The effectiveness of myofascial trigger point therapy in patients with chronic low back pain

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ABSTRACT

Chronic low back pain (CLBP) is one of the most prevalent musculoskeletal disorders, affecting a large proportion of the global population and contributing significantly to disability, reduced quality of life, and healthcare costs. Although the role of soft tissue as a potential pain generator has long been recognized, only in recent years has therapeutic focus shifted toward soft tissue–based treatment strategies. Myofascial pain, in particular, presents a persistent clinical challenge and is a frequent cause of visits to primary care and pain management clinics. The purpose of this study was to investigate and evaluate the effectiveness of myofascial trigger point (MTrP) release therapy in individuals with CLBP. A total of 32 male and female participants aged between 25 and 65 years were randomly assigned to receive either MTrP therapy or sham MTrP therapy (SMTrP). Both interventions were applied twice weekly over a two-week period, with at least a one-day interval between sessions. Each treatment lasted 40 minutes. Pain intensity and functional disability were assessed using the Visual Analogue Scale (VAS) and the Oswestry Disability Index (ODI), respectively. The results demonstrated that MTrP therapy significantly reduced pain levels and improved functional ability compared to the sham treatment. These findings suggest that myofascial trigger point therapy is an effective and practical method for managing chronic low back pain. Its implementation may help reduce chronic complications, alleviate the burden on healthcare systems, and lower overall treatment costs. **Keywords:** chronic pain; low back pain; spine; myofascial trigger point; physiotherapy

Učinki terapije miofascialnih prožilnih točk pri pacientih s kronično bolečino v križu

POVZETEK

Kronična bolečina v križu je ena najpogostejših mišično-skeletnih motenj, ki prizadene velik del svetovnega prebivalstva ter pomembno prispeva k invalidnosti, zmanjšani kakovosti življenja in povečanim zdravstvenim stroškom. Čeprav je vloga mehkih tkiv kot možnega povzročitelja bolečine že dolgo znana, se je šele v zadnjih letih terapevtski pristop začel usmerjati v zdravljenje, osredotočeno na mehka tkiva. Miofascialna bolečina predstavlja pomemben klinični izziv in je pogost razlog za obisk zdravnikov primarne ravni in specialistov za zdravljenje bolečine. Namen raziskave je bil preučiti in ovrednotiti učinkovitost terapije sproščanja miofascialnih prožilnih točk pri osebah s kronično bolečino v križu. V raziskavi je sodelovalo 32 prostovoljcev, moških in žensk, starih med 25 in 65 let, ki so bili naključno razporejeni v skupino z terapijo miofascialnih prožilnih točk ali v skupino z navidezno terapijo miofascialnih prožilnih točk. Intervencije so bile izvedene dvakrat tedensko v obdobju dveh tednov, z najmanj enodnevnim premorom med terapijama. Vsaka terapija je trajala 40 minut. Intenzivnost bolečine in funkcionalna oviranost sta bili ocenjeni z vizualno analogno lestvico (VAS) in z Oswestryjevim vprašalnikom invalidnosti zaradi bolečin v križu (ODI). Rezultati so pokazali, da je terapija miofascialnih prožilnih točk statistično značilno zmanjšala raven bolečine in izboljšala funkcionalno sposobnost v primerjavi z navidezno terapijo. Ugotovitve kažejo, da je terapija sproščanja miofascialnih prožilnih točk učinkovita in uporabna metoda pri obravnavi kronične bolečine v križu, saj lahko prispeva k zmanjšanju kroničnih zapletov, razbremenitvi zdravstvenega sistema ter nižjim stroškom zdravljenja. **Ključne besede:** kronična bolečina; bolečina v križu; hrbtenica; miofascialna prožilna točka; fizioterapija

INTRODUCTION

Low back pain (LBP) represents one of the most prevalent musculoskeletal disorders, particularly among middle-aged and older adults, making its management a matter of substantial clinical and public health importance (1,2). Despite extensive research in the field of LBP epidemiology over the past decades, accurately estimating its prevalence remains a significant challenge (3). Scott et al. (2010) estimated that between 49% and 90% of individuals in developed countries will experience LBP at some point in their lifetime. Globally, LBP remains the leading cause of pain and disability, contributing most significantly to the overall burden of musculoskeletal disorders (4). Numerous investigations worldwide consistently highlight the substantial impact of LBP on both physical and psychosocial health. Beyond restricting physical functioning and daily activities, LBP is also associated with high levels of psychological distress and depression (5,6). When LBP persists for twelve weeks or longer, it is classified as chronic. Chronic low back pain (CLBP) can profoundly impair an individual's functional capacity within the family, workplace, and broader social environment, thereby exerting a marked negative influence on health-related quality of life (7). CLBP ranks as the third most common musculoskeletal disorder (8,9), yet its underlying pathological causes remain poorly understood. Several studies suggest that CLBP is associated with factors such as age, general health status, psychological conditions, and occupation (10,11). CLBP represents a significant public health issue that, due to its high prevalence, recurrent nature, and substantial direct and indirect costs, poses a considerable health and economic burden on individuals, families, and society at large (1,12–14). Consequently, both clinicians and patients increasingly seek alternative therapeutic approaches for managing chronic low back pain. Myofascial pain is a clinical condition that has elicited both interest and confusion for decades. It is among the most common reasons for visits to primary care physicians and pain management clinics. Most individuals experience muscle pain at some point in their lives as a result of trauma, injury, or excessive or repetitive strain. Such pain typically resolves within a few weeks, either spontaneously or with treatment. However, in some cases, muscle pain persists long after the initial injury has healed and may even radiate to other regions of the body. This phenomenon indicates a state of heightened sensitivity and represents one of the hallmarks of chronic pain disorders (15). In recent years, numerous studies have investigated the treatment of CLBP through various soft tissue manipulation technique (5,16–20). One such technique is myofascial trigger point (MTrP) release. The recognition of soft tissue as a potential generator of pain in CLBP is not a new concept (21). A MTrP is defined as a hypersensitive spot located within a taut band of skeletal muscle. This technique is used for the management of chronic musculoskeletal pain (22) and has demonstrated clinical utility in the treatment of CLBP (23). There is growing evidence supporting the efficacy of treating active trigger points to alleviate symptoms in patients with LBP(24–26). However, many of these treatment methods lack robust evidence confirming their effectiveness in deactivating trigger points, reducing pain, and improving mobility. Therefore, further investigation is needed to determine whether trigger point release techniques represent an effective intervention for chronic low back pain.

METHODS

Participants and study design

Patients with a referral diagnosis of chronic lumbago were recruited from the private physiotherapy clinic Remedios in a prospective, randomized, single-blinded study. The inclusion criterion was a diagnosis of CLBP, defined as pain in the lumbar region without signs of radiculopathy (radiating pain, numbness, or muscle weakness) persisting for three months or longer. The diagnosis was further confirmed ensuring pain originated from muscular or articular structures in the lumbar spine using Cyriax orthopedic physical examination. Exclusion criteria included spinal osteoporosis, joint diseases (e.g., rheumatoid arthritis), metabolic bone disorders, malignancies and fractures, cardiovascular or other systemic conditions limiting physical exertion, radicular pain, pregnancy, severe psychiatric disorders, usage of analgesic medication for more than ten days per month or any other treatment for CLBP within the previous six months.

Prior to participation, each subject received verbal and written information regarding the study purpose and procedure, and all participants provided written informed consent. Data on age and sex were recorded for each participant. Participants were randomly assigned into *experimental* and *control group* throwing a dice (odd number experimental and even number control group). Stratified randomization was employed to ensure an even distribution according to sex and age. A trial diagram is shown in Figure 1.

Intervention and outcome measures

For patients assigned to experimental group, MTrPs were assessed in the quadratus lumborum, iliocostalis lumborum, gluteus maximus, gluteus medius, and gluteus minimus muscles. The criteria for identifying active MTrPs included the presence of a palpable taut band within the muscle, a hypersensitive spot within the taut band, and reproduction of the participant's characteristic pain upon palpation. Control subjects received sham therapy, during which the therapist placed hands over the identified trigger point areas without applying pressure or compression, performing only light touch.

Each participant received two therapy sessions per week over a two-week period, with each session lasting 40 minutes and separated by at least one day. All interventions were conducted by a highly qualified and clinically experienced physiotherapist.

An assessor blinded to group allocation, evaluated the outcomes using the *Visual Analogue Scale (VAS)* and the *Oswestry Disability Index (ODI).* The questionnaire was translated from English into Slovenian language, and data were processed according to Fairbank and Pynsent (27).

Statistical analysis

The collected data were processed using Microsoft Excel 2021, and statistical analyses were performed using IBM SPSS Statistics version 26. Nonparametric tests were applied when testing the hypotheses. For comparing dependent samples (pre-therapy vs. post-therapy within the same group), the Wilcoxon signed-rank test was used. To evaluate differences between independent samples (experimental group before intervention vs. control group before intervention; experimental group after intervention vs. control group after intervention), the Mann–Whitney U test was employed. A conventional significance level of 5% was used when testing all assumptions.

RESULTS

Between May 15 and August 30, 2023, 80 patients were assessed for eligibility (Figure 1). Forty-eight participants were excluded, mainly because they did not meet the inclusion criteria. A total of 32 patients with CLBP (14 men; mean age, 53 years) were randomized into the MTrP therapy group and the SMTrP group. Baseline demographic and clinical characteristics of the 32 patients with CLBP randomized to the experimental and control groups are presented in Table 1.

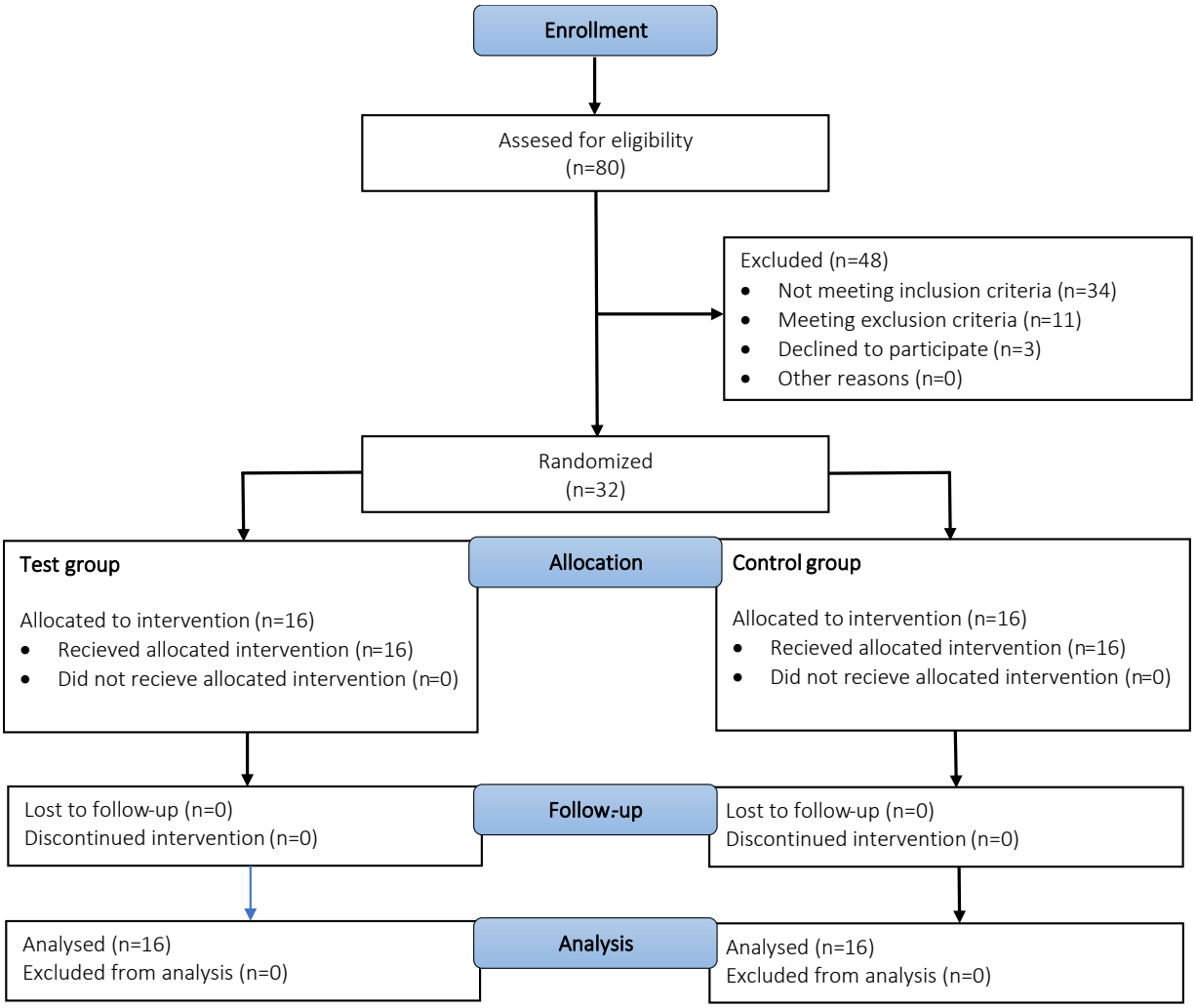

Figure 1. Diagram of the single-centre randomised controlled trial of patients with chronic low back pain (CLBP).

In the experimental group, significant differences in VAS and ODI scores were observed before and after the intervention (Table 2; Figure 2). No significant differences were observed in the control group.

Table 1. Baseline demographic and clinical features of 32 patients with chronic low back pain (CLBP) randomized to experimental and control group.

	Experimental Group (n=16)	Control Group (n=16)	p-value
Age, years	53.0 (6.54)	53.1 (6.41)	0.988
Males	7 (44)	7 (44)	1.000
VAS	5.3 (2.0)	4.1 (1.8)	0.085
ODI	13.6 (7.3)	10.7 (7.8)	0.286

Note: variables are defined as mean (SD) or number (%).

Table 2. Comparison between the experimental and control groups before and after therapy in 32 patients with chronic low back pain (CLBP).

	Experimental group			Control group		
	Before	After	p-value	Before	After	p-value
VAS	5.3 (2.0)	3.4 (1.7)	0.001	4.1 (1.8)	3.8 (1.9)	0.129
ODI	13.6 (7.3)	7.6 (4.8)	0.001	10.7 (7.8)	10.0 (8.0)	0.201
Pain intensity	2.3 (1.0)	1.3 (0.7)	0.002	1.8 (0.8)	1.7 (0.9)	0.564
Personal care	1.0 (0.7)	0.6 (0.6)	0.008	1.1 (0.9)	1.1 (0.9)	1.000
Lifting	2.0 (1.3)	1.1 (0.7)	0.011	1.8 (1.2)	1.0 (1.3)	0.157
Walking	0.6 (0.8)	0.1 (0.4)	0.020	0.4 (0.6)	0.3 (0.5)	0.317
Sitting	1.5 (0.9)	0.8 (0.7)	0.003	0.9 (1.1)	0.8 (1.0)	0.655
Standing	1.4 (0.9)	1.0 (0.9)	0.034	1.3 (1.0)	1.2 (1.0)	0.317
Sleeping	1.0 (0.6)	0.6 (0.6)	0.014	0.5 (0.7)	0.5 (0.7)	0.317
Sex life	0.9 (1.0)	0.4 (0.6)	0.007	0.6 (0.7)	0.5 (0.7)	0.317
Social life	1.0 (1.0)	0.5 (0.9)	0.011	1.0 (1.0)	0.8 (1.0)	0.157
Travelling	1.5 (1.0)	0.8 (0.6)	0.007	1.1 (1.1)	1.0 (1.2)	0.157

Note: variables are defined as mean (SD).

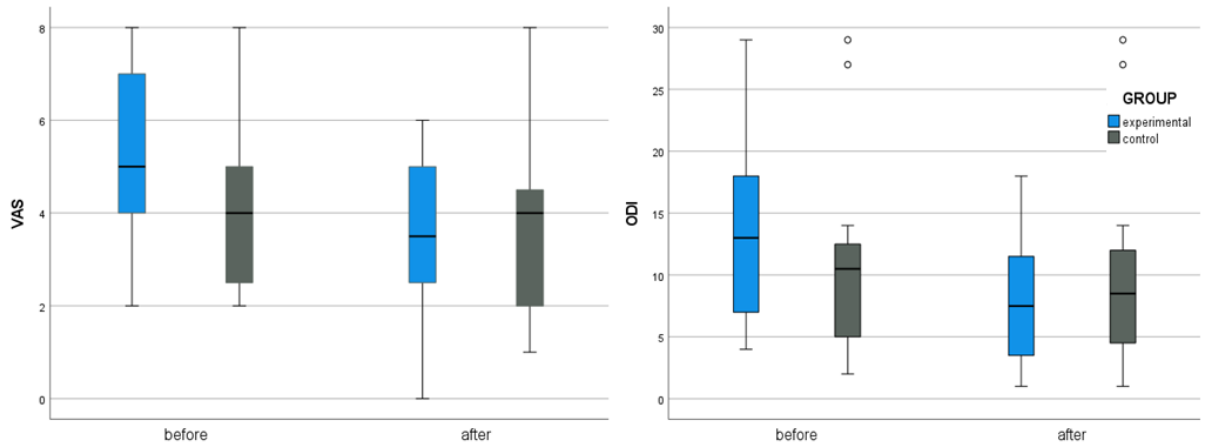

Figure 1: Comparison of VAS and ODI between the Experimental and Control groups before and after therapy in 32 patients CLBP.

DISCUSSION

The main finding of this study is that MTrP therapy was effective in reducing pain and improving functional status in patients with CLBP, whereas no meaningful changes were observed following sham intervention. These findings support the clinical relevance of MTrP therapy as a targeted manual treatment for CLBP and align with the majority of previously published studies using comparable protocols (16–19, 23, 28–33).

The observed improvements in functional ability are consistent with earlier research employing validated disability questionnaires, including the Oswestry Disability Index, Roland–Morris Disability Questionnaire, and Quebec Back Pain Disability Scale (16–19, 23, 29–33). Most previous studies reported beneficial effects of MTrP therapy on daily functioning and activity limitations in CLBP (16,17,19,23,29–31,33). Importantly, several investigations demonstrated that MTrP therapy was effective as a standalone intervention (17), while others reported comparable benefits when combined with exercise or other manual techniques (23). These findings reinforce the role of MTrP therapy in addressing functional impairment associated with chronic musculoskeletal pain.

Our findings are also consistent with previous evidence demonstrating pain reduction following MTrP therapy in CLBP, as assessed by visual analogue scales and other pain questionnaires (16–19, 28, 30–33). Multiple studies have shown that MTrP therapy can produce clinically meaningful pain relief over short- and medium-term follow-up periods (16,17,19,23,28,31,33). Although some studies reported fluctuating pain responses during treatment (31), the overall trend supports a beneficial effect on pain intensity. In contrast, a small number of studies failed to demonstrate superiority of MTrP therapy over comparator interventions, particularly when added to spinal manipulation or when different manual techniques were compared (18,30). These discrepancies may be explained by methodological differences, heterogeneity of treatment protocols, and limited statistical power.

The absence of significant changes in the control group strengthens the interpretation that the observed benefits were attributable to the active MTrP intervention rather than spontaneous improvement or placebo effects. This finding is consistent with prior trials reporting minimal or no improvement in sham-treated groups (19,33).

Despite these positive findings, several limitations must be acknowledged. The relatively small sample size and short intervention period limit the generalizability of the results. In addition, standardization of manual pressure and treatment parameters remains challenging in myofascial therapy research. Heterogeneity across studies—including differences in treatment duration, frequency, technique selection, and outcome measures—continues to limit comparability and evidence synthesis. These limitations are well recognized in the current literature (16–19, 23, 28–33) and highlight the need for more rigorous, standardized randomized controlled trials.

Overall, the present findings are in line with most previous studies and support the growing body of evidence suggesting that MTrP therapy can reduce pain and improve functional capacity in patients with CLBP. Standardization of treatment protocols and larger, high-quality trials are essential to strengthen the evidence base and guide clinical implementation.

CONCLUSION

Chronic low back pain remains a major cause of disability and reduced quality of life worldwide. This study demonstrates that myofascial trigger point therapy is an effective, non-invasive intervention for reducing pain and improving functional status in patients with CLBP. The findings are consistent with existing evidence and support the integration of MTrP therapy into physiotherapy practice. Future research should focus on larger randomized controlled trials with standardized treatment protocols to confirm and generalize these results and further establish MTrP therapy as a core component of CLBP management.

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