

Abstract

Assessment of the effectiveness of myofascial techniques in improving body posture, joint mobility, tissue oxygenation and reducing pain in people with upper crossed syndrome

Introduction: The upper crossed syndrome (UCS) is a characteristic body posture resulting from muscle and fascial imbalance. Its typical features include protraction of the head and shoulder girdle and deepening of cervical lordosis and thoracic kyphosis. The symptoms mentioned are maintained by the shortening of specific muscle groups and the associated lengthening of antagonist muscles. In shortened muscles such as: trapezius descending part (MTDP), levator scapulae (MLS), suboccipital muscles (MS), sternocleidomastoid (MSCM), pectoralis major (MPMa) and pectoralis minor (MPMi). myofascial trigger points (MTrPs) develop. Active MTrPs cause pain in the cervical spine and head as well as limited mobility of these body parts. Among the many therapies used to treat pain and limitations in the range of motion in people with UCS, trigger point therapy methods and muscle energy techniques are popular, however, the assessment of their effectiveness, the size of changes and the duration of maintained effects requires research.

Aim: The aim of the study was to compare the effectiveness of two therapy methods: trigger point therapy techniques and muscle energy techniques on changes in body posture, joint mobility, tissue oxygenation, quality of life and reduction of pain in people with upper crossed syndrome.

Material and methods: A group of 45 people was qualified for the study, consisting of 24 women and 21 men presenting a body posture typical of UCS. The participants were divided into three equal groups in terms of number of people (15 people) and gender (8 women and 7 men). Group A was subjected to a series of 10 trigger point therapies performed once a week based on the technique of positional release and myofascial release. During each session, the therapy was performed on both sides and included the following muscles: MTPD, MLS, MS, MSCM, MPMa and MPMi. In group B, the same muscles were treated with the same frequency of therapy as in group A. The post-isometric muscle relaxation technique and the reciprocal inhibition technique were used, which belong to the group of muscle energy techniques. Group C was a control group that did not receive any therapy. All participants were examined before and after completing the 10-week series of therapy. The range of motion of the cervical spine

in all planes and the range of overall spine flexion and extension were assessed using the BTS three-dimensional motion analysis system. This system was also used to examine the body posture of the subjects, where the angle of cervical lordosis, thoracic kyphosis and lumbar lordosis was assessed in the standing and sitting positions. Shoulder protraction was measured using calipers, quality of life was assessed using the WHOQoL-BREF questionnaire, and tissue oxygenation was assessed using the MoorVMS-NIRS device. The instrument used to assess the pressure pain threshold was an algometer, and the short McGill Pain Assessment Questionnaire was used to assess the occurrence of pain. Statistical analysis was performed using the Statistica 13.3 program.

Results: A series of treatments using trigger point therapy caused statistically significant changes in the following areas: an increase in the range of motion of the cervical spine (forward lateral bending, left lateral bending), a reduction in the pressure threshold of pain, a reduction in pain and an improvement in the quality of life. There were no significant changes in the other analyzed parameters. a series of treatments using muscle energy therapy resulted in a statistically significant improvement in the range of motion of the cervical spine (lateral bending to the right), a reduction in the pressure pain threshold, a reduction in pain and an improvement in the quality of life. There were no significant changes in the other analyzed parameters. In the control group, significant changes were noticed only in domain 1 of the WHOQoL-BREF questionnaire.

Conclusions: Trigger point therapy and muscle energy techniques may be effective in treating cervical spine motion restrictions, reducing pain, and improving quality of life in people with upper crossed syndrome. A series of treatments performed once a week is insufficient to obtain statistically significant improvement for most of the parameters tested.