

Author's first name and surname: Bc. Magdaléna Málková

Title of master thesis: The difference in the change in chest flexibility when using expiratory trainers in patients with COPD

Department: Department of Rehabilitation and Sports Medicine, Motol University Hospital

Supervisor: Mgr. Lenka Babková

External examiner: Mgr. Alexandra Janečková

The year of presentation: 2022

Abstract:

The thesis deals with chronic obstructive pulmonary disease (COPD) and the effect of short-term expiratory training on chest flexibility in these patients. It is developed in the form of a research study to determine whether the use of an expiratory trainer during weekly training has an effect on increasing chest flexibility, improving the ability to activate the diaphragm and improving the subjective sensation of breathing. The practical part of the work was conducted as a randomized control pilot study to determine the effect of short-term therapy using the Threshold PEP trainer in COPD patients under the outpatient care of a pulmonary physician.

Twenty patients with stage 2-4 COPD (10 males and 10 females) with a mean age of 70.2 ± 7.6 years and a mean disease duration of 11.1 ± 8.5 years participated in the study. The patients were divided into two groups - an expiratory training group and a control group. The data collection was carried out in collaboration with Lenka Povýšilová, MD, in the pulmonary outpatient clinic at Poliklinika pod Marjánkou in Prague in the period from January to April 2022. The study assessed chest flexibility (chest circumferences at four levels during rest and maximal breathing), expiratory muscle strength (PE_{max}), postural function (diaphragm test) and CAT questionnaire scores.

The results of this study demonstrated that even short-term EMT training can increase chest flexibility at some levels - specifically at the axillary, mesosternal and

xiphosternal levels of the chest at resting respiration and at the axillary level of the chest at maximal respiration. At the same time, the increase in PEmax after expiratory training and the improvement in the values in question 3 of the CAT questionnaire were considered statistically significant changes, i.e. patients felt less chest tightness and reported feeling much better.

According to the results of this study, the measurement of chest circumferences by tape measure can be considered the simplest and relatively reliable method of assessing chest flexibility in the clinical practice of physiotherapists. Neither the history alone nor the CAT questionnaire can reliably indicate whether a patient tends to have reduced chest flexibility.

Key words: physiotherapy, COPD, chest wall flexibility, expiratory trainers, Threshold PEP