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HOME REHABILITATION PROGRAM FOR FARMERS SUFFERING LOW BACK PAIN: A CASE STUDY

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Abstract

Introduction: Low back pain is one of the major problems faced by a worker. According to data from a survey by work-related diseases of 43,000 workers in agriculture, 27,000 of them complain of low back pain. Wrong posture done by workers for a long time will trigger the emergence of pain in the lower back.

Case Presentation: The method used in this study is a case report from a patient low back pain at Ngawi Hospital with a identity TN.BC with the age of 56 years. The patient felt pain in the lower back in November 2020 because he often lifted heavy loads while doing activities in the fields such as lifting fertilizers, lifting spray tanks.

Management and Outcome: the provision of infrared, TENS and Core stability exercise (CSE) is one of the effective methods to reduce complaints of pain in the lower back

Discussion: This IR application given to LBP patients will provide a relaxing effect and help blood flow to the area. Giving TENS here is used to block the pain that appears. This type of *Core Stability* exercise aims to improve neuro-muscular control, endurance, central muscle strength to maintain dynamic spinal stability. CSE can control during the movement of weight transfer, functional activities such as sitting, standing and walking. We all need a good *Core stability* program to prevent low back pain from initiating limb movement, for proper utilization of muscle strength and to improve performance.

Conclusion: Handling physiotherapy in the form of giving IR, TENS and CSE can reduce complaints of low back pain that farmers complain about.

Keywords; *Core stability, TENS, IR, Low back pain*



Introduction

Low back pain (LBP) or what can be called *low back pain* (LBP) is a big problem among workers with high workloads. Often some activities make a worker to bend or stand too long and do heavy work. Work that involves several movements such as lifting, bending, twisting when moving items from side to side and looking down while working over time will cause complaints¹. LBP is a symptom, not a disease that can arise from several disorders with known or unknown causes. LBP is usually felt between the lower rib margin and the buttock fold. Pain is usually also felt in one or both legs². The cause of the emergence of LBP in farmers is due to the habit of wrong posture for a long time when carrying out their activities as a farmer such as a long bent posture when planting rice as well as when hoeing.

The cause of low back pain in addition to excessive muscle work, can also be caused by poor posture such as kyphosis, scoliosis, and flat back. This postural deformity results in unbalanced muscle contractions and is chronic, such as the habit of bending over. As is the habit of a farmer who often does activities in the fields with a lot of bending, such as when planting, harvesting, hoeing rice, when spraying rice where the farmer's body carries a heavy tank. Data from a work-related disease survey shows that out of 43,000 workers in the agricultural sector, 27,000 workers experience LBP complaints³.

Pain punggung below stems from musculoskeletal disorders who is allowed to continue and lead to abnormalities that persist in the muscles and skeleton, habits such continuous and beradaptasi on the body making a felt comfortable so it does not feel any of the postures⁴. Area muscles often experience keluran pain and muscle strain the lower back area, namely the muscles paravertebra and muscles abdominal of things that can be reduced by exercise, one of her with *core stability exercises* to train the strength of the muscles and restore flexibility of muscle paravertebra and muscle abdominal. Exercise Physical also serves to increase the flow of blood so that the process of recovery netting a n soft on the part back more quickly and better .

Core stability exercise (CSE) is a form of exercise used to train the core muscles. CSE is an exercise that is currently a trend given to LBP patients in several countries⁵. Core muscle which are deep muscle consisting of m. trnasversus, abdominal, m.internal oblique, m.lumbar multifidus, and m.quadratus lumborum m emi Liki function for stability, control of the spine and the body posture⁶. *Core stability exercise* is effective for patients with LBP to reduce pain and disability in the short term⁷. And also CSE is easy to do and does not require special equipment and expensive costs. Strong *core muscles* can improve balance and stability. With their good stability at the *center of gravity* (COG) can be maintained over the base of support (BOS)⁸. This exercise program is based on the belief that core strength and endurance are the most important things to



maintain low back health and to prevent injury, especially in increasing functional activity.

Case Presentation

Subjective Examination

The patient felt pain in the lower back in November 2020 because he often lifted heavy loads while doing activities in the fields such as lifting fertilizers, lifting spray tanks. K emudian patients are often bent in a long time in performing activities such as plowing paddy fields, and also the time to plant rice. Then the new patient went to a hospital in Ngawi because he complained of pain in his lower back. After that the patient was referred to the physiotherapy poly for therapy. Patients do not memil iki disease history broadcaster and patients with a new once complained of sore backs are very painful and disturbing aktifitas , and also the patient had no history of previous illness

The aim to be achieved is m engurangi tenderness and pain g Erak in the lower back, as well as enhance the functional activity in patients .

Physical examination

The physical examination carried out here starts from general examinations such as vital signs, to examinations that are specific to the case. Physical examination here is an important examination because it will help to establish a physiotherapy diagnosis.

This vital sign examination is also an important examination because from this examination it can see how the general condition of a patient is and to evaluate whether therapy can be carried out or not.

Table 1. Vital sign examination

vital signs	Category
Blood pressure: 130/80 mmHg	Pre-Hypertension
Pulse: 70 x / min	Normal
Breathing : 21 x / min	Normal
BMI : 25.9	Obesity Level 1

The patient's general condition is still in good category so the patient can still continue therapy and do some exercises to reduce the disturbance experienced by the patient.

Examination IPPA or inspection inspection palpation percussion and auscultation. But the examination is carried out according to the patient's needs or symptoms of the patient. For these patients only in ilakukan examination of inspection and palpation.

a. Inspection check

1) static inspection

When do checks inspections on the patient in the position of sleep supine in



bed patients seemed in pain withstand pain and posture of the body of the patient also look more forward so terlihat gap between the bed and the body of the patient for not sticking perfectly .

2) Dynamic inspection

When do checks inspections dynamic in patients with the position of running appears to face the

patient as pain and patients seen walking in slow slow and cautious like withstand pain

b. Palpation

When do the examination palpation by way of giving a little pressure on the back of the bottom , especially in the muscles of the spine of patients complained of pain , and in the back under a palpable rigid .

Furthermore, a basic movement examination is carried out to determine the movement ability of the patient. For examination of active motion and movement of the patient such as movement towards flexion, extension, right and left side flexion, as well as right and left rotation of the trunk the patient cannot move full ROM and there is pain. Then for isometric movement the patient is only able to hold it minimally and there is pain. Below is a table for basic motion checks.

Table 2. Examination of Basic Movement Functions

Active Motion			
Movement	ROM	Painful	
Trunk flexion	Not Full	+	
Trunk extension	Not Full	+	
Side Flexion dextra- sinistra trunk	Not Full	+	
Right-left trunk rotation	Not Full	+	
Passive Motion			
Movement	ROM	Painful	End feel
Trunk flexion	Not Full	+	Firm
Trunk extension	Not Full	+	Firm
Side Flexion dextra- sinistra trunk	Not Full	+	Firm
Right-left trunk rotation	Not Full	+	Firm
Isometric Movement			
Movement	ROM	Painful	Prisoner
Trunk flexion	Not Full	+	Minimum
Trunk extension	Not Full	+	Minimum
Side Flexion dextra- sinistra trunk	Not Full	+	Minimum
Right-left trunk rotation	Not Full	+	Minimum

Muscle examination conducted to determine the ability of tot in these patients. This examination was performed using manual muscle testing (MMT). The results of the muscle



examination can be seen in table 3.

Table 3. Examination of muscle strength

Movement	Muscle Value
Trunk flexion	4 of 5
Trunk extension	4 of 5
Right side flexion of trunk	4 of 5
Left side flexion of the trunk	4 of 5
Right trunk rotation	4 of 5
Left trunk rotation	4 of 5

It can be seen from the results of the examination above that all muscle strength values are 4, which means the patient is still capable of full ROM, against resistance but only minimally .

In addition, from the beginning the patient has complained of pain in the lower back so it is necessary to do a pain examination to determine the value of pain and be able to evaluate it. Pain examination here uses a numeric rating scale (NRS) with the results as shown in Table 3.

Table 4. Pain Examination

Painful	Results	Category
Shut Up	0 out of 10	No Pain
Press	4 of 10	Moderate Pain
Motion	6 of 10	Moderate Pain

In examining the patient's functional activity using a modified Oswestry Disability Index . This questionnaire is designed to easily provide information to physiotherapists about how LBP affects their daily activities with the assessment indicator, namely movements that are usually performed daily. The results of the ODI modification can be seen in table 4.

Table 5. ODI Modification Check

Criteria	Mark
Pain Intensity	3
Self care	2
Lift	1
Walk	1
Sit down	2
Stand up	2
Sleep	0
Social life	1
Travel	1
Profession	2

The results of this functional activity examination are 15. The interpretation of disability is 30% with a moderate disability classification, the patient still feels sick and has difficulty in



carrying out self-care activities, lifting, walking, sitting, standing, social life, traveling and doing work, while for sleep activity had no effect.

Management and Outcome

The physiotherapy program given to the patient while in the physiotherapy poly is in accordance with the complaints felt by the patient after that the patient is given exercises to do at home to reduce complaints from the patient. The purpose of the physiotherapy program is to reduce pain and increase functional activity so that patients can carry out their work as farmers without any disturbance. The table below is a plan for the physiotherapy program given to the patient.

Tabel 6. Intervention Physiotherapy

Intervention	Dose	Aim
IR	F : 2x/week I : Patient threshold Q: 15 minutes	Relax muscles
TENS	F : 2 x / week I : Patient threshold T : 15 minutes (2x/week) T :TENS	Reduce pain
Core Stability Exercise	F : every day / week u I : 2 repetitions Q: 20 minutes/day T : Exercise	Maintain posture

Outcome The patient's complaint was pain in the lower back area since 3 months ago, then the physiotherapist provided a therapy program and exercises in the form of giving IR, TENS and core stability exercises for 4 weeks. Evaluation is done once a week for a period of 4 weeks. From the therapy program that has been given to the patient, the following evaluation results are obtained:

The results of the evaluation of pain examination using the NRS can be seen in the image below.

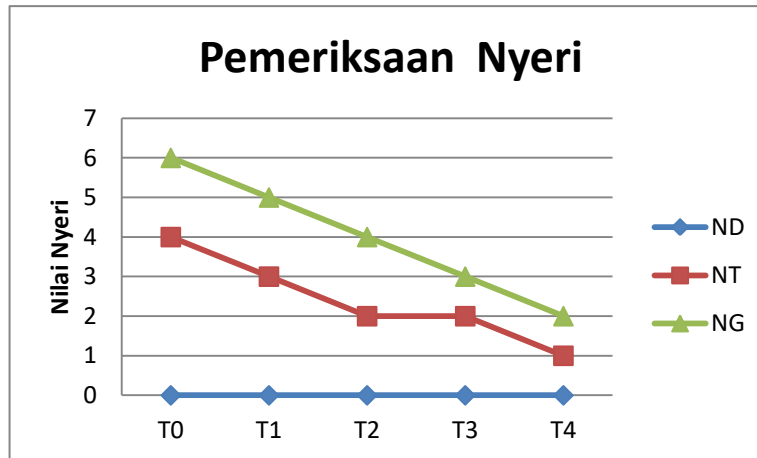


Figure 1. Pain Evaluation Results

For silent pain, the patient did not have any complaints. Then related to the tenderness that occurred in the patient, the pain decreased initially to 4 with the classification of moderate pain down to a value of 1 with the classification of mild pain. Meanwhile, for motion pain, the patient experienced a significant reduction in pain when the patient's pain score was 6 with a moderate pain classification, then during the 4th evaluation, the patient's motion pain decreased to mild pain with a score of 2.

The next evaluation is the patient's functional activity using a modified Oswestry Disability Index. As with the evaluation of pain, the functional activity of this patient was evaluated weekly for a period of four weeks. The results of the evaluation can be seen in the image below.

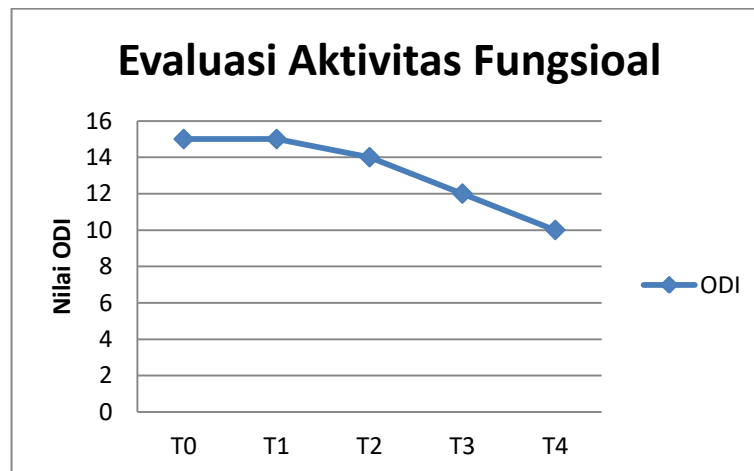


Figure 2. Evaluation of Functional Activities .

From the results of the evaluation that has been carried out for 4 times the patient experienced increased activity at the first time the patient's ODI value came in 15 with a moderate disability classification and after the patient underwent a therapy program the results of the patient's ODI examination became 10 with a mild disability classification .



Discussion

Infrared is a type of electromagnetic radiation, including wavelengths between 760 nm – 100,000 nm. Several studies have reported that IR can improve skin wound healing and reduce pain, this modality is often used in cases of musculoskeletal injuries. Superficial heating of the skin will cause physiological effects that function for the healing process⁹. Infrared radiation therapy can increase blood flow and tissue metabolism, relax muscles and increase stability which can contribute significantly to reducing pain intensity¹⁰.

TENS applications in the medical and sports world are used for rehabilitation, training and recovery purposes. Clinically and therapeutically, treatment using TENS helps weight bearing and muscle endurance training. The expected effect, the first is an increase in blood flow in the muscle and the destruction of muscle metabolites. The second effect is the reduction of muscle pain through an analgesic effect. Increased blood flow to muscle may result from vasoactive metabolites derived from muscle contraction. Electrical stimulation is believed to alter blood flow¹¹. TENS has benefits, namely to reduce pain intensity and unlike pain relief by drugs, because TENS is not addictive, does not cause drowsiness, nausea and can be done anytime as needed.

This type of *Core Stability* exercise aims to improve neuro-omuscular control, endurance, central muscle strength to maintain dynamic spinal stability. The transsversus abdominis (TrA), lumbar multifidi, and other paraspinal, abdominal, diaphragm, and pelvic muscles are targeted in Core Stability exercises¹². Core stability is important for proper load balance in the spine, pelvis, and kinetic movements. The so-called core is the group of trunk muscles that surround the spine and viscera. The abdominal, gluteal, hip, paraspinal, and other muscles work together to provide spinal stability. Core stability exercise has the ability to control position and movement in the center of the body, because the main target of this exercise is the muscles located from the abdomen, which are connected to the spine, pelvis and shoulders¹³.

The specific nature of the CSE program may vary depending on whether the focus is on muscle control or capacity. Core Stability, evidence so far suggests that there are specific changes in the strategies used to control the spine, and these consistently involve impaired activity of the deep muscular system, often associated with muscle overactivity¹⁴. Abdominal and paravertebral muscles will form a better relationship because there is coactivity of the deep muscles of the lower trunk so that they can control during the movement of weight transfer, functional activities such as sitting, standing and stepping. We all need a good core stability program to prevent LBP from initiating limb movements, for proper utilization of muscle strength and improve performen⁵.



Conclusion

Low back pain is pain related to how the bones, ligaments and muscles of the back work. The pain will become problematic when the pain interferes with activities of daily living. Back pain itself is one of the complaints that many farmers feel. To reduce the pain, *core stability* exercises can be given which this exercise has a good effect on reducing back pain and can also increase daily functional activities.

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