



# **Efficacy of Self Myofascial Release Technique to Reduce Frequency and Severity of Nocturnal Leg Cramp in Older Adults**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Background:** Nocturnal leg cramps (NLC) are involuntary muscle contractions of the calf muscles, hamstrings, or foot muscles that occur unexpectedly, episodically, and are unpleasant. Night time cramping affects about one-third of adults. Leg cramps can strike anyone at any age, although they are more widespread and often more severe as grow older. The majority of cramps are idiopathic, and the physiological cause behind them is unknown. Muscle cramps appear to be triggered by neuromuscular structures in muscle, tendons, and nerve fibres, according to some writers. Musculoskeletal issues linked to a sedentary lifestyle, as well as job postures, prolonged standing, and the western habit of sitting rather than squatting, have been implicated of generating cramps, particularly NLC. Patients with cramps have a higher risk of peripheral vascular disease than individuals without cramps. Stretching before bedtime can help older persons lessen the frequency and severity of nocturnal leg cramps. Stretching treatments, like as Myofascial Release, can help relieve NLC. Self-Myofascial release (SMFR) is a sort of Myofascial release (MFR) that is accomplished by the person rather than a therapist, and it is usually done with the help of a tool. Self-MFR is a low-cost, easily accessible approach for people to relieve muscle and fascia pain while also maintaining flexibility. Foam rollers and roller massage are two of the most used devices

for self-MFR. MFR is used to treat a wide range of musculoskeletal disorders; it is used to treat a wide range of problems, and many types of treatment, such as trigger-point therapy and proprioceptive neuromuscular facilitation, fall under the myofascial umbrella.

**Aim and Objectives:** To study the main impact of Self Myofascial Release (SMFR) to decreasing the duration of pain and improving Quality of Life in patients with NLC.

**Methodology:** In this study total 30 patient with nocturnal leg cramps will receive Self Myofascial Release technique (SMFR), it will be including exercise which will be performed for 4 weeks twice a day and each for 5-10 mins.

**Discussion:** This study is done to find out the effectiveness of Self Myofascial release in individual with nocturnal leg cramps (NLC).

**Conclusion:** Conclusion of the study can be made based on the effect of Self Myofascial Release technique on patient with nocturnal leg cramps.

*Keywords: Nocturnal leg cramps (NLC); self myofascial release technique (SMFR); night cramps; stretching.*

## 1. INTRODUCTION

Nocturnal leg cramps (NLC) are involuntary muscle contractions of the calf muscles, hamstrings, or foot muscles that occur unexpectedly, episodically, and are unpleasant. Night time cramping affects about one-third of adults [1]. The pain from these contractions is strong and intense, and it can last anywhere from just a seconds to many minutes. Leg cramps occur across the daylight in 20% of patients who suffer from nocturnal leg cramps. The cramps can come in waves that last a few days or a week [1].

Stretching before bedtime can help older persons lessen the frequency and severity of nocturnal leg cramps. Painful, prolonged, involuntary muscle spasms of the calf muscles, hamstrings, or feet define these episodic cramp attacks [2]. The majority of cramps are idiopathic, and the physiological cause behind them is unknown. Muscle cramps appear to be triggered by neuromuscular structures in muscle, tendons, and nerve fibres, according to some writers. Musculoskeletal issues linked to a sedentary lifestyle, as well as job postures, prolonged standing, and the western habit of sitting rather than squatting, have been implicated of generating cramps, particularly NLC [3]. Furthermore, patients with cramps have a higher risk of peripheral vascular disease than individuals without cramps. Despite this, the majority of night time leg cramps occur without the involvement of arterial circulation [4]. Leg cramps can strike anyone at any age, although they are more widespread and often more severe as grow older. Women, particularly older women, are more likely to experience nocturnal cramps, and by most studies. Nocturnal individuals who

have frequent cramps also report higher sleep disruption, lower sleep quality, and daytime somnolence than matched controls who do not encounter cramps [5]. Many metabolic, fluid, and electrolyte issues have been linked to muscle cramps. They affect nearly two-thirds of diabetics, and it's most common in patients with Type 2 diabetes and diabetic neuropathy [5].

Leg cramps during the night are common and bothersome, especially in later life, and have a substantial impact on overall quality of life, particularly sleep quality. The current level of knowledge about the diagnosis, frequency, pathogenesis, and therapy of cramps is reviewed in this article. Leg cramps may be exacerbated by diuretic and long-acting beta-agonist prescription, according to new research.

The effectiveness of preventive stretching exercises in preventing cramps is controversial. Quinine is still the only drug that has been shown to diminish the occurrence and intensity of leg cramps. However, the benefits of quinine are minor, and the hazards include infrequent but dangerous immune-mediated reactions and dose-related detrimental impact, notably in the elderly. Quinine treatment should be limited to those with severe symptoms, should be checked on a frequent basis, and should include a dialogue with patients about the risks and benefits [5]. Although chronic venous insufficiency is frequently mentioned as a cause of muscular cramps, the link isn't always evident, yet the symptoms can manifest in such patients. Apart from that, magnesium supplementation and Quinine medication were the most widely mentioned treatments for preventing repeated cramping.

Stretching treatments, like as Myofascial Release, can help relieve nocturnal leg cramps (NLC). Myofascial release (MFR) is a regularly used manual technique for facilitating continuous stretching of matching tissue or increasing soft tissue extensibility by compression while restoring limited fascia or normal muscle length. MFR is generally to apply slow and continued pressure to restricted fascial layers for few seconds [6]. Self-myofascial release (SMFR) is a sort of myofascial release (MFR) that is accomplished by the person rather than a therapist, and it is usually done with the help of a tool [7].

Self-MFR is a low-cost, easily accessible approach for people to relieve muscle and fascia pain while also maintaining flexibility. Foam rollers and roller massage are two of the most used devices for self-MFR. MFR is used to treat a wide range of musculoskeletal disorders; it is used to treat a wide range of problems, and many types of treatment, such as trigger-point therapy and proprioceptive neuromuscular facilitation, fall under the myofascial umbrella [8].

## 2. METHODOLOGY

### 2.1 Study Design

This study will be carried out in the OPD setting of Ravi Nair Physiotherapy College and AVBRH, Sawangi (Meghe), Wardha. All participants will be educated about the details of the intervention, research and data confidentiality prior to the start of the study.

**Study type** – Interventional study

**Targeted population** – Patient with Nocturnal leg cramps

**Participant** - 30

**Duration of study** – 6 weeks

**Type of sampling** – Probability sampling

**Sampling techniques** – Simply random sampling

**Sample size** – Sample size is determined considering prevalence of NLC age groups.

For this study protocol there is COCHRAN FORMULA for sample size estimation.

### 2.2 Eligibility Criteria

**Inclusion criteria** – The individual above 50 years of male and womens. Those who have diagnosed with NLC, and who have ability to understand and follow instruction.

**Exclusion criteria** – The individual who are below 50 and who are not willing to participate.

**Randomization:** Will be done using simple random sampling

**Dependent Variables:** Pain, Mobility, Function.

**Independent Variables:** Self Myofascial release technique.

### 2.3 Study Procedure

- The clinical trial study will be performed on individuals above 50 years of age group with Nocturnal Leg Cramps. Self myofascial release technique will be used to relieve pain and reduce muscles cramps.

- Patient position - long sitting with hands at the side of the patient.

- Patient have to lift his body on this both the hands supported at his side, whereas a foam roller is placed beneath the patients lower limb.

- Slowly and gently gliding over the foam roller will stretch the muscle to relieve pain and cramps.

- Gradually number of repetition is increased.

- The foam roller can be placed beneath hamstrings or calf muscles as per the requirement of the patient

- Protocol including exercise which will be performed for 4 weeks twice a day and each for 5-10 mins.

### 2.4 Outcome Measures

#### 2.4.1 Primary outcome measures

Muscle cramp scale (MCS): This scale comprises of 5 point subdomains

- 1) Triggering factors

- 2) Frequency

- 3) Location

- 4) Severity

- 5) The Degree of cramps which affect overall daily living

#### 2.4.2 Secondary outcomes measures

Visual Analogue Scale (VAS): This scale is a validated, subjective measure for acute and chronic pain.

Scores are recorded on scale consisting of 10 cm line which represents between no pain to worst pain (0 to 10).

### 2.5 Data Collection

The instrument used in this study is questionnaire, which will be arranged on the basis of VAS and MCS, on the patient with nocturnal leg cramps.

VAS- The pain intensity scale is characterized from zero (no pain) to ten (maximum pain), and pain score with pain severity is categorized and evaluated as follows.

- 1) Severe pain – Pain score 8-10
- 2) Moderate pain – Pain score 4-7
- 3) Mild pain - Pain score 1-3

MCS – Muscle cramp scale, comprises of 5 point subdomains. This scale is used to rule out the severity of muscle cramps.

### 3. DISCUSSION

The Protocol will be conducted as to see the effect of Self Myofascial release technique in patient with Nocturnal leg cramps. Instruct the Patient to sit in long sitting position with hands at the side, then ask him to lift his body on this both the hands supported at his side, whereas a foam roller will be placed beneath the his lower limb.

Slowly and gently gliding over the foam roller will stretch the muscle to relieve pain and cramps. The foam roller can be placed beneath hamstrings or calf muscles as per the requirement of the patient.

### 4. CONCLUSION

After the data collection and stastical analysis of the data the conclusion of the study will be drawn.

### CONSENT

Principal Investigators will obtain the written informed consent from the participant on a printed form (local language) with signatures and give the proof of confidentiality.

### ETHICAL APPROVAL AND DISSEMINATION

The participant individuals of the study and DMIMSU who will fund it will be able to retrieve findings of study. After completion of study and publication of results data will be stored in the DMIMSU data repository.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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