The effects of myofascial release of the diaphragm and chest on the functional parameters of the lungs and characteristics of the abdominal muscles and diaphragm in children with cerebral palsy: Randomized clinical trials

Cerebral palsy is one of the most common disabilities in children. The prevalence ranges from 1.5 to 3/1000 live births. People with CP have many disorders associated not only with the neuromuscular system but also with the cardiovascular, respiratory and digestive systems. Although CP does not directly attack the bronchial tree, its consequences, such as muscle atrophy, reduced motor activity, as well as frequent spinal and chest deformities, tissue contractures and changes in movement patterns, contribute to respiratory problems. The main symptoms of respiratory system dysfunction are associated with coughing, shallow, uneven breathing, hoarseness, accumulated discharges or frequently recurring lung disease or even apnoea. The consequences of such a long-term condition affect lung life parameters and hinder daily life, which in turn reduces the patient's capacity and participation in social and professional life.

Contemporary medicine has a very limited impact on the functioning of the respiratory system in patients with CP. Most known methods require the patient to actively participate with the use of equipment and the ability to follow instructions. Thereby, people with a high degree of intellectual and motor disability are deprived of therapy. Therefore, we will want to develop and verify the effects of physiotherapeutic (manual) techniques that do not require conscious (volitional) patient participation on respiratory parameters in people with cerebral palsy (CP) within the confines of project. To this end, spirometry tests and shear wave elastography of the abdominal muscles and diaphragm will be performed. In addition, we will check how the proposed therapy affects the quality of life.

We hope that the myofascial release of the chest and diaphragm will significantly affect the life parameters of the lungs of people with cerebral palsy. The results of the study may eventually translate into the development of new standards of respiratory physiotherapy in neurological (not only CP) and pulmonary patients with limited possibilities of active participation in therapy. On the other hand, the development of new diagnostic possibilities of respiratory disorders (using ultrasound imaging) will contribute to the development of new diagnostic models (including those patients in whom spirometry was difficult to perform), which will translate into faster diagnostics and earlier treatment focused on the respiratory system of individuals with CP.