, there were more significant improvements in pain during activity, endurance, and functionality after stabilization exercises. Core stability and stabilization is deemed essential for proper load and balance within the spine, pelvis and kinetic chain, also referred to as the core of the body.<sup>11</sup> By increasing strength and stability within the core, the patient was able to more evenly displace the load and pressure being put on his low back by receiving "help" from his core musculature.

Regarding the McKenzie technique and interventions, the patient's directional preference was spinal extension. The McKenzie method is an effective program for low back pain as it stresses self-treatment through posture correction and repeated exercise movements at end-range performed with high frequency within a specific directional preference.<sup>12</sup> Most exercises prescribed included some form of spinal extension. Examples include but are not limited to prone on elbows, prone press-ups, standing extension, etc. When the patient assumed extension positioning, his pain was better controlled. The patient

explained the later in the rehabilitation process, his extension range of motion improved and his pain continued to decrease as well.

The following exercise interventions were most commonly and consistently used within the clinic as well as within the home exercise program. When appropriate, and the patient was able to use proper body mechanics, the patient used pulley machines, resistance bands, six-pound medicine balls, and a fifteen-pound kettlebell. Many times, the patient did not use any equipment at all, allowing for easier replication of interventions within the patient's home program. The patient did have resistance bands and light dumbbells at home to use when necessary. Throughout the plan of care, there were a total of four exercises (single leg deadlift, banded walks, overhead extension, and 3D mapping) removed from the plan of care either due to increased pain with the activity, inability to replicate at home, or the patient did not want to participate in the specific intervention.

The interventions were all performed to target mobility and strengthening within the hip, core, and posterior chain musculature to assist in retaining movement patterns and maintaining better postural alignment to aid in relieving pain. Exercises were added each week, as well as a mix of past weeks interventions. Interventions which required increased equipment was done within the clinic, while those using less or no equipment were made a part of the his home exercise program. Progressions were made when patient was able to perform previous exercises correctly and without pain. These progressions

included high level movement patterns as well as addition of resistance to existing interventions. The time frame in weeks added are listed in Table 3.

Research suggests lumbar stabilization exercises, such as proximal core musculature strengthening, with the combination of thoracic mobilization has a greater effect on the stability of the lumbar region, relieving pain, and improving the function of patients with low back pain.<sup>13</sup> In addition, a randomized control trial suggests another major component to working with patients with low back pain is core stabilization.<sup>14</sup> This study suggests core stability is effective in improving proprioception, balance, and percentage change of muscle thickness of transversus abdominis and lumbar multifidus, reducing functional disability and fear of movement in patients with low back pain.

The exercises performed within the clinic as well as within the home exercise program were discussed with the patient directly. His tolerance to exercise was appropriate in the clinic and he only required mild modification or adaptations when attempting new exercises. Exercises were not sent home with the patient unless he had performed them within the clinic with supervision to ensure proper mechanics. He came to appointments alone, with no other individuals involved in these discussions. The patient was married and expressed his wife was aware of his home exercise program and the expectations. The patient often spoke highly of his wife and explained she was his support system. For the first visit, the patient was given a handout of all exercises and this was reviewed before he left the clinic that day. The patient from that point forward used the electronic version of his home program and no longer wanted print outs

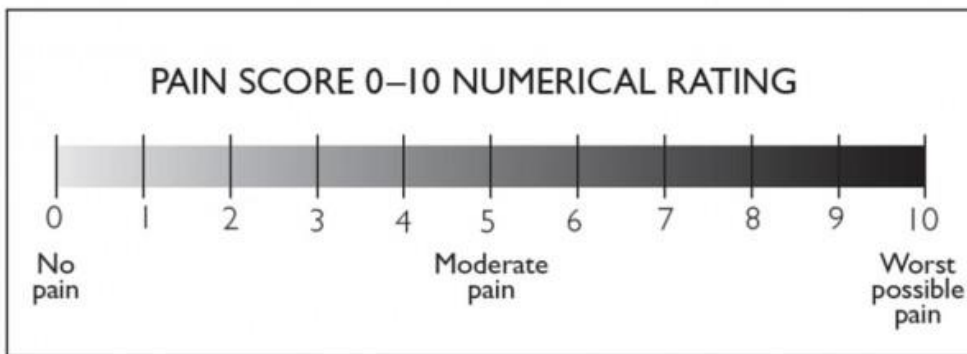
of his exercises. The patient was not working with any other disciplines at this time, and no communication was warranted with any other provider. The patient did not see his primary care physician during this episode of care and he mentioned he did not feel reaching out was necessary at this time because of his continued progress.

## CHAPTER IV

### OUTCOMES

The main outcome measure used throughout the plan of care was the numerical rating scale. The numerical rating scale is a scale used to monitor patient's pain ranging from zero to ten. Zero is typically described to patients as experiencing no pain at all, while a ten is typically described as the worst pain ever experienced.

Figure 2. Numerical Rating Scale for Pain.<sup>17</sup>



A systematic review suggests the numerical rating scale has good sensitivity and generate data which can be analyzed for audit purposes.<sup>15</sup>

Another study suggests pain-rating scales to pose potential for error and interpretation of the data from a pain-rating scale is not straightforward.<sup>16</sup>

Table 4. Pain Rating at Initial Evaluation and Discharge

Pain Rating at Initial Evaluation	8-9/10 with activity
Pain Rating at time of Discharge	0/10 with activity



When the patient began his episode of care, he rated his pain at 8 to 9 out of 10. At the end of week 6, he reported 0 out of 10. He was extremely satisfied with his progress and the way he was feeling when getting back to his normal activities and hobbies. After concluding his plan of care for the full eight weeks, the patient was educated on continuation of exercises to decrease the likelihood of returning symptoms. The patient demonstrated excellent compliance with his home program and stated he would continue with the program to maintain the results he achieved with physical therapy.

## **CHAPTER V**

### **DISCUSSION**

The main goal of this case report was to determine the most effective treatment strategy for acute spondylosis. Through literature and clinical judgement, a treatment plan was created to address the patient individual problem list as well as observed and measurable deficits likely contributing to his low back pain. In this case report, the combination of mobility training, strength training, postural stabilization, and manual therapy techniques for the treatment of spondylosis was successful in terms of meeting therapist and patient goals for rehabilitation. Typically patients, such as this one, experiencing acute low back pain have a favorable prognosis with resolution of 4 weeks, regardless of treatment style.<sup>18</sup> This patient was dedicated to attending all scheduled appointments as well as adequate compliance with his home program. He began to see significant progress within the first four weeks, and felt his symptoms were completely resolved at the end of his care plan of eight weeks. All areas of deficit observed during the initial evaluation were addressed during the episode of care. Areas of deficit included limited thoracic and lumbar spine mobility, weakness within hip and abdominal musculature, and poor postural strength and endurance.

When referencing current literature regarding lumbar spondylosis and acute low back pain, many treatment options have been deemed effective.<sup>18-</sup>  
<sup>19</sup> Most, if not all, agreed a combination of treatment approaches is best, followed

by clinical judgement as to which approach and style is working best for each specific patient. The most reputable treatment approaches include mobility, strength, and postural stability interventions. While evidence does support the use of manual therapy and additional modalities to assist in the rehabilitation process, emphasis has been placed on physical and interactive interventions. Exercise produces large reductions in pain and disability, a feature that suggest that exercise should play a major role in the management of low back pain.<sup>19</sup>

Measurement procedures, focused primarily on reported pain, significantly improve throughout the episode of care. The patient first demonstrated centralization, as described by the McKenzie method as spinal pain originating from the spine distally, and through targeted repetitive movements the pain migrates back toward the spine.<sup>20</sup> When centralization is observed, typically a favorable treatment result is expected.<sup>21,23</sup> After seeing continued centralization, the patient began to see improvements in spinal mobility, followed by strengthening and postural endurance.

A meta-analysis specifically addressing cervical and lumbar results from high G-forces used in military aircraft suggests typically retired pilots, such as the patient discussed in this case report, are more likely to experience cervical pain.<sup>24</sup> However, many experience isolated low back pain or a combination of cervical and lumbar spine following retirement in the air force. Prevention of lumbar and neck injuries should be combined with individual lumbar and neck support, as well as increasing back muscle strength through training.<sup>24</sup> This training is recommended to take place while actively in the air force as well as

following retirement in efforts to avoid onset of cervical and lumbar pain, such as spondylosis.

Future research in this area should focus more on spondylosis of the lumbar spine. Most research done regarding a diagnosis of spondylosis focuses on the cervical spine. While spondylosis is a general and not always a specific diagnosis, there is limited research done specific to the lumbar spine. This case report is limited to one patient and one outcome measured used to measure progress, such as the Oswestry Low Back Disability Questionnaire.<sup>25</sup> Progress was based on patient reports of continued, worsening, or decreasing symptoms of pain. This provides limitations because of lack to objective measurements. Many things can affect a patient's symptoms day to day. Increased use of objective measurements would help provide increased insight to progress rather than solely relying on patient report.

### **Reflective Practice**

Anytime you are working with individuals and their well-being I believe practicing self-reflection is imperative. Upon reflection, I try to identify things in which were successful as well as things in which were unsuccessful. Each are learning opportunities and ways a clinician can improve upon patient care performance. I was able to continually self-reflect while treating this patient which I believe allowed me to provide the best possible care to him and his circumstance. I continued to investigate the research as well as reevaluate him at each visit to track progress as well as new techniques or strategies to attempt to continue to see progress.

When looking back to the evaluation for this patient, I would have liked to use a standardized functional assessment to truly track progress and not solely relying on patient report of symptoms. While reporting of symptoms is vital, I would like to add increased objective measures to track progress and show the patient improvements are being made even if they are minor and hard to decipher from visit to visit.

I would have also liked to perform a more thorough movement assessment specific to the patient's golf swing and putting form. This may have provided increased insight as to why these motions/movements were causing pain and where the largest deficits in mobility and strength were for the patient. There were very few movements and interventions which provoked the patients exact pain within the clinic and this may have added increased value to the full evaluation process.

I took an approach in which I looked at the entire body, rather than just his low back. We targeted many areas down the chain in which would be involved in the movements which provoked symptoms. This approach was widely supported in research and I believe provided results quickly, rather than just focusing on the low back. By targeting mobility within the spine and strengthening within the lower extremities, glutes, and core we were able to see improvements quickly. This not only brought patient satisfaction, but also allowed for long-term buy in from the patient to continue with his home exercise program when the plan of care within the clinic had expired.

Finally, there seemed to be a lack of research done on a diagnosis of lumbar spondylosis and a surplus of research done on cervical spondylosis. While both a part of the spine and the same diagnosis, the treatment and causes of the diagnosis vary greatly. Cervical spondylosis is more commonly diagnosed as opposed to lumbar, while lumbar spondylosis is typically characterized as general low back pain or degenerative disc disease. It seemed some of the above terms were used interchangeably in research, while I believe there should be a greater distinction between the two for more accurate results.

## **APPENDIX**

### **Appendix 1: Patient Goals**

1. Following PT intervention, the patient will be able to pick objects weighing greater than 10 pounds off the ground to allow the patient to pick up and carry grocery bags into the house within three weeks.
2. Following PT intervention, the patient will be able to increase mobility, motor control and strength to participate in recreational activities such as golf without an increase in pain within 6 weeks.

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