Abstract

Title: Effect of Balance Training on Balance and Walking in Patients with Multiple Sclerosis

Objectives: Main aim of this master thesis is to assess the effect of four-week sensorimotor stimulation therapy and four-week balance training with Homebalance® in Multiple Sclerosis patients with balance disorders. Also to assess how effective these techniques are, if they are performed without any other therapy. And at the end compare them between each other.

Methods: The research was conducted with 20 subjects divided in two groups of ten. These two groups differed in their balance programme. First group underwent four- week sensorimotor stimulation therapy twice a week for an hour. Second group trained at home with Homebalance® for four weeks 15-20 minutes a day. Everyone has been measured before and after therapies with Timed 25-foot walk (T25FW), Timed Up-and-Go Test (TUG) and TUG cognitive, Mini-BESTest and Berg Balance Scale, they also filled in short balance questionnaire, 12-Item Multiple Sclerosis Walking Scale (MSWS-12) and Falls Efficacy Scale-International (FES-I). Data analysis was provided by Shapiro-Wilk test, Student t-test, Wilcoxon signed-rank test and Mann-Whitney U test according to data distribution.

Results: The average EDSS score in people with Homebalance® therapy was 3,8 (± 1,53) and their average age was 44,5 (± 13,62). In standardized questionnaires there were statistically significant changes between before and after training. Average improvement in MSWS-12 was 3,56 points and in FES-I it was 2,34 points. Other results were not statistically significant although there were some positive changes. In Mini-BESTest was average change 1,2 point. Other changes before and after therapy for this group were very small. The other group that went through sensorimotor stimulation therapy had average EDSS score 4,7 (± 1,69) and mean age 50,8 (± 11,15). No results in this group were statistically significant. There has been couple of positive changes though. In MSWS-12 questionnaire the mean score change was 1,9 point and in FES-I 3 points. In Berg Balance Scale the score got better by 2,6 points after therapies and in Mini-BESTest it was 1,1 point. There was also worsening in TUG cognitive, where the mean time after therapies was 1, 94 seconds slower.

Keywords: Multiple Sclerosis, balance, gait, sensorimotor stimulation, HomeBalance