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The Effect of Massage Therapy and Stretching Therapy on Chronic Low Back Pain in Athletes

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Abstract

Chronic low back pain (CLBP) is a prevalent issue among athletes, significantly impacting their performance and quality of life. This study investigates the comparative effectiveness of different combinations of massage therapy and stretching therapy in reducing CLBP. Using a 2x2 factorial experimental design, 24 athletes were randomly divided into four groups: thumb massage with self-stretching, thumb massage with assisted stretching, knuckle massage with self-stretching, and knuckle massage with assisted stretching. Each group consisted of six athletes receiving one treatment session. Pain intensity was measured using the Numeric Rating Scale (NRS) before and after treatment. Results indicated a reduction in pain intensity across all groups, with the highest average reduction observed in the knuckle massage with assisted stretching group, followed by knuckle massage with self-stretching, thumb massage with assisted stretching, and thumb massage with self-stretching groups. The study concludes that the combination of massage and stretching therapies effectively reduces CLBP in athletes, with knuckle massage combined with assisted stretching showing the most significant reduction. No significant interaction between massage and stretching therapies was found suggesting the independent efficacy of each therapy. These findings support the use of these non-invasive treatments in managing CLBP among athletes.

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INTRODUCTION

Chronic low back pain (CLBP) is a common and debilitating condition that significantly affects athletes' performance and overall well-being(Balagué et al., 2012). Defined as pain, muscle tension, or stiffness localized below the rib cage and above the gluteal folds, CLBP persists for more than three months and can be triggered by various factors such as poor posture, repetitive strain, and inadequate recovery(Kang et al., 2012; Sundell et al., 2019). In athletes, CLBP is particularly concerning due to the physical demands of their training and competitions, often leading to decreased performance, reduced participation, and long-term health consequences(Thornton et al., 2021).

Previous studies have highlighted various conservative treatments for CLBP, including physical therapy, pharmacological interventions, and alternative therapies such as acupuncture and chiropractic care. Massage therapy has been widely recognized for its potential in alleviating pain through muscle relaxation, improved blood circulation, and reduced muscle tension(Rizki & Saftarina, 2020; Thornton et al., 2021). Different massage techniques, such as effleurage, petrissage, and deep tissue massage, have shown varying degrees of effectiveness(Setiawan & Rustiadi, 2021). Stretching exercises, on the other hand, are essential for maintaining and improving flexibility, which can help reduce muscle stiffness and prevent injuries(Hatefi et al., 2021; Zhimina Devi et al., 2014).

Despite the availability of various treatments, there is limited research comparing the specific effects of different massage techniques and stretching methods on CLBP in athletes. Understanding the most effective combination of these non-invasive therapies can provide valuable insights for optimizing pain management and enhancing athletic performance. This study aims to compare the effectiveness of thumb massage and knuckle massage in reducing CLBP in athletes, evaluate the impact of self-assisted stretching versus therapist-assisted stretching on pain reduction, and investigate any potential interaction between massage and stretching therapies in managing CLBP.

METHODS

A randomized controlled trial with a factorial design (2x2) was conducted to assess the effects of massage therapy and stretching therapy on CLBP. Twenty-four athletes diagnosed with CLBP were recruited and randomly assigned to one of four intervention groups: thumb massage with self-assisted stretching (a1b1), thumb massage with therapist-assisted stretching (a1b2), knuckle massage with self-assisted stretching (a2b1), and knuckle massage with therapist-assisted stretching (a2b2). Each group consisted of six athletes, balanced in terms of gender distribution.

Massage therapy involved thumb massage, where pressure is applied using the thumbs to target muscle knots and tension points, and knuckle massage, which utilizes the knuckles to apply deeper pressure for more profound muscle relaxation and pain relief. Stretching therapy included self-assisted stretching, where athletes perform stretches on their own to improve flexibility and reduce muscle tension, and therapist-assisted stretching, where a therapist assists athletes in performing stretches to ensure optimal range of motion and correct technique. Each intervention was administered in a single treatment session, and pain intensity was measured using the Numeric Rating Scale (NRS) before and after the intervention. Data were analyzed using two-way ANOVA to assess the main effects and interaction effects of the therapies.

RESULTS AND DISCUSSION

The participant pool included a diverse group of athletes, with an equal distribution across the four intervention groups. The study revealed significant reductions in pain intensity for knuckle massage and therapist-assisted stretching. Knuckle massage showed a mean pain reduction of 6.5 indicating its effectiveness in providing deeper muscle relaxation and pain relief compared to thumb massage.

Table 1: Hypothesis Testing for Massage Therapy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Massage	18.375	1	18.375	13.364	**0.002**

This aligns with previous studies by Setiawan & Rustiadi, (2021) and Cherkin et al., (2011), which highlighted the benefits of deep tissue massage for pain reduction. Therapist-assisted stretching also significantly reduced pain intensity, with a mean reduction of 6.25

Table 2: Hypothesis Testing for Stretching Therapy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Stretching	9.375	1	9.375	6.818	**0.017**

The professional guidance ensured proper technique and optimal stretching, enhancing flexibility and reducing pain more effectively than self-assisted stretching. This finding is consistent with the work of Kim & Lee, (2017), which emphasized the importance of assisted stretching for lower back pain.

No significant interaction was found between massage and stretching therapies (F = 0.273, Sig. = 0.607), suggesting that each therapy independently contributes to pain reduction without synergistic effects.

Table 3: Interaction Between Massage and Stretching Therapies

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Massage *Stretching	0.375	1	0.375	0.273	**0.607**

This indicates that both massage and stretching therapies can be used independently to manage CLBP in athletes effectively. Comparing these results with previous studies, Setiawan & Rustiadi, (2021) found that deeper massage techniques were more effective in reducing pain for knee injuries, aligning with our findings on knuckle massage. Cherkin et al., (2011)reported the benefits of massage therapy for CLBP, emphasizing the importance of technique depth. Kim & Lee,(2017)highlighted the effectiveness of assisted stretching for lower back pain, supporting our results on therapist-assisted stretching.

CONCLUSION

This study concludes with three key findings that the combination of massage and stretching therapies effectively reduces CLBP in athletes, with knuckle massage combined with assisted stretching showing the most significant reduction. knuckle massage is more effective than thumb massage in reducing CLBP among athletes due to its deeper pressure application; therapist-assisted stretching significantly reduces pain intensity compared to self-assisted stretching, highlighting the importance of professional guidance in stretching exercises; and there is no significant interaction between massage and stretching

therapies, indicating that they independently contribute to pain reduction. These conclusions provide valuable insights for practitioners in the field of sports medicine, emphasizing the importance of incorporating effective massage and stretching techniques into the routine care of athletes with CLBP.

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