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The Benefits of Traditional Physical Therapy and Primal Reflex Release Technique in Treating Chronic Low Back Pain

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THE BENEFITS OF TRADITIONAL PHYSICAL THERAPY AND PRIMAL REFLEX RELEASE TECHNIQUE IN TREATING CHRONIC LOW BACK PAIN

by

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I dedicate this writing to my host parents Lorna and Gordon Bradbury, Barbara Nash and her family, Jacky Keck and my wife for all they have done to see me attain my goal of becoming a therapist.

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ABSTRACT

Background and Purpose: Low back pain (LBP) is very prevalent in the general population. It is estimated that 79% of the population will experience low back pain during a lifetime. The purpose of this case report is to elaborate on the importance of traditional physical therapy interventions and to introduce the use of a new technique: primal reflex release technique (PRRT) in the treatment of LBP.

Case Description: The client was a 74-year-old female with history of multiple falls resulting in a vertebral fracture that was reduced by a kyphoplasty. Her chief complaints were pain in the T12 - L1 spinal level, resulting in decreased functional mobility.

Intervention: Treatment included Electrical stimulation, ultrasound, PRRT, exercises to increase mobility and strength, manual therapy and massage.

Outcomes: The patient was treated over a six week period, for 12 visits of 30-45minutes per treatment. At discharge, the patient's pain rating on the visual analog scale decreased from 7/10 at initial evaluation to 0-2/10 with activities.

Discussion: The benefit of traditional physical therapy in treating LBP remains strong. Interventions such as massage and strengthening exercises have been proven in various literatures to be effective in the managing LBP. PRRT also benefited the patient in managing her pain symptoms however, there is much to be learned about this emerging technique. Future research to substantiate the effects of this technique is also indicated.

CHAPTER 1

BACKGROUND and PURPOSE

The prevalence of chronic low back pain in the general population for people of all ages is on the rise. In a study by Walker et al,[1] an estimated 79.2% of the general population will experience some form of back pain during their lifetime. Despite the advances in health care practices and education towards prevention, no standardized evidence-based treatments (EBTs) are outlined. EBTs are interventions which have been proven effective through rigorous research methodologies. The high cost of health care also remains another challenge to providers and the general public in the management of low back pain. There are various schools of thought on the management and treatment of low back pain, with physical therapy being one option.

Low back pain is caused by many conditions that affect the muscle, bone, nerve and connective tissue structures.[1] Depending on the structures involved, low back pain could originate from a bulging disc, cauda equina syndrome, spinal stenosis, or mechanical low back pain. Mechanical and/ or continuous pressure on intervertebral discs can cause degeneration and weakening of supportive cartilage, making way for disc material to be pushed out of this space. This causes compression or irritation of the spinal cord or nerve tissue, resulting in pain and/or weakness. Cauda equina syndrome (CES) occurs when disc material is pushed into the spinal canal, compressing lumbar and sacral nerve roots. Permanent neurological damage, such as saddle and perineal hypesthesia or anesthesia, or bowel and bladder disturbances, could result from CES. Lower extremity motor weakness and sensory deficits, as well as reduced or absent lower extremity reflexes, may also result if this syndrome is left untreated.

Pain in the low back can also be a result of other conditions such as tumor, cyst, metastatic disease, degeneration and or irritation of the sciatic nerve root (sciatica), and osteoporosis. Skeletal irregularities, such as poor posture over a long period of time, kyphosis, lordosis, prolonged static postures could also be causes of pain in the low back. Fibromyalgia is a chronic disorder characterized by widespread musculoskeletal pain, fatigue, and multiple tender points, which may affect the back. Low back pain could result from inflammatory responses to any or all of the structures in the body.

Low back pain could be classified as acute low back pain from the onset of symptoms and may last till about six weeks or less. Symptoms are classified as sub-acute if symptoms extend from six to twelve weeks. The presence of symptoms beyond twelve weeks is termed chronic low back pain.[2]

Literature reviews

Literature reviews for LBP interventions focus on traditional physical therapy (PT) interventions for pain control and accelerated tissue healing. Traditional physical therapy interventions for low back pain may include manual therapy techniques to break scar adhesions, to relax muscle spasms, to increase motion and to provide pain relief. Traditional physical therapy also includes therapeutic exercises for strengthening, passive modalities such as ultrasound,[3] laser lights, cryotherapeutic and thermal agents (cold packs, hot packs). Electrical stimulation and an emerging technique called Primal Reflex Release Technique (PRRT) are also being used to treat patients with chronic low back pain, among other painful syndromes. PRRT is an emerging technique developed by John Iams which targets the overreaction of primitive reflexes and their function of protecting the body and stimulating the flight and fight response.[4] Primal Reflex Release Techniques deregulate such reflexes, thereby restoring the

body to homeostasis. The usefulness of reflexes in detecting neurological conditions is well documented in the literature.[5] It has been speculated that the primitive reflexes disappear early in life, in most cases by the end of the first decade. Some, however, reappear in late life and have been attributed to neurological disorders such as stroke, dementia and Parkinson's disease. The PRRT school of thought indicates that these reflexes are hard wired into the human system, and even though they may not always be evident, their presence could be noted as an indication of chronic pain. Research by Van Boxtel MP et al,[6] indicates that the prevalence of nociceptive reflexes increases with age in normal adults. PRRT suggests that the dysfunctional activation of these reflexes may be at the root of most painful conditions.[4] The examination techniques of PRRT are directed to effectively assess the source of pain (musculoskeletal origin), and treatment techniques are used to release stress in the tissue and in essence "down regulate" the reflex.[4]

Literature reviews on the above mentioned interventions are still variable. PRRT, however, is at this time only supported by expert opinions rather than published research. Despite the divergent views in the literature regarding the effects of traditional physical therapy interventions on low back pain, there is greater evidence in support of physical therapy interventions when compared to no treatment and/or pharmaceutical treatment.[7]

The treatment of low back pain can only be as standardized as the unique presentations of symptoms found through the examination and evaluation process. The importance of a good history collection could not be overemphasized in treating low back pain. It has been speculated that through history taking 75% to 80% of a diagnostic decision is concluded.

I believe that the success of intervention can only be achieved after arriving at the best clinical diagnosis and classification of the condition with a known or suspected cause. This would lead to

the selection of an appropriate modality or physical agent for control of symptoms, and interventions such as therapeutic exercises, primal reflex release techniques, manual therapy techniques, education, and/or timely referral to appropriate sources, to resolve the underlying cause of pain.

The effects physical agents such as ultrasound when administered at the appropriate time facilitates treatment by decreasing or increasing (↓↑) blood flow, ↓↑ nerve conduction velocity, reducing spasticity, increasing pain threshold, and ↓↑ metabolic rates.

Therapeutic exercises and manual therapy techniques on the other hand would be explored to correct underlying causes when indicated. These benefits may include stretching of tissues to restore their normal length, breaking of scar adhesions to allow blood flow and increase tissue extensibility, strengthening of weak muscles to improve function and maintain posture or down regulating the hyper-excited reflex system to restore the body to homeostasis.

As mentioned earlier, each patient that will present to you with a low back pain will be unique and may require a varied mix of the above mentioned interventions, but may not be unusual to explore most of the list before finding a lasting result in managing the low back pain.

The purpose of this case report is to elaborate on the benefits of traditional physical therapy interventions on low back pain, and also to introduce the new PRRT technique, which is currently lacking published support.

CHAPTER 2

CASE DESCRIPTION

The patient was a 74-year-old female, who was referred to physical therapy with complaints of low back pain following a recent fall. The fall resulted in a vertebral fracture at the T12- L1 level; the fracture was reduced by kyphoplasty. The patient lived alone in a one story house prior to the fall. She was independent with all activities of daily living (ADLs). The patient, however, resided with her daughter for assistance with ADLs following the fall. She enjoyed gardening and visiting her grandchildren and other family members living within a 50-mile radius.

The patient had also been recently diagnosed with fibromyalgia, which could be a contributing factor to the chronic pain symptoms in the low back. Other details of her past medical history include a cardiac stent placement, a right ankle open reduction internal fixation (ORIF) 25 years ago, a left elbow repair (ORIF) 20 years ago, and a recurrent history of falls with no known causes. There has been no record indicating osteoporosis in her medical records, even though for her age a diagnosis sooner or later may not be unusual.

The results of a magnetic resonance imaging (MRI) after the last fall episode confirmed a compression fracture at the T12 vertebral body. The vertebral fracture was reduced with a kyphoplasty in June 2008. Kyphoplasty is a minimally invasive spinal surgery procedure used to treat painful, progressive vertebral compression fractures (VCF).[8] It involves the use of a device called a balloon tamp to restore the height and shape of the vertebral body. This is followed by the application of bone cement to strengthen the vertebra (Figure 1). Ninety five percent of

clients with VCF who are treated with kyphoplasty recover and return to their previous level of function (PLF) without any other intervention.[8]

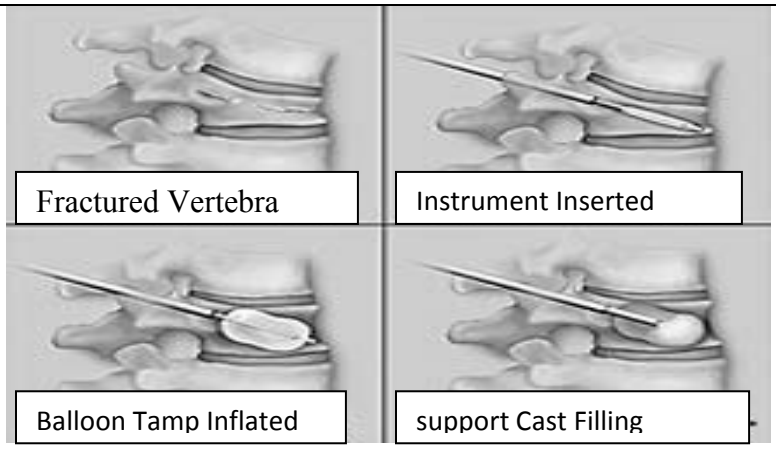


Figure 1 Kyphoplasty of a vertebral spine.

A review of the patient's medical records indicated a list of medications, some of which include; pravachol, hyzaar, and other NSAID's and vitamins, with various side effects which could be a source of her frequent falls and/or contribute to back pain. Some of the notable side effects of her medication list include dizziness, nervousness, drowsiness, tremors, fatigue, fainting, seizures, blurred vision, weakness, and muscle pain. Rhabdomyolysis which is the breakdown of muscle fibers resulting in the release of muscle fiber contents (myoglobin) into the bloodstream leading to possible kidney damage have also been an associated side effect of one of the medications.

The- patient's main goal was to return to her previous level of functioning without pain. Concerns from the patient's family were for the patient to be able to return to independent living without frequent falls. These goals were the focus of the intervention rendered.

Examination, Evaluation and Diagnosis

The patient's main complaint was the unresolved low back pain onset since her fall six months ago. Her pain symptoms were worse with movement transitions from supine to sitting.

Her only position of comfort was lying on her side. The mechanical visual analog scale (MVAS) was used to measure the patient's pain.[9] The MVAS is a numerical scale 0-10 cm with descriptors of pain intensity, 0 indicating no pain and 10 the worst pain, and with a matching colored bar chart in shades of white, green and red indicating less comfort/ tolerable pain to unbearable pain. Her pain ranged from 2/10 at rest and 7/10 during activities such as transfers. The location of pain was illustrated with a pictorial human model (refer to appendix B for an example of a pain scale used) on which the patient indentified the T8-L3 level along the spinal muscles as the region of pain. Associated symptoms included intermittent shooting pain into her buttocks and a deep ache in the mid to lower back. The patient described her pain as constant, aching, and sharp, sometimes stabbing during movements such as bending forward or sideways and while walking. The patient's symptoms could generally be predicted based on motion and body position.

Observation: The patient's postural assessment indicated a forward head posture and functional kyphosis which were evident by her poor standing and sitting posture. Also noted was a demonstration of a wide yet unstable base of support, with a slow, guarded velocity with gait. The patient, however, was very hesitant in using any kind of assistive device by her own admission.

The patient demonstrated withdrawal reflex (pulling her body away) from touch sensation during palpation. Also noted was tenderness and atrophy of the erector spinae muscle, with more atrophy noted on the right side compared to the left at approximately T10-L3 levels. Reflexes at the knee and Achilles tendon were equal on both sides. The patient also had no indications for abnormal dermatomes and or myotomes patterns of the lower extremities during assessment.

The slump test (sitting dural stretch test) for nerve tissue involvement was used during assessment but was inconclusive due to the patient's inadequate description of symptoms. A study by Majlesi J et al,[10] reported a sensitivity value of 0.84 and a specificity value of 0.83 for the slump test. The straight leg test for dural/nerve involvement was also negative. This test also has reported sensitivity value of 0.52 with a specificity of 0.89.

Hamstring tightness was measured with a goniometer using the 90^{o}-90^{o} Straight Leg Raise (SLR) Test. The patient demonstrated a decreased hamstring length bilaterally, with the left knee lacking 16^{o} to full extension, and the right knee lacking 15^{o} to full extension. The heel to knee test for lower extremity coordination testing was positive. The Romberg test for balance was also positive, with the patient demonstrating a less than three - second loss of balance with her eyes closed.

Further balance testing was done, using the Berg Balance Test (sensitivity: 53%, specificity: 96%) and the Biomechanical Ankle Platform System (BAPS).[11] The BAPS is a computerized system used to evaluate or predict the risk of falls by monitoring the ability to maintain dynamic postural stability on unstable surfaces via computer sensors. The patient's performance scores on the Berg Balance Test and BAPS assessment were within the high falls risk categories. The patient's performance score on the functional reach test prior to intervention was 5 inches. This score indicated that the patient was four times more likely to fall.[12]

Imaging: Acute vertebral fractures were later ruled out with an x-ray image. The results of the x-ray, however, indicated degenerative changes in the lumbar spine which correlated to the which correlated to the patient's age as a normal process.

Range of motion: The patient's bilateral hip and knee active range of motion (AROM) measures were within functional limits (WFL). Her bilateral ankle AROM was minimally limited. Refer to table 2 for recordings of the patient's lumber AROM based on McKenzie's lumbar assessment grouping. There is limited research on the reliability of using McKenzie's ROM descriptors to categorize lumber ROM; but it is deemed more functional and adequate based on the patient's "normal" ROM. This technique classifies a patient's inability to bend and reach her knees with her upper extremities as a major loss of ROM. A person's ability to reach past the knees to about the upper shin indicates a moderate loss of motion, and being able to nearly reach one's lower shin indicates a minimal loss of motion in flexion. Impairments or limitations in extension are also based on characteristics of "normal" values that are deemed functional.[13]

Refer to Table 3 for lower extremity strength testing values**.** Strength testing for trunk muscles was deferred secondary to the patient's previous history of vertebral fractures and pain with movements. The patient's upper extremities strength was within functional limits.
The patient demonstrated decreased lumbar range of motion, with pain in all planes. She had an increase of pain severity during back extension. The patient's dynamic balance and lower extremity coordination were impaired. Other impairments and functional limitations included limited independence in activities of daily living, along with decreased strength and endurance due to inactivity. The patient diagnosis of chronic low back pain could be classified in practice pattern 4I, Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with bony or soft tissue surgery.[14]

Table 1. Initial Range of Motion Measures

Range Of Motion	**Degree of Limitation**	
Lumbar Flexion	Major limitation	
Lumbar Extension	Major limitations with sharp pains with movement	
Lumbar Side Bending	Left ; major limitations	Right: major limitations
Lumbar Rotation	Left: minor limitations	Right: moderate limitations
Hip (grossly)	Within functional limits (WFL)	
Knee (grossly)	WFL	
Ankle (grossly)	WFL	

Table 2. Lower Extremity Strength Testing Measures.

Strength testing	**Flexion**	**Extension**	**Abduction**	**Adduction**
Bilateral Hip	4+/5	4/5	4/5 Bilat	5/5 Bilat
Bilateral Knee	4+5 Bilat	4+/5 Bilat		

The patient's cardiovascular system was insignificant; she however demonstrated signs of decreased endurance with increase respiration with exercises, evident of her previous level of activity. The patient's scars at the site of spinal surgery were well healed, but with notable adhesion. Other impairments noted were in the musculoskeletal and neuromuscular systems as stated in the sections above.

Prognosis and Plan of Care

The patient would demonstrate optimal joint mobility, motor function, muscle performance, range of motion, and the highest level of function at home, during the course of 1 to 8 months.[14] The patient's age, history of frequent falls, motivation to exercise, and adherence to the home exercise program become important factors in her potential for overall functional improvement and also make her prognosis good.

The patient's goal was for relief of back pain and return to previous level of function. Short term intervention goals were to decrease the patient's pain within 2 to 3 weeks from 7/10 to 0 to 2/10, and also to improve her gait mechanics with an appropriate assistive device for safe return to living independently without increase risk of falling. Long term intervention goals were to improve the patient's posture to decrease stress on her tissues, improve her balance to decrease fall risks, and for the patient's safe return to PLF independently within a 5 to 8 weeks. These goals were discussed with and accepted by the patient and her daughter. Treatment options included one or more of the following listed interventions; ultrasound, therapeutic exercises, electrical stimulation, and PRRT for pain and inflammation control. Performance and goal attainment was measured with verbal reports of functional level at home, sleep pattern, ease of movement, range of motion measurements, and assessment of pain threshold on VAS.

CHAPTER 3

INTERVENTION

The patient was treated for 12 visits, 2 to 3 visits per week for 6 weeks. All treatment sessions started and ended with a review of HEP to ensure proper demonstration and understanding, a pain level assessment using the VAS, the patient's subjective report on her quality of life since the last treatment (sleeping habits and recovery from treatment session when indicated) and the PRRT one-minute nocioceptive exam (MNE). The one- minute nocioceptive exam is performed by palpating various trigger points/regions on the body from one side to another during each visit. Regions of increased reflex activity may elicit a painful startle reflex, which will be evident by what John Iams describes as the 3G's: gasp, groan or grimace for most people.[15] The patient demonstrated positive painful startle reflexes during the MNE, the most common regions being at the right L1, the right sacrum, the SI joint, the gluteus maximus, the 11th and 12th ribs bilaterally, the diaphragm, the rectus capitus posterior minor, bilateral fibers of levator scapulae, and the upper thoracic spine at the C7-T1 levels. Treatment goals for weeks 1 and 2 focused on pain relief, increased ROM and rapport building. The patient was treated with soft tissue mobilization to the lumbar spine and deep friction massage with fascial snaps (lifting of skin and underlying connective tissue to allow increased mobility and to break adhesions). Alpha stimulation, which is one form of therapeutic electrical stimulation, was also used for 20 minutes during sessions, in most instances while using tissue mobilization techniques.[16,17] The patient was also treated with various PRRT techniques based on positive findings from the MNE. Refer to appendix A for description of the most commonly used PRRT techniques used in

treating this patient. Treatment sessions were limited to 3 to 5 techniques per day, based on speculations in the PRRT community about possible adverse reactions with too many techniques at one time. Adverse reactions may include increased pain, headache, nausea due to inadequate water consumption, and an overload of the liver resulting in failure to eliminate the chemicals released into the body during the flight and fight response.

Ultrasound (US) is a therapeutic modality which uses 'inaudible acoustic vibrations delivered at a frequency between 0.75 and 3.0 MHz and intensity between 0.5 and 3 Watts per cm^2."[3] The lower-frequency sound waves penetrate into deeper tissues such as joints, muscles, and bones, and produce thermal effects that are not normally perceived by patients. The patient was given US at 1 MHz, 1.2 - 1.8 watts per cm^2, mainly for deep tissue penetration in the lumbar region prior to soft tissue techniques. Ultrasound applications preceded soft tissue massages across the paraspinal muscles and deep friction massages for scar tissue breaking around the site of the kyphoplasty.

Exercise intervention goals were to improve the spinal ROM and general endurance capabilities. Exercises included: supine lumbar rolling, assisted single knee to chest, straight leg raise, heel slides, gluteal sets, hip abduction, bridging, standing back extension, passive hamstring stretches and heel cord stretches. Handouts of these exercises were also issued to the patient to facilitate her home exercise program (HEP). The patient was educated to incorporate a 10 minute walking program twice per day, which was later progressed to 20 minutes a day.

The patient's motivation to continue physical therapy was a result of the benefits of intervention. Symptoms were reduced to a 50% rating on all scales compared to the initial evaluation during weeks three and four.

Intervention during these sessions included continuous use of US and alpha-stimulation. Other treatments included grade 2 to 3 posterior-anterior mobilization glides to the lumbar spine for pain relief and increased joint motion and PRRT, including occipital-lower trap release,™ erector spinae release,™ diaphragm lift Lx2,™ upper T-spine inhibiting technique,™ trigeminal dR™ (downregulate) maneuver. The benefits of these techniques included the disappearance of the withdrawal response (the 3G's) to palpation and increased mobility in the thoracic and lumbar spine.

BAP's testing and training was initiated during this period.[18, 19] The following therapeutic exercises were implemented: bridging with isometric holds, heel raises, mini-squats with bilateral upper extremity support, single stance step tapping, lumbar rolling, and review of HEP as mentioned in week one's treatment.

The treatment goal for weeks 5 to 6 was to prepare the patient for discharge into a community based exercise program at the wellness unit of the facility. This program was for individuals above the ages of 55 years with sedentary lifestyles, who have little to no experience of exercising for rehabilitation. Program details included cardiopulmonary endurance activities such as biking, swimming, and walking on a treadmill. Other special topics included "back school" (taking care of one's back during daily activities), daily stretching routines at home, and group exercises.

Treatment interventions were continued as per weeks 1 to 4, except US was discontinued. The patient's range of motion reassessment indicated some improvement in all planes with minimal restrictions in flexion, extension, and side bending noted. Improvements were also noted in the patient's BAPS and Berg balance reassessment scores to an approximate 35 % and 50%, respectively.

The last treatment session in week 6, as agreed on by patient and therapist, was directed towards posture, gait, and transfers assessment. Also further instructions were given on the progressing in the HEP. The patient was given a discharge plan for continuous exercise participation with a free month membership to the community program.

The patient's and her family's concerns regarding possible reinjures during this community program were addressed. All exercise interventions in the program were basic strength and endurance routines developed by a physical therapist, who was available for evaluations when needed during program hours.[20]

CHAPTER 4

OUTCOMES

The patient was discharged from skilled physical therapy services at the end of week 6. The patient missed her final appointment (due to family constraints), which was to transition her into the wellness program. The patient, however, had sufficient information about discharge plan and the wellness program. A follow up phone call was made to the patient to confirm her agreement with the discharge plan and enrollment in the wellness program.

At discharge, the patient demonstrated improvements in her gait velocity and stability, with a single point cane. Her dynamic and static posture on observation also improved, even though the patient still needed occasional verbal cueing for her upright sitting posture. The patient was able to transfer sit to stand and sit to supine with ease of movement without grimace or complaints of pain. The patient was able to walk up a flight of stairs with a rail and single point cane reciprocally without loss of balance. The patient's own verbal report on her quality of life was invaluable. She reported as increased ability to rest better at night, hence waking up more energetic without back pain, an indication of improved quality of life. At discharge the patient demonstrated lumbar ROM measures as recorded in Table 4 below.

Based on the patient's age, previous medical history of falls and past level of activities, these gains in ROM as compared to her initial evaluation values were clinically significant over the course of the intervention period. Pain threshold was also increased upon discharge. The patient pain rating on the M-VAS ranged from 0 to 2 during the last week of treatment. The primal

reflex release techniques, US, and the soft tissue massage were the reported interventions that the patient stated were the most helpful in her pain control.

The patient returned from her daughter's house to live in her house in the fifth week of intervention. She started driving herself to therapy appointments and had no stated limitations of functioning at home.

Table 3. Final ROM Assessment

Range Of Motion	**Degree of Limitation**
Lumbar Flexion	Minor limitation
Lumbar Extension	Minor limitations with no pains with movement
Lumbar Side Bending	Minor limitations bilaterally
Lumbar Rotation	Minor Limitations

CHAPTER 5

DISCUSSION

The results of pain control and goal attainment are comparable to other findings in the literature supporting some of the intervention techniques. Exercise therapy has been proven to be effective in decreasing pain and improving overall function in adults with chronic low back pain.[21, 22, 23,24] In another study by Furlan et al,[25] it is indicated that massage is superior to therapeutic exercises individually in measuring short term pain and functional improvement. When combined, massage and exercise however demonstrated better improvements in pain control and function on both long and short term. The absences of established evidence on the benefits of PRRT,[15] in the presence of significant clinical positive outcomes, is an indication for future researchers to consider investigating its use in the treatment of chronic low back pain. The beneficial effects of ultrasound for tissue healing and pain control have also been stated in various publications with conflicting results. The thermal effects, however, have been established in articles such as the one published by Morrisette et al.[3] The continued use of traditional physical therapy intervention in the treatment of patients with chronic low back, is an established evidence in most literature reviews.

The Performance Oriented Mobility Assessment (POMA) would have been one of the useful assessment tools to clinically determine the mobility status and evaluate changes over time for the patient. This tool has adequate reliability and validity for assessing mobility in older adults as documented in a study by Faber et al.[26] The reported sensitivity values based on a 95%

Confidence interval was 64% and a specificity value of 66%. This tool if used at initial evaluation and final assessment would have indicated a reproducible measure of gain.

Reflective Practice

The examination process used during this case report is adequate and could be applied with minimal to no changes to other patients who may present with chronic low back pain. However, data collection on ROM in the lumbar spine could be more objective than using the McKenzie method as used in this case report. Measurements could be taken with a tape measure or an inclinometer. In a study by Saur et al,[27] it was concluded that the use of an inclinometer was highly reliable and valid in the measurement of spinal ROM.

The intervention provided in this case report seems to be the more standardized interventions that most physical therapists would use in the treatment of LBP, except for PRRT. As the clinical relevance of PRRT continues to be developing, it would be interesting to assess its usefulness in treating painful conditions of the back without exploring other modalities. As stated by Fantazzi et al,[28] the results of PRRT are fast; if a patient will benefit from it, it is easy to detect in the first treatment, and if it will be unsuccessful, it will also be evident.[29] I think it will, hence be prudent for people who have some training in the use of this technique to continue to explore it carefully whiles paying attention to the successes and failures to aid in future practice and research. I have seen some of my clients benefit from the use of some of the PRRT treatments delivered by other PT's and think it will be necessary to gain further training in the levels of the course/training in the future.

Another aspect of this case study that I could have approached differently is changing the exercise lifestyle of the client. Even as we plan to enroll our patients in other kinds of therapeutic activities (either for maintenance purposes or start of a new program) it could be beneficial to do

so while they are still receiving treatment. For instance, if I should have enrolled this patient in the wellness program before she was getting ready to discharge, I would be able to assess her gains in the program and would be able to see if the details of the program met her needs. That would not only help ease the patient's tension of the unknowns in the program, but would also help monitor compliance and adherence to the program.[30, 31] The concept of exercising in a group will also help create a social environment which will improve chances of exercise adherence.

In a report by the Center for Disease Control and Prevention, people age 72 and older average a health care cost for falls injury of about $19,440, which includes hospital stay, nursing home, emergency room, and home health care, but not doctors' services.[32] Physical therapy interventions directed towards this population, for strength and balance training will in turn benefit the patient and the general population by saving health care dollars. The total cost of physical therapy visits was $921.16, with Medicare paying about 70% (644.81) of her charges. The cost to the patient was $230.29 dollars.

A home evaluation to assess activity-based functional limitations would also be beneficial to assist elderly clients with a history of falls by allowing the clinician to tailor an appropriate plan of care for each individual.[33] Such a visit would also be an additional measure to consider in developing resistance programs for home purposes.

It is my hope this case report would serve as added knowledge and/or a refresher to other therapists and the general public in making choices to deal with chronic low back pain. As a reminder, the choices are broad and sometimes not all will need to be used before the "magic" of healing is realized.

APPENDIX A

A description of the primal reflex release techniques used during session.

i. Occipital-lower trap release: The patient may demonstrate positive findings (3 G's) with the palpation of the latissimus dorsi along the iliac crest, the lateral scapula and the lateral boarder of the lumbar spinous processes. The patient is positioned in supine with the cervical spine rotated towards the involved side. The patient is then instructed to close the eyes, and to shrug the shoulders with the elbow in full flexion. The patient's shoulder is instantaneously pushed down and elbow lifted off the table (all done with the patient unaware).

ii. Erector spinae release: The patient is instructed to keep eyes closed, and to lift the head off the pillow slightly. The tendons of the sternocleidomastoid and the rectus abdominis are simultaneously tapped with the hypothenar eminence for 12 seconds.

iii. Diaphragm lift: The patient is instructed to expire fully and hold this state. The therapist lifts the costal margin of the involved side. The stretch should be maintained until the patient needs to inspire again and before release.

iv. Upper T-spine inhibiting technique: The patient's elbows and shoulders are flexed to 90 degrees. The therapist taps in an attempt to elicit a triceps reflex on bilateral upper extremities, while the patient gently presses against the therapist's other hand at the wrist.

v. Iliopsoas dR: The patient is instructed to lift the buttocks off the treatment table with eyes closed. The therapist taps on the gluteus maximus insertion or resists ASIS elevation by pushing down.

vi. Piriformis release: The patient's eyes are closed. The therapist places the involved leg over the edge of the treatment table. The patient is instructed to resist an external rotation of the involved leg. This technique could be repeated approximately 5-8 times for about 12 seconds.

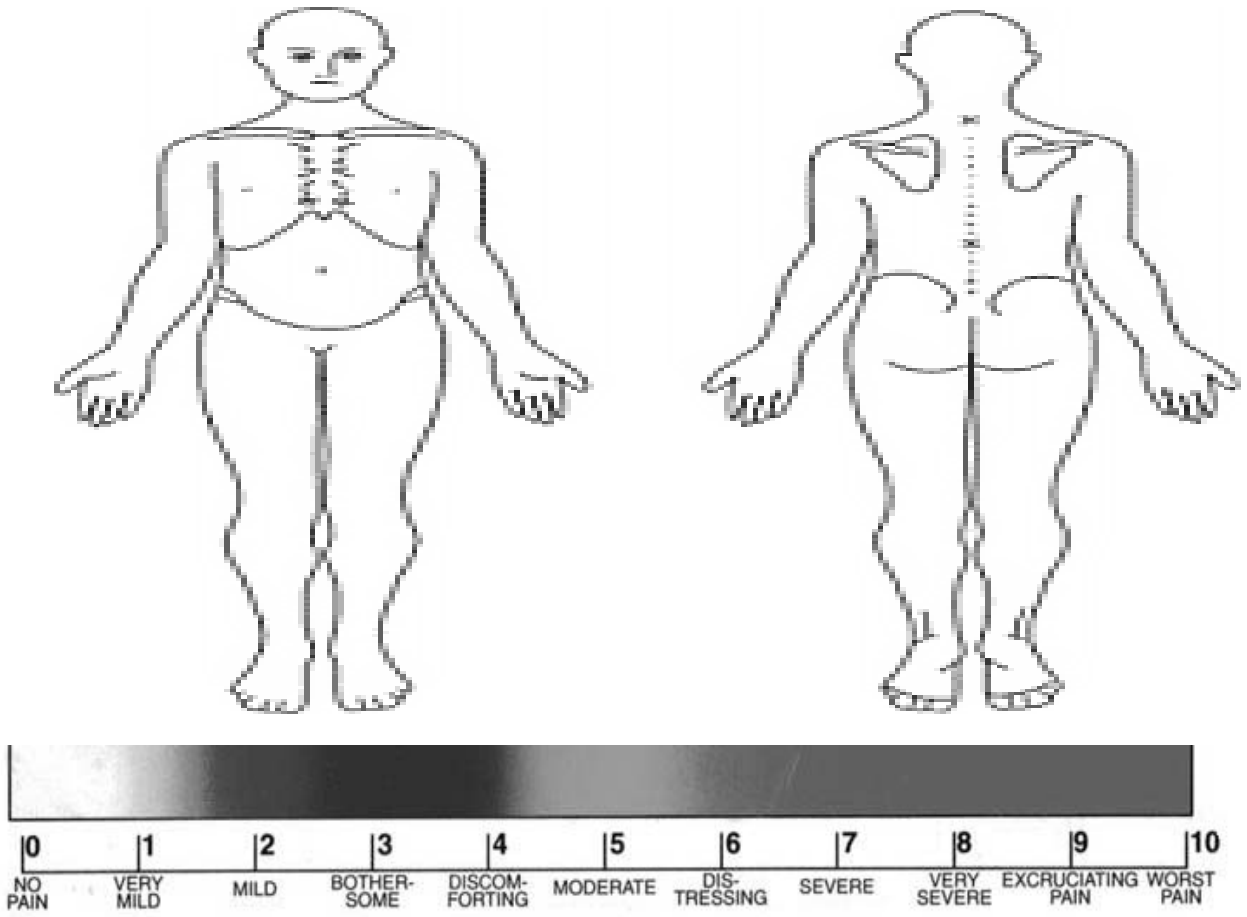
vii. SI/Lumbar release: The patient is instructed to cross the left leg (involved lower extremity) over her right leg with an approximately 30 degrees flexion of the right knee. The patient is instructed to hold both lower right leg abduction and external rotation, while performing a hip hiking on the right side. The therapist performs a distraction force and assisted pelvic rotation on the involved side. The patient slowly exhales while performing activity for 12-second holds.

APPENDIX B

Visual Analog Pain Scale

Draw a circle in the area of where you feel your pain or discomfort.

Next to your circle write a number as shown in the line diagram below, to indicate the intensity of your pain.



REFERENCES

1. Walker BF, Muller R, Grant WD. Low back pain in Australian adults: prevalence and associated disability. J Manipulative Physiol Ther. 2004;27(5):238 –244.

2. Hayden J, van Tulder MW, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low back pain. Cochrane Database of Systematic Reviews 2005, Issue 3. Art. No.: CD000335. DOI: 10.1002/14651858.CD000335.pub2.

3. Morrisette DC, Brown D, Saladin ME. Temperature change in lumbar periaticular tissue with continuous ultrasound. J Orthop Sports Phys Ther 2004; 34(12):754-760.

4. Frank Fantazzi, Amy Snyder, Mark Snyder. Primal Reflex Release Technique: Welcome to a Paradigm Shift- Part 1 of a 3 part series, Available at http://www.cyberpt.com/PRRT.asp, Accessed April 14, 2009

5. Sharma KR, Saadia D, Facca AG, Resnick S, Ayyar DR. Diagnostic role of deep tendon reflex latency measurement in small-fiber neuropathy. J Peripher Nerv Syst. 2007 Sep;12(3):223-231

6. Van Boxtel MP, Bosma H, Jolles J, Vreeling FW. Prevalence of primitive reflexes and the relationship with cognitive change in healthy adults: a report from the Maastricht Aging Study. J Neurol. 2006 Jul;253(7):935-941.

7. Staal JB, de Bie R, de Vet HCW, Hildebrandt J, Nelemans P. Injection therapy for subacute and chronic low-back pain. Cochrane Database of Systematic Reviews 2008, Issue 3. Art. No.: CD001824. DOI: 10.1002/14651858.CD001824.pub3.

8. North Texas Inst. of Spine. Minimally Invasive Surgery – Kyphoplasty. Available at http://ntxspinal.com/mininv/01/. Accessed September 10, 2008.

9. Price DD, McGrath PT, Rafii A, Buckingham B. The validation of visual analogue scales as ratio scale measures for chronic and experimental pain. Pain 1983;17:(1)45-56.

10. Majlesi J, Togay H, Unalan H, Toprak S. The sensitivity and specificity of the slump and the straight leg raising tests in patients with lumbar disc herniation. J Clin Rheumatol. 2008;14(2):87-91.

11. Conradsson M, Lundin-Olsson L, Lindelöf N, et al. Berg Balance Scale: intra-rater test-retest reliability among older people dependent in activities of daily living and living in residential care facilities. J Phys. Ther. 2007; 87(9):1155-1163.

12. Duncan W, Studenski S, Chandler J, Prescott B. Functional Reach: predictive validity in a sample of elderly male veterans. J Gerontol. 1992; 47:M93-M98.

13. McKenzie R, May S, The Lumber Spine Mechanical Diagnosis and Therapy, Volume Two. 2nd edition Waikanae, New Zealand; 2003:404-440.

14. Guide to Physical Therapist Practice. 2nd edition. Physical Therapy. 2001;81:9-744.

15. Iams JF. The Primal Reflex Release Technique Home Study Course. Super Spine, Inc. April 20-21, 2007.

16. Gabis L, Shklar B, Baruch YK, Raz R, Gabis E, Geva D. Pain reduction using transcranial electrostimulation: a double blind "active placebo" controlled trial. J Rehabil Med. 2009;41(4):256-261.

17. Weiner DK, Perera S, Rudy TE, Glick RM, et al. Efficacy of percutaneous electrical nerve stimulation and therapeutic exercise for older adults with chronic low back pain: a randomized controlled trial. Available at http://www.hookedonevidence.org/searchresults.cfm?process=1&ReviewID=12106 Accessed April 12, 2009.

18. Wolf SL, Barnhart HX, Ellison GL, Coogler CE. The effect of tai chi quan and computerized balance training on postural stability in older subjects. Atlanta FICSIT Group. Frailty and Injuries: Cooperative Studies on Intervention Techniques. Phys Ther. 1997;77(4):371-81.

19. Lajoie Y. Effect of computerized feedback postural training on posture and attentional demands in older adults. Aging Clin Exp Res. 2004;16(5):363-368.

20. Boshuizen HC, Stemmerik L, Westhoff MH, Hopman-Rock M. The effects of physical therapists' guidance on improvement in a strength-training program for the frail elderly. Journal of Aging & Physical Activity 2005; 13(1):5-22.

21. Hayden J, van Tulder MW, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low back pain. Cochrane Database of Systematic Reviews 2005, Issue 3. Art. No.: CD000335. DOI: 10.1002/14651858.CD000335.pub2.

22. Howe TE, Rochester L, Jackson A, Banks PMH, Blair VA. Exercise for improving balance in older people. Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD004963. DOI: 10.1002/14651858.CD004963.pub2.

23. Cress ME, Buchner DM, Questad KA, Esselman PC, De Lateur BJ, Schwartz RS. Exercise: effects on physical functional performance in independent older adults. Journals of Gerontology Series A-Biological Sciences & Medical Sciences 1999; 54A (5):M242-8.

24. Liu CJ, Latham NK. Progressive resistance strength training for improving physical function in older adults. Cochrane Database of Systematic Reviews 2009, Issue 3. Art. No.: CD002759. DOI: 10.1002/14651858.CD002759.pub2.

25. Furlan AD, Imamura M, Dryden T, Irvin E. Massage for low-back pain. Cochrane Database of Systematic Reviews 2008, Issue 4. Art. No.: CD001929. DOI: 10.1002/14651858.CD001929.pub2.

26. Faber MJ, Bosscher RJ, van Wieringen PCW. Clinimetric Properties of the Performance-Oriented Mobility Assessment. Phys. Ther. 2006;86: 944-954.

27. Saur PM, Ensink FB, Frese K, Seeger D, Hildebrandt J. Lumbar range of motion: reliability and validity of the inclinometer technique in the clinical measurement of trunk flexibility. Spine. 1996;21(11):1332-1338.

28. Fantazzi F, Snyder A, Snyder M, Primal Reflex Release Technique: Welcome to a Paradigm Shift- Part 2 of a 3 part series ı, Available at http://www.cyberpt.com/prrt2.asp accessed August 18, 2009

29. John Iams, MA, PT. When Reflexes Rule A New Paradigm in Understanding Why Some Patients Don't Get Well. Available at http://www.theprrt.com/files/pdf/when-reflexes-rule.pdf accessed March 25, 2009.

30. King DE, Mainous AG 3rd, Carnemolla M, Everett CJ. Adherence to healthy lifestyle habits in US adults, 1988-2006. Am J Med. 2009;122(6):528-34.

31. Rubenstein LZ, Josephson KR, Trueblood PR, et al. Effects of a group exercise program on strength, mobility, and falls among fall-prone elderly men. J Gerontol A-Biol Sci Med Sci 2000;55(6):M317-21.

32. Centers for Disease Control and Prevention, Available at http://www.cdc.gov/ncipc/factsheets/fallcost.htm Accessed March 31, 2009.

33. Topper AK, Maki BE, Holliday PJ. Are activity-based assessments of balance and gait in the elderly predictive of risk of falling and/or type of fall? J Am Geriatr Soc. 1993;41(5):479-487.