

Effect of Occupational Therapy based Balance Training on Pusher Behavior

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Abstract: ***Introduction:** Pusher syndrome is a disorder, in which stroke patients shift their body weight toward the affected side of the body and push away from the non-hemi paretic side, **Aim:** To find out the effect of occupational therapy intervention with balance training on pusher behavior of persons with stroke, **Methods:** The Single group pre and post Quasi experimental study was conducted with 15 subjects, The Scale for contraversive pushing and Burke Lateropulsion scale to assess the pusher behavior and balance of the participants, all participants received occupational therapy based balance and postural training for the period of one month, each session extended 45 minutes to one hour, four sessions in a week. **Results:** A comparison of pre and post training assessment results revealed that occupational based balance training led to following significant changes, comparison of balance score p value is <0.01, comparison of pusher behavior score p value is <0.01, **Conclusion:** The occupational therapy based balance and postural training activities are found to be effective in reducing pusher behavior among stroke.*

Keywords: occupational therapy, pusher behaviour, contraversive, lateropulation

1. Introduction

Pusher syndrome is a disorder in which stroke patients shift their body weight toward the affected side of the body and push away from the non-hemi paretic side. Pusher syndrome is one of the atypical balance problems that can manifest after a stroke. Occurrence of pusher behavior (PB) is estimated to occur in about 5% of the stroke population and 10% of stroke patients admitted for rehabilitation and is considered a negative factor regarding recovery time. It is typically associated with posterior thalamic stroke, less frequently with extra-thalamic lesions, patients with PB have an altered perception of the body's postural orientation in gravitational space (7, 8) and experience their body as oriented upright when it is tilted about 20° to the unaffected side. They have typical behavior when they try to realign their body's centre of gravity with their disturbed internal body reference. Other investigations suggest the presence of graviceptive neglect, related to a disrupted processing of somesthetic graviceptive information. Two therapeutic approaches have been suggested based on experience, clinical observation and physiopathological investigations. Some authors consider the role of visual cues to be a basic element, others judge somesthetic information to be more important.

Pusher syndrome is still a largely unknown disorder that is clinically presented in 5-52% of patients who have suffered a stroke. Three important variables to identify pusher syndrome, namely: 1) spontaneous body posture, 2) increase of pushing force by spreading the non-paretic extremities and 3) resistance to the passive correction of posture. These

three variables were then established in the form of a scale called the "Clinical Scale for Contraversive Pushing (SCP)" by Karnath et al. to aid clinicians in diagnosing pusher syndrome and measuring the severity of pusher syndrome. In addition to the SCP, several other clinical tools have been developed for examining pusher syndrome following a stroke, namely the Modified Scale for Contraversive Pushing and the Burke Lateropulsion Scale (BLS). Of these scales, the most extensively tested was the SCP, which had acceptable clinometric properties. Patients with pusher syndrome tend to be stroke patients with the most severe impairments and functional limitations in gait, standing, and walking. There must be an deficit in the brain is clear and that deficit has also an strong effect on the perception of the body scheme. Authors consider the role of visual cues to be a basic element, others judge somesthetic information to be more important. Occupational therapy practitioners can help people with stroke improve their occupational performance and social participation using many different intervention strategies, including but not limited to remediation or development of skills, use of compensatory strategies, activity modifications, and environmental accommodations.

Aim

To find out the effect of occupational therapy intervention with balance training on pusher behavior of persons with stroke

Objectives

- To assess the balance of people with stroke
- To assess the pusher behavior people with stroke

- To evaluate the effect of occupational therapy based balance training on pusher behavior of people with stroke.

Study design

Single group pre and post Quasi experimental design

Study setting

Live well institute of rehabilitation, puvanthi, melur main road, sivagangai.

Sample techniques

Convenient sampling

Sample size

15 subject-experimental group

Study duration: Six Months

Selection criteria

- Sub acute stroke diagnosed by a Psychiatrist
- Age range 30 to 50 years
- Male and female
- Pusher behavior with stroke
- People scores more than 25 on Mini Mental status examination
- People admitted in Residential Rehabilitation Programme

Independent variables

Balance and postural training

Dependent variables

Pusher behavior

Materials Used

- Scale for controversial pushing, This scale was proposed by Karnath and others and is based on Davis criteria, Reliability-0.97, Validity-0.63
- Burke Lateropulsion scale, Reliability-0.93, Validity-0.57

Procedure

A total of 15 subjects were taken in this study for experimental group. The study was conducted from Live well institute of rehabilitation, puvanthi, melur main road, sivagangai, age group between 30 years to 50 years. These subjects were selected based on selection criteria. Scale for controversial pushing and Burke Lateropulsion scales were used in pre and post test to assess the pusher behavior and balance of the participants, all participants received occupational therapy based balance and postural training for the period of one month, each session extended 45 minutes to one hour, four sessions in a week. Pre and post test scores were tabulated and statistically analyzed with “t” test.

Occupational Therapy Interventions

Postural Training:

Alignment with the vertical axis through visual feedback (door frames, window frames, tape on a mirror), Removing surfaces that may be used to push. Providing a task for non involved extremities, asking the individual to hold a cup of

water during transferring, parallel bars discouraged, hands on techniques to facilitate movements.

Balance Training

Use stable, hard, rigid and even surface, Then progress to uneven surface, Weight shifts, Increase sway, Useballs, Use foam rollers, Balance board and beam, Environment-real stimulation, Sequence-simple to complex, Feedback-external feedback.

2. Data Analysis and Interpretation

Table 1: Comparison of balance score between pre and post test

SCP	Group	Test	mean	S. D	t value	p value
		Pre	4.66	1.12		
		Post	4.26	0.86		

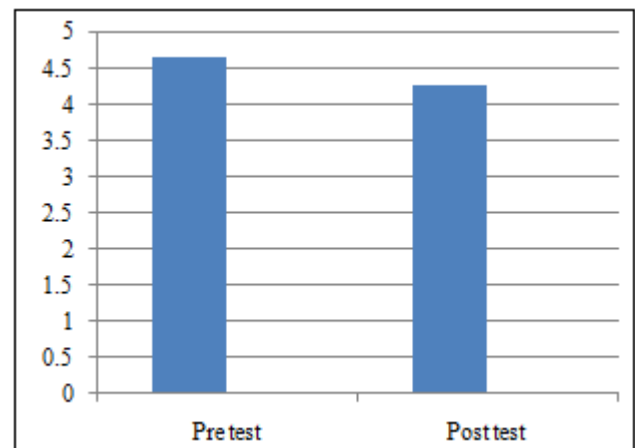


Table and graph 1: shows comparison of balance score between pre test and post test. The mean value in pre test is 4.66 and post test mean value in 4.26, t value 2.70, p value 0.0172. This shows there is significant difference between pre and post test values.

Table 2: Comparison of Pusher behavior between Pre Test and Post Test

BLS	Group	Test	mean	S. D	t value	p value
		Pre	10.73	2.91		
		post	9.60	2.85		

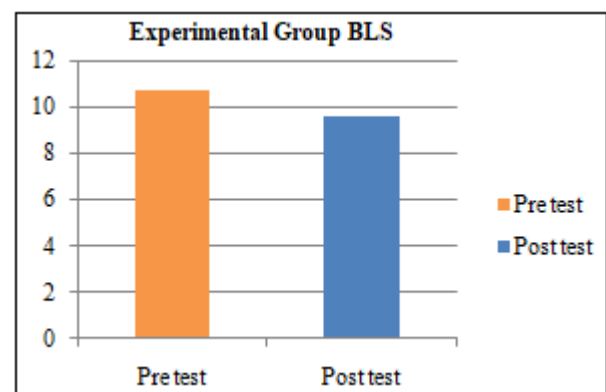


Table and graph 2: shows comparison of pusher behavior between pre and post test. The mean value of pre test is 10.73 and post test mean value is 9.60, t value 2.91, p value 0.011.

0.0113. This shows there is significant difference between pre and post test values.

3. Discussion

The purpose of the study is to determine the effects of occupational therapy based balance training on pusher behavior.

A total of 15 subjects were taken in this study for experimental group. The study was conducted from Live well institute of rehabilitation, puvanathi, melur main road, sivagangai, age group between 30 years to 50 years. these subjects were selected based on selection criteria. Scale for controversial pushing and Burke Lateropulsion scales were used in pre and post test to assess the pusher behavior and balance of the participants, all participants received occupational therapy based balance and postural training for the period of one month, each session extended 45 minutes to one hour, four sessions in a week. Pre and post test scores were tabulated and statistically analyzed with "t" test.

Table and graph 1: shows comparison of balance score between pre test and post test. The mean value in pre test is 4.66 and post test mean value is 4.26, t value 2.70, p value 0.0172. This shows there is significant difference between pre and post test values. It indicates that there is a significant improvement after occupational therapy based balance training on balance of people with stroke. These findings are also supported by Yea-Ru Yang et. al, they have conducted a study to investigate the effects of a computer-generated interactive visual feedback training program on the recovery from pusher syndrome in stroke patients total of 19 individuals were referred from the outpatient department of rehabilitation of a medical center in Taiwan as potential study participants. The scale for controversial pushing for severity of pusher syndrome, the Berg Balance Scale for balance performance, and the Fugal-Meyer assessment scale for motor control were the outcome measures. Patients were assessed pre-and post training. Upper extremity motor function did not significantly improve after either training program, possibly owing to the emphasis on posture control in this study. However, lower extremity motor function significantly improved after either training program.

Table and graph 2: shows comparison of pusher behavior between pre and post test. The mean value of pre test is 10.73 and post test mean value is 9.60, t value 2.91, p value 0.0113. This shows there is significant difference between pre and post test values. It indicates that there is significant improvement on pusher behavior of person with stroke after occupational therapy based balance training.

These findings are also supported by Matteo Paci et. al, in their study the patients attended 27 therapy sessions over a 3-week period. The therapy consisted of individual 2-hour physiotherapy twice a day for 5 days a week and a single 1-hour session on Saturdays. The study results shows that the treatment did not reduce the leaning towards the affected side, but on the other hand the patient learned to use compensatory strategies for activities like walking or transferring from bed to wheelchair.

Thus this study accepting the alternate hypothesis and rejecting the null hypothesis. So findings suggest that the occupational based balance and postural training activities are found to be effective in reducing pusher behavior among stroke.

4. Conclusion

From this study it is concluded that the occupational therapy based balance and postural training activities are found to be effective in reducing pusher behavior among stroke.

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