

Physiotherapy

KEYWORDS:

Parkinsons, strategy training, berg balance scale, time up and go test, unified parkinsons disease rating scale.

A COMPARATIVE STUDY ON THE EFFECTIVENESS OF STRATEGY TRAINING VS PNF TECHNIQUES TO IMPROVE BALANCE IN SUBJECTS WITH PARKINSON'S DISEASE-A RANDOMIZED COMPARATIVE STUDY.



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ABSTRACT

The purpose of the study was to determine the effectiveness of STRATEGY TRAINING VS PNF TECHNIQUES TO IMPROVE BALANCE IN SUBJECTS WITH PARKINSON'S DISEASE 30 patients according to the inclusion and exclusion criteria were selected and were assigned into 2 groups by random allocation .Group-A(strategy training) Group-B (pnf technique exercises) consists of 15 patients in each group. Prior to the starting of the intervention program pre assessment was done by using outcome measures of berg balance scale,time up and go test ,unified parkinson disease rating scale for both the groups Intervention program for 4 weeks . After the 4 weeks intervention post test assessment was taken by using outcome measures of berg balance scale,time up and go test,unified parkinson disease rating scale.Statistical analysis of the data showed Both the groups A and B showed significant difference from pre to post intervention. But on comparing mean values of Group A & B, Group A showed more improvement than Group B This findings suggest that strategy training combined with conventional training program is more effective in improving balance dysfunction in parkinson's patients.

INTRODUCTION

Parkinson's disease is a debilitating chronic neurodegenerative disorder of unknown etiology. It is a complex progressive disorder characterised by various motor symptoms ¹. Predominantly dopamine producing neurons in a specific area of the brain called substantia nigra are altered ^{2,3,4,5} It is manifested by neurological symptoms like difficulty in maintaining movement leading to imbalance, postural instability, balance impairments are the main symptoms of parkinsonism disease. parkinsons is a common disease that affects an estimated 7 to 10 millions people world wide.mean age of onset is between 58 to 85 years.males are affected 1.2 to 1.5 times more frequently than women ⁶

Balance is the main ability to maintain the body's center of mass over its base of support hip, knee, ankle strategy play an important role in maintaining the balance in subjects with Parkinson's disease. the ankle and hip strategy were the specific balance strategy training in order to improve balance in patients with

parkinsons disease.⁷ PNF is a physiotherapy approach for Parkinson it is a method of facilitating the response of neuromuscular mechanism through the stimulation of proprioceptors. PNF techniques can be used to develop muscular strength, facilitate stability mobility, neuromuscular control and coordinated movements improves static balance dynamic balance ultimately contribute to a more stable gait so, this technique is very useful in the management of improving balance and gait training among parkinsons patients.⁸

However there, are very few studies done on strategy training and PNF techniques and there are no comparative studies done between these two interventions according to my knowledge. so ,the purpose of study is to compare the effectiveness of **strategy training** versus **pnf** techniques to improve balance in parkinsons patients.

METHODOLOGY AND MATERIALS REQUIRED.

STUDY TYPE - A comparative study with pre and post intervention comparison design.

SAMPLE SIZE - 30 subjects, 15 in each group fulfilling inclusion and exclusion criteria.

STUDY PERIOD - 1 year duration from the date of approval

SAMPLING METHOD - Randomized sampling.

STUDY DURATION - 4 weeks

ETHICAL CLEARANCE : The ethical clearance was taken from ethical committee of MNR'S SANJEEVANI COLLEGE OF PHYSIOTHERAPY.

STUDY POPULATION - Both male and female age group from 40-60yrs.

STUDY AREA - Physiotherapy outpatient department (OPD) of MNR hospital, Sangareddy.

STUDY SAMPLE -

A total number of 30 patients both male and female having balance dysfunction who are willing to participate .An informed consent

was taken from each participant. they were allocated into 2 groups 15 in each by randomized sampling.

GROUPS:

GROUP A: strategy training +conventional physiotherapy

GROUP B: pnf techniques +conventional physiotherapy

OUTCOME MEASURES: berg balance scale^{9,10}

Time up and go test^{11,12}

Unified parkinsons disease rating scale:(Motor examination)^{13,14}

INCLUSION CRITERIA

- 1.Both male and female genders are included.
- 2.Subjects with age group of 40 to 60 year⁶
- 3.Berg balance scale score ranging from 21 to <56⁶
- 4.grade 3 on yahr and hoehn scale.⁶
- 5.ability to participate in 30-min physiotherapy sessions.

EXCLUSION CRITERIA

1. Subjects with sensory deficits and other neurological deficits.⁶
2. Subjects with auditory deficits.
3. Non –ambulant patients
4. Subjects with cognitive deterioration⁶
5. Subjects with severe cardiac problems.⁶

MATERIALS USED:

- 1.Table or chair
- 2.Paper and pencil
- 3.mat
- 4.Stopwatch or timer
- 5.Chair with arm support
- 6.Parallel bars

PROCEDURE :subjects in group A Received strategy training +conventional physiotherapy,and subjects in group B received PNF techniques +conventional physiotherapy.Total duration of the intervention was for 4 weeks with 4 sessions per week.

GROUP A

PROCEDURE: STRATEGIC TRAINING PROGRAM

The patient is asked to stand with stationary base of support then starting with exercises sit- to- stand -to sit, heel raises ,and toe offs, knee squats and then coming up ,standing and side ,front , back kicks ,marching on spot, and leg lifts.

The patient was instructed to practice ankle strategy on a broad surface. Patients were asked to sway slowly in anterior/posterior, right/left, first to and from midline, progressing to passing midline, and finally progressing to sway toward the periphery without return to midline.⁶Head and pelvis should travel in the same direction at same time. Patients can practice standing near a wall with a chair/table in front of them, swaying forward to touch the chair or table with their stomach [leading with the pelvis]and backward to touch the wall with the back of their head. Cues are given not to bow to the table or chair and not to touch the wall with the buttocks Hip strategy is practiced on a narrow surface .The head and pelvis travel in opposite direction to counter balance each other, in a forward bow /backward bending motion anterior/posterior sway. Using the wall and table or chair, client can be cued to bow to touch the nose with table or chair while simultaneously touching the wall with the buttocks.^{6,15,16,17}

PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION TECHNIQUES IN IMPROVING BALANCE:

15 subjects will be taken in the group, 30 minutes a day for 4 days a week for duration of 4 weeks.

Warm up exercises, mild stretching to the 4 limbs, relaxation exercises:

Gentle rocking, rotational exercises ,slow Rhythmic rotational

movements through small range Rhythmic initiation are given to produce generalized relaxation of excessive muscle tension due to rigidity^{18,19,20}

Rhythmic stabilization technique in weight bearing positions to improve balance.

· Hold relax or contract relax .

· FROM LYING TO SITTING:

· Use resistance at the pelvis and shoulder for eccentric control .

· Weights siftings in sitting position,

· Positional stretching,

· PNF extremity patterns, bilateral symmetrical upper extremity D2 flexion and D2 extension promoting upper trunk extension, lower extremity D1 –D2 patterns, Resisted PNF exercises²¹

CONVENTIONAL PHYSIOTHERAPY:

For both the groups along with their corresponding treatment protocol.

PROCEDURE:

The patient is asked to sit comfortably in the chair, slow rhythmic deep breathing exercise is incorporated at the starting of session and at times the patient feels fatigue .the patient is asked to stand with stationary base of support then starting with exercises sit-to-stand-to-sit ,raising from chair, heel raises, and toe offs ,partial wall squats, and then coming up, standing and single limb stance with sidekicks, front kicks, back kicks ,marching in a place and functional reach and leg lifts improved balance by adjusting base of support, weight bearing exercises, side walking, tandem [walking ,standing], standfalloing wobble board ,physio ball reach out,each of exercises was performed for repetition of 10 times each.^{6,22,23,24}

STATISTICAL ANALYSIS:

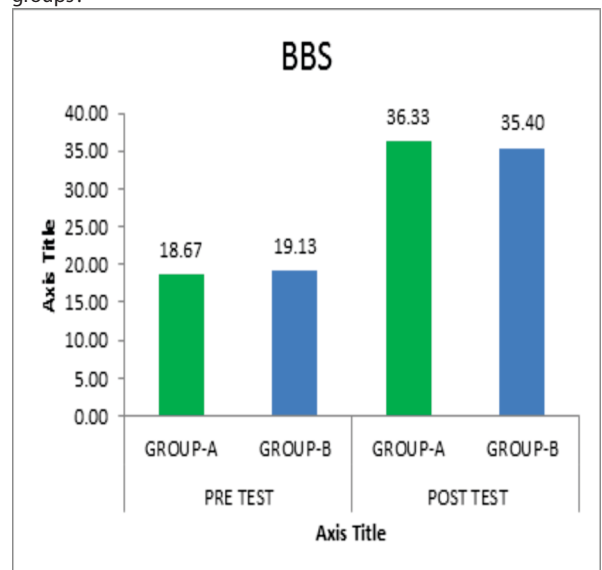
All statistical analysis in this study was done using SPSS (version 17)for windows.the general characteristics of the participants were expressed in terms of mean and standard deviation by using descriptive analysis

within the group

paired t test was performed for comparison within group

BETWEEN THE GROUPS:

independent t test was used for comparing differences between groups .



BAR GRAPH SHOWING COMPARISON OF DIFFERENCES BETWEEN THE GROUPS

Independent Samples Test

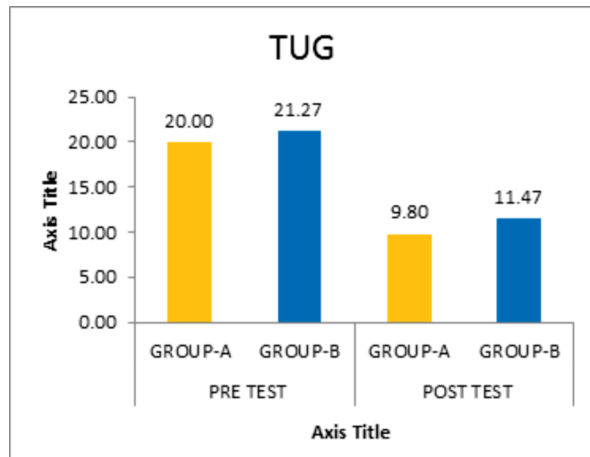


Fig 2 Bar Graph Showing Differences Between The Groups

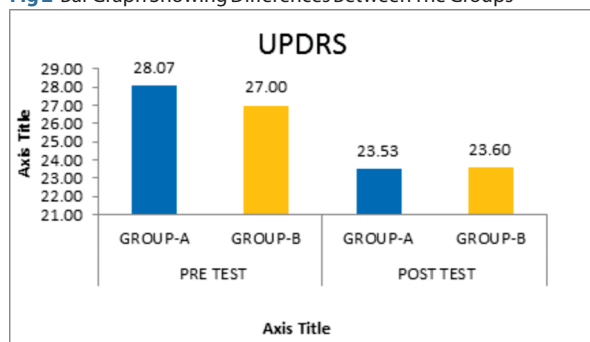


Fig 3 Bar Graph Showing Comparison Of Differences Between The Groups

DISCUSSION

Parkinsons disease is the most common degenerative disease of the basal ganglia .basal ganglia disorders frequently leads to impaired mobility as well as falls.In parkinsons disease balance difficulties is a common and it is a major clinical problems .controlling the body's position in space for the purpose of balance and orientation requires motor coordination process that organize movement throught out the body into coordination movement strategies.

In this study we have tried to find out the effects of STRATEGY TRAINING with conventional balance program and PNF TECHNIQUES with conventional balance program .the balance parameter using BERG BALANCE SCALE ,TIME UP AND GO TEST,UNIFIED PARKINSONS DISEASE RATING SCALE (motor examination) is measured in both groups.

The present study suggest that strategy training with conventional balance program improve balance when tested before and after the intervention .comparison of inter group A and B shows that group A had more significant improvement in balance .PVALUE <0.05.

On group analysis in group A and group B strategy training with conventional balance program was effective in improving the balance in patients with parkinsons disease is supported by previous researches .

O SULLIVAN S AND SCHMITZ ;stated balance training in parkinsons patients when delivered showed improvement in balance in parkinsons patient²⁵.CAMPELL A,J ET AL,stated home based exercises was delivered to older women to prevent falls²⁶.GEHLSEN ETAL; stated static balance and dyanamic balance improved balance in people with history of falls.

Strategy training program involving ankle,hip strategy training in group of people has shown improvement in balance . strategy tranning program along with general balancing program have

reported to improve balance to considerable limits .Nashner L M stated that ankle sway that control balance by neutrally programmed synergies brings about improvement in balance .The ankle sways to control balance in parkinsons diseases.JENNIFER C NITZ ET AL; stated that specific balance strategy training and conventional exercises interval had significant improvement in balance as compared to pnf techniques along with conventional intervention.shumway COOK A et al stated a combination of activities along with strategy training exercises when delivered improved balance.²⁷

The program of physical therapy in parkinsons disease comprises of repetative exercises directed at improving the balance Individual group analyses indicated that those participants receiving the strategy training did better than PNF TECHNIQUES ,such interventions encouraged increased speed range of motion ,in addition improved flexibility and balance .retraining strategies for balance control involve patient to recover,sensory and motor strategies to meet the demands of balance required for functional task I here by stated that alternate hypothesis is proved and null hypothesis is not justified.

CONCLUSION

The study concluded that The data analysis found a significant difference between strategy training program and pnf techniques ,this study supports the use of strategy training along conventional balance program shown superior results to improve balance in patients with parkinsons diseases with moderate disability.

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