

Abstract

Title: Influence of physiotherapist intervention on shoulder muscular imbalance and movement stereotype in users of mechanical wheelchair.

Objectives: The aim of the work is to find out to what extent a twelve-week strength training under the professional guidance of a physiotherapist can affect the users of mechanical wheelchairs (paraplegics) and their functional muscle tension in the shoulder area.

Methods: This pilot multiple qualitative research took place from January to July 2021. Three paraplegics aged 39 to 46 participated voluntarily in the research. A kinesiological analysis was performed on each proband with an examination of the movement stereotype while riding a mechanical wheelchair. A diagnostic method with a tensiomyograph was performed for individual muscles of the shoulder girdle. Kinesiological analysis and muscle measurements were performed before and after the intervention, which took place three times a week. Due to the unfavorable epidemic situation, it was carried out in the form of video transmission at home. The comparative method was used in the comparison section before and after the end of the physiotherapist's intervention during the training cycle of each proband. The obtained results were processed by the TMG 100 software, which meets the requirements for data evaluation and by the Microsoft Excel program. The difference between absolute values and the degree of change of the monitored parameters was determined individually. In this way, the effect of the intervention on functional muscle tension, lateral and functional symmetry of the muscles in the shoulder area was assessed.

Results: Both positive and negative changes in lateral and functional symmetry were noted among all probands. Improvement of deterioration in functional symmetry correlated with dominance of the upper limb. The results of changes in all parameters were very different for the measured muscle areas in most probands, also depending on the dominance of the upper limb. After evaluating the output data, no clear trend was observed in all probands with regard to the method of intervention.

Keywords: wheelchair strengthening, muscle imbalance, shoulders, intervention, tensiomyograph