

Effectiveness of Stretching Exercises on Muscle Cramps among Geriatric Patients in Selected Setting, Tiruvannamalai

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ABSTRACT

A quasi-experimental study was conducted to assess the effectiveness of stretching exercises on muscle cramps among geriatric patients in Government Tiruvannamalai Medical College and Hospital, Tiruvannamalai. The geriatric patients were selected by using a convenience sampling technique based on sample selection criteria. A total of 60 geriatric patients were recruited in this study (30 experimental and 30 control). The modified muscle cramps assessment scale was used to assess the level of muscle cramps. The study result shows that, comparing the pre-test and post-test levels of muscle cramps among geriatric patients in the experimental group, the pre-test mean value of muscle cramps was 20.87 with (SD) ± 2.81 , and the post-test mean value was 15.53 with $SD \pm 2.78$. The calculated paired 't' value was $t = 7.98$ found to be statistically significant at $p < 0.001$ level. In control group, the pretest mean value of muscle cramps was mean 21.13 with $SD \pm 2.94$ and the posttest mean value was 21.70 with $SD \pm 2.97$. The calculated paired 't' value was $t = 0.74$ found to be statistically non-significant at $p < 0.05$

level. The pre test mean value level of muscle cramps in experimental group mean was 20.87 with $SD \pm 2.81$ and control group mean was 21.13 with $SD \pm 2.94$. The calculated unpaired 't' value = 0.35 was found to be statistically non-significant at $p < 0.05$ level. The posttest mean value of muscle cramps in experimental group mean was 15.53 with $SD \pm 2.78$ and control group mean was 21.70 with $SD \pm 2.97$. The calculated unpaired 't' value was $t = 8.30$ shows statistically significant at $p < 0.001$ level. The study findings revealed that there was a highly significant difference in the level of muscle cramps among geriatric patients after implemented stretching exercise in experimental group then the control group.

Keywords: Muscle cramps, Geriatric patients, modified muscle cramps assessment scale and stretching exercises.

INTRODUCTION

Old age is the end stage of the human life cycle, typically starting around age 60–65yrs⁽¹⁾, marked by irreversible biological, physical, and cognitive changes. NITI Aayog (2024) reported that India's over-60

population has reached approximately 156.7 million, representing about 11% of the total population, and is projected to more than double to 347 million by 2050. With a sex ratio of 1,065 females per 1,000 males, this growing demographic faces significant challenges, as 75% suffer from chronic diseases and 40% have disabilities.

The aging process decreases muscle mass by 1%–2% after the age of 50 and decreases muscle strength by 12%–15% every 10 years after a person reaches the age of 50⁽⁴⁾. With advancing age, physiological changes such as reduced muscle mass (sarcopenia), decreased circulation, nerve conduction alterations, and electrolyte imbalances increase the susceptibility to muscle cramps. Chronic illnesses such as diabetes, peripheral vascular disease, kidney disorders, and thyroid dysfunction further contribute to their occurrence. Additionally, the use of certain medications such as diuretics, antihypertensives, and statins can predispose older adults to cramps⁽⁶⁾.

Muscle cramps is an unexpected, involuntary, and painful contraction of a single muscle or a muscle group, relieved by stretching the cramping muscle. Muscle cramps are arisen from spontaneous ectopic discharges of motor nerves or the terminal branches of motor axons⁽³⁾. Muscle cramps usually occur in the lower extremities but can also manifest in the arm, hand, and abdominal muscles⁽¹⁰⁾, 35-86% of patients have lower extremities muscles cramps. The most affected leg muscles are the gastrocnemius (at the back of lower leg), the hamstrings (the muscles behind the thighs), the quadriceps (the muscles in front of the thighs) and soleus⁽⁵⁾.

Stretching exercises, particularly stretching exercises, can reduce leg muscle cramps by improving flexibility in the leg muscles, which helps to prevent them from tightening up and causing cramps; essentially, by regularly stretching leg muscles. grip bell exercises, elastic band exercise and calf stretch exercises these are Increased blood flow and stretching our muscle to reduce pain and cramps⁽⁹⁾.

Researcher had clinical experience in a geriatric care unit and observed that geriatric patients experienced hearing loss, vision problems, cardio vascular disease, and chronic conditions like diabetes, arthritis, fatigue, insomnia, and muscle cramps. Muscle cramp is one the cause that affects geriatric people the quality of life. So, the researcher had an interest to go with other alternative therapies for geriatrics. Stretching exercise is easy to practice and cost-effective. This to motivate the researcher is interested to observe the effect of stretching exercises on muscle cramps among geriatrics.

Statement of the Problem

A study to assess the effectiveness of stretching exercises on muscle cramps among geriatric patients in selected setting, Tiruvannamalai.

Objectives

- ✓ To assess the pre and post test level of muscle cramps in experimental and control group among geriatric patients.
- ✓ To compare the pre and post test level of muscle cramps within experimental and control group among geriatric patients.
- ✓ To compare the pre and post test level of muscle cramps between experimental and control group among geriatric patients.

Assumptions

- ✓ Patient with leg muscle cramps may experience cramps, joint pain, stiffness, and decreased function.
- ✓ Leg Muscle cramp patients may get benefit from stretching exercises to reduce joint pain, cramp stiffness, improve physical function and Sleep.
- ✓ A patient with muscle cramps may be aware of the benefits of and stretching exercise.
- ✓ Stretching exercises have no side effects.

Null Hypothesis

- ❖ **NH₁:** There is no significant difference

in pre and post test level of muscle cramps within experimental and control group among geriatric patients at $p < 0.05$ level.

- ❖ **NH₂:** There is no significant difference in pre and post test level of muscle cramps between experimental and control group among geriatric patients at $p < 0.05$ level.

MATERIALS & METHODS

Research Approach: The research approach used in this study was quantitative research approach ⁽²⁾.

Research Design: The research design adopted for this study was pre test and post test design which comes under quasi experimental design.

Variables

Independent variables: Stretching exercise

Dependent variables: Muscle cramps

Demographic variables

The demographic variables were age in years, gender, religion, educational status, food habits, site of muscle cramps and are you doing regular exercise.

Setting of the Study: The study was conducted in the Government Tiruvannamalai Medical College and Hospital at Tiruvannamalai.

Population: A population is the entire set of individuals or objects having some common

characteristics ⁽²⁾. In this study, the population was geriatric patients with muscle cramps.

Target population: The target population is the entire population in which the researcher is interested and to which they would like to generalize the study results ⁽²⁾. In this study, the target population was geriatrics patients diagnosed with muscle cramps at Tiruvannamalai district.

Accessible population: The accessible population is the list of populations that the researcher finds in the research. The accessible population for this study is geriatrics who are all diagnosed with muscle cramps visiting Government Tiruvannamalai Medical College and Hospital.

Sample: The study sample comprise of geriatrics patients with muscle cramps in the age group of above 60 years who are all satisfy the sample selection criteria of the study.

Sample Size: The sample size chosen for this study was 60 geriatrics patients with muscle cramps (30 in experimental group and 30 in control group).

Sampling Techniques: In this study, a non-probability convenience sampling technique was adopted to select the samples based on sample selection criteria.

Criteria for sample selection:

Inclusion criteria	Exclusion criteria
Patients who - Are diagnosed with muscle cramps - are age group above 60 years - able to read and write Tamil or English	Patients who - are having complications of muscle cramps - are having any co –morbid diseases - are physical and mental impairment

DEVELOPMENT AND DESCRIPTION OF THE TOOL

The tool constructed in this study has two sections

Section A: Assessment of Demographic Variables

The demographic variables were age in years, gender, religion, educational status, food habits, site of muscle cramps and are you doing regular exercise.

Section B: Tool to Assess the Muscle Cramps

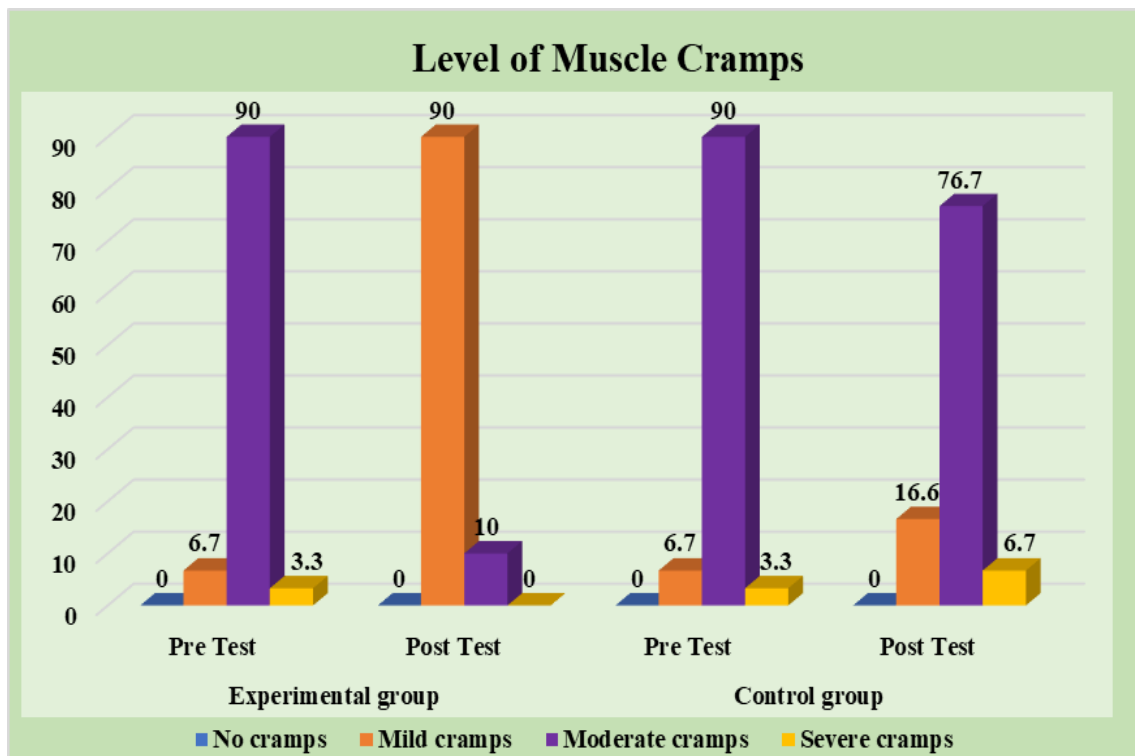
This section consists of modified muscle cramps assessment scale. It is a 10 item self-report assessment scale. Each question is scored on a Likert-type scale of 0- 3. The tool includes positively worded questions. The total raw scores range from 0- 30.

Scoring interpretation:

Level of muscle cramps	Scoring pattern	Percentage
No cramps	0	0
Mild cramps	1 – 10	1 – 33
Moderate cramps	11 – 20	34 – 66
Severe cramps	21 – 30	67 – 100

RESULT AND DISCUSSION

Percentage distribution of pre test and post level of muscle cramps in experimental and control group. n = 30+30



Compare the pre test and post test level of muscle cramps within the experimental and control group among geriatrics. n = 30+30

Group	Pre test		Post test		Paired 't' test
	Mean	SD	Mean	SD	
Experimental	20.87	2.81	15.53	2.78	t= 7.98 S***
Control	21.13	2.94	21.70	2.97	t = 0.74 NS

NS -Non-Significant, S***- Significant at p< 0.001 level.

Above the table shows comprise of pre test and post test level of muscle cramps among geriatric patients in experimental and control group. In experimental group, the pre test mean value of muscle cramps was mean 20.87 with SD±2.81 and the post test mean value was mean 15.53 with SD±2.78. The calculated paired 't' value t = 7.98 was found to be statistically significant at

p<0.001 level. In control group, the pre test mean value of muscle cramps was mean 21.13 with SD±2.94 and the post test mean value was mean 21.70 with SD±2.97. The calculated paired 't'= 0.74 was found to be statistically non significant at p< 0.05 level. This present study result indicates after the administration of stretching exercise highly statistically significance in experimental

group than the control group. This study result is supported by Vijayalakshmi.S & Poovaragavan.V (7) in Tamilnadu, who

reported that lower extremities exercises were an effective method in reducing patients level of pain.

Compare pre test and post test level of muscle cramps between experimental and control group among geriatrics. n = 30+30

Assessment	Group	Mean	SD	Unpaired 't' test
Pre test	Experimental	20.87	2.81	t=0.35
	Control	21.13	2.94	NS
Post test	Experimental	15.53	2.78	t=8.30
	Control	21.70	2.97	S***

NS – Non-Significant, S***- Significant at $p < 0.001$ level

Above table shows that comparison of pre and post test level of muscle cramps between experimental group and the control group. The pre test mean value level of muscle cramps in experimental group mean was 20.87 with $SD \pm 2.81$ and the pre test mean value of muscle cramps in control group mean was 21.13 with $SD \pm 2.94$. The calculated unpaired 't' value=0.35 was found to be statistically non significant at $p < 0.05$ level. The post test mean value of muscle cramps in experimental group mean was 15.53 with $SD \pm 2.78$ and the post test mean value of muscle cramps in control group mean was 21.70 with $SD \pm 2.97$. The calculated unpaired 't' value was $t = 8.30$ shows statistically significant at $p < 0.001$ level. The study findings reveals that, in experimental group stretching exercise showed statistically highly significant and decreases post test level of muscle cramps then the pre test. The results of this study are consistent with those of the uncontrolled study by Rabbitt L (2016), which suggested that stretching exercises were effective in preventing the occurrence of nocturnal leg cramps.

CONCLUSION

The present study demonstrated the positive impact on stretching exercise on muscle cramps among geriatrics in selected hospital at Tiruvannamalai. The study findings concluded that there was a statistically significant difference in reducing the level of muscle cramps after stretching exercise and improving quality of life. Hence it proved that stretching exercise is a cost

effective, non-invasive and non-pharmacological alternative management for geriatrics without any complications.

Declaration by Authors

Ethical Approval: Approved

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Conflict of Interest: The authors declare no conflict of interest.

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