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## Influence of myofascial release technique toward changes in pain level among non-specific low back pain patients

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**Abstract.** Non-specific low back pain is a condition causes pain in the lower back that cannot be found in a specific disorder included mechanical pain, joint pain, postural pain, muscle strain, ligament sprain and muscle spasm. This study aims to determine the effect of myofascial release technique toward changes in pain level in non-specific low back pain patients. The study was used quasi-experimental design using time-series experimental design. The study population were all non-specific low back pain patients seeking treatment at Physiotherapy Poli of Bontang Hospital. The samples were 20 patients who met the inclusion criteria. The data was analysed using Wilcoxon test with SPSS program. The result showed that highest number of non-specific low back pain patients were aged  $\geq 45$  years old. The study also showed changes in pain level on post-test 1 and post-test2 was high than pre-test. The pain level before and after given Myofascial Release Technique showed significant changes with pre-post 1 and pre-test 2= 0.000 with 95% confidence level. Based on Wilcoxon test with pre-post 1 and pre-post 2=0.000<0.05 had shown there was an effect of Myofascial Release Technique on changes in the pain level with non-specific low back pain.

### 1. Introduction

The low back pain is defined as pain in the lumbar or gluteal region with or without radicular pain to the lower extremities [1]. The low back pain (LBP) among cause of disability globally and affected nearly 80% of adult population in their lives times [2,3,4]. Nonspecific LBP is a condition causes lower back pain which cannot be found in specific diseases such as cancer, nerve irritation, fracture and infection. In additions, non-specific LBP are included with mechanical pain, joint and postural pain, muscle strain, ligament sprain and muscle spasm [5].

Pransky et al found low back pain prevalence increased five times over period of 15 years [6]. Meanwhile, the prevalence of low back pain in men is 8.2% and 13.6% of women in Jawa island. The low back pain prevalence in Bontang regional is 47% which dominated by 59.6% of women. The pain can occur in non-specific low back pain patients due to changes in tissue structure in lumbar region that stimulates the pain receptors in the body and given signal to the brain perception.

The pain is cause by interference with the fascia and decreased nociceptor activation. The fascia is connective tissue layer surrounding muscle, bone, vein, nerve and organ within the body. Myofascial release technique is therapeutic manual on Myofascial which expected to improve fascial. The ability of fascial movement enhancement have impact on the improvement surrounding tissue movement [7].



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MacDonald et al. (2014) stated Myofascial release technique (MRT) is capable of lowering pain in muscle injury [8]. Castro-Sanchez et al. (2011) found MRT can be complementary treatment for pain relief [9]. In additions, Ajimsha et al. (2013) stated effective MRT to reduce pain in chronic low back pain [10]. This study aims to determine the effect of myofascial release technique toward changes in pain level in non-specific low back pain patients.

## 2. Methodology

The study was conducted at Bontang Regional General Hospital. This location was selected due to socioeconomic background of respondents. The study used quasi-experimental research with time-series experimental.

The study population were all non-specific low back patient patients undergone the treatment at Bontang Regional General Hospital. There were 20 samples who met the inclusion criteria and willing to be respondents in this study.

The data was collected through primary data and used normality test with SPSS program. Besides, the Wilcoxon test also used for not normally distributed. The data was represented in form of tables and narratives.

## 3. Result and Discussion

### 3.1. Result

In Table 1, there were 13 respondents (65%) aged more than 45 years old and 7 respondents (35%) were aged less than 45 years old. Meanwhile, 10 male respondents (50%) and 10 female respondents (50%) had involved in this study. In additions, 8 respondents (40%) were housewives and 7 respondents (35%) were retired. There were 14 respondents (70%) had body weight less than 60 kg and 6 respondents (30%) had body weight more than 60 kg.

**Table 1.** Respondents characteristics distribution.

Characteristic	F	%
<b>Age</b>		
<45 years old	7	35
≥45 years old	13	65
<b>Gender</b>		
Male	10	50
Female	10	50
<b>Employment</b>		
Teacher	1	5
Housewives	8	40
University student	1	5
Operator	2	10
School student	1	5
Retired	7	35
<b>Body weight</b>		
<60 kg	14	70
≥60 kg	6	30
<b>Total</b>	20	100

Meanwhile, normality test showed pre-test, post-test 1 and post-test 2 obtained significant value  $p=0.000<0.05$ ,  $p=0.009<0.05$  and  $p=0.012<0.05$ .

**Table 2.** Normality test.

	Shapiro-Wilk	Statistic	df	Sig.
VAS	Pre-test	0.780	20	0.000
	Post-test 1	0.864	20	0.009
	Post-test 2	0.870	20	0.012

Table 3 shows that pre-test had obtained mean of 5.30 with standard deviation of 0.657. Minimum and maximum of pre-test were 4 and 6. In additions, post-test 1 had mean of 3.15 with standard deviation of 0.813. The mean and standard deviation of post-test 2 were 1.30 and 0.831. The minimum and maximum of post-test 1 were 2 and 5.

**Table 3.** Statistic descriptive.

VAS	Mean	Standard deviation	Minimum	Maximum
Pre-test	5.30	0.657	4	6
Post-test 1	3.15	0.813	2	5
Post-test 2	1.30	0.801	0	3

Furthermore, Wilcoxon test showed negative ranks on all sampled with mean rank 10.50 and sum of ranks of 210.00.

**Table 4.** Wilcoxon Signed Ranks.

		N		Sum of ranks
Post-test1-Pre-test	Negative ranks	20 <sup>a</sup>	10.50	210.00
Post-test 2-Pre-test	Positive ranks	0 <sup>b</sup>	0.00	0.00
	Ties	0 <sup>c</sup>		
	Total	20		

The statistical test showed significant correlation in pre-post 1 and pre-post 2 with significance value of  $p=0.000<0.05$ .

**Table 5.** Statistical test.

	Pre-post 1	Pre-post 2
<b>Asymp Sig. (2-tailed)</b>	0.000	0.000

Table 6 shows that the pre-test had minimum and maximum of 4 and 6. There was significant correlation between pre-test and post-test with  $p=0.005<0.05$ . The post-test 1 and post-test 2 had median of 3.15 and 1.30. Meanwhile, there was influence between pre-test and post-test 2,  $p=0.000<0.05$ . The minimum and maximum in post-test 1 were 2 and 5, while post-test 2 had minimum and maximum of 0 and 3.

**Table 6.** Influence test.

VAS	Minimum	Maximum	Median	Sig.
Pre-test	4	6	5.30	0.005
Post-test1	2	5	3.15	
Pre-test	4	6	5.30	0.000
Post-test2	0	3	1.30	

### 3.2. Discussion

Non-specific low back pain included mechanical pain, joint and postural pain, muscle strain, ligament sprain and muscle spasm [5]. In this study, number of respondents suffered non-specific low back pain was aged 45 years. The result suggested low back pain usually occurred between 20 years and 40 years age and will re-appeared in age between 40 years old and 80 years old and increased with age [6,11].

The gender distribution did not explain that more male respondents than women or vice versa. There was equal number of male respondents and female respondents in this study. In previous study also found uncertainty on number of respondents based on gender [6,12].

In additions, 6 times of Myofascial release technique was more effective than 3 times of Myofascial release technique. The decrease in pain among respondents due to effect of Myofascial release technique given to the elongation so the restrictive could be corrected and prevented. The release of adhesion resulted in the improvement of physiological nature of Myofascial in form of increased metabolism that stimulated circulation (increased metabolism reaction, fibroblastic activation in the healing process. Hence, increment viscoelasticity of Myofascial, inhibiting Acetylcholine and cell transmitter, decreased interleukin and parasympathetic activation which lead to decrease in pain level. Thus, similar to the fact that effect from above can reduce the pain level [13-15].

### 4. Conclusion

In conclusion, there was effect of Myofascial Release technique on changes of pain level among non-specific low back pain patients. The Myofascial Release technique had reduced pain level before and after given Myofascial Release technique of 3 times and 6 times. In additions. 6 times of Myofascial Release technique was more effectiveness than 3 times of Myofascial Release technique in reducing pain levels among non-specific lower back pain patients.

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