

THE EFFECT OF WILLIAM'S FLEXION EXERCISE ON THE LEVEL OF BACK PAIN DOWNTOWN ELDERLY IN THE TRESNA SOCIAL INTEGRATED SERVICE UNIT WERDHA BLITAR IN TULUNGAGUNG DISTRICT

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Abstract

Old age is a factor that aggravates the occurrence of lower back pain due to the decline in body functions, especially bone. William's flexion exercise is one of the therapeutic exercises for lower back pain sufferers by strengthening the abdominal muscles and maximus gluteus muscles and stretching the extensor muscles of the back. This study aimed to know the effect of William flexion training on lower back pain levels in older people in the Blitar Age Blind Social Service Unit at Tulungagung Dormitory. This research uses the Pre Experimental Design model one group pre-test - post-test design. The population of this study were all elderly at UPT Social Service of Tresna Werdha Blitar Tulungagung Dormitory who experienced low back pain; the sample was taken with a total sampling technique of 33 respondents. The variable of therapy-free William flexion is the dependent variable of lower back pain. The study was conducted on March 30-April 1, 2018, with data processing using the Wilcoxon signed rank test with the SPSS program. The result of the research was obtained before the therapy of William's flexion. Most respondents had severe back pain, 19 respondents (57.6%), and after the therapy of William's flexion, almost all respondents had mild back pain, as many as 27 respondents (81.8%). The result of the statistical test of Wilcoxon signed rank by using the SPSS program got the result $P \text{ Value} = 0.000 < 0.05$, so H_1 is accepted, which means there is the influence of William flex exercise to lower back pain level at elderly in the Technical Service Unit of Tresna Werdha Blitar at Tulungagung year 2018. William's flexion exercises will increase muscle elasticity, reduce pain, and restore work to some muscle groups. William's flexion movement is done slowly and rhythmically to stimulate the sensory nerve fibers that will inhibit the activation of pain receptors in Tresna Werdha Blitar Tulungagung Hostel.

Keywords: William's Flexion Therapy, Lower Back Pain, Elderly

I. INTRODUCTION

Low back pain is a problem that is often encountered by someone at some point in their life. The back and spine are almost always involved in human activities. Regarding physical disturbances related to the body's movement, spinal disorders are one of the many disorders due to work, both in structure, function, and pathological processes. The lumbar region consists of L1 to L5 and L5 – S1, which receives the greatest burden or body weight so that the lumbar area receives the greatest force and mechanical stress along the vertebrae and can cause pain (Setiasih, 2012).

Exercise therapy commonly used for low back pain sufferers include Mc. Kenzy exercises, PNF exercises, William's flexion, and core stability exercises. William's flexion exercise is one of the therapies for low back pain sufferers developed by Dr. Paul William

in 1937 by strengthening the abdominal muscles and gluteus maximus muscles and stretching the back extensor muscles. The movement that occurs is lumbosacral flexion; the requirement for the exercise is to be done every day but not to exceed the pain limit (Syafi'i, 2012).

Old age is a factor that exacerbates the occurrence of low back pain, so it is usually suffered by older adults due to a decrease in body functions, especially the bones so that they are no longer as elastic as they were when they were young. Low back pain is caused by muscles that overwork and rebel against pressure by contracting or spasming for a while (Sa'adah, 2013).

According to WHO, in 2011, in the UK, the prevalence of low back pain in a population of approximately 16,500,000 per year was found. Moreover, in the United States, it is reported that 60-80% experience low back pain in this data. Based on data from the Central Statistics Agency (BPS) in 2011, the number of older adults in Indonesia reached 18.96 million people. Of the existing number, 11.16% are in East Java Province and ranked number two for the area with the highest number of older people after Central Java (National et al., 2012).

Research by the Community Oriented Program for Control of Rheumatic Disease (COPD) in Indonesia found that back pain was 13.6 percent in women and 18.2 percent in men. Based on patient visits to several hospitals in Indonesia, the incidence of back pain with various symptoms ranges from 3-17 percent. Meanwhile, data from the National Safety Council shows that of 1,700,000 work-related illnesses, around 22 percent are back pain (Via, 2016).

Epidemiological data regarding low back pain in Indonesia does not yet exist, but it is estimated that 40% of the island of East Java aged over 55 years have experienced back pain; the prevalence in men is 18.2%, and in women is 13.6%. Incidence based on patient visits in several hospitals in Indonesia ranges from 3-17% (Sadeli & Tjahjono, 2011). According to RISKESDAS (Basic et al.), in 2013, the prevalence of joint disease based on NAKES (Health Worker) diagnosis in Indonesia was 11.9 percent and, based on diagnosis or symptoms, 24.7 percent. The prevalence based on the diagnosis of NAKES (Health Workers) was highest in Bali (19.3%), followed by Aceh (18.3%), West Java (17.5%), and Papua (15.4%).

The results of a preliminary study conducted by researchers at Tresna Werdha Tulungagung on December 22, 2017, of 10 elderlies found that 7 (70%) had experienced lower back pain and 3 (30%) had never experienced lower back pain.

In the elderly, the body's immune system decreases. People reduce their physical activity after retirement. It is often found in the community that elderly parents prefer to stay at home taking care of their children and grandchildren rather than exercising because they think it takes up time. Generally, they fear that the exercise will result in more severe pain later because the bones are not as strong as they used to be. Low back pain is a pain in the lumbosacral and sacroiliac areas. Lower back mobility is very high; besides that, it also supports body weight and, at the same time, is very close to other tissues (Sa'adah, 2013). The impact of the pain is caused by sensitivity and loss of function in the spine in the lower back.

Exercise therapy is commonly used for people with low back pain. William's flexion exercise is one of the exercise therapies for low back pain sufferers by strengthening the abdominal muscles and gluteus maximus muscles and stretching the back extensor muscles. The movement that occurs is lumbosacral flexion; the exercise requirements are carried out every day but do not exceed the pain limit. William's flexion exercises can increase muscle flexibility or elasticity, reduce pain, and restore balance to work on several muscle groups. The benefits of William's flexion exercise therapy are to reduce body weight pressure on the facet joints (articular weight-bearing stress), stretch muscles and fascia (increase the extensibility of soft tissue) in the dorsolumbal area, and correct wrong posture (Syafi'i, 2012). With strong spinal support muscles and correct posture, balance and functional activity can be improved (Wahyono, 2015).

II. RESEARCH METHODS

This research was conducted on March 30 -April 1, 2018, at the Tresna Werdha Blitar Integrated Social Services Unit in Tulungagung.

The research design used comparative analysis using the Pre Experimental Design method using the model "*one group pre-test - post-test design*". This treatment is given to determine the consequences of the treatment given.

The population in this study is all seniors in Tresna Werdha Blitar Integrated Social Services Unit in Tulungagung who experienced low back pain, as many as 33 people. Samples were taken with a total sampling technique of 33 people.

The independent variable of the research is William's flexion exercise. Dependent variable lower back pain. Collecting data using research measuring instruments is SOUPW illiam's flexion exercise and observation of the NRS scale.

The data were analyzed using the Wilcoxon signed rank test, showing whether the William flexion exercise affects low back pain in the elderly. Because the data can be categorized on an ordinal scale, the data is then analyzed using the Wilcoxon signed rank test using a computer with the SPSS (Statistical et al. Version 16 Windows) technique. To determine the significant level between the variables in the measurement of significant influence with the significance level is $p \geq 0.05$, which means H_0 accepted means there is no influence between variables (Syarifudin, 2009).

III. RESULTS

1. Lower back pain in the elderly before the William flexion exercise

Table 1 Frequency distribution of low back pain in the elderly before doing the William flexion exercise at the Tresna Werdha Blitar Social Integrated Service Unit in Tulungagung Regency for the period March 30-April 1, 2018

| No | Painful | Frequency | Percentage |
|--------|------------|-----------|------------|
| 1 | Very heavy | 10 | 30,3 |
| 2 | Heavy | 19 | 57,6 |
| 3 | Currently | 4 | 12,1 |
| 4 | Light | 0 | 0 |
| 5 | No Pain | 0 | 0 |
| Amount | | 33 | 100 |

Source: Data processed in 2018

Based on Table, 1it was found that out of 33 respondents before the flexion William therapy, most experienced severe back pain, namely as many as 19 respondents (57.6%).

2. Lower back pain in the elderly after doing the William flexion exercise

Table 2 Frequency distribution of low back pain in the elderly after doing the flexion William exercise at the Tresna Werdha Blitar Social Integrated Service Unit in Tulungagung Regency for the period March 30-April 1, 2018

| No | Painful | Frequency | Percentage |
|--------|------------|-----------|------------|
| 1 | Very heavy | 0 | 0 |
| 2 | Heavy | 0 | 0 |
| 3 | Currently | 5 | 15,2 |
| 4 | Light | 27 | 81.8 |
| 5 | No Pain | 1 | 3 |
| Amount | | 33 | 100 |

Source: Data processed in 2018

Based on Table 2it, out of 33 respondents after the flexion therapy, almost all respondents experienced mild back pain, namely, as many as 27 respondents (81.8%).

3. Effect of William flexion exercise on low back pain levels in the elderly at Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung

Table 3 Frequency distribution of the effect of the William flexion exercise on the level of low back pain in the elderly at Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung Period March 30-April 1, 2018

| No | Painful | Before | | After | |
|--------|------------|-----------|------------|-----------|------------|
| | | Frequency | Percentage | Frequency | Percentage |
| 1 | Very heavy | 10 | 30,3 | 0 | 0 |
| 2 | Heavy | 19 | 57,6 | 0 | 0 |
| 3 | Currently | 4 | 12,1 | 5 | 15,2 |
| 4 | Light | 0 | 0 | 27 | 81.8 |
| 5 | No Pain | 0 | 0 | 1 | 3 |
| Amount | | 33 | 100 | 33 | 100 |

Source: Data processed in 2018

Results research in Table 3it can be interpreted that out of a total of 33 respondents before the flexion William therapy, most of the respondents experienced severe back pain, namely as many as 19 respondents (57.6%), and after the William flexion therapy, almost all respondents experienced mild pain namely as many as 27 respondents (81.8%). Meanwhile, the analysis of the effect of William's flexion exercise on the level of low back pain in the elderly at the Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung is as follows:

Table 4 Cross-tabulation of the effect of William flexion exercise on the level of low back pain in the elderly

| No | Pain Before | Pain After | | | | | | Total | |
|----------------------|-------------|-----------------|------|-------|------|---------|---|-----------------|------|
| | | Currently | | Light | | No Pain | | F | % |
| | | F | % | F | % | F | % | | |
| 1 | Very heavy | 4 | 12.1 | 6 | 18.2 | 0 | 0 | 10 | 30.3 |
| 2 | Heavy | 1 | 3 | 18 | 54.5 | 0 | 0 | 19 | 57.6 |
| Amount | | 5 | 15.2 | 27 | 81.8 | 1 | 3 | 33 | 100 |
| Wilcoxon Signed Rank | | P-value = 0.000 | | | | | | $\alpha = 0.05$ | |

From Table 4 above, it is known that the majority of respondents, namely 18 (54.5%), experienced a decrease in pain, namely experiencing severe pain before the William flexion therapy was carried out and then becoming mild pain after the William flexion therapy was carried out.

The results of quantitative data analysis using the Wilcoxon Signed Rank statistical test with the help of the SPSS computer program can be interpreted as the results of the Wilcoxon Signed Rank statistical test with a significance of 0.05, resulting in a P-Value = 0.000, which is less than the $\alpha = 0.05$ ($0.000 < 0.05$) so that H_0 is rejected and H_1

is accepted, which means that there is an effect of the William flexion exercise on the level of low back pain in the elderly at the Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung in 2018.

DISCUSSION

A. Lower back pain in the elderly before doing the William flexion exercise at the Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung

Based on Table 1, it was found that out of a total of 33 respondents before the flexion william therapy, most of the respondents experienced severe back pain, namely as many as 19 respondents (57.6%).

Back pain is simple back pain (or back pain) related to how the back's bones, ligaments, and muscles work. This is usually pain that occurs due to lifting, bending, or straining, intermittent, most common in the lower back, and usually does not indicate permanent damage (Eleanor, 2007).

According to elderly researchers, many of them experience severe back pain, indicating that back pain is often experienced by the elderly. Back pain occurs due to aging; the spinal joints' flexibility decreases as you age. Back pain in the elderly is physiological, but if the pain is very severe, it can interfere with daily activities in the elderly.

One of the factors that affect the level of pain is age. The study results showed that out of 33 respondents, almost all were aged 60-74 years, namely 29 respondents (87.9%).

According to Eleanor (2007), back pain is a natural result of the aging process. As a person ages, the discs that separate the spine (vertebrae) lose their flexibility and shock-absorbing properties and become more easily damaged.

The facts in this study indicate that many older people experience low back pain with severe pain intensity. This is because the aging process in the elderly occurs through joint stiffness due to reduced flexibility.

Gender can also be the background of low back pain in the elderly. The results showed that out of a total of 33 respondents, the majority of respondents were women, namely 21 respondents (63.6%).

Research by the Community Oriented Program for Control of Rheumatic Disease (COPD) in Indonesia found that back pain was 13.6 percent in women and 18.2 percent in men (Via, 2016). The results of this study are not by the Community Oriented

Program for Control of Rheumatic Disease (COPORD) research on the prevalence of back pain in Indonesia, where the incidence of low back pain in the Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung is mostly experienced by women. This is because most of the elderly in the Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung are women.

B. Lower back pain in the elderly after doing the flexion exercise at Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung

Based on Table 2, it was found that out of a total of 33 respondents after the William flexion therapy, almost all respondents experienced mild back pain, namely, as many as 27 respondents (81.8%).

The William Flexion Exercise is a form of exercise that aims to reduce lower back pain. The trick is to strengthen (strengthen) the abdominal and gluteus maximus muscles and stretch (stretch) the extensor muscles of the back. The exercise is called lumbosacral flexion (Dachlan, 2009). Movements in the William Flexion exercise therapy can also open the intervertebral foramen, stretch the ligament structures and distract the apophyseal joints, give a slight massage effect on the back so that it can reduce muscle spasms, stretch the lower back muscles and reduce lumbar lordosis (Wahyuni, 2012).

The William Flexion therapy is implemented by dividing the elderly into small groups of about 10 people. Then do the Williams flexion exercises for each group once a day for 3 days with a duration of 15-30 minutes, accompanied by an instructor. After 3 days, low back pain was observed and compared to pain before flexion therapy.

According to the researchers, the reality at the research site was the theory that after the William Flexion therapy was carried out on the elderly, almost all of the lower back pain experienced by the elderly could be reduced. This is because after doing the William flexion therapy, which is a slow and rhythmic movement that will stimulate sensory nerve fibers so that it will inhibit the activation of pain receptors. Thus the pain will be reduced. In addition, William's flexion exercises will strengthen the abdominal muscles and stretch the back extensor muscles so that blood circulation becomes smooth and stimulates the sensory nerves. Thus lower back pain in the elderly can be reduced.

C. Effect of William flexion exercise on low back pain levels in the elderly at Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung

The results of the study in Table 3 can be interpreted that out of a total of 33 respondents before the flexion therapy, most of the respondents experienced severe back pain, namely as many as 19 respondents (57.6%), and after William's flexions therapy almost all respondents experienced mild pain namely as many as 27 respondents (81.8%). Moreover, Based on Table 4, it is known that the majority of respondents, namely 18 (54.5%), experienced a decrease in pain, namely experiencing severe pain before the William Flexion therapy was carried out and then becoming mild pain after the William Flexion therapy.

The results of quantitative data analysis using the Wilcoxon Signed Rank statistical test with the help of the SPSS computer program can be interpreted as the results of the Wilcoxon Signed Rank statistical test with a significance of 0.05, resulting in a P-Value = 0.000, which is less than the $\alpha = 0.05$ ($0.000 < 0.05$) so that H_0 is rejected and H_1 is accepted, which means that there is an effect of the William flexion exercise on the level of low back pain in the elderly at the Tresna Werdha Blitar Social Service Technical Implementation Unit in Tulungagung in 2018.

William's flexion exercise is one of the exercise therapies for low back pain sufferers by strengthening the abdominal muscles and gluteus maximus muscles and stretching the back extensor muscles. The movement that occurs is lumbosacral flexion; the exercise requirements are carried out every day but do not exceed the pain limit. William's flexion exercises have the advantage of increasing flexibility or muscle elasticity, reducing pain, and restoring the balance of work on several muscle groups. The benefits of William's flexion exercise therapy are to reduce body weight pressure on the facet joints (articular weight-bearing stress), stretch muscles and fascia (increase soft tissue extensibility) in the dorsolumbal area, and correct wrong posture (Syafi'i, 2012).

The facts and theories above are by the fact that after doing William's flexion therapy in the elderly, almost all of the lower back pain experienced by the elderly can be reduced, namely from very severe pain it decreases to moderate pain, and from severe pain it decreases to mild pain. This is because muscle elasticity will increase after the William flexion exercise to reduce pain and restore work to several muscle groups. The Wilcoxon signed rank analysis also showed a difference in the intensity of low back pain in the elderly between before and the William flexion therapy, meaning that the William

flexion therapy was proven to reduce the intensity of low back pain in the elderly. This is because after doing the William flexion therapy, which is a slow and rhythmic movement that will stimulate sensory nerve fibers so that it will inhibit the activation of pain receptors. Thus the pain will be reduced.

This study supports the results of research conducted by Setiasih (2012) at the Faculty of Health Sciences, the University of Muhammadiyah Surakarta, with the research title "The Effect of William Flexion Exercise Core Stabilization Exercise on Miogenic Lower Back Pain", where the results found that the statistical test using the Paired T-test obtained a result of 0.0001 means that there is an effect of William Flexion Exercise on myogenic low back pain. Whereas in the Core Stabilization Exercise group, the result was 0.001, meaning that Core Stabilization Exercise affected myogenic low back pain. Based on the Independent T-test, the results obtained were $p = 0.001$, indicating differences in the effect of William Flexion Exercise and Core Stabilization Exercise on myogenic low back pain.

IV. CONCLUSION

1. Low back pain in the elderly before the flexion therapy was carried out, most of the respondents experienced severe back pain, namely 19 respondents (57.6%).
2. For lower back pain in the elderly after flexion therapy, almost all respondents experienced mild back pain, namely 27 respondents (81.8%).
3. Most respondents, namely 18 (54.5%), experienced a decrease in pain, namely experiencing severe pain, before the Williams flexion therapy was carried out. It became mild pain after the William flexion therapy was carried out, meaning that the William flexion exercise affected the level of lower back pain in the elderly in the Implementation Unit. Technical Social Services Tresna Werdha Blitar in Tulungagungin 2018. Proventhe results of the Wilcoxon Signed Rank statistical test with a significance of 0.05 produce a P-Value = 0.000 which is less than the $\alpha = 0.05$ ($0.000 < 0.05$)

SUGGESTION

1. For Nursing Education Institutions

We hope to work with health institutions to provide information about William flexion therapy in reducing low back pain in the elderly so that older people who experience low back pain can be anticipated and treated.

2. For Further Research

It is hoped that further research related to lower back pain and William flexion therapy, for example, the effect of duration, frequency, and intensity of William flexion therapy on reducing back pain in the elderly and so on, so that the proper application of William flexion therapy for the elderly in reducing low back pain is known.

3. For Research Sites

Should convey information about William flexion therapy to reduce lower back pain usually experienced by the elderly and can apply the William flexion therapy to the elderly.

V. REFERENCES

- Alimul Hidayat, Aziz. 2011. *Metode Penelitian Kebidanan dan Teknik. Analisis Data*. Jakarta: Salemba Medika.
- Basmajian, John. 2008. *Therapeutic Exercise*. Thirt edition, Sidney : The William and Wilkins.
- Bustan, M.N., 2007. *Epidemiologi Penyakit Tidak Menular*. Cetakan 2. Rineka Cipta.
- Dachlan L.M., 2009. *Pengaruh Back Exercise Pada Nyeri Punggung. Bawah*. Tesis Magister Kedokteran Keluarga Universitas Sebelas. Maret. Surakarta.
- Eleanor, Bull dan Archad Graham. 2007. *Simple Guide Nyeri Punggung*. Jakarta : Erlangga.
- Fisioterapi ID. 2011. *Fisioterapi Pada Penderita LBP Akibat Spondylosis*
- Jiwa, Paliyama M. (2012). *Perbandingan Efek Terapi Fleksi William Dengan TENS Dalam Pengurangan Nyeri Punggung Bawah Muskulosekeletal*. Masters Thesis. Program Pascasarjana Universitas Diponegoro. Available at <http://eprints.undip.ac.id/14889/> 20-12- 2017.
- Kurniawan H. 2011. *Latihan pada Osteoarthritis sendi lutut* ; Diakses tanggal 25/12/2017.
- Kushariyadi. (2010). *Asuhan Keperawatan Klien Lanjut Usia*. Jakarta: Salemba. Medika.
- Maryam, R. Siti, dkk. 2008. *Mengenal Usia Lanjut dan Perawatannya*. Jakarta: Medika.
- Notoatmodjo, S. 2007. *Pendidikan dan Perilaku Kesehatan*. Jakarta: ECG
- Nugroho, W. 2008. *Keperawatan Gerontik & Geriatrik Edisi 3*. Jakarta: EGC.
- Sa'adah, Hamidatus. 2013. *Pengaruh Latihan Fleksi William (Stretching) terhadap Tingkat Nyeri Punggung Bawah pada Lansia di Posyandu Lansia RW 2 Desa Kedungkandang Malang*. Tuban: Stikes NU Tuban.

- Sadeli HA dan Tjahjono B. 2011. *Nyeri Punggung Bawah. dalam: Nyeri Neuropatik, Patofisiologi dan Penatalaksanaan*. Editor: Meliala L, Suryamiharja A, Purba JS, Sadeli HA. Perdossi, 2001:145-167.
- Safitri, 2009. *Teknik Dasar Latihan Terapi*. Jakarta: EGC.
- Setiasih. 2012. *Pengaruh William Flexion Exercise Dan Core stabilization. Exercise Terhadap Nyeri Punggung Bawah Miogenik*. Universitas. Muhammadiyah Surakarta.
- Soeweno, Inten. (2010). *Pedoman Pelaksanaan Posyandu Lanjut Usia*. Jakarta: Komnas Lansia.
- Syafi'i, 2012. *Pelatihan Penatalaksanaan Fisioterapi Komprehensif pada nyeri*: Jakarta: EGC.
- Syafi'i. 2012. *Posyandu dan desa siaga*. Yogyakarta : Nuha Medika.
- Wahyono, Yulianto. 2015. *Latihan Core Stability Dan William's Flexion Dalam Menurunkan Nyeri, Peningkatan Keseimbangan Dan Kemampuan Fungsional*.
- Wahyuni, Nila. 2012. *Perbedaan Efektivitas Antara Terapi Latihan Williams Flexion dengan Mckenzie Extension pada Pasien yang Mengalami Postural Low Back Pain*. Denpasar: Jurnal Program Studi Fisioterapi. Universitas Udayana.