



# Trigger Point Compression and Passive Stretching Reduce Spontaneous Electrical Activity and Pain Perception in The Upper Trapezius Muscle

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## Introduction

Chronic pain is a global health problem, with an estimated 20% of the population experiencing chronic pain [1]. The upper trapezius muscle is a common site of chronic pain, and is often associated with neck pain and headaches [2]. Trigger point compression (TPC) and passive stretching are two non-pharmacological interventions that have been shown to reduce pain and improve function in the upper trapezius muscle [3,4].

TPC involves the application of a sustained, low-intensity pressure to a specific point in the muscle, which is believed to be a hyperirritable spot in skeletal muscle [5]. This pressure is thought to disrupt the cycle of muscle spasm and pain, and to reduce the release of inflammatory mediators [6]. Passive stretching involves the gradual elongation of the muscle, which is thought to reduce muscle tension and improve flexibility [7].

Both TPC and passive stretching have been shown to reduce pain and improve function in the upper trapezius muscle [3,4]. However, the mechanisms of action of these interventions are not fully understood. One potential mechanism is the reduction of spontaneous electrical activity (SEA) in the muscle, which is a marker of muscle hyperexcitability [8]. SEA is thought to be caused by the presence of trigger points, which are hyperirritable spots in the muscle that are capable of producing a palpable nodule and a characteristic taut band [9].

The purpose of this study was to investigate the effects of TPC and passive stretching on SEA and pain perception in the upper trapezius muscle. The study was conducted in a laboratory setting, and involved 15 healthy participants. The participants were randomly assigned to either the TPC group or the passive stretching group. The TPC group received TPC to the upper trapezius muscle, while the passive stretching group received passive stretching to the same muscle. The SEA was measured before and after the intervention, and the pain perception was measured using a visual analog scale (VAS).

## Discussion

The results of this study show that both TPC and passive stretching significantly reduced SEA and pain perception in the upper trapezius muscle. This finding is consistent with previous research, which has shown that both interventions are effective in reducing pain and improving function in the upper trapezius muscle [3,4].

The reduction in SEA suggests that both TPC and passive stretching may be acting on the same underlying mechanism, which is the hyperexcitability of the muscle. SEA is a marker of muscle hyperexcitability, and is thought to be caused by the presence of trigger points [8]. The reduction in SEA following TPC and passive stretching suggests that both interventions may be disrupting the cycle of muscle spasm and pain, and reducing the release of inflammatory mediators [6].

The reduction in pain perception is also consistent with previous research, which has shown that both interventions are effective in reducing pain [3,4]. The reduction in pain perception may be due to the direct mechanical effects of the interventions, or to the reduction in SEA, which is thought to be a marker of muscle hyperexcitability [8].

The findings of this study have important implications for the clinical management of chronic pain in the upper trapezius muscle. Both TPC and passive stretching are non-pharmacological interventions that are easy to perform and can be used in a variety of settings. The reduction in SEA and pain perception following these interventions suggests that they may be effective in reducing the underlying hyperexcitability of the muscle, and improving function in the upper trapezius muscle.

There are several limitations to this study. The study was conducted in a laboratory setting, and involved a small number of participants. The interventions were performed by a single researcher, which may have influenced the results. The study did not measure the long-term effects of the interventions, and did not measure the effects on other muscles or on overall function.

Future research should investigate the mechanisms of action of TPC and passive stretching, and should evaluate the long-term effects of these interventions. It would also be useful to compare the effects of TPC and passive stretching to other non-pharmacological interventions, such as massage and acupuncture.



## Conflict of Interest

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## References

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