Myofascial Release and Ultrasound, versus Deep Friction Treatment: Which Is the Best for Patients with Tennis Elbow Injuries?

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Abstract: Tennis elbow is an inflammation of the tendons that join the forearm muscles on the outside of the elbow. The forearm muscles and tendons become damaged from overuse repeating the same motions again and again. This leads to pain and tenderness on the outside of the elbow. Rehabilitation programs do help reduce the pain. Research aims: This research aims to compare between myofascial Release and Ultrasound versus deep friction treatment and determine the best treatment for reducing pain for Tennis elbow patients. Methodology: This study used a double-blind experimental design with an alpha value of 5%. The study was conducted at the Clinic "Rumah Fisio." Based on the randomization technique, the sample was drawn from the list of patients who are diagnosed with Tennis elbow and undergoing physiotherapy from December 2018 to February 2019. The pain was measured using the Visual Analogue Scale (VAS). Research findings: The results of the t-test analysis showed that Deep Friction (DF) [mean = 6,6 ; SD = 0.41, p = 0.000] is more effective than Myofascial Release techniques and Ultrasound (MrU) (mean = 4.8 ; SD = 0,82) in reducing pain for Tennis Elbow patients. Practical implications: This study offers an understanding of the best treatment that would help in reducing the tennis elbow pain.

1 INTRODUCTION

Tennis elbow is a local inflammation near the proximal (upper) attachments of wrist extensor muscles, characterized by pain on palpation of the lateral epicondyle of the humerus and in resisted movements against wrist extension. It is a syndrome of overuse (e.g., use of computer mouse, racquet sports) that can result in considerable socioeconomic costs resulting from a prolonged leave of absence from work[11'] Myofascial release technique is the facilitation of mechanical, neural and psycho-physiological adaptive potential as interfaced via the myofascial system. Ultrasound therapy used in physical medicine to relieve pain and increase joint mobility[5]. Ultrasound increases blood flow and oxygen to the affected area by increasing muscle temperature. Clinical studies show that it has limited effectiveness in reducing disability caused by tennis elbow. However, when ultrasound is combined with physical therapy such as massage and strengthening and stretching exercises, its effectiveness increases. In the research conducted by Haris Begovic and Guan-Quan Zhou, showed, Ultrasound and Strain gauge trigger changes in contractile properties and transmission of style after the friction massage Transfer is applied to the quadriceps tendon. This change is displayed by the signal onset, which provides information about the transmission of force and stiffness in the elastic component. There is evidence to justify the widespread use of ultrasound, and one of them is related to its potential analgesics. Our findings indicate that therapists pay attention to increased pain after the use of ultrasound. These results were also found by other studies that showed ultrasound as an analgesic promoter that has the potential to produce satisfactory results for pain associated with the trigger point and decrease in reported low back pain. Deep transverse friction is applied perpendicular to the fibre in pushing each strand in the trigger area which gives a mechanical effect, local hyperemia, analgesia, and the relationship of scar tissue to the structure of the ligaments, tendons and muscles. Deep, transverse friction can cause stimulation of nociceptive ends connected to Aδ fibres and mechanoreceptors found in soft tissue attached to large diameters of Aβ fibres. This large diameter fibre affects cells in the posterior

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horn cell and also facilitates the transmission of small-diameter nociceptive information until the safety gate is closed
From some of the studies above, no one has done research directly between myofascial Release and ultrasound versus deep transfer friction, because from my practice experience at Rumah Fisio clinic, two streams are used for patient therapy with each claiming is that my flow is the best result because the latest scientific journal supports it. Therefore I am very interested in conducting a study based on experimental studies.

2 METHODOLOGY

This study used a double-blind experimental design with a pre-post-test design of two groups. The study was divided into two groups, consisting of group 1 with Myofascial Release techniques and ultrasound and group 2 with deep, transverse friction . with an alpha value of 5%. The study was conducted at the Clinic "Rumah Fisio." Based on randomization technique, The number of study respondents was ten people, treatment group 5 people and control group 5 people the sample was drawn from the list of patients who are diagnosed with Tennis elbow and undergoing physiotherapy from December 2018 to February 2019. The pain was measured using the Visual Analogue Scale (VAS).

3 RESULTS

Table 1: Distribution of Respondents by Gender.

Gender	Mr	Per cent (%)	D.F.	Per cent (%)
Male	5	100	5	100
Female	0	0	0	0
Total	5	100	5	100

Based on table 1. Appears in the group treatment MrU (group 1) has a sample with gender five male (100%). Whereas at group treatment D.F. (group 2) has an example with gender five male (100%)

Table 2. Distribution of respondents by age.

	MrU		*DF*	
characteristic	*mean*	*S.D.*	*mean*	*SD*
age	29.50	3.37	29.56	2.92

Table 2 shows, the sample MrU has a mean age of 29.50 years old and in D.F. groups has an average age of 29.56 years past.

Table 3.: Distribution of Respondents Based on Pain Measurement with VAS (Visual Analogue Scale) units of mm (millimeters) in groups MrU.

Respondents		Pain scale	
	Before intervention	Before intervention	Differences before & after an intervention
1	8,3	3,7	4,6
2	8,7	2,9	5,8
3	9,1	5,5	3,6
4	8,4	3,1	5,3
5	9,0	4,2	5,8
Total	5	5	5
Mean ± SD	8,7 ±0,35	3,88 ±1,04	4,82 ± 0,82

Based on table 3, the average value of pain measurement using VAS in MrU group before treatment is 8,7 and after surgery is 3.8. the average difference of pain measurement value by using VAS before and after treatment is 4.82, and the amount of the standard deviation is 0.82.

Table 4: Distribution of Respondents Based on Pain Measurement with VAS (Visual Analogue Scale) units of mm (millimetres) in groups D.F.

Respondents		Pain scale	
	Before intervention	Before intervention	Differences before & after the intervention
1	9,1	2,6	6,5
2	8,7	1,9	6,8
3	9,3	2,2	7,1
4	8,4	1,6	6,8
5	8,9	2,9	6,0
Total	5	5	5
Mean ± SD	8,8 ±0,34	2,24 ±0,5	6,6 ± 0,4

Table 5: The results of Normality Test data degree of tennis elbow pain before and after treatment.

Pain scale	*P* Value (*Saphiro wilk test*)	
Tennis elbow	MrU	DF
Before	0,501	0,976
After	0,519	0,919

Based on table 5 it can be seen the results of normality test data on the MrU group with the probability value in the pre-test (p-value) is 0.501, so it can be concluded that the data are normally distributed (p> 0.05). The probability value in the post-test (p-value) is 0.519, so it can be found that the data has a normal distribution (p> 0.05). Data normality test results in the D.F. group with the probability value in the pre-test (p-value) is 0.976, and it can be concluded that the data are typically distributed (p> 0.05). The probability value in the post-test (p-value) is 0.919, so it can be found that the data is normally distributed (p> 0.05).

Tabel 6: Hasil T-test untuk Uji Hipotesis.

	n	Mean ± S.D.	*p*
MrU	5	4,8 ± 0,82	0,000
DF	5	6,64 ± 0,41	0,000

Based on table 6. the value of pain measurement in the treatment group I, namely the administration of myofascial Release, which was analyzed using the Paired Sample T-test obtained probability value (p-value) of 0,000. The probability value is smaller than 0.05 (p <0.05), this means that Ha is accepted and Ho is rejected. It can be concluded that in hypothesis I there is an influence of myofascial Release and Ultrasound on pain reduction in tennis elbow. Hypothesis II test is to determine the effect of deep, transverse friction on pain reduction in tennis elbow. To test hypothesis II, the Paired Sample T-test was used.

Based on table 6. the value of pain measurement in treatment group II, namely the provision of deep, transverse friction which was analyzed using the Paired Sample T-test obtained probability value (p-value) of 0,000. The probability value is smaller than 0.05 (p <0.05), this means that Ha is accepted and Ho is rejected. It can be concluded that in hypothesis II there is an effect of giving deep transversion friction to decrease pain in tennis elbow

4 CONCLUSION

Based on the results of the research, it can be concluded that DF [mean = 6,6, SD = 0.41, p = 0.000] is more effective than MrU (mean = 4.8, SD = 0,82) in reducing the pain of tennis elbow patients. The results of One-Way ANOVA study also showed that there was a significant difference in the decrease of pain produced by frequency treatment of D.N. & E.S. [F (1, 6) = 12,333, p = 0,007].

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