Clinical Chiropractic (2012) 15, 55—61

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Clinical Chiropractic

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ORIGINAL ARTICLE

# Comparison between the immediate effect of manual pressure release and strain/counter strain techniques on latent trigger point of upper trapezius muscle

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Received 22 February 2012; accepted 4 April 2012

**KEYWORDS**
Upper trapezius;
Latent trigger point;
Manual pressure release;
Strain counterstrain

**Summary**

*Objective:* This study compared the immediate effect of manual pressure release (MPR) and strain/counterstrain (SCs) techniques on latent trigger point of the upper trapezius muscle.
*Methods:* Sixty volunteers (mean age, 24.73 ± 1.63 years) participated in this study. Subjects underwent a screening process to establish the presence of myofascial trigger points (MTrPs) in the upper trapezius muscle. Subjects were divided randomly into 3 groups: MPR group, SCs group and a placebo group, which received a sham ultrasound. The outcome measure was the pressure pain threshold (PPT) and visual analogue scale (VAS) on the MTrP in the upper trapezius muscle by an assessor blinded to the treatment allocation of the subject.
*Results:* The experimental groups showed a trend toward an increase in PPT levels and decrease in VAS after the intervention procedures. Within-group effect sizes were large in the MPR and SCs groups ($d > 1$), and small to medium in the placebo group ($d \sim 0.4$). Comparing MPR and SCs groups showed significant differences in PPT and VAS changes ($P < 0.05$).
*Conclusions:* MPR and SCs techniques are superior to sham ultrasound in immediately reducing pain in patients with non-specific neck pain and upper trapezius MTrP, but MPR technique is better than SCs technique.




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1479-2354/$36.00 
http://dx.doi.org/10.1016/j.clch.2012.04.003

## Introduction

Myofascial trigger points (MTrPs) are claimed to be a common source of musculoskeletal pain in people presenting to manual therapists for treatment. Simons[1] has contended that MTrPs are often inadequately diagnosed and treated due to insufficient training and knowledge of practitioners. MTrPs are claimed to be a source of local and referred pain, and may create additional complaints by reducing joint range of motion and producing autonomic disturbance. Patients with MTrPs can present with complex clinical findings, and the underlying cause of MTrPs has been the subject of much speculation.[2]

Travell and Simons[3] clinically define a myofascial trigger point (MTrP) as "a hyperirritable spot in skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band." MTrPs can develop from a number of conditions including genetics, aging, and strenuous activity.[4] MTrPs can be brought on by macrotrauma or by cumulative microtrauma. Abnormal posture, repetitive motion and psychological stresses are examples of cumulative microtrauma.[3–5] Formation and presence of a MTrP is correlated with muscle pain, weakness and movement dysfunction.[3,6–14] There are a variety of modalities purported to relieve or diminish the symptoms associated with MTrPs including ischemic compression,[3,15,16] massage,[3,18–22] [illegible]ng,[3,23] vapocoolant spray and stretch,[3,[illegible]1,32] electrical stimulation,[33–37] laser therapy,[33,38] ultrasound,[41–49] and diathermy.[50]

Sustained manual pressure, referred to in this paper as 'manual pressure release' (MPR) and previously referred to as 'ischemic compression,' 'inhibition', and 'trigger point pressure release,' is one of a number of techniques advocated for the treatment of MTrPs. MPR is performed by applying tolerably painful, sustained manual pressure, usually with the thumb or fingertip, against the tissue barrier of a MTrP.[1] There is evidence that the palpable MTrP bands and nodules are a result of localized bunching of the sarcomeres in a muscle fiber to produce 'contraction knots' and 'contraction discs'.[3,51]

The upper trapezius is probably the muscle most often beset by MTrPs.[52,53] Fischer measured the PPT of eight different muscles with a pressure algometer and determined that the upper trapezius was most sensitive to the pressure of the muscles tested.[54] The two trigger point locations in the upper trapezius commonly refer pain along the posterolateral aspect of the neck, behind the ear to the temple.[2]

A recent systematic review of manual therapies in treatment of MTrPs concluded that there were few studies analysing treatment of MTrPs using manual therapy.[58] As MTrPs are characterized by restricted range of motion of the affected tissues,[1] Fernandes-De-Las-Penas et al.[19] suggested the necessity of including changes to range of motion of the affected tissues after MTrP treatment. Manual therapy is an inexpensive method and can be used everywhere, without instrumentation. These treatments do not have any side effects, [illegible]is not known which of the manual therapy techniques is more effective.

The aim of the present study is to compare the immediate effects of manual tissue release and strain/counterstrain on the upper trapezius latent trigger points. It was hypothesised that the MPR and SCs interventions would elicit reductions in trigger point sensitivity and pain intensity that could not be seen following sham ultrasound.

## Methods

This study was a randomised, single-blind, sham-controlled clinical trial. The study was conducted at the Physical Therapy Research Center (PTRS) of Shahid Beheshti University of Medical Sciences in Tehran, Iran and approval for the study was obtained from the PTRS Research Ethics Sub-Committee. Data collection occurred between October 2010 and June 2011.

The sample size and power calculations were performed with a local software (Tamaño de la Muestra, 1.1, Madrid, Spain). The calculations were based on detecting a 20% difference in pressure pain threshold (PPT) at post intervention data, assuming an SD of 10%, an $\alpha$ level of .05, and a desired power of 80%. These assumptions generated a sample size of at least 20 subjects per group.

## The participants

Through local newspaper advertisements, sixty six female students from Zanjan University, Iran, between the ages of 18–35 years suffering from neck/shoulder pain corresponding with the area covered by the upper trapezius muscle were recruited. They were healthy individuals, diagnosed with latent MTrPs in the trapezius muscle. Subjects were randomly divided into 3 groups for treating MTrPs: 24 subjects in the MPR group; 22 subjects in the SCs group; and 20