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## Comparative analysis of effects of cryostretching v/s foam rolling technique on cervical pain and flexibility

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### Abstract

This study compared the short- and long-term benefits of foam rolling against cryostretching on cervical discomfort and range of motion. Common problems that can have a substantial influence on a person's quality of life include cervical pain and limited range of motion. While foam rolling uses self-myofascial release with a foam roller, cryostretching combines stretching with the use of cold treatment. The goal of the study was to compare the effectiveness of foam rolling against cryostretching in reducing neck pain and enhancing range of motion. 40 cervical pain individuals were divided into two groups at random: foam rolling or cryostretching. Three sessions per week were held during the four-week intervention phase. Before the intervention, baseline assessments of cervical pain severity using a visual analogue scale (VAS) and cervical range of motion using goniometry were made. At the end of the four-week intervention period and four weeks after the intervention's conclusion, respectively, immediate post-intervention and long-term follow-up assessments were taken. In conclusion, cervical pain can be reduced and range of motion can be increased with the use of both cryostretching and foam rolling. However, compared to foam rolling, cryostretching showed more favourable short- and long-term effects. These results imply that cryostretching might be a more effective treatment for people with chronic neck discomfort and limited range of motion. To further understand the underlying mechanisms of these therapies and to maximise their use in the treatment of cervical discomfort, more research is required.

**Keywords:** Neck pain, cryostretching and foam rolling

### Introduction

Neck discomfort is a very common condition that causes a great deal of agony, disability, and financial expense. In addition to being a significant personal load, it has an impact on families, the health system, and the economic foundation of nations. Because neck discomfort has a significant impact, its worldwide incidence has not been fully presented in a form that may serve as the foundation for various epidemiological research and as a means of comparing various healthcare systems globally.

Use of ice in conjunction with stretching, or cryostretching, can increase the therapeutic effects. Stretching, which is one way to administer stress, can speed up fibroblastic activity and boost the expression of many growth factors necessary for the wounded muscle to regenerate. By encouraging more rapid capillary blood vessel formation and more parallel orientation of muscle fibres, gentle stretching can aid in restoring the tensile strength of the healed tissue. In addition to the histological alterations, after stretching, the injured muscle's bio-mechanical strength returns to that of the uninjured muscle more quickly. Stretching changes the angle-torque correlation and aids in regaining the injured muscle's strength. Stretching is also thought to speed up recovery by increasing the elasticity and valence of the wounded muscle, reducing atrophy and loss of extensibility.

Foam rolling is now routinely used in many types of sporting environments, and it is highly regarded in the strength and conditioning community for enhancing the effectiveness of training or competition preparation and for speeding up post-exercise recovery. Foam rolling (FR) is a type of self-massage in which a FR device is used to roll and compress the targeted musculature.

The foam roller and different roller massage bars and sticks, which come in a variety of sizes and foam densities, are common Foam Rolling instruments.

Increased range of motion (ROM), decreased perceived pain, rapid healing from exercise-induced muscle injury, and improved performance have all been noted in studies looking at foam rollers, roller massagers, and other similar devices. During 20 minutes, rolling can immediately increase range of motion (ROM) by 3-23%. In contrast, just a tiny (4%) ROM increase was identified in the meta-analysis of 26 high methodological quality rolling trials that revealed a substantial magnitude favourable effect of rolling on ROM.

**Methodology**

**Subjects:** 40 students were selected from the RIMT University from different departments who were having neck pain and divided in two groups 20 in each group. Group A as cryostretching and Group B as foam rolling, using convenience sampling.

**Variable:** Neck pain

**Test and Criterion Measure:** To measure the severity of the neck pain Copenhagen scale were used to assess the pain and Goniometer were used to assess the ROM.

**Collection of Data**

Immediately after a match, Pre- test data were collected from the two groups. Both the techniques were then administered to the groups divided and immediate and long term effect were monitored.

**Statistical Analysis**

To find out the effect of both the techniques VAS were assessed and ROM were measured using Goniometer, descriptive statistics unpaired T test was calculated to assess the difference and find the significant outcome.

**Result**

**Table 1:** Shows the mean and standard deviation of age

Variable	Group	Mean	SD	N
Age	Group A	20.95	1.59	20
	Group B	21.45	2.37	20

**Table 2:** Shows significant difference in pre-post values of pain in Group A

Paired 'T' Test	Group A (Cryostretching)	
	Pain	
	Pre	Post
Mean	2.34	2.61
S.D	0.177	0.185
Result	S	

**Table 3:** Shows significant difference in pre-post values of pain in Group B

Paired 'T' Test	Group B (Foam Rolling)	
	Pain	
	Pre	Post
Mean	2.37	2.68
S.D.	0.171	0.196
Result	S	

**Table 4:** Shows comparison between groups (A & B) cryostretching and foam rolling

Unpaired T Test	Flexibility			
	PRE		POST1	
	Group A	Group B	Group A	Group B
Mean	80.19	90.02	81.15	92.05
S.D.	6.955	10.086	8.643	9.727
Number	20	20	20	20
Maximum	93.94	110.51	97.10	114.30
Minimum	69.66	78.38	68.00	75.30
Range	24.28	32.13	29.10	39.00
Mean Difference	9.82		10.90	
Unpaired T Test	3.586		3.746	
P Value	<0.0019		<0.0016	
Table Value at 0.05	2.02		2.02	
Result	Significant		Significant	



**Fig 1:** Cervical pain and flexibility

**Discussion**

In the research done by Yadav *et al.*, 2017 [7] Cryostretching offers the extra benefit of numbing the afflicted muscle before stretching it, using the anaesthetic properties of the ice to minimize spasm and increase pain-free range of motion. By lessening the pain and muscular spasm, it aims to reduce muscle spasm and enable enhanced flexibility. Thimo Wiewel hove *et al.*, 2019 [6] stated in his research that Foam rolling is

very common, yet there is little agreement on its advantages. This could be partially explained by the fact that not many studies have looked at the physiological factors behind foam rolling. However, mechanical, neurological, physiological, and psychophysiological factors have all been linked to the potential impacts of foam rolling. A number of sub-mechanisms, including decreased tissue adhesion, changed tissue stiffness, and thixotropic responses, make up the mechanical mechanisms. According to neurological models, foam rolling may enhance analgesic effects and muscle regeneration via regulating pain-modulatory systems (such as diffuse noxious inhibitory regulation and/or nociceptor and mechanoreceptor sensitivity). Enhanced arterial blood flow, parasympathetic circulation, inflammatory reactions, and associated trigger-point breakdown are the physiological explanations that have been hypothesised. A decrease in arousal level, an activation of the parasympathetic response, an increase in plasma endorphins, as well as the placebo effect are examples of psychophysiological reactions that may lead to better sensations of recovery and well-being.

### Conclusion

The aim of this study was to compare the effect of Cryostretching and Foam Rolling on Cervical Pain and ROM on university Students. On the basis of the result, Cryostretching was found to be more effective treatment in cervical pain and improving ROM as compared to Foam Rolling. Both interventions are affordable, simple to prescribe to the affected population, and simple to carry out on their own while under the supervision of a therapist. It will be especially helpful to the population who cannot afford expensive treatment, such as students, middle-class individuals, and housewives, as well as in situations where we need an immediate result, such as in sports, where athletes can benefit from it. After receiving proper training from a professional and continuous surveillance, either intervention can be recommended as a self-treatment strategy.

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