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Can the combination of deep tissue massage and stretching influence the recovery process of lower back pain injuries?

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ABSTRACT

Lower Back Pain (LBP) presents as discomfort in the lumbar region, leading to movement limitations. Addressing LBP requires specialized treatment to alleviate pain. The aim of this study was to demonstrate the effectiveness of combining deep tissue massage and stretching in healing low back pain injuries. This study adopted a pre-experimental design, employing a one-group pretest and posttest approach. The initial assessments (pretests) gauged LBP severity using VAS, Modified Schober Test, Fingertip to Floor, and ODI. Subsequently, a combination therapy of deep tissue massage and stretching is administered three times weekly over three weeks. Final assessments (posttest) are conducted. Participants, recruited from the LKP Rumah Sehat Mandiri clinic over the past five months, consisted of 20 individuals aged 20-60 years, sampled purposively. The study revealed significant improvements in pain, flexion, extension, right flexion, left flexion, and functional indicators following the combination therapy, with a significance value of 0.000, indicating a profound effect ($p < 0.05$). Notably, left flexion demonstrated a significance value of 0.001, further affirming the treatment's efficacy. The findings support the effectiveness of combining

deep tissue massage and stretching in reducing LBP severity and promoting healing. Thus, this combined approach holds promise for managing LBP injuries effectively.

KEYWORDS

Low Back Pain; Deep Tissue Massage; Stretching

1. INTRODUCTION

Low back pain, characterized by discomfort in the lumbar region and movement limitations, is a prevalent global health issue (Babu, 2022; Cieza et al., 2020; Li et al., 2019). Lumbar spondylosis, a common cause of low back pain, affects approximately 60-80% of individuals (Ansari et al., 2022). This musculoskeletal disorder poses significant disability challenges worldwide (Ahmed et al., 2021; Forestier et al., 2020), with an estimated 540 million people experiencing activity limitations due to low back pain (Liza et al., 2023), and 70-85% encountering low back pain at least once (Tchorowska et al., 2021).

A study by Yang et al. (2014) highlights the widespread impact of low back pain on both developed and developing nations. In Thailand, this condition is prevalent, particularly among manual laborers, affecting 30% of the population (Rujipong et al., 2021). Low back pain, a common musculoskeletal issue, afflicts 70-80% of adults (Farber & Wieland, 2016; Liza et al., 2023), predominantly affecting women aged 45-60 years (Kozinoga et al., 2015). In Indonesia, low back pain incidence ranges from 7.6% to 37%, with a higher occurrence among individuals aged 20-40 years (Liza et al., 2023). Low back pain, along with neck pain, is a leading cause of disability, imposing significant social, economic, and personal burdens (Coenen et al., 2013).

Poor posture contributes to low back pain symptoms by increasing mechanical stress on the lumbar region (Workneh & Mekonen, 2021). Chronic non-specific low back pain affects individuals of all ages, posing significant health concerns (Ma et al., 2021). Disc degenerative disease-related low back pain affects gait and daily activities (Krekoukias et al., 2021; Oatyimprai et al., 2020). Trauma, overactivity, and improper sitting posture are additional causes of low back pain (Şimşek et al., 2017). Low back pain is a recurring chronic condition that diminishes quality of life (Kim et al., 2020), exacerbated by exposure to cold air (Wati et al., 2023). It leads to decreased muscle performance, impaired circulation, and worsened spinal posture (Suryadi et al., 2024), prompting medical attention (Kiel et al., 2020). Each year, approximately 2.7 million patients seek emergency

care for low back pain in the US (Rothberg & Friedman, 2017), making it a common reason for doctor visits (Hoffman et al., 2020).

Deep tissue massage and stretching are proposed solutions for managing low back pain. More than half of US physicians advocate massage therapy for low back pain treatment (Namiranian et al., 2021), supported by previous research (Miake-Lye et al., 2019). Health workers are at high risk of low back pain (Şimşek et al., 2017). Gentle, prolonged massage improves quality of life and reduces pain in low back pain patients (Liza et al., 2023). Sports massage enhances flexibility, blood flow, and aids in injury rehabilitation (Mahesvi et al., 2023). Soft tissue manipulation offers benefits in conservative low back pain treatment (Loghmani et al., 2021).

Another advantage is that massage therapy contributes to enhancing patient functionality and alleviating back pain (Tchorowska et al., 2021). Massage therapy and acupressure, administered twice weekly over 12 sessions, prove effective in treating low back pain. According to a study by Goertz, 81% of patients reported receiving recommendations from medical doctors for both drug and non-drug therapies (Goertz et al., 2021). While Majchrzycki et al., (2014) previously conducted research on deep tissue massage treatment alongside nonsteroidal anti-inflammatory drugs, and applied both deep tissue massage and therapeutic massage for low back pain injuries (Liza et al., 2023). However, there has been no follow-up to this research until 2023, particularly concerning the combination of deep tissue massage and stretching for low back pain injuries. This gap in research underscores the importance of conducting the present study. Therefore, the aim of this study is to demonstrate the effectiveness of combining deep tissue massage and stretching in healing low back pain injuries.

2. METHODS

2.1. Participants

This study adopted a pre-experimental design utilizing the one-group pretest and posttest approach. The participants of this research were individuals who had suffered from low back pain injuries and had been attending the LKP Rumah Sehat Mandiri clinic for the past five months. Purposive sampling was employed, considering criteria such as non-specific low back pain, willingness to participate, male gender, and diminished motor function. A sample size of 20 individuals was determined using a sample size calculator. The collected data revealed that the participants ranged in age from 20 to 60 years old.

2.2. Instruments

The sample of this study is assessed before treatment to obtain pre-test data, and then re-evaluated after treatment to obtain post-test data. Initially, researchers collect pre-test data on low back pain, followed by administering a treatment combining deep tissue massage with stretching. Therapy sessions are conducted three times a week for three weeks, after which final data measurements are conducted as post-tests.

Various instruments are used to measure low back pain and related factors. These include the Visual Analogue Scale (VAS) for assessing the intensity of low back pain, the Modified Schober Test for assessing Range of Motion (ROM) in the hip joint, the Fingertip to Floor test for measuring lateral flexion movement, and the Oswestry Disability Index (ODI) for evaluating body function. Specifically, ODI posttest data collection is conducted three times: at 24, 48, and 72 hours after treatment. Additionally, equipment utilized in the research for administering deep tissue massage and stretching includes lubricants, towels, massage equipment, masks, and hand sanitizer. The research procedure chart is outlined in Figure 1.

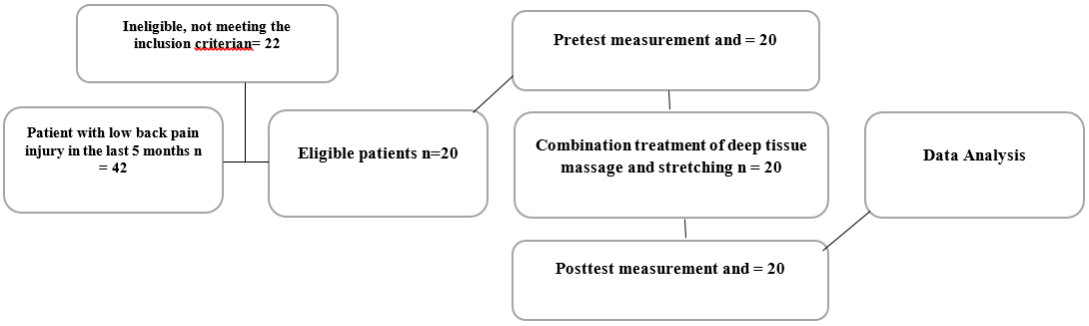

Figure 1. Chart of Research Procedures

2.3. Statistical analysis

Descriptive analysis was conducted on the research data to offer a concise overview and aid in data presentation. For normally distributed data, the t-test was utilized to examine differences between the mean pretest and posttest results, with significance assessed using the paired sample test in the SPSS 26 application.

3. RESULTS

The sample was categorized by age group, offering a comprehensive overview of the participants who received a combination of deep tissue massage and stretching. The breakdown of sample data by age group is presented in Table 1. According to the table provided, it can be observed that out of the total sample population receiving the combined treatment of deep tissue massage and stretching, 8 individuals are within the age range of 20-29 years, accounting for 40% of the sample. Additionally, there are 2 participants aged 30-39, constituting 10% of the sample. Furthermore, 6 individuals fall within the age bracket of 40-49, representing 30% of the sample, while 4 participants are aged 50-59, making up 20% of the sample.

Table 1. Sample group by age

Result	Age Range	Amount	Percentage
Deep Tissue Massage a combination of *stretching*	20-29	8	40%
	30-39	2	10%
	40-49	6	30%
	50-59	4	20%

According to the results of the normality test presented in Table 2, it is evident that the significance value (p-value) for each indicator is greater than 0.05. Therefore, it can be concluded that all indicators in the combination treatment of deep tissue massage and stretching follow a normal distribution. As a result, the study proceeds with the t-test.

Upon conducting hypothesis testing for the deep tissue massage combined with stretching treatment, significant p-values of 0.000 were obtained for the pain, flexion, extension, right flexion, and function indicators. The left flexion indicator yielded a significance value of 0.001. Since both values are less than 0.05, it can be inferred that there are significant differences in each indicator of the treatment. Consequently, the combination of deep tissue massage and stretching demonstrates a notable effect on the healing of low back pain in patients, as detailed in Table 3.

Furthermore, Table 4 displays the minimum, maximum, mean, and standard deviation of both pretest and posttest data for the deep tissue massage combined with stretching treatment. It indicates that while the posttest scores show improvement, the difference is not substantial. For further insights, refer to Figure 2.

Table 2. Results of the Shapiro Wilk Normality Test data pretest and post-test

Normality Test	Statistics	df	Sig.
Pretest	0.841	20	0.104

Posttest	0941	20	0.254
Pretest	0.976	20	0.880
Porttest	0.957	20	0.478
Pretest	0.930	20	0.158
Posttest	0.890	20	0.067
Pretest	0.875	20	0.054
Posttest	0.955	20	0.457
Pretest	0.944	20	0.285
Posttest	0.918	20	0.092
Pretest	0.934	20	0.187
Posttest	0.988	20	0.996
Pretest	0.934	20	0.187
Posttest	0.903	20	0.078
Pretest	0.934	20	0.187
Posttest	0.943	20	0.275

Table 3. T test for low back pain healing data

Data	test	t	df	Sig. (2-tailed)	Information
Painful	Pretest - Posttest	10,551	19	0.000	Sig.
flex	Pretest - Porttest	-9,797	19	0.000	Sig.
Extension	Pretest - Posttest	-6,527	19	0.000	Sig.
Right flex	Pretest - Posttest	6,529	19	0.000	Sig.
Left flex	Pretest - Posttest	3,904	19	0.001	Sig.
24 Hour Function	Pretest - Posttest	5.309	19	0.000	Sig.
48 Hour Function	Pretest - Posttest	10.108	19	0.000	Sig.
72 Hours Function	Pretest - Posttest	10,562	19	0.000	Sig.

Table 4. Descriptive data on the combination treatment of deep tissue massage and stretching

Indicator	test	N	Minimum	Maximum	Means	std. Deviation
Painful	Pretest	20	30.00	82.00	64.10	16.82
	Posttest	20	20.00	51.00	34.90	9.10
flexion ROM	Pretest	20	4.00	7.40	5.66	0.91
	Porttest	20	4.50	8.00	6.40	0.95
Extension ROMs	Pretest	20	1.20	6.30	3.30	1.30
	Posttest	20	2.70	7.70	4.36	1.19

Right ROM	flexion	Pretest	20	30.60	48.00	43.42	4.61
		Posttest	20	30.00	46.00	39.68	4.19
Left ROM	flexion	Pretest	20	32.90	48.10	42.27	4.29
		Posttest	20	31.10	45.10	39.45	3.86
Function		Pretest	20	46.00	72.00	57.20	8.34
24 Function	Hour	Posttest	20	20.00	76.00	46	13.53
48 Function	Hour	Posttest	20	18.00	52.00	37.60	11.06
72 Function	Hours	Posttest	20	18.00	48.00	32	9.49

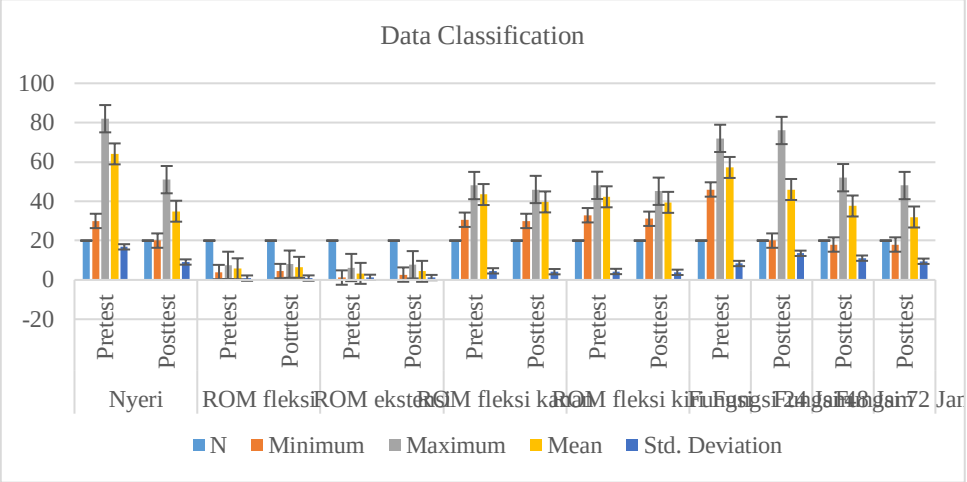

Figure 2. Pretest and Posttest Data Classification

4. DICUSSION

The findings indicate that this combination therapy significantly aids in the healing process of low back pain injuries. Moreover, it demonstrates effectiveness in pain relief, enhancing range of motion (ROM), and improving functionality in individuals with low back pain injuries. Previous research has consistently shown positive outcomes of deep tissue massage in reducing pain among patients with chronic low back pain injuries (Liza et al., 2023).

These findings are further supported by previous studies that applied deep tissue massage and therapeutic massage, highlighting their beneficial effects on chronic low back pain (Romanowski et al., 2012). Güney & Uçar (2021) found that deep tissue massage reduces pain levels and provides comfort for postoperative women. Joseph et al. (2018) demonstrated that combining massage therapy with lumbopelvic stability exercises yields superior results compared to standard massage therapy for

healing low back pain. Low back pain injuries typically manifest as pain below the costal margin and above the inferior gluteal region (Daneau et al., 2019; Putri et al., 2020), prompting the exploration of various treatment modalities.

Indeed, other studies have shown the effectiveness of diverse treatments such as massage therapy, segmental stretching, motor control exercises, and posture education in reducing back pain and improving spinal alignment (Liza et al., 2023). Traditional Thai massage combined with stretching exercises has been found effective in reducing pain, disability, and increasing back flexibility (Buttagat et al., 2020). Additionally, massage therapy combined with abdominal exercises offers significant benefits for lower back pain relief (Liza et al., 2023).

Moreover, Chinese massage therapy serves as a cornerstone in treating chronic low back pain (Yang et al., 2014), and massage therapy has been effective in alleviating low back pain among nursing staff (Borges et al., 2014). Lumbar transforaminal epidural block treatment also shows positive effects in treating low back pain with radicular pain (Bellido-Fernández et al., 2018). Back massage therapy has demonstrated effectiveness in reducing low back pain injuries (Lee & Ko, 2015), while therapeutic massage intervention yields successful outcomes in alleviating symptoms of low back pain (Larson, 2015).

Furthermore, massage therapy combined with ultramagnetic therapy has been shown to reduce pain in shoulder injuries (Liza et al., 2022). Regular physical exercise is recommended for managing non-specific low back pain (Shipton, 2018), and maintaining physical fitness, which can lead to improved health and gross motor skills (Meo et al., 2021; Rubiyatno et al., 2023; Samodra et al., 2023; Saputra et al., 2023; Suryadi, 2022; Suryadi et al., 2021, 2023; Suryadi & Rubiyatno, 2022).

5. CONCLUSIONS

The research findings and discussions presented in this study build a solid foundation regarding the effectiveness of deep tissue massage and stretching in treating low back pain, drawing from the references cited throughout the results and discussions. The study's results offer compelling evidence that the combination of deep tissue massage and stretching significantly reduces low back pain injuries in patients. This conclusion is supported by the notable improvements observed in pain levels, range of motion (flexion, extension, right and left flexion), and functional ability following the combined treatment. These findings contribute new insights into the management of low back pain

and underscore the efficacy of combining deep tissue massage and stretching for its treatment. Consequently, the study suggests that this combined therapy is an effective approach for addressing low back pain.

For future research directions, it is recommended to investigate the comparative effectiveness of deep tissue massage and stretching versus sports massage therapy in individuals with low back pain injuries. This comparative analysis could provide further insights into the optimal treatment modalities for managing low back pain and improving patient outcomes.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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