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EFFECT OF REPEATED NECK RETRACTION MOVEMENTS ON STRENGTH AND EMG ACTIVITY OF THE UPPER LIMBS, ON RANGE OF MOTION AND CERVICAL POSTURE.

Background: Neck pain is a common clinical finding in result of different factors such as changing in head posture or in cervical mobility. The McKenzie method of Mechanical Diagnosis and Therapy (MDT) deals also with neck disorders. Repeated cervical movements are one of the principal diagnostic and therapeutic strategy used in MDT. The most used is the neck retraction movement, which involves pulling the head and neck posteriorly into a position in which the head is aligned on the thorax, while the head and eyes remain level. In scientific literature neck retraction is not still investigated in depth even if it may represent an effective method to achieve pain centralization, ROM improvements and head posture correction. To date, few articles have analyzed the effect of repeated retraction on strength performance and related emg activity of the upper limbs.

Purpose: To investigate the effect of 30 repeated neck retractions on strength performance of the upper limbs and on cervical posture and mobility in healthy volunteers.
Materials and Methods: 16 healthy subjects (6M - 10W, 20 to 56 years of age mean 23,5) were randomly assigned into two groups: CTRL (control), INT (intervention). 8 subjects (CTRL) performed, in sitting position, 3 series of 10 cervical flexion-extension movements, while 8 subjects (INT), in the same position, completed 3 series of 10 neck retractions.
Each volunteer was assessed both at baseline (T0) and at the end of repeated movements (T1) in terms of: cervical range of motion, rest posture of the head, upper limbs' strength and electromyographic activity. As regards to force assessment it was evaluated palmar and pinch strength using Jamar and Pinch dynamometers but also isometric contraction in shoulder abduction and elbow flexion-extension using Biodex dynamometer. During the Biodex's tests were collected emg data respectively from Deltoid, Biceps and Triceps Brachii. Every test was performed on right and left arm.
Taking into account sample size were used non parametric tests; Wilcoxon Signed Rank Test was used for the comparison within groups, whereas the analysis between groups was performed by Mann Whitney's Test.
Results: The two groups were homogeneous at baseline for every variable included, like strength parameters and cervical mobility. At T1 there was an improvement in some CROM variables in the INT group; while the CTRL group showed a significant reduction in strength parameters. Rest posture was not modified neither in the INT group nor in the CTRL group. In the analysis between groups was shown an effect in favour of neck retraction on strength, emg and cervical mobility parameters.
Conclusions: This preliminary study suggests that neck retractions appear to influence positively strength performances and their related upper limbs emg activity but also cervical

mobility in healthy subjects. Further investigation, with a larger sample size, are necessary to supply more valid conclusions; moreover it will be interesting to analyze the effect of neck repeated retraction in patients with cervico-brachial pain.