Abstract

Spinal muscular atrophy (SMA) is a rare α-motoneuron disease characterized by the weakening of primarily proximal and axial muscles, including the respiratory muscles, which increases the risk of respiratory failure and premature death in patients. This thesis focuses on the impact of respiratory muscle training on pulmonary function in SMA patients.

The theoretical part discusses respiratory complications associated with SMA and compares different parameters of respiratory muscle training in patients with progressive neuromuscular disease based on a thorough review of previously published studies. The practical part presents a pre-experimental study that evaluated the effects of a three-month respiratory muscle training program on inspiratory and expiratory muscle strength, lung function, overall physical condition, and quality of life and sleep in five pediatric patients with SMA types I-III. The results showed an increase in respiratory muscle strength in all patients; however, improvement in lung function was observed in only two patients, and no impact on physical condition or quality of life was demonstrated. The main limitations of the study were the small number of participants and the absence of a control group, which limits the generalizability of the results. Nevertheless, this study provides important recommendations and seeks to propose optimal training parameters for future research on respiratory muscle training in SMA patients, particularly regarding the duration of training, exercise frequency, resistance levels on the training devices, and methods for evaluating the effects of therapy.