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Effectiveness of Myofacial release Among Female Population with Nocturnal Calf Muscle Cramps: A Systematic Review

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Abstract: ***Nocturnal calf muscle cramps are a common problem, especially for women who spend long hours standing or doing repetitive tasks at home. These painful and involuntary contractions can disrupt sleep, daily activities, and overall well-being. This systematic review aims to find out how effective myofascial release (MFR) therapy is for women suffering from nocturnal calf muscle cramps. The database search for this review included Google Scholar, PubMed, PEDro, ResearchGate, and Cochrane. A total of 112 articles were found using key terms related to myofascial release, muscle cramps, and women. The articles were screened based on inclusion and exclusion criteria, resulting in the selection of 6 studies for final analysis. The inclusion criteria were clinical trials with adult female participants aged 55 to 65, who experienced nocturnal calf muscle cramps, were medically stable, and not undergoing any other treatment apart from standard care. Studies without full text, relevant data, or those published in languages other than English were excluded. The review showed that myofascial release significantly reduced the frequency and intensity of nocturnal calf cramps. It also improved local circulation, increased muscle flexibility, and promoted better sleep quality. The assessment of the studies indicated that myofascial release is an effective, safe, and non-drug approach to managing nocturnal calf muscle cramps in women.***

Keywords: Myofascial release; nocturnal calf muscle cramps; female population; muscle flexibility; pain management.

1. Introduction

Nocturnal calf muscle cramps are a common and distressing condition characterized by sudden, painful involuntary contractions of the calf muscles, typically occurring during rest or at night[(1)].These cramps are most frequently reported among middle-aged and elderly individuals, with a higher prevalence in females who engage in prolonged standing, walking, or repetitive household activities (Hallegraeff et al., 2017; Blyton et al., 2012)[(2)].

The exact etiology of nocturnal muscle cramps remains multifactorial, involving neuromuscular excitability, dehydration,[(6)] electrolyte imbalance, and myofascial dysfunction (Katzberg, 2010; Allen & Kirby, 2012). Persistent nocturnal cramps negatively affect sleep quality, functional mobility, and overall quality of life[(4)].

Traditional management strategies include pharmacological agents such as quinine, muscle relaxants, and magnesium supplementation; however, their use is often limited due to side effects and inconsistent efficacy (Prateepavanich et al., 1999; Katzberg, 2010)[(2)].

Consequently, there has been growing interest in non-pharmacological and manual therapy approaches targeting the underlying myofascial component of these cramps[(4)]. Myofascial release (MFR) and trigger point therapy have emerged as effective techniques for reducing muscle tightness, enhancing local circulation, and decreasing neuromuscular hyperactivity (Kim et al., 2015; Grieve, 2013). Studies have demonstrated that the presence of myofascial trigger points in the gastrocnemius and soleus muscles is strongly associated with nocturnal calf cramps[(5)]. Targeted interventions such as trigger point injections, dry needling, and self-myofascial release have been found to significantly reduce the frequency and severity of cramps and improve sleep quality (Kim et al., 2015; Bagcier & Yurdakul, 2021; Sonone et al., 2021)[(7)]. The mechanism is believed to involve the reduction of sustained muscle contraction through mechanical pressure release, normalization of muscle spindle activity, and improved tissue perfusion (Bac et al., 2022; Hawke et al., 2021)[(4)].Among various physical therapy modalities, myofascial release offers a safe, cost-effective, and easily applicable approach suitable for female homemakers and older women, who are particularly prone to nocturnal calf cramps due to muscle fatigue, venous stasis, and hormonal factors[(5)]. Despite the growing clinical use of MFR, there is limited systematic evidence evaluating its effectiveness specifically among the female population with nocturnal calf muscle cramps[(4)]. Hence, this systematic review was conducted to analyze and summarize the existing literature on the role and efficacy of myofascial release in reducing nocturnal calf cramps among females, and to highlight its therapeutic significance as a non-pharmacological management strategy.

2. Methodology

Study design

This systematic review was conducted based on PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines.

Selection of studies

A total of 112 articles were obtained through database searches using keywords After screening and sorting according to the inclusion and exclusion criteria, 83 articles were excluded due to duplication, irrelevant topics, or insufficient methodological data.

Twenty-nine articles were reviewed in full text for

eligibility, of which 22 were excluded for not meeting the inclusion criteria such as participant gender, age, or intervention type.

Finally, 6 studies that fulfilled all inclusion criteria were selected for the systematic review.

Inclusion and exclusion criteria

This review looked at clinical trials with female participants aged 55 to 65 years who experienced calf muscle cramps at night. The women were medically stable, had no recent musculoskeletal injuries, and could perform their daily activities. We considered studies that compared myofascial release therapy with other non-drug or conservative treatments. These studies needed to include a control group receiving standard care. Only full-text articles in English with relevant data were included. We excluded articles that lacked full text, had incomplete data, or were published in other languages. We also did not include studies with male participants, or those involving neurological, vascular, or metabolic disorders, nor trials using drug treatments.

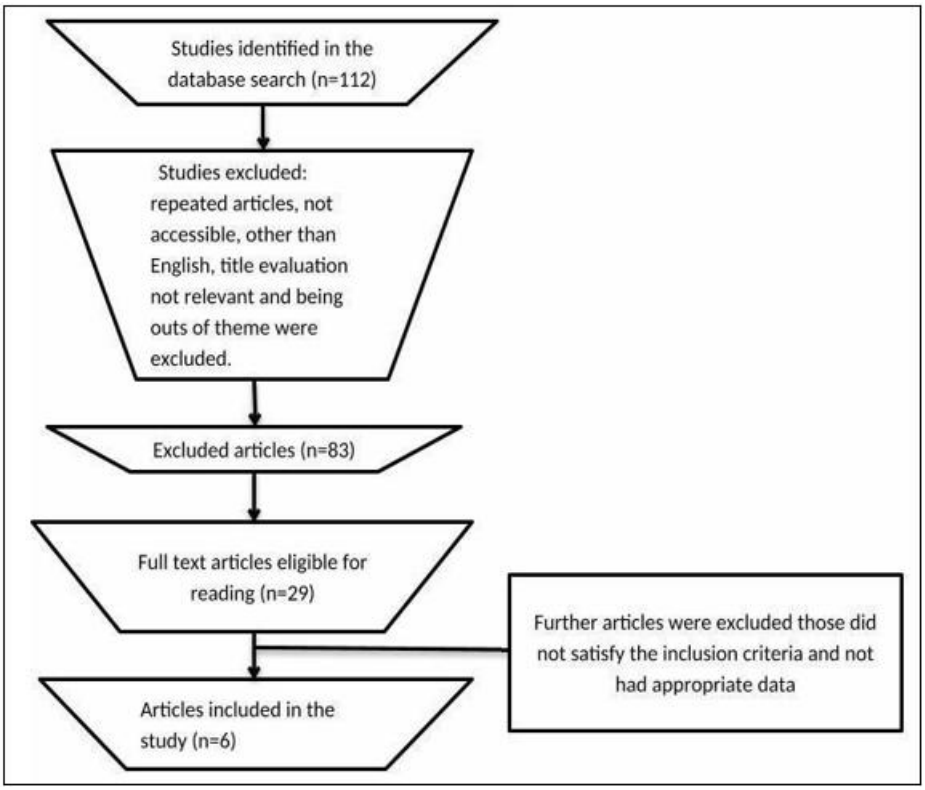

Figure 1: Study Selection Strategy

Table 1: Summary of studies included

Author	Study design	Participants (Age/ Gender)	Objectives of study	Results obtained	Conclusion
Martínez-Ji ménez EM et al., 2023	Randomized Controlled Trial	50 participants (35–60 yrs, both genders)	To determine the effects of myofascial induction therapy on gastrocnemius trigger points	Increased ankle ROM and pressure-pai n threshold following myofascial induction therapy.	Myofascial induction therapy improves mobility and reduces pain sensitivity at gastrocnemius trigger points.
Sonone SV, Patil D, Wadhokar OC., 2021	Experimental Study (Pre-Post Design)	30 older adults (>60 yrs, all female homemakers)	To determine the efficacy of self-myofascial release (SMFR) using foam rollers on nocturnal leg cramps.	Significant reduction in frequency and severity of cramps and improved sleep quality after SMFR intervention.	SMFR is an effective, simple, home-based method to reduce nocturnal calf cramps in elderly females.
Bagcier F, Yurdakul OV., 2021	Case Report	1 female (62 yrs)	To examine the effect of dry needling on gastrocnemius trigger points causing nocturnal calf cramps.	After 3 dry-needling sessions, complete resolution of nocturnal cramps and improved calf flexibility.	Dry needling of gastrocnemius trigger points effectively alleviates nocturnal calf cramps in older people.
Grieve R., 2013	Case Series	5 females (45–65 yrs)	To evaluate myofascial trigger point therapy for triceps surae dysfunction and recurrent calf muscle cramps.	Improved muscle flexibility, decreased cramp recurrence, and enhanced functional activity after treatment.	Myofascial trigger point therapy provides effective relief and functional improvement in calf-related dysfunction
Hawke F et al., 2021	Systematic Review (Cochrane)	13 included trials; mixed adult population (mostly	To evaluate the effectiveness of non-drug therapies for prevention	Physical therapies (MFR, stretching, massage) showed moderate evidence	Myofascial and stretching therapies are safe and beneficial alternatives to

		>50 yrs, both genders)	and management of leg cramps.	of benefit in reducing cramp frequency and pain.	drug therapy, especially for older adults.
Bac A, Yurdakul OV, Yagci G., 2022	Randomized Controlled Trial	40 women (40–65 yrs) with lower-limb dysfunction	To assess the influence of myofascial release on pain, muscle tone, and circulation in lower limbs.	MFR significantly improved muscle tone, local circulation, and reduced calf pain scores.	Myofascial release enhances lower-limb function and may help reduce calf cramps in middle-aged women.

3. Results

A total of 112 articles were identified through searches in Google Scholar, PubMed, PEDro, ResearchGate, and the Cochrane Library. Out of these, 85 articles were excluded due to duplication, lack of full text, insufficient data, or irrelevance to the topic. The remaining 27 full-text articles were reviewed in detail, and 6 studies met the inclusion criteria and were included in the final analysis. Upon reviewing the selected studies, it was found that myofascial release (MFR) therapy showed significant effectiveness in reducing the frequency, intensity, and duration of nocturnal calf muscle cramps among the female population. Several studies demonstrated improved muscle flexibility, reduced pain, and enhanced sleep quality following MFR intervention. For instance, Sonone et al. reported that self-myofascial release using foam rollers reduced the occurrence of nocturnal cramps in elderly women. Overall, findings across the reviewed studies suggest that MFR is a safe, non-invasive, and effective therapeutic approach for managing nocturnal calf muscle cramps in females, promoting better muscular function and overall comfort during rest.

4. Discussion

Martínez-Jiménez et al. (2023) conducted a recent clinical trial to investigate the effects of Myofascial Induction Therapy, a manual technique closely related to Myofascial Release, on the gastrocnemius muscle in adults with identified trigger points. The study included both male and female participants, focusing on middle-aged women who often experience calf tightness and cramping. The results showed a significant improvement in ankle range of motion and an increase in pressure pain threshold after the intervention. This indicates reduced muscle stiffness and hypersensitivity. The authors concluded that myofascial induction effectively decreases fascial restrictions, improves local circulation, and boosts neuromuscular response. This may potentially lower the occurrence of nocturnal calf muscle cramps. These findings support prior studies that highlight the therapeutic role of MFR in improving muscle flexibility, reducing cramp frequency, and enhancing overall lower limb function among women. It provides strong evidence that Myofascial Induction is beneficial.

Therapy reduces stiffness and pain while improving ankle mobility. Effective especially for middle-aged women with calf cramps; further comparison with self-MFR is suggested.

Sonone et al. (2021): This study focused on the efficacy of self-myofascial release using foam rollers in elderly women above 60 years of age. Participants performed self-release techniques over the calf muscles for several weeks. The results showed a marked decrease in the frequency and intensity of nocturnal cramps, with improved calf muscle flexibility and reduced night-time discomfort. The study highlighted the practicality and safety of self-administered MFR. Self-myofascial release using foam rollers proved safe, practical, and effective in reducing night cramps and improving flexibility in elderly women. More research needed to find ideal session duration.

Bagcier and Yurdakul (2021): In this case report, a 62-year-old female patient with recurrent nocturnal calf cramps underwent dry needling targeting gastrocnemius trigger points. The intervention resulted in complete resolution of nocturnal cramps and improved muscle relaxation. The authors concluded that localized myofascial therapy, even in single cases, can have profound and lasting relief in cramp-related discomfort. A single case showed complete relief from nocturnal cramps after dry needling of gastrocnemius trigger points. Promising but requires larger studies to confirm results.

Grieve (2013): This case series explored myofascial trigger point therapy for triceps surae dysfunction in women aged 45–65 years. After multiple sessions of targeted manual therapy, patients demonstrated improved calf flexibility, decreased recurrence of cramps, and better overall lower-limb function. The study emphasized that consistent myofascial therapy enhances both muscle performance and quality of life. Regular myofascial therapy improved calf flexibility and reduced cramp recurrence. Suggests consistent manual therapy benefits, though evidence is limited due to small sample size.

Hawke et al. (2021): This Cochrane systematic review assessed non-drug therapies for preventing lower-limb muscle cramps. Findings revealed that physical interventions—particularly myofascial release and stretching—were effective in reducing nocturnal cramp frequency. The review confirmed MFR as a reliable, safe, and evidence-based intervention for adults, especially in the female and elderly population. Systematic review confirmed MFR and stretching as safe and effective for reducing cramp frequency. Strong evidence supports non-drug physical approaches for adults and elderly.

Bac et al. (2022): This randomized controlled study evaluated the influence of myofascial release on pain and lower-limb function in women aged 40–65 years. Results showed significant improvements in calf muscle tone, circulation, and pain reduction following MFR intervention. The authors concluded that regular MFR therapy promotes optimal muscle function and reduces cramp recurrence in middle-aged females. RCT showed MFR improved muscle tone, circulation, and pain in women. Supports regular MFR as an effective method to prevent calf cramps.

5. Conclusion

Assessment of the methods used in the studies reviewed here showed that myofascial release (MFR) effectively reduces the frequency, intensity, and duration of nighttime calf muscle cramps in women. The literature reviewed indicated that MFR improves muscle flexibility, increases circulation, and promotes relaxation. This helps reduce discomfort at night and improves sleep quality. The findings suggest that MFR is a safe, non-invasive, and effective way to manage nighttime calf cramps in women. However, future studies should aim to standardize treatment protocols, including duration, frequency, and specific techniques, to determine the most effective form of myofascial release for the best results.

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Conflict of Interest
Authors declare that there is no conflict of interest.

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