

# The Effect of Friction and William Flexion Exercise Method For Low Waist Pain Patients

<sup>1</sup>Suriani

<sup>1</sup>Physiotherapy Department, Health Polytechnic, Makassar, Indonesia  
Email: surianidappe24@gmail.com

## Abstract

It is assumed that almost all people ever suffered low waist pain in their life. The effect of low waist pain, the patients suffer a limit in doing daily activities and they also lose many work times, particularly in productive age. This study aimed to analyze the effectivity of friction and William flexion exercises method for reducing low waist pain by utilizing one group pretest-posttest design. The subject of this research was 19 patients who suffered low waist pain and they visited to Physiotherapy Clinic of Ratulangi Medical Centre in Makassar, Indonesia. Paired sample t-test showed p-value was 0.000, thus, it could be concluded that there was a significant difference of low waist pain level between before and after giving friction and William Flexion Exercise method.

**Key words:** Friction, William Flexion Exercises, low waist pain

## I. INTRODUCTION

Low waist pain is a complaint that is found more in daily life and it is assumed that almost all people ever suffered this pain in their life. The case of low waist pain is mostly found to the people who are 40 years old. In developed country, the prevalence of people who suffer low waist pain is about 70-80 %. Even though, it is often fatal, the felt pain causes the patient has a limit in doing daily activities and loses more the work time, particularly in productive age. Thus, it is the most reason of why the patient searches a medical treatment to solve it. Around 80% of American people ever suffered low waist pain and it was estimated that 15 - 20%, the pain developed to be referent pain that spread to the leg which could cause the people were disability in doing daily activities<sup>1</sup>. In addition, it was estimated that 80% of Western people ever suffered low waist pain in their life. One survey reported that 17,3 millions of English people ever suffered low back pain, 26% of adult American people ever suffered low back pain at least one day in three months<sup>2</sup> and around 80% of American people suffered low waist pain. Moreover, it was estimated that around 15 - 20%, the pain developed to be referent pain, and around 2 - 8%, it became chronic pain. Every year, around 3 - 4% from the population of low waist pain, the people were disability in doing activities. Meanwhile, the low back pain (LBP) incident peaked in person's middle age and decreased in old age<sup>3</sup>. In Indonesia, research conducted by the unity neurologist in Indonesia at 14 cities in 2001 found that there were 18,1% of patients who suffered low back pain<sup>4</sup>. According to Copcord Indonesia, it showed the prevalence of low back pain that was suffered by male was higher rather than by female<sup>5</sup>, and the patient who suffered the pain and did not exercise in particular had risk in 12 times for reoccurring again in three years later<sup>6</sup>. Low waist pain was often occurred in various populations such as employee, housewife, and dignitary. This was caused by lumbar region that was often involved in working, exercising, and gestures. The muscles that stabilized the lumbar region often suffered a disorder as the effect of mechanical stress which was occurred frequently. However, the most source and cause of it was the disorder of the effect of mechanical and trauma factors. Around 50% from all populations who suffered musculoskeletal disorder also suffered low waist pain. The prevalence of disability in doing activities as the effect of low back pain increased as long as with the increase of the person's age, that was around 60% for female and 40% for male<sup>3</sup>. Furthermore, low waist pain lost more the work time and needed more cost for curing. Haanen et al.<sup>8</sup> who researched 3000 males and 3500 females who were 20 years old more stated that 51 % of males and 57 % of females complained that their low waist were painful and 50 % of them were unfit for working during some times and 8 % of them had to change the job<sup>8</sup>. In order to medicate the patient who had physiotherapeutic low waist pain could give various medical treatment method such as interference, microwave diathermy, stabilization exercise, william flexion exercises method, Mc.Kenzi exercises method, Friction and stretching method<sup>7,9,10</sup>. In this research, the researcher was interested to know whether there was a significant difference between friction method and William flexion exercise method toward the decrease of patients' low waist pain or not.

## II. RESEARCH METHOD

This research was pre-experimental research by utilizing one group pretest-posttest design that was conducted at Physiotherapy Clinic of Ratulangi Medical Centre in Makassar, Indonesia from August to November 2016. The subjects of this research were 9 low waist pain patients. The sample size pointed to the Krejcie-Morgan table, that the sample size (n) which was for population (N)=20 was 19<sup>11</sup>. Afterwards, it was conducted the measurement of actuality pain by utilizing visual analog scale (VAS)<sup>13</sup>. The collected data was analyzed by utilizing paired sample t-test.<sup>14</sup>

### III. RESEARCH RESULT

Table 1. The actuality pain value of low waist pain patients before and after giving friction and William flexion exercise method

Subject of Research	Actuality Pain Value (cm)		Difference of Pain Value
	Before	After	
1	6.2	2.5	3,7
2	6,5	2.5	4,0
3	8.3	4.2	4,1
4	6.5	3.3	3,2
5	7.5	5,1	2,4
6	8,2	4.8	3,4
7	7.2	4.3	2,9
8	6.6	3.5	3,1
9	8.4	4.5	3,9
10	7,6	3.8	3,8
11	6.5	3,1	3,4
12	8,1	3.8	4,3
13	7,2	3.5	3,7
14	5.9	2,5	3,4
15	6.4	3.5	2,9
16	6,7	2,3	4,4
17	6.6	2.3	4,3
18	5.9	1,7	4,2
19	8.3	4.7	3,6
Mean	6,963	3,379	3,584
SD	0,877	1,103	0,226

According to the table above, it was showed that there was a mean change of actuality pain value of low waist pain patients which was  $6,963 \pm 0,877$  cm before treatment and it became  $3,379 \pm 1,103$  cm after treatment. Hence, the mean difference was  $3,584 \pm 0,226$  cm. Paired sample t-test showed that there was significant difference of pain level between before and after giving friction and William flexion exercises (Table 2).

Table 2. The actuality pain value of low waist pain patients before and after giving friction and William flexion exercise method

Variable	Friction and William flexion exercise				Mean difference	paired t - test
	Before		After			
	Mean	SD	Mean	SD		
The actuality of waist pain value	6,963	0,877	3,379	1,103	3,584	0,000

The result of paired t-test in the actuality of pain value before and after giving Friction and William flexion exercise method showed that there was a significant difference ( $p=0,000$ ) with mean difference was 3,584 cm.

### IV. DISCUSSION

According to John E Murtagh<sup>14</sup>, a person who was 40 years old and more had underwent degeneration process which L4-L5 segment and L5-S1 segment mostly underwent degeneration that often caused pain in waist and spread to the back of thigh to calf. Based on data of the actuality pain value in the subject of this research, it showed that there was a significant change of pain value before and after the treatment. This case showed that the giving of friction and William flexion exercise treatment could reduce the patients' pain. Deep transverse friction,<sup>9</sup> was applied perpendicularly with the fiber in the effort for separating each fibers in trigger point area that gave mechanical effect, hyperemia local effect, analgesia effect, and the decrease of scarring toward ligament structure, tendon, and muscle.

Boyling<sup>9</sup> reported that deep transverse friction could cause nociceptive point stimulation, which was connected to A $\delta$  fiber, and mechanoreceptors were found in soft tissue that was connected to big diameter of A $\beta$  fiber. The

fiber with big diameter had the effect in cells of posterior horn and tended to inhibit nociceptive information transmission that had small diameter. Hence, the gate pain decreased with presynaptic inhibition and inhibited pain with enkephalin production. Yoon in Doley M, et al.,<sup>9</sup> reported that deep transverse friction would increase blood circulation in soft tissue, and finally, it increased lactic excretion or inflammation substance and facilitated endogenous opiate secretion. Therefore, the pain would decrease. William flexion therapists stated the lordosis posture in a stand was formed due to the development of upright posture. The purpose of William flexion therapy was in order to straighten lordosis posture, stretch out the extensor of m. back, strengthen the m. abdominal, and open intervertebral foramen, hence, it could decrease the nerve compression<sup>7</sup>. Kenneth A. Olson.<sup>16</sup> argued that when a person stood up straight, the distribution of weight, which particularly was focused on the discus of intervertebral lumbar and cervical, it was especially in lumbar 4 and 5. The lordosis position of vertebral lumbar caused the weight of posterior structure of intervertebral discus. The excessive pressure, especially was occurred on posterior part of vertebrae, was continued to intervertebral discus. Thus, it could cause intervertebral discus rupture of lumbar 5. The discharge of nucleus pulposus into spinal canals caused a pressure on spinal nerve passed through the spinal canals. Besides, it was also occurred a nerve clamping and irritation of spinal nerve.

William's flexion exercise was an exercise for having accurate balance between flexor and extensor of postural muscle group. This exercise involved active and static movement by constructing abdominal muscles, the gluteus Maximus, hamstring muscles, and stretching of hip flexor and low back. Thus, back extensor muscle could be stretched out and the abdominal muscles and hip flexor suffered strength improvement. Therefore, stretching of the muscle and low back pain could reduce<sup>7</sup>. Therapy movements of Williams flexion exercise also could open intervertebral foramen, stretch ligament structure, and distraction of epiphyseal joint. Pelvic tilt movement was used to strengthen the indorser muscle around low back, particularly abdomen muscle. Pelvic tilt movement also gave a little massage effect to the back, thus, it could reduce the muscle spasm. Both movements of the therapy of Williams flexion exercise were single and double knee to chest, which were used to stretch low back muscles. Lying leg movement was used to train either low back muscle or hamstring muscle. Partial sit up was used to reduce the lumbar<sup>7</sup>.

Williams flexion exercise<sup>7</sup> through flexion movements could cause activation of abdominal muscle, gluteus Maximus and hamstring muscle, passive stretching of waist flexor muscle and low back, hence, they could result the balance between postural flexor muscle and postural extensor muscle. Besides, they also could reduce lordosis position from the lumbar vertebrae. Therefore, they could reduce the pressure of lumbar vertebrae posterior structure, and strengthening the abdominal muscles and musculus gluteus maximus. Furthermore, all effects above would reduce the pain in low back and return the increase of daily functional mobility.

## **V. CONCLUSION AND SUGGESTION**

According to the result of this research above, it could be concluded that giving friction and William flexion exercise could reduce low waist pain. Hence, it was used to improve the function and mobility in waist area. Furthermore, it was suggested that the physiotherapist should utilize friction and William flexion exercise as the one option in the effort of therapy for low waist pain patients.

## **References**

1. Shidarta Priguna, Mardjono Mahar, Neurologis Klinis Dalam Praktek Umum”, Dian Rakyat; Jakarta, 2009.
2. Nurbaya, S, Analisis karakteristik dan klasifikasi penyebab Nyeri Pinggang Bawah di RS Umum Daerah kota Makassar. Hasanuddin University ,2014
3. Navid, The Incidence of Back Pain, <http://www.zimmerspine.eu/global/action>, 2009., accessed on 25<sup>th</sup> February 2015.
4. Alodokter. Nyeri punggung gejala penyebab dan mengobati, (Online), (<http://www.alodokter.com>, 2015, accessed on 18<sup>th</sup> November 2016)
5. Wirawan, R.B., Diagnosis dan Manajemen Nyeri Pinggang. Jogjakarta: Dalam Pain Simposium. Towards 1 Mechanism Based Treatment. 5<sup>th</sup> December, pp. 36, 105 – 108 ., 2004.
- 6 Knudsen, H.A. William's Flexion versus Mc. Kenzie Extension for LBP. PT Doctor Information products inc, [online], [http://homeexerciseprogram.com/William's - Flexion-Versus- Mckenzie-Extension- Exercises-for low back .Pain.html.](http://homeexerciseprogram.com/William's-Flexion-Versus-Mckenzie-Extension-Exercises-for-low-back-Pain.html), 2003.
7. Kisner, Carolyn. Lynn Alen Colby, Therapeutic Exercise Foundations and Techniques, Fifth Edition, F. A Davis Company , Philadelphia. 2007.
8. Suharto, Fisioterapi Pada Nyeri Pinggang Bawah Aspesifik, Jurnal Cemin Dunia Kedokteran. 2010.
9. Doley M., Warikoo D., Arunmozhi R. Effect of Positional Release Therapy and Depp Tranverse Friction Masaage of Gluteus Medius Trigger Point-A Comparative Study. Journal of Exercise Science and Physioteherapy. Vol. 9, No. 1, 40-45, 2013

10. Cameron, Michelle. 2009. *Physical Agents In Rehabilitation*. St. Louis, Missouri: Saunders an Imprint of Elsevier. 2009,
11. Nugraha Setiawan, *Penentuan Ukuran sampel menggunakan Slovin dan Tabel Krejcie –Morgan, Telaah Konsep dan Aplikasinya*, Pajajaran University, Bandung.,2007.
12. Paul Hooper, *Williams’ Flexion Exercises vs McKenzie’s Extension Protocol*, <http://www.dynamic-ciropractic.com/williamvs mckenzie.html>, 1999, accessed on 16<sup>th</sup> October 2016.
13. Jensen MP & Karoly P. *Hanbook of Pain Assessment*, 2<sup>nd</sup>Edn, New York: Guilford Pres., 2001.
14. Wahana Komputer Seri professional, *Pengolahan Data Statistik dengan SPSS 16.0* Salemba Jakarta. 2009.
15. John E. Murtagh, Clive J. Kenna, *Back Pain and Spinal Manipulation*, Second Edition, Butterworth Heinemann, Oxford,1997.
16. Kenneth A. Olson, *Manual Physical therapy of the Spine*, St.Louis Missouri Saunders Elsevier,2009