

Determine the Effect of Kinessio Taping Use after Mc Kenzie Exercise to Decrease the Scale of Back Pain in Low Back Pain Non Specific Cases

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Abstract: Lower back pain is disease that affects the quality of life and productivity of a person. The purpose of this study was to determine the effect of Kinessio Taping use after McKenzie Exercise to decrease the scale of back pain in low back pain nonspecific cases. This research method was a quasi-experimental design with pre-test and post-test respondents were 16 people consisting of two treatment groups with each group totaling 6 people. Statistical test results obtained p-value <0.05 (0.001 <0.05) means that there was an influence of Kinessio Taping Usage after Mc.Kenzi Against Pain Scale Reduction in Low Back Pain Case Non Specific. The results of this study should be used as one method that can be used for handling cases of non-specific low back pain so it can help the pain experienced by the sufferer.

1 INTRODUCTION

Non-specific Low Back Pain is a clinical syndrome that is often found in the community. Complaints are accompanied by pain around the lower back. Almost the entire population of the world has complained of Low Back Pain during his lifetime (Ruhaya, 2018).

Spasms caused by low back pain nonspecific cause sufferers to feel pain, even prolonged spasm will cause vasoconstriction of blood vessels which causes ischemia, so that patients limit movement because it will cause pain. Muscle experiencing spasmodic is not moved and results in decreased functional activity in patients (Mulyaningtyas, 2016).

Data from the World Health Organization (WHO) states that 150 types of musculoskeletal disorders are suffered by hundreds of millions of people that cause long-lasting pain and inflammation as well as disability or functional limitations, causing psychological and social disorders of sufferers, namely Non-Specific Low Back Pain complaints that are complaints most commonly found among other complaints of pain (Putu Restu, 2019).

Data in the World states that every individual in his lifetime must experience complaints of Non Specific Low Back Pain, the prevalence is 70-80%

and the prevalence is 15-45% per year (Putu Restu, 2019) while 50-80% of workers worldwide have ever experience Low Back Pain and result in decreased human productivity (Tanderi, 2017). The prevalence of Non-Specific Low Back Pain cases was found as many as 500,000 and in 5 years the incidence rate increased by 59% with the number of sufferers being aged 18-56 years by 85%.

Data from the hospital. Grandmed, Lubuk Pakam showed that cases of Non-Specific Low Back Pain have increased from year to year. In 2017 a total of 3,567 people or 33% of the total while in 2018 increased by about 35%, and in January to March 2019 the number of visits was 305 people with an average of 100 people every month, Poly Physiotherapy Hospital Grandmed Medistra, 2019.

To overcome the problem of cases of non-specific low back pain, non-specific low back pain complaints are by providing Mc.Kenzie exercise and KinessioTaping intervention. Treatment performed by physiotherapists in Non-Specific Low Back Pain complaints includes mobilization, exercise therapy (Mc Kenzie) joint and muscle manipulation (stretching and strengthening), diathermy (SWD or MWD), TENS, Ultrasound, Traction, and Kinessio Tapping.

Another method that can be given to overcome the problem of muscle tension in patients with acute-stage Low Back Pain Specific acute stage can be done with Mc.Kenzi and Kinesio Taping exercises that combine the back extension movement and Tapping. Therefore researchers want to prove whether there is an Effect of Giving Kinesio Taping After Mc Kenzie Exercise Against Lower Lower Back Pain in Patients with Non-Specific Low Back Pain.

2 RESEARCH METHODS

This research was conducted at the Grandmed Poly Physiotherapy Hospital, located at Jl Raya Medan, No.66, Lubuk Pakam. The research was conducted in February-July 2019.

This type of research is a quasi-experimental research design with pre-test and post-test two groups. With a pre-test and post-test group control approach. Parallel design is used to compare between two independent group (group compersion) groups to compare between two intervention groups (Sugiono, 2016). respondents were divided into two groups and the control group was only done by Mc Kenzie Exercise in patients with Non-Specific Low Back Pain, and the intervention group was the group that used Kinesio Taping after Mc Kenzie Exercise in patients with Non-Specific Low Back Pain in Figure 1.

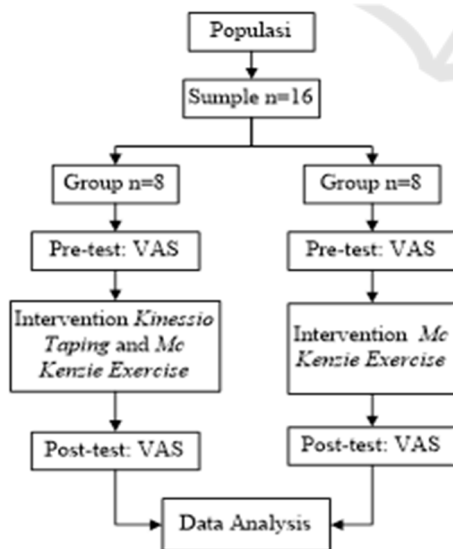


Figure 1: Research Implementation Flow.

Pain measurement was performed using Verbal Analog Scale (VAS). VAS has been widely used in

diverse adult populations, including those suffering from rheumatic diseases. VAS is an instrument used to assess pain intensity using a line 10 cm long (Figure 1) with a scale reading of 0-10 cm with a range of meanings: no pain (0.9 cm), mild pain (1-3 cm) moderate pain (3.1 -7 cm), and severe pain (7.1-8.9 cm). Pain measurement can be done by the respondent himself. Determination of VAS score is done by measuring the distance between the end of the line on the painless line to the point indicated by the patient (Klimek, Bergmann, Biedermann, et al, 2017).

Pain measurement in this study was carried out before and after treatment of pain intensity measurements in both groups in advance was given an explanation of the handling of Kinesio Taping and Mc Kenzie Exercise to determine the scale of pain. Measurement data will be tested by Paired Sample t-test and independent t-test. The flow of this research can be seen in Figure 2.

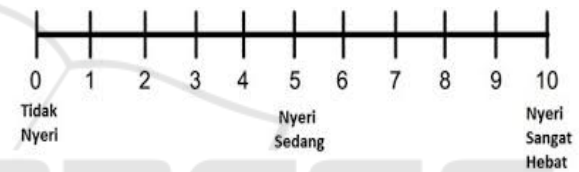


Figure 2: Visual Analogue Scale.

Information:

- 1-3 : Mild pain
- 4-6 : Moderate pain
- 7-9 : Severe pain
- 1 : heavy pain

2.1 Kinesio Taping

The Kinesio Taping method is a technique developed by Dr. Kenzo Kaze in Japan in the 1973 era, where this technique uses elastic tape that is applied directly to the skin. Kinesio taping is a therapeutic modality that is based on a natural healing approach with the help of giving elastic plasters (Fredik, 2016, Ismaningsih, Selviani, I. 2018).

Kinesio taping is an elastic adhesive that can be pulled with a pull of 130-140 of its actual length, which aims to facilitate the work of muscles (Soriano et al, 2013). Kinesio Taping is a modality based on the body's own healing process, the method in Kinesio Taping shows its effects through the activity of the neurological system and the circulatory system. The basis of this method is the Kinesio Taping science as a treatment that can be combined with other treatments. Kinesio Taping functions include

activation of the endogenous analgesic system, eliminating disruption to the flow of fluids in the body, correction of joint problems, reducing pain through suppression (Kim T, Melita P., 2017). The flow of this research can be seen in Figure 3.



Figure 3: Kinesio Taping

2.2 Methods Mc Kenzie Exercise

The McKenzie Exercise Method consists of 4 exercises namely the first exercise until the fourth exercise are extension exercises, the last 2 exercises are flexion exercises. As an initial application, training is only given until the fourth exercise. Exercise I Position the patient facedown with the head facing one side and the arms at the sides. The patient is asked to inhale then exhale regularly until the patient feels relaxed. Hold the position for 2 minutes. The flow of this research can be seen in Figure 4.



Figure 4: Exercise I.

Exercise II, both position the patient facedown with the hand position like a push up, then do the movement pressing the mat / floor with the waist of the body raised up and elbows bent 90°, try to pelvic and both legs remain attached to the floor, hold for 5 seconds and do as much 10 times. The flow of this research can be seen in Figure 5.



Figure 5: Exercise II

Exercise III, position the patient face down, hands up in a position like push-ups, then hand movements press the mat / floor until the elbows are in a straight position and the body is raised upward until the waist aches, try to pelvic and both legs remain attached to the mat / floor. Hold it for 5 seconds and do it 10 times. The flow of this research can be seen in Figure 6.



Figure 6: Exercise III

Exercise IV, position the patient upright, legs slightly open and hands placed on his waist, then bend his body back as far as the patient can. Hold the position for 5 seconds and do it 10 times. The flow of this research can be seen in Figure 7.



Figure 7: Exercise IV

To get optimal results from Mc Kenzie Exercise therapy there are a number of things that must be considered, including:

- The preparation of this exercise starts from the movements that are easiest for the patient, then is increased according to the patient's abilities.
- When doing exercises as far as possible straight crooked movements performed by patients slowly, rhythmically and in control.
- Each type of movement is done at least 5 (five) times and the best movements are performed 15 times.
- Exercise in a lying position should be done on the floor using a rather hard mattress.
- Exercise is done as much as the patient is able, not to be too tired.
- Must notify the person concerned if the exercise carried out adds to the pain, even if necessary the exercise must be stopped (Agung, 2019).

3 RESULTS AND DISCUSSION

3.1 Characteristics of Respondents

Distribution of respondent data In the control group based on the age of Non-Specific Low Back Pain patients at most aged 30-40 were 7 people (43.8%) and in the intervention group were 7 people (43.80%), ages 41-50 in the group control were 8 people (50.0%) and in the intervention group were 8 people (50.0%), while the number of respondents based on age 51-60 in the control group as many as 1 person (6.3%) (Table 1).

Table 1: Respondents distribution based on age characteristics.

Characteristics of Respondents	Control group		Intervention Group	
	n	%	n	%
30-40	7	43,8	7	43,8
41-50	8	50,0	8	50,0
51-60	1	6,3	1	6,3
Total	16	100	16	100

It is suspected that with increasing age a person is more at risk for contracting stiffness in the muscle area, especially in the muscles in the lumbar region, a muscle that is often performed in activities for individuals who sit for long periods of time, bend for long periods or often bend when working , lifting heavy objects, standing, sleeping and lying down badly. Prolonged postural stress causes overstretch of the ligaments and other soft tissues that maintain the

vertebra. When the joint between the two bones is in a position that results in overstretch and fatigue in the soft tissue around the joint, pain often results (Ellen Z Hilleggas, 2016).

Based on Table 2, the number of respondents based on male gender in the control group was 10 people (62.5%) and in the intervention group as many as 11 people (68.8%) while the number of female respondents in the control group was as many as 6 people (37.5%) and in the intervention group were 5 people (31.3%).

Table 2: Distribution of respondents based on sex characteristics.

Characteristic of Responden	Control Group		Intervention Group	
	n	%	n	%
Man	10	62,5	11	68,8
Woman	6	37,5	5	31,3
Total	16	100	16	100

3.2 Average before and after Administration of Mckenzie Exercise in Patients with Non-specific Low Back Pain

Based on data collection conducted at the physiotherapy clinic of Grandmed Lubuk Pakam Hospital on Non-Specific Low Back Pain, the results of data processing before and after the administration of Mc Kenzie Exercise in this study can be seen in Table 3 below.

Based on Table 3, it can be seen that there is a difference between the Mean results before and after the administration of Mc Kenzie Exercise, namely the Mean before 6.19 with SD 1.047 and the Mean results after giving Mc Kenzie Exercise Mean 4.50 with SD 1.033 While the difference differences in the mean results before and after the administration of Kinesio Taping after Mc Kenzie exercise, the mean before 6.63 with SD 1.147 and the mean results after giving Kinesio Taping after Mc Kenzie Exercise 3.94 with SD 0.929

Table 3. Average before and after administration of Kinesio taping after Mc Kenzie Exercise

Category`	Kinesio Taping and Mc Kenzie Exercise		Mckenzie Exercise	
	Mean	Std Deviation	Mean	Std Deviation
Before	6,63	1,147	6,19	1,047
After	4,50	1,033	4,50	1,033

3.3 Difference before and after Administration of Kinesio Taping and Mckenzie Exercise in Patients with Non-specific Low Back Pain

Based on the data processing that has been done in statistical tests using the paried t-test, the results of the data processing of the mean difference before and after the administration of Mc Kenzie Exercise can be seen in Table 4, below. Statistical test results obtained mean 1.688 with SD 0.602 and p-value $\alpha < (0.001 < 0.05)$, it can be concluded that there is a significant effect between before and after administration of Mc Kenzie Exercise in patients with Non-Specific Chronic Low Back Pain.

Table 4. Difference Before and after administration of Kinesio Taping after Mckenzie Exercise.

Category	Mean	Std Deviation	T	p-value
Before and After <i>Mc Kenzie Exercise</i>	1,688	0,602	11,211	0,001

3.4 Difference before and after Administration of Kinesio Taping after Mckenzie Exercise in Patients with Non-specific Low Back Pain

Based on the data processing that has been done in statistical tests using the paried t-test, the results of the processing of the difference in data before and after giving Kinesio Taping after Mc Kenzie Exercise can be seen in Table 5 below

Statistical test results obtained mean 2.688 with SD 0.704 and p-value $\alpha < (0,000 < 0.05)$, it can be concluded that there is a significant effect between before and after administration of Kinesio Taping after Mc Kenzie Exercise in patients with non-specific Low Back Pain.

Table 5. Difference before and after administration of Kinesio taping after Mckenzie Exercise

Category	Mean	Std Deviation	T	p-value
Before and After <i>Kinesio Taping After Mc Kenzie Exercise</i>	2,688	0,704	15,276	0,000

3.5 Difference in Giving Mckenzie Exercise and Giving Kinesio Taping after Mc Kenzie Exercise

Based on data processing that has been done in statistical tests using the independent t-test, the results of the data processing difference in Mc Kenzie Exercise and Kinesio Taping after Mc Kenzie Exercise can be seen in Table 6 below.

Statistical test results obtained mean 1.688 with SD 0.602 and p-value $\alpha < (0.001 < 0.05)$ Mc Kenzie Exercise, it can be concluded that there is an influence between before and after administration of Mc Kenzie Exercise in patients with Non-Specific Low back pain. Statistical test results obtained mean 2.688 with SD 0.704 and p-value $\alpha < (0,000 < 0.05)$, it can be concluded that there is a significant effect between before and after administration of Kinesio Taping after Mc Kenzie Exercise in patients with Non-Specific Low Back Pain.

Table 6. Difference in giving Mckenzie Exercise and Giving Kinesio taping after Mc Kenzie Exercise

Mc Kenzie Exercise Group	Mean Difference	Sig (2-tailed)
Kinesio Taping After Mc Kenzie Exercise	1,000	0,000

The conclusion above can be concluded that the hypothesis of this study is accepted, namely: "There is an Effect of Giving Kinesio Taping After Mc Kenzie Exercise Against Lower Lower Back Pain in Patients with Non-Specific Low Back Pain".

3.6 Effect of before and after Mc Kenzie Exercise (Control Group) on the Pain Scale Reduction in Non-specific Low Back Pain

Based on the results of the study before the Mc Kenzie Exercise was carried out it was known that the average pain value of 6.19 with SD 1.047. Whereas after giving Mc. Kenzie is known to have an average pain value of 4.50 with an SD of 1.033.

The statistical test results obtained p value $\alpha < (0,000 < 0.05)$, it can be concluded there is the influence of Mc Kenzie on the pain scale reduction in cases of non-specific low back pain. The results of this study are in accordance with research conducted by Pope, (2014) Mc Kenzie Exercise is an exercise therapy that uses body movements, especially towards extensions. Where in the case of non-specific LBP spasms occur due to suppression of the posterior

longitudinal ligaments which are very sensitive because they contain afferent nerves type A δ and C, so the patient is ill when bending (Mulyaningtyas Trikusuma Wardani, 2016, Maciej C., Truszczyńska-Baszak, Kowalczyk, 2018).

Mc Kenzie Exercise Pain Reduction Mechanism is an exercise therapy that uses body movements, especially towards extension. Where in the case of non-specific LBP spasms occur due to suppression of the posterior longitudinal ligaments which are very sensitive because they contain afferent nerves type A δ and C, so the patient is ill when bending (Mulyaningtyas Trikusuma Wardani, 2016, Basil J., MK Franklin S., 2019). By giving Mc Kenzie Exercise exercises that use body movement towards extension and the patient's active role will restore mobility and lumbar function by relieving stress that will restore the nucleus pulposus back to the anterior, so that inflammation that occurs in the posterior longitudinal ligament decreases and pain in the lumbar will decrease and can provide a sense of comfort and there is improvement in posture and eliminate imbalance muscles (Ellen Z Hilleggas, 2016, Wahid M., Mansour S., Amirhossein B., et al, 2017).

The researchers' assumption is that by doing Mc Kenzie's exercise that uses body movements towards extension and the patient's active role will restore lumbar mobility and function by relieving stress that will return the nucleus pulposus back to the anterior, so that inflammation in the posterior longitudinal ligament decreases and pain in the lumbar will decrease and can provide comfort and there is improved posture and eliminating muscle imbalance.

3.7 The Influence of before and after Kinesio Taping and Mc Kenzie Exercise Intervention Group on Decreasing Pain Scale in Non-specific Low Back Pain

Based on the results of the study before giving Kinesio Taping and Mc Kenzie Exercise, the average pain value was 6.63 with SD 1.147, while after giving Kinesio Taping and Mc Kenzie Exercise the average pain value was 3.94 with SD. 0.929. Statistical test results obtained p value (0.001) $<$ α (0.05), it can be concluded that there is an influence before and after administration of Kinesio Taping and Mc Kenzie Exercise on pain intensity in patients with Non-Specific Low Back Pain.

Because with the technique of giving Kinesio Taping it will make the area in the waist refuted and prevent the onset of low back pain which is closely related to the way of working, work attitude, and

work position. By paying attention and managing the causes and triggers, the incidence of work back pain can be minimized or delayed presence. Several factors related to lifting and lifting that affect the onset of work back pain are heavy loads, large loads, types of loads and so on. One of the tools for handling low back pain.

The mechanism of the use of pain with the use of Kinesio Taping self-protective due to work that prevents injury to muscle tissue while doing activities. Pain that arises because of the paravertebral muscle spasm that will suppress the nociceptor nerve fibers and from there the pain is sent to the Posterior Horn cell (PHC) and sent back to the brain. With Kinesio Taping, muscle work will be helped so that spasm in the muscles will be reduced and the pressure will be reduced so that the pain will also be reduced (Ellen Z Hilleggas, 2016, Seyda T. C., Derya O. K., 2019). The researchers' assumption is that the addition of Kinesio Taping before Mc Kenzie's intervention can further inhibit or reduce pain, this is due to a refinement done by Kinesio Taping so that it is topped and will reduce the emphasis on the lumbar muscles, therefore it is necessary to use Kinesio Taping to prevent the occurrence of Kinesio Taping excessive diotomy.

3.8 Difference in Average Difference before and after the Administration of the Mc Kenzie Exercise Intervention with the Mc Kenzie Exercise and Kinesio Taping Groups

Test results using independent t-test statistical test obtained p value $\alpha <$ (0.001 $<$ 0.05), so the hypothesis in this study was accepted, namely: "There is an Effect of Giving Kinesio Taping after Mc Kenzie Exercise Against Pain Scale Reduction in low back pain cases nonspecific in Poly Physiotherapy Hospital of Granmed Lubuk Pakam".

The effect produced by the combination of Kinesio Taping and Mc Kenzie Exercise will be far more successful compared to therapy that only uses 1 intervention. This is because the process of pain in non-specific low back pain patients not only comes from the receptors but because of the bad posture that occurs in these patients, therefore therapy is needed to refute or block the muscles around the lumbar in order to reduce pain (Tanna, Thiagarajan, Gounde, 2016)

The researchers' assumption is that there are fundamental differences in the first treatment and the second treatment, in the first course to reduce tension in the muscles but cannot refute the muscles around

the lumbar. While in the second treatment, Kinessio Taping can intervene in the lumbar so that it cannot repair bad posture to avoid excessive position.

4 CONCLUSIONS

Based on statistical test results, it can be concluded that:

- In the control group based on the age of non-specific low back pain patients at most ages 41-50 as many as 8 people (50.0%) while in the intervention group the most were 41-50 aged as many as 8 people (50.0%). The sex of the majority of non-specific low back pain patients is male in the control group (62.5%) while in the intervention group (68.8%).
- Mean pain intensity in the control group (Mc Kenzie Exercise): before the mean of 6.19 and after the mean of 4.50
- Mean pain intensity in the intervention group (Mc Kenzie Exercise and Kinessio Taping) before the mean of 6.63 and after the mean of 3.94.
- Difference in mean pain before and after the control group and intervention group mean 1.045.
- There is an Effect of Giving Kinessio Taping after Mc Kenzie Exercise on Pain Scale Reduction in Non-Specific Low Back Pain Cases in Physiotherapy at Grandmed Lubuk Pakam Hospital in 2019 (p value = 0.001)

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