

Comparison between the Effects of Task Oriented Training Program and Balance Training On Improving Balance in Stroke Patients

A. Anas Ahamad¹, Kannan Dhasaradharaman², Vishnupriya Radhakrishnan³

¹MPT Student, ²Professor cum Principal, ³Professor,
JKK Munirajah Medical Research Foundation, College of Physiotherapy, Komarpalayam, Tamil Nadu, India

Corresponding Author: Kannan Dhasaradharaman

ABSTRACT

Background and purpose: Difficulty to maintain balance in stroke patients on their daily living activities is of major challenge. Our study aims to compare the effects of task oriented training program and balance training on improving balance in stroke patients.

Methods: A sample of 30 patients within the age group of 40-65 years with Stroke were randomly divided into two groups, Group A(n=15) and a group B (n=15).The subjects in the group A is treated with Task oriented training program and the subjects in the group B is treated with balance training. The subjects balance is measured by Berg Balance Scale and Performance oriented Mobility Assessment before and after completion of six months of treatment program.

Results: After six months of treatment there is a significant difference in both Group A and Group B. When the mean changes between the groups are compared there is more improvement in Group A in compared to Group B.

Conclusion: The 6 months exercise program shows that Task oriented training program was more effective in improving balance in Stroke.

Keywords: Task Oriented Training, Balance training, Berg Balance Scale, Performance Oriented Mobility Assessment.

INTRODUCTION

Stroke has great impact on a patient's life. It decreases the ability to maintaining the balance and often becomes a reason for repeated falls. The balance is required for people to lead normal daily lives and perform intended activities. ^[1] However, difficulty with balance and postural control in stroke patients leads to defective movement ability, disables walking and activities of daily living. ^[2] Balance requires coordination from multiple sensory systems including the vestibular, somatosensory and visual systems. ^[3]

There is evidence that therapists treating people affected by a neurological disorder should be prescribing task oriented training in their therapy. Task oriented training is originated from the movement science and motor skill learning literature. In this training where patients practice context-specific motor tasks and receive some form of feedback. In the field of skill learning, it may be associated with different practice conditions, feedback and conditions of transfer. ^[4]

So thus improving the balance is of great importance in Stroke patients. The purpose of this study deals about comparing

the task oriented program and balance training in improving the balance.

METHODS

This study was performed in Outpatient department of JKK Munirajah Medical Research and foundation, Physiotherapy department of Bharath Neuro-speciality hospital, Erode and Erode Trust Hospital. The 30 subjects were included in the study and divided into two groups, Group A received Task oriented training program (n=15) in addition to selected physical therapy program (strengthening exercises, weight bearing exercises and gait training), and group B received balance training (n=15) in addition to selected physical therapy program (strengthening exercises, weight bearing exercises and gait training). The both groups received treatment for total duration of 6 months, 5 days/week, 1 session/day, each session for 45 min to 1 hour. The subjects balance is measured by Berg Balance Scale and Performance oriented Mobility Assessment before and after completion of six months of treatment program.

PROCEDURE:

The subjects are selected under inclusion criteria and Group I performed task oriented program in form of : (1) Heel lifts ; lifting non affected leg with adduction and abduction movements of leg and drawing an “ 8 “ on the ground with feet (repeat 10 times), (2) unilateral and bilateral slow arm movements and slow forward and backward walking (repeat 10 times), (3) dual task of moving while holding ball in unaffected hand and stopping on a verbal order given by therapist (repeat 10 times), (4) walking 3m, turning around a target point and coming back (repeat 10 times), (5) standing up from a chair, walking four steps forward, turning to the right, stepping over the exercise step, turning to the right again and walking forwards to the chair (repeat the exercise circuit in opposite direction) (repeat 10 times), (6) from a sitting position on a 85-cm Swiss ball, patient hold a ball in unaffected hand and also perform reaching

and grasping while sitting on a Swiss ball (repeat 10 times), (7) from standing position on balance board, patient hold a ball or cane in unaffected hand and also perform reaching and grasping while standing on balance board(repeat 10 times),(8) from standing position on balance board, patient perform abduction in non affected arm (repeat 10 times), (9) from standing position on balance board, patient perform squatting (repeat 10 times).

Group II performed balance exercises in form of:(a) Forward and backward balance from kneeling (repeat 20 times), (b) Side to side balance when kneeling (repeat 20 times), (c) Weight Shift Forward and Back; the patient shift the weight forward and back by arching and rounding the lower back (repeat 20 times), (d) Weight Shift Side to Side; Shift weight first on the right hip then the left hip. Ribcage should move side to side and hip should lift off of surface (repeat 20 times), (e) Standing and keeping static balance with both feet apart, then with both feet close to each other, with eyes opened then with eyes closed (holding for 15 seconds for each), (f) Forward and backward lean while standing (repeat 20 times), (g) stepping forward, backward, and sideways on the exercise step (repeat 20 times), (h)Standing on non affected leg (holding for 5 seconds, repeat 20 times).

DATA ANALYSIS:

The statistical methods for collection presentation and analysis of the results were used according to the following: (1) Data was summarized using mean and standard deviation.(2) Comparison within the groups was performed using paired t-test and between groups comparison was performed using unpaired t-test (3) P-values less than 0.05 were considered statistically significant.

RESULTS

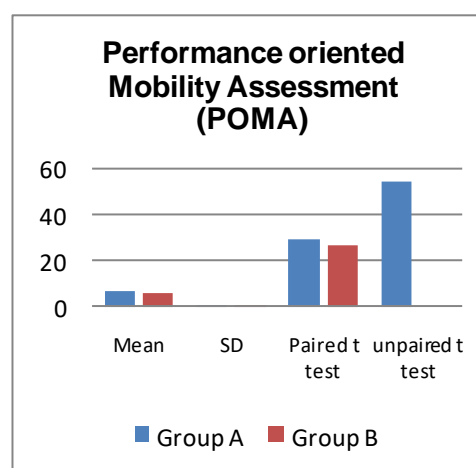
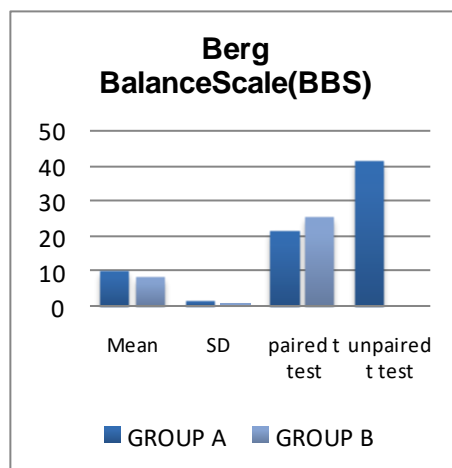
The study sample comprised of 30 patients, of which 15 Group A and Group B. The mean age of subjects was 40-65 years. Among 30 subjects, 15 were treated with

Task oriented training program and 15 were treated with Balance training program.

The pre and post test values were assessed by Berg Balance Scale (BBS) and Performance Oriented Mobility Assessment (POMA) in group A and Group B. The mean difference for BBS is 10 and 8.47 and POMA is 7.27 and 6.07 respectively. The

standard deviation values for BBS is 1.81 and 1.30 and POMA is 0.96 and 0.88 respectively. The paired 't' test values for BBS is 21.4 and 25.2 and POMA is 29.33 and 26.71 respectively. The unpaired 't' test values for BBS is 41.0 and POMA is 54.34 respectively.

	Berg Balance Scale (BBS)				Performance Oriented Mobility Assessment (POMA)			
	Mean	SD	Paired t test	Unpaired t test	Mean	SD	Paired t test	Unpaired t test
Group A	10	1.81	21.4	41.07	7.27	0.96	29.33	54.34
Group B	8.47	1.30	25.2		6.07	0.88	26.71	



The results obtained from statistical analysis indicate that there was statistically significant difference ($p < 0.05$) between two groups in showing improvement in balance in stroke patients. The increase in balance was seen in all subjects received irrespective of the techniques task oriented training program and balance training program. By analyzing the mean values, the result showed the subjects who received Task oriented training program are found to be more effective in improving the balance than Balance training program. By analyzing the values of S.D the results showed a significant increase in the subjects received Task oriented training program than those who received Balance training program.

Through the results, alternate hypothesis is accepted and also there is a significant difference between task oriented training program and balance training program for the improvement in balance.

DISCUSSION

While consideration of improving quality of life in patients with stroke the study shows there was effective and good improvement.

The Purpose of the study was to compare treatment effectiveness of task oriented training program and balance training program in improving the balance in stroke patients. The balance was assessed by Berg Balance Scale and Performance Oriented Mobility Assessment was taken as the parameter to quantify the effectiveness of the treatments task oriented training program and balance training program both improves balance.

This study revealed the efficacy of balance exercises on the postural stability in stroke patients with superiority of task oriented training, this result agreed with Kim et al (2012) whom evaluated the effect of task oriented training program on stroke patients for trunk control ability, balance

and gait showed significant improvements. Their study concluded that task oriented training after stroke can improve the trunk control ability, balance and gait. [5] Task oriented training could provide proper visual input and, substitutes for absent or reduced proprioceptive input from the affected body side. [6] Task oriented training improved motor performance, motor control strategies, sensory recovery, and daily function more than the traditional treatment. [7] This was explained by Bayona et al, (2012) [8] who proved that recovery after task oriented training occur due to learning as well as cortical plasticity related to acquisition and recovery of function. Also brain-functional imaging studies describe the recovery from hemiplegic stroke to be associated with a marked reorganization of activation patterns of specific brain structures after task oriented training. [9] Kalra (2012) has recommended that developments performed in the vicinity of a practical errand target (e.g., coming to forward to take a refreshment) are smoother and quicker than developments performed without such questions (e.g., reaching forward to a spot without an assigned focus) amid situated coming to undertakings. [10]

CONCLUSION

This study concludes that task oriented training program is effective on maintaining balance in stroke patients than balance exercises. Task oriented training program is a useful one for the treatment of stroke patients.

ACKNOWLEDGEMENT

We thank all participants for their engagement in supporting this study.

REFERENCES

1. Horak FB: Clinical Measurement of postural control in adults. *Phys Ther*, 1987, 67: 1881-1885.
2. Carr JH, Shepherd RB, et al.: Investigation of a new motor assessment scale for stroke patients. *Phys Ther*, 1985, 65: 175-180.
3. O'Sullivan, Susan and Schmitz, Thomas. *Physical Rehabilitation* (5th Ed.), 2007c; 55(3): 254-259.
4. Teasell R, Foley N, Salter K and Jutai J. A Blueprint for Transforming Stroke Rehabilitation Care in Canada: The Case for Change. *Archives of Physical Medicine and Rehabilitation*, 2008; 89(5):575-578
5. Kim. Bo Hyun, Lee. Suk Min, Bae. Young Hyun, Yu. Jae Ho, Kim and Tae Hun. The Effect of a Task-oriented Training on Trunk Control Ability, Balance and Gait of Stroke Patients. *Journal of Physical Therapy Science*, 2012; 24(5): 519-525.
6. Flor H and Diers M. Sensorimotor training and cortical reorganization. *Neuro Rehabilitation*, 2009; 25(5): 19-27.
7. Ching-Yi Wu, Pai-Chuan Huang, Yu-Ting Chen, Keh-Chung Lin and Hsiu-Wen Yang. Effects of Mirror Therapy on Motor and Sensory Recovery in Chronic Stroke: A Randomized Controlled Trial. *Archives of Physical Medicine and Rehabilitation*, 2013; 76(8): 406-12.
8. Bayona NA, Bitensky J, Salter K and Teasell R. The role of task-specific training in rehabilitation therapies. *Top Stroke Rehabil*, 2012; 12(9): 58-65.
9. Butrach W, Jitpraphai C and Sangkrai S. Improved function after task specific training therapy in chronic stroke patients. *J Med Assoc Thai*, 2011; 86(3): 579-84.
10. Kalra L. The influence of stroke unit rehabilitation on functional recovery from stroke. *Stroke*, 2012; 25(3): 821-5.

How to cite this article: Ahamad AA, Dhasaradharaman K, Radhakrishnan V. Comparison between the effects of task oriented training program and balance training on improving balance in stroke patients. *Int J Health Sci Res*. 2019; 9(10):238-241.
