Relationship of balance to function independence in stroke survivors

Beatriz Fernandes1, Leonor Prates2, Maria L Ferreira3, Paulo Becker1, Isabel Evangelista4, Joaquin S. Sérgio3
1 Higher School of Health Technology of Lisbon, Lisbon, Portugal
2 Fernando Fonseca Hospital, Amadora, Portugal

Abstract

Cerebral stroke is the primary cause of permanent disability in Portugal. Impaired balance is considered an important factor after stroke as it is related with higher risk of falls and functional impediments. Physiotherapy intervention usually starts early after stroke in order not to lose recovery window to improve the ability to perform activities of daily living (ADL). PURPOSE: To investigate the relationship of balance to function independence in acute stroke patients. METHODS: 16 subjects (14 women and 2 men, mean age 63.4 ± 11.9), with unilateral stroke to the middle cerebral artery territory, were admitted to physiotherapy department of Fernando Fonseca Hospital in Portugal, within the first month after stroke. All subjects were examined after cognitive assessment according to Mini Mental State, to rule out of severe cognitive subproblems and no other disease could interfere with treatment. All patients gave their informed consent to participate in the study. Subjects were assessed with the Modified Barthel Index (MBI) and the Berg Balance Scale (BBS). RESULTS: Mean score for BBS was 51.9 ± 19. View indicates poor balance. MBI mean score of 0.7 indicates functional dependence. For BBS and MBI, Spearman correlation coefficient is 0.520 p < 0.01. These results indicate that no balance measured scores were associated which indicates correlation. CONCLUSIONS: Balance appears to be a key factor for function independence after stroke. These results point out the need for early physiotherapy intervention focused on balance management in order to enhance independence.

Introduction

This work is part of an ongoing study designed to investigate the efficacy of physiotherapy intervention in treating postural disorders in individuals who suffered a stroke.

Postural control involves two main objective: postural orientation, to be able to maintain appropriate relationship between the body segments and between the body and the environment, postural stability, to be able to control the relationship between the center of mass and the base of support. Postural control depends on the integration of sensory inputs and cognitive systems. Visual, somatosensory and vestibular systems provide the Central Nervous System with several information for postural control. In addition, muscles are recruited in specific patterns in order to maintain stability on a variety of tasks performed in a variety of environments.

Following stroke there appears to be reduced capacity to maintain stability. Impaired balance interacts with functional independence and increases the risk of falls. The aim of physiotherapy interventions is to increase functional abilities and prevent secondary complications. In Portugal, patients who suffered stroke usually see physiotherapy in the acute stage. Early intervention includes balance treatment in order to improve functional independence. But, is there evidence that balance and functional independence are related? It seems significant to investigate if the balance score and the level of independence of physiotherapy treatment is related in balance training in order to maintain independence while performing daily activities and help people to become more independent.

Purpose

The purpose of this study is to investigate if there is a relationship of balance in functional independence in patients who suffered a stroke.

Methods

Sample

Barthel index criteria

Sample is only enrolled in the middle cerebral artery territory

Sample consists of one month stroke survivors

No cognitive impairment according to Mini Mental State

No severe bed related problems

No other disorder that could interfere with balance

All subjects were assessed with the Berg Balance Scale (BBS) and the Modified Barthel Index (MBI).

Data analysis was performed with the statistical software SPSS 17.0

Results

The scatterplot shows that as MBI score increases, BBS score also increases, which indicates positive correlation between the two variables. Spearman correlation coefficient is 0.520 p < 0.01.

Conclusions

The positive correlation between the Berg Balance Scale and the Modified Barthel Index indicates that in balance improves, functional independence also improves. These results indicate that after stroke, early physiotherapy intervention focused on balance training is needed to improve the ability to maintain stability while performing daily activities and help patients to become more independent.

References


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