

O-10

Chronic Low Back Pain et causa Spondylosis and Spondylolisthesis: Case Report

Rahimia¹ Taufik Eko Susilo²

Physiotherapy Department, Faculty of Health Science, Universitas Muhammadiyah Surakarta

*Corresponding author: Rahimia, Email: miarahimia@yahoo.com

Abstract

Chronic low back pain et causa spondylosis and spondylolisthesis is a rare case. One of the physical therapy interventions, in this case, is William's flexion exercises that are proven to relieve pain and increase range of motion. The purpose of this case report is to show William's flexion exercise can maintain or even reduce signs and symptoms of the patient's condition, increase functional activity measured by Oswestry Disability Index. Our patient is a 56-years-old-woman with Chronis low back pain et causa spondylosis and spondylolisthesis grade 1 condition after 10 treatments have changed the walking distance caused by William's flexion exercise.

Keyword: Chronic Low Back Pain, Spondylosis, Spondylolisthesis, William Flexion Exercise, Walking, Physiotherapy.

1. Introduction

Chronic low back pain is the largest musculoskeletal case in the world with rates reaching 70-80% and continues to increase over time in both men and women (1). In a 2017 controlled trial-based study, it showed that core stabilization exercise reduced pain better in cases of chronic non-traumatic low back pain, in that study only measured pain not with the patient's functional ability. (2). Meanwhile, in 2020, Fabio Zaina etc. stated that until now there has not been found the most effective way to deal with pain from various things that cause it (3). Recent findings of pain felt by patients with spondylosis

cases can be treated with non-surgical management whereas, for spondylolisthesis cases, surgery is generally carried out (4).

Previous studies have not discussed many cases of chronic low back pain et causa spondylosis and spondylolisthesis simultaneously. Therefore we discuss the problem of a patient with 2 cases at once. After 1 month, we found a case of chronic low back pain et causa spondylosis and grade 1 spondylolisthesis with functional improvement results, especially walking distance with routine William flexion exercise.

2. Case Presentation

A 56-year-old woman, a teacher with a normal BMI, complained of low back pain and tingling in the lower left leg since 1.5 years ago (December, 2019) suddenly and getting worse, pain when waking up, unable to straighten legs when supine and slightly bent when standing and walking. When taking the history, the patient admitted that he had fallen when he was in 4th grade with the glutes being the focus. Since January, the patient checked his condition to the hospital. Prof. Soeharso.

The results of the inspection obtained, the patient tends to tilt to the left when standing. When examining the basic active movements of the trunk, pain was found during extension, left lateral flexion, left rotation, and when doing left hip flexion and extension there was also a shortening of the Iliopsoas, left hamstring, quadratus lumborum, erectorspine muscles. Weakness of the abdominal muscles and gluteus

For a specific examination in this case, no pain was found during the step off/on test, but instability of vertebral motion was found when performing flexion movements. Positive results were found when the left slump test, contralateral laseque, and left femoral nerve test were examined.



To confirm this, the patient underwent an X-ray test and obtained a mild listhesis of 25% L4-L5 and a narrowing of L3-L4 and L4-L5 (figure 1).

As recommended by the doctor, the patient is asked to do therapy regularly. With the results of the MRI, it is contraindicated to exercise the

trunk towards the posterior. Thus, the treatment carried out is in the form of William flexion.

William Flexion Exercise is an exercise that aims to reduce lower back pain and improve lower trunk stability with active exercises on the abdominal muscles, as well as passive stretching of the gluteus maximus, hamstring, hip flexors and sacrospinalis muscles.

Figure 1

Dosage Exercises performed 8-10 times with movements held for 10-15 seconds repeated for 3 sets or as much as possible.

After 10 times treatments for approximately 1 month there was a feeling of thick feeling in the patient's feet which was no longer felt. Previously, the patient walked only 200 m and felt pain and during the sixth evaluation it was approximately 1 km but there was still pain in the hamstring and gluteus. For functional assessment using Oswestry (low back pain and disability index) which is measured once a week. The results obtained during 6 weeks of

LOW BACK PAIN AND DISABILITY INDEX (REVISED OSWESTRY)

Patient Name: _____ Date: ____/____/____

Please read instructions carefully.
 This questionnaire has been designed to give the doctor information as to how your low back pain has affected your ability to manage everyday life. Please read all statements in each section and mark the box which most closely describes your problem.

<p>SECTION 1 - PAIN INTENSITY</p> <p><input type="checkbox"/> The pain comes and goes and is very mild.</p> <p><input type="checkbox"/> The pain is mild and does not vary much.</p> <p><input type="checkbox"/> The pain comes and goes and is moderate.</p> <p><input type="checkbox"/> The pain is moderate and does not vary much.</p> <p><input type="checkbox"/> The pain comes and goes and is very severe.</p> <p><input type="checkbox"/> The pain is severe and does not vary much.</p> <p>SECTION 2 - PERSONAL CARE</p> <p><input type="checkbox"/> I do not have to change my way of washing or dressing to avoid pain.</p> <p><input type="checkbox"/> I do not normally change my way of washing or dressing even though it causes some pain.</p> <p><input type="checkbox"/> Washing and dressing increases the pain but I manage not to change my way of doing it.</p> <p><input type="checkbox"/> Washing and dressing increases the pain and I find it necessary to change my way of doing it.</p> <p><input type="checkbox"/> Because of the pain, I am unable to do some washing and dressing without help.</p> <p><input type="checkbox"/> Because of the pain, I am unable to do any washing or dressing without help.</p> <p>SECTION 3 - LIFTING</p> <p><input type="checkbox"/> I can lift heavy objects without any extra pain.</p> <p><input type="checkbox"/> I can lift heavy objects, but it gives extra pain.</p> <p><input type="checkbox"/> Pain prevents me from lifting heavy objects off the floor.</p> <p><input type="checkbox"/> Pain prevents me from lifting heavy objects off the floor but I can manage if they are conveniently positioned on a table.</p> <p><input type="checkbox"/> Pain prevents me from lifting heavy objects but I can manage light to medium objects.</p> <p><input type="checkbox"/> I can only lift very light objects at the most.</p> <p>SECTION 4 - WALKING</p> <p><input type="checkbox"/> I have no pain on walking.</p> <p><input type="checkbox"/> I have some pain but it does not increase with distance.</p> <p><input type="checkbox"/> I cannot walk more than one mile without increasing pain.</p> <p><input type="checkbox"/> I cannot walk more than 1/2 mile without increasing pain.</p> <p><input type="checkbox"/> I cannot walk more than 1/4 mile without increasing pain.</p> <p><input type="checkbox"/> I cannot walk at all without increasing pain.</p> <p>SECTION 5 - SITTING</p> <p><input type="checkbox"/> I can sit in any chair as long as I like.</p> <p><input type="checkbox"/> I can only sit in my favorite chair as long as I like.</p> <p><input type="checkbox"/> Pain prevents me from sitting more than one hour.</p> <p><input type="checkbox"/> Pain prevents me from sitting more than half an hour.</p> <p><input type="checkbox"/> Pain prevents me from sitting more than 10 minutes.</p> <p><input type="checkbox"/> I avoid sitting because it increases pain.</p>	<p>SECTION 6 - STANDING</p> <p><input type="checkbox"/> I can stand as long as I want without pain.</p> <p><input type="checkbox"/> I have some pain on standing but it does not increase with time.</p> <p><input type="checkbox"/> I cannot stand for longer than one hour without increasing pain.</p> <p><input type="checkbox"/> I cannot stand for longer than 1/2 hour without increasing pain.</p> <p><input type="checkbox"/> I cannot stand longer than 10 minutes without increasing pain.</p> <p><input type="checkbox"/> I avoid standing because it increases the pain.</p> <p>SECTION 7 - SLEEPING</p> <p><input type="checkbox"/> I get no pain in bed.</p> <p><input type="checkbox"/> I get pain in bed but it does not prevent me from sleeping well.</p> <p><input type="checkbox"/> Pain reduces my normal sleep by 1/4 each night.</p> <p><input type="checkbox"/> Pain reduces my normal sleep by 1/2 each night.</p> <p><input type="checkbox"/> Pain reduces my normal sleep by 3/4 each night.</p> <p><input type="checkbox"/> Pain prevents me from sleeping at all.</p> <p>SECTION 8 - SOCIAL LIFE</p> <p><input type="checkbox"/> My social life is normal and gives me no pain.</p> <p><input type="checkbox"/> My social life is normal but increases the degree of pain.</p> <p><input type="checkbox"/> My social life is unaffected by pain apart from limiting more energetic interests.</p> <p><input type="checkbox"/> Pain has restricted my social life and I do not go out very often.</p> <p><input type="checkbox"/> Pain has restricted my social life to my home.</p> <p><input type="checkbox"/> I have hardly any social life because of the pain.</p> <p>SECTION 9 - DRIVING / RIDING IN CAR, ETC.</p> <p><input type="checkbox"/> I get no pain while traveling.</p> <p><input type="checkbox"/> I get some pain while traveling but none of my usual forms of travel make it any worse.</p> <p><input type="checkbox"/> I get extra pain while traveling but it does not compel me to seek alternate forms of travel.</p> <p><input type="checkbox"/> I get extra pain while traveling which compels me to seek alternate forms of travel.</p> <p><input type="checkbox"/> Pain restricts all forms of travel.</p> <p><input type="checkbox"/> Pain prevents all forms of travel except that done lying down.</p> <p>SECTION 10 - CHANGING DEGREE OF PAIN</p> <p><input type="checkbox"/> My pain is rapidly getting better.</p> <p><input type="checkbox"/> My pain fluctuates but overall is definitely getting better.</p> <p><input type="checkbox"/> My pain seems to be getting better but improvement is slow at present.</p> <p><input type="checkbox"/> My pain is neither getting better or worse.</p> <p><input type="checkbox"/> My pain is gradually worsening.</p> <p><input type="checkbox"/> My pain is rapidly worsening.</p>
--	--

therapy were 40% to 20%. These results are also due to the spirit and discipline of the patient doing therapy independently at home 2 times a day in the morning and evening with doses according to the recommendations of the therapist.

Figure 2

The Oswestry Disability Index (figure 2) is a functional measuring tool that is most often used in cases of problems with the waist. In this index there are 10 sections, where in each section there are 6 options to be marked when measuring the patient's function. If what is felt

or experienced by the patient is the first choice then the value is 0 and if the last choice is the value 5 in each section. The total assessment or measurement is described in Figure 3.

Scoring instructions

For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows:

Example: 16 (total scored)
 50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated:

 16 (total scored)
 45 (total possible score) x 100 = 35.5%

Minimum detectable change (90% confidence): 10% points (change of less than this may be attributable to error in the measurement)

Figure 3

- If the result of the percentage of the Oswestry Disability Index <21% (minimum disability) indicates that the patient is able to do daily work. Education is the most needed thing, such as ergonomic position when sitting and lifting weights, as well as regular exercise.
- Results The percentage < 41% (moderate disability) indicates that the patient has difficulty maintaining static positions such as sitting and standing, lifting weights, traveling, and possibly having difficulty working.
- Results Percentage < 61% (Severe Disability) pain that is felt to interfere with daily activities.
- Results Percentage <81% (Crippled) Whatever the patient does, the patient feels pain in the waist, so further treatment is needed
- Results Percentage >81% Patients can only stay in bed, but this result can also be because the patient exaggerates the pain.

(Low Back Pain and Disability Index) Oswestry Item	T0 (before treatment)	T1 (2nd week of treatment)	T2 (4th week of treatment)
1. Pain Intensity	3	3	2
2. Personal Care	1	0	0
3. Lifting	0	0	0
4. Walking	4	3	2
5. Sitting	1	1	1
6. Standing	2	2	1
7. Sleeping	2	1	0
8. Social Life	2	2	1

9. Driving/Riding	1	1	1
10. Changing Degree of Pain	4	3	2
Total Score (%)	40%	32%	20%

3. Discussion

Management of cases of chronic low back pain in these patients aims to maintain or reduce signs and symptoms that interfere with the patient's daily activities. So far, William flexion exercise has been proven to reduce pain and increase range of motion in cases of low back pain exercise.

The mechanism of the William Flexion Exercise is to open the intervertebral foramen, stretch the structures in the ligaments, and give space to the apophyseal joints. Which is related to improving muscle performance. If muscle strength increases, the concentric-eccentric work of the muscles also increases. When the agonist muscle contracts, the antagonist muscle relaxes. This is very necessary so that there is no unbalanced muscle work and work harder because of compensation which causes pain when moving (4,5).

Human functional mobility is basically walking, when walking, the basic things needed are muscle synergy work, posture, coordination, balance. There are several factors that can cause interference when walking such as pain, muscle weakness, tightness, and so on (6).

In a walking analysis conducted by Shu Jee hyun (2019), the walking speed of patients with chronic low back pain is slower than that of people without back pain. In this study, it was stated that walking exercise with proper posture reduces the severity of low back pain (7).

William Flexion exercise can help reduce pain by suppressing intradiscal, -endorphins will appear and be responded to by receptors in the hypothalamus and limbic system regulating emotions. An increase in the amount of -endorphin has been shown to be effective in reducing pain, increasing blood pressure and the work of the respiratory system. The William flexion exercise aims to reduce pressure on the spinal joints, and stretch soft tissues which help to correct wrong posture and increase stability by exercising the abdominal muscles, gluteus Maximus and hamstring (8).

4. Conclusion

Chronic Low Back Pain et causa spondylosis and mild spondylolisthesis can be treated with surgical and non-surgical management, for non-surgical treatment is given to maintain / reduce signs and symptoms that interfere with daily activities. William flexion exercise has proven to be one of the treatments given to patients with low back pain. In addition, William flexion exercise can also increase the Range of Motion, activating the muscles that support posture and the muscles that also affect walking. So, it can be said that William flexion exercise can increase functional activity in someone who has chronic low back pain with the achievement of maintaining/reducing the patient's condition before treatment.

REFERENCES

1. Allegri, M., Montella, S., Salici, F., Valente, A., Marchesini, M., Compagnone, C., Baciarello, M., Manferdini, ME, & Fanelli, G. (2016). Mechanisms of low back pain: A guide for diagnosis and therapy [version 1; referees: 3 approved]. *F1000Research*, 5, 1–11. <https://doi.org/10.12688/F1000RESEARCH.8105.1>
2. Akhtar, MW, Karimi, H., & Gilani, SA (2017). Effectiveness of core stabilization exercises and routine exercise therapy in management of pain in chronic nonspecific low back pain: A randomized controlled clinical trial. *Pakistan Journal of Medical Sciences*, 33(4), 1002–1006. <https://doi.org/10.12669/pjms.334.12664>
3. Zaina, F., Balagué, F., Battié, M., Karppinen, J., & Negrini, S. (2020). Low back pain rehabilitation in 2020: New frontiers and old limits of our understanding. *European Journal of Physical and Rehabilitation Medicine*, 56(2), 212–219. <https://doi.org/10.23736/S1973-9087.20.06257-7>
4. Shamrock AG, Donnally III CJ, Varacallo M. Lumbar Spondylolysis and Spondylolisthesis. [Updated 2020 Sep 27]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK448122/>
5. Gupta S. 2015. A comparison between mckenzie extensions exercises versus william's flexion exercises for low back pain in b.pt. Students. Vol. 3, *Indian Journal of Physical Therapy*. 2015.
6. Kane, SN, Mishra, A., & Dutta, AK (2016).Dynamic Simulation and Analysis of Human Walking Mechanism. Preface: International Conference on Recent Trends in Physics (ICRTP 2016). *Journal of Physics: Conference Series*, 755(1).

<https://doi.org/10.1088/1742-6596/755/1/011001>

7. Suh, JH, Kim, H., Jung, GP, Ko, JY, & Ryu, JS (2019). The effect of lumbar stabilization and walking exercises on chronic low back pain: A randomized controlled trial. *Medicine*, 98(26), e16173.

<https://doi.org/10.1097/MD.00000000000016173>

8. Amila, A., Syapitri, H., & Sembiring, E. (2021). The Effect of William Flexion Exercise on Reducing Pain Intensity For Elderly with Low Back Pain. *International Journal of Nursing and Health Services (IJNHS)*, 4(1), 28–36.