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ΣΧΟΛΗ ΕΠΙΣΤΗΜΩΝ ΥΓΕΙΑΣ ΚΑΙ ΠΡΟΝΟΙΑΣ

Τμήμα Φυσικοθεραπείας

PhD THESIS SUMMARY

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Title of PhD Thesis:

The Effectiveness of Cervical Spine and Diaphragm Manual Therapy in Combination with Breathing Reeducation Exercises in Patients with Non-specific Chronic Neck Pain: A Randomized Clinical Trial

Introduction: Chronic neck pain (CNP) may affect the musculoskeletal, respiratory and psychological aspects of the individual, contributing to the increase in occupational and public expenditure. Neck pain is a major cause of morbidity and disability in everyday life and at the workplace, in many different countries and populations, but its basic pathology and pathophysiology are still unclear. Neck pain is typically classified as chronic (CNP), when it persists or regularly recurs for at least 3 months.

Although CNP has conventionally been treated by traditional physiotherapy or manual therapy, the majority of patients do not completely recover from their symptoms. A multi-morbidity perspective of troublesome CNP has been highlighted in relation to spondylarthritis and respiratory disorders.

More precisely CNP patients exhibit an altered neuromotor control, characterized by reduced activity in the deep cervical flexors and increased activity in the superficial flexors usually accompanied by aberrant movement strategies. Furthermore, they display reduced isometric endurance of the deep cervical flexor muscles, impairment of cervical proprioception, which subsequently leads to cervical sensorimotor control disturbances, local hyperalgesia, impaired conditioning pain modulation, depressive symptoms, pain catastrophizing, low quality of life, increased forward head posture, muscle imbalances, increased activation and fatigability of sternocleidomastoids, anterior scalene and upper trapezoid muscles, reduced active range of motion during neck rotation. All the above should be taken into account during assessment and treatment. Additionally, CNP patients present with respiratory dysfunction, as follows: decreases in Maximal Voluntary Ventilation (MVV), Maximal Inspiratory and Expiratory Pressure (MIP & MEP), Forced Vital Capacity (FVC), Forced Expiratory Volume in the 1^{st} second of forced expiration (FEV1), and End Tidal CO2 (ETCO2).

Several studies have shown that mobilization of the cervical spine can improve pain, function and musculoskeletal clinical parameters in chronic neck pain. Other studies have shown that Breathing Reeducation Exercises can improve pain, function and musculoskeletal clinical and respiratory parameters in CNP patients who had plateaued with manual therapy and exercise. Also, Conventional Physiotherapy in the form of hot packs, in combination with electrical stimulation current and isometric exercises in multiple directions can improve pain and balance of CNP patients.

However, the effectiveness of Breathing Reeducation Exercises, in combination with Diaphragm Manual Therapy and Mobilization of the Cervical Spine has not been tested up to now in CNP patients.

The present's study hypothesis is that, the combination of manual diaphragm release techniques and Breathing Reeducation Exercises with cervical spine mobilization will improve the alterations in the breathing pattern and respiratory dysfunction (pH, End Tidal CO2), decreased chest expansion, increased activation and fatigability of the respiratory muscles and Maximal Inspiratory and Expiratory Pressure in CNP patients. Additionally, we assume that the improvement of the above parameters, will improve pain, disability, range of motion and psychological situation in CNP patients

Aim: The purpose of this study was to determine the effectiveness of Breathing Reeducation Exercises, in combination with Cervical Spine and Diaphragm Manual Therapy in a number of altered clinical parameters in CNP patients.

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