**Questa è la seconda parte di un lavoro scientifico in collaborazione con il corso di laurea in fisioterapia dell'Università Vita-Salute, Ospedale San Raffaele, direttore Ft. Roberto Gatti.**

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

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**Study design:** Ongoing trial
**Background:** Neck pain is a common clinical condition in result of different factors including changes in cervical posture and mobility [1]. The McKenzie method of Mechanical Diagnosis and Therapy (MDT) deals also with neck disorders. Repeated cervical movements are the main diagnostic and therapeutic strategy used in MDT [2]. 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 maintaining the look ahead (fig.1). In scientific literature neck retraction is not still investigated in depth even if it may represent an effective method to **treat symptoms,** achieve pain centralization, ROM improvements and head posture correction. To date, **no** articles have analyzed the effect of repeated retraction on strength performance and **few have dealt with** related EMG activity of the upper limbs.
**Purpose:** To investigate the effect of 30 repeated neck retractions on strength performance of the upper limbs, on the posture and mobility of the cervical spine in healthy subjects.
**Materials and Methods:** 50 healthy subjects were recruited and randomly assigned into two groups: CTRL (control), INT (intervention). 25 subjects (CTRL) performed in sitting position 3 series of 10 flexion-extension cervical movements, while 25 subjects (INT), in the same position, completed 3 series of 10 neck retractions.
Each subject 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, isometric contraction in shoulder abduction and elbow flexion-extension using Biodex dynamometer. During isometric contraction measured by Biodex, it was detected EMG activation of Deltoid, Biceps and Triceps Brachii. All evaluations were bilateral.
**Results:** Although the study analysis is not concluded yet, temporary results from 16 subjects (8 CTRL, 8 INT) show a significant improvement in the intervention group in cervical range of motion, strength (left elbow extension) and EMG activation of right deltoid.
**Discussion:** Further analysis are needed to **verify in depth this phenomenon, before elaborating any hypothesis regarding the reasons (**strengthen the validity of these hypothesis**)**.

**References:**

[1] Bovim, G. Schrader, H. Sand, T. Neck pain in general population. *Spine*. 1994;19:1307-1309

[2] McKenzie R. The cervical and thoracic spine: mechanical diagnosis and therapy. 1st ed. Spinal Pubblication, New Zealand Ltd; 1990

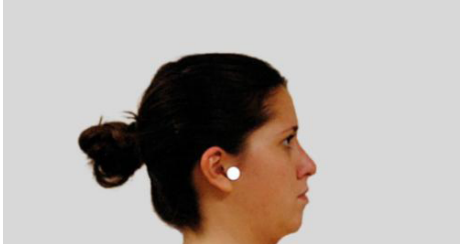

fig.1: neck retraction movement