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Research Article

Impact Of Frenkel's Balance Exercises And Otago Exercise On Functional Mobility And Balance Among Elderly Population: A Randomized Control Trail

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ABSTRACT

Background: The reduction of physiological reserves in older adults over the years facilitates functional limitations and imbalance. Mobility limitations may occur in several ways, such as difficulties to move, in sit and stand, going up or down stairs, and even in making balance during walk.
Study design: A Randomized control trail
Aim: To assess the impact of Frenkel's exercises and Otago home based exercises to improve functional mobility and Balance among elderly population.
Objective: To evaluate the impact of Frenkel's exercises and Otago home based exercises to improve functional mobility and balance among elderly population through elderly mobility scale and berg balance scale respectively.
Participants: The participants were recruited on the basis of exclusion and inclusion criteria. The 40 participants were randomly divided in two group, 20 in control group and 20 in experimental group.
Method: This is randomized control trail study; a total 40 participant recruited between 60-75 years of age. Participants were randomly assigned in one of 2 groups: control group with conventional occupational therapy exercises and experimental group Frenkel balance exercise and Otago home based exercises. Exercise intervention was conducted in 4 sessions per week, 45 min for 8 weeks. The outcomes of the intervention were assessed using BERG BALANCE and ELDERLY MOBILITY outcome measure.
Result: In Berg balance scale (BBS) the pre mean was (36.3) accompanied by standard error (0.86), standard deviation (3.84) and subsequently post mean value of BBS increased (49.1) standard error (1.16) and standard deviation (5.20) which indicate progress of post mean value (49.1) indicating an improvement in balance among elderly population. In Elderly mobility scale (EMS) pre and post related that the pre mean of EMS (14.25) accompanied by standard error (0.70), standard deviation (3.14) and subsequently post mean value of EMS increased (18.9), standard error (0.52) and standard deviation (2.31) which indicate progress of post mean value (18.9) signifying enhanced functional mobility and a reduction in dependency and progress toward independence.
Conclusion: This research discovered that the impact of Frenkel balance exercises and Otago home based exercises is more significant than only conventional occupational therapy exercises for improving functional mobility and balance of elderly population. This study makes elderly people more mobile and independent in their activity of daily living.

Keywords: - Frankel exercise, Otago home-based exercise, Balance and Functional mobility.

INTRODUCTION:

The percentage and number of older people in the population of almost every nation in the world are rising. The world population prediction for 2022 states that the population over 65 is expanding at a faster rate than the population under that age[1]. The percentage of adults 65 and older is growing more quickly than the percentage of people under that age. Accordingly, it is anticipated that the proportion of the world's population that is 65 and older would increase from 10% in 2022 to 16% in 2050. It is predicted that by 2050, there will be twice as many people 65 and older worldwide as there are children under the age of five, and nearly as many as there are children under the age of twelve[1].

There is always a higher chance of functional and physical health issues among older persons. They become more susceptible as they age because of these consequences, which lead to illness, disability, and death[2]. Numerous fall risk variables, such as prior falls, advanced age, female gender, stride, and balance, have been discovered in older adults. Home risks, some diseases and medications, impairments, and visual impairments[3].

Several strategies can be employed to enhance functional mobility and balance in older adults, reducing the risk of falls. These include Pilates training, Otago exercises, Frenkel exercises, balance training, lower limb strengthening exercises, and combined programs that integrate balance and strength training. Such interventions aim to improve stability, strength, and overall physical function, thereby minimizing fall risk[4].

Frenkel's exercises, a type of repetitive motor training, have demonstrated effectiveness in improving balance and coordination among older adults. These exercises target coordination deficits by enhancing motor learning and integrating cognitive and motor functions. This approach serves as a valuable strategy for addressing balance and coordination challenges commonly experienced by the elderly[5].

Frenkel's balance exercises provide numerous advantages for older adults, including improved functional balance, reduced fall risk, increased muscle strength, and better coordination. RQesearch suggests that integrating Frenkel exercises with additional interventions, such as music therapy or dedicated balance training, can further enhance outcomes, leading to significant improvements in balance, muscle strength, and reaction times[6].The Otago Exercise Program, developed at the Otago Medical School, is an evidence-based intervention designed to prevent falls in older adults. It is specifically structured for home-based implementation and focuses on three key components: muscle strengthening, balance training, and walking exercises. These domains work synergistically to enhance physical function and reduce fall risk[7].

Frenkel's balance exercises and the Otago exercise program are both essential in improving functional mobility and balance in older adults. Research indicates that balance disorders are common among the elderly, often resulting in reduced functional activity and an increased risk of falls. These exercise programs effectively address these issues by focusing on enhancing balance, strength, and mobility, thereby helping to mitigate fall risk and promote greater independence[8].

Research comparing the effectiveness of the Otago exercise program and balance exercises for individuals with knee osteoarthritis has shown mixed results. While both interventions have demonstrated potential benefits in improving balance and reducing fall risk, the outcomes vary, suggesting that further investigation is needed to better understand their comparative effectiveness for this specific population. More studies are required to determine which intervention is most beneficial for individuals with knee osteoarthritis in terms of improving functional mobility and preventing falls[9].

Additionally, interventions such as aquatic cognitive-motor exercise have shown significant improvements in cognition, gait speed, and functional mobility in older adults. These findings highlight the importance of combining cognitive and physical health strategies to promote overall well-being in the elderly. Therefore, integrating Frenkel's balance exercises and the Otago exercise program can be particularly beneficial for improving functional mobility and balance, ultimately reducing the risk of falls and enhancing the quality of life for older adults[10].

This study focuses on assessing the impact of Frenkel's balance exercises, the Otago home-based exercise program, and conventional occupational therapy exercises on functional mobility and balance in elderly individuals. The goal is to determine how these interventions can enhance the mobility and independence of older adults, specifically in their ability to perform activities of daily living.

METHODOLOGY:

The study was taking place at Santosh college of Occupational therapy, Ghaziabad. Participants were divided into experimental and control group by random sampling. Participants were screened using Romberg test for balance. If subject ability to stand with the feet parallel and together with the eyes open and closed for 30 sec, then, they were included in the study. After screening, participants were recruited for the study according to the inclusion and exclusion criteria. Consent was taken from the participants before therapy in the study. Participants were undergoing for pre-test assessment using Berg balance scale (BBS) and elderly mobility scale (EMS). 32 sessions were conducted 4 times in one week for 8 weeks and duration was 45 minute per sessions. In the experimental group participants were received Frenkel's balance exercises and Otago home based exercises. Participants of control group received conventional Occupational therapy program. Post-test

assessment was done using outcome measure and results was analyzed.

SCREENING MEASURES: -

(1.) Romberg test

The purpose of the Romberg test is to assess balance when individuals experience reduced visual sensory input. The Romberg Test by having the individual stand as quietly as possible without deviating, with the feet placed together (left and right medial malleoli touching) or in the heel-to-toe position, with differing visual sensory conditions. The visual sensory conditions are eyes open and eyes closed. The Romberg sign is positive if the individual begins to sway involuntarily during the reduced-vision condition. If abnormal movements or sway are detected during the Romberg test, then a neurologic deficit is believed to exist within the higher-functioning sensory systems. Interrater reliability was excellent. The Romberg test has convergent validity[11].

OUTCOME MEASURES: -

(1.) Berg Balance Scale

The berg balance scale (BBS) is a 14-item objective measure that assess static balance and fall of risk in older adults. The time duration to assess 15-20 minutes. Standard chair, step stool, ruler, slipper or shoes, stop watch are required for the test. Lower the score indicates the high risk of falling. The Berg Balance Scale is a testing tool with high validity and reliability used to measure balance. The relative intra-rater reliability of the Berg Balance scale is high. The berg balance scale has construct validity[12].

(2.) Elderly Mobility Scale

The EMS is a 20-point validated assessment tool for the assessment of elderly subjects. The time duration to assess 15-20 minutes. Meter rule, stop watch, access to a bed and chair, and usual walking aid are required for the test. It has been proposed that the EMS measures two dimensions of mobility are bed mobility and functional mobility. The elderly mobility scale has concurrent validity and good inter-rater reliability when used with elderly People[13].

Treatment protocol:

GROUP A: EXPERIMENTAL GROUP

Frenkel's exercises for the experimental group given as Follows:

Sitting

1. Sitting; one leg stretching, to slide heel to a position indicated by a mark on the floor.
2. Sitting; alternate leg stretching and lifting to place heel or toe on the Specified mark.
3. Stride sitting; change to standing and then sitting down again.

Standing

1. Stride standing; transference of weight from foot to foot.
2. Stride standing; walking sideways placing feet on marks on the floor.
3. Standing; walking placing feet on the mark.
4. Standing; turn around.
5. Standing; walking and changing direction to avoid obstacles.

All the above-mentioned exercises were giving to participants for 8 weeks and 4 times in one week for 15 minutes to perform under the supervision of occupational therapist[14].

Otago home exercises for the experimental group given as follows: -

Table 1: Otago home exercises protocol for the experimental group[15].

	STRENGTHENING	BALANCE RETRAINING
ACTIVITIES	5 leg muscle strengthening exercises, with up to 4 levels of difficulty	12 balance retraining exercises, with up to 4 levels of difficulty.
ASSESSMENT	The amount of weight in ankle cuff should allow 8-10 repetitions before fatigue.	Set each exercise at a level that the person can safely perform.
INTENSITY	Moderate	Moderate
PROGRESSION	Increase to 2 sets of repetitions or increase the weight of ankle cuff	From supported exercise to unsupported exercise.
FREQUENCY	4 times a week	4 times a week
DURATION	Approximately 15mins for flexibility, strength and balance exercises.	Approximately 15mins for flexibility, strength and balance exercises.

Table 2: Strength Training[15].

	STRENGTHENING EXERCISES	
Knee extensors (front knee strength) Knee flexors(back knee strength) Hip abductors (side hip strength)	All 4 levels Ankle cuff weights are used to provide resistance to muscles and 10 repetitions of each exercise are carried out	
Ankle plantar flexors (calf raises)	Level C 10 repetitions, hold support, repeat	Level D 10 repetitions, no support, repeat
Ankle dorsiflexors (toe raises)	10 repetitions, hold support, repeat	10 repetitions, no support, repeat

Table 3: Balance Training[15].

	Level A	Level B	Level C	Level D
Knee bends	10 repetitions, Hold support	1)10 repetitions, no support or 2)10 repetitions, hold support, repeat	10 repetitions, no support, repeat	3*10 repetitions, No support
Backward walking		10 steps, 4 times Hold support		10 steps, 4 times No support
Walking and turning around		Walk and turn around (make figure of 8) twice Use walking aid	Walk and turn around (make figure of 8) twice no support	
Sideways walking		10 steps, 4 times Use walking aid	10 steps, 4 times No support	
Tandem stance (heel toe stand)	10 sec, hold support	10 sec, no support		
Tandem walk (heel toe walk)			Walk 10 steps Hold support, repeat	Walk 10 steps, No support, repeat
One leg stand		10 sec, hold support	10 sec, no hold	30 sec, no hold
Heel walking			10 steps, 4 times Hold support	10 steps, 4 times No support
Toe walk			10 steps, 4 times Hold support	10 steps, 4 times No support
Heel toe walking backwards				Walk 10 steps No support, repeat
Sit to stand	5 stands, 2 hands for support	1)5 stands, one hand support or 2)10 stands,2 hands for support	1)10 stands, no support or 2)10 stands,2 hands for support, repeat	10 stands, no support Repeat
Stair walking	As instructed	As instructed	As instructed	As instructed, repeat

CONTROL GROUP INTERVENTION

The Control group consisted of a set of conventional exercises are as follows:
1.Quad drills
2.Hams curls
3.side hip strengthening for abductors
4.Toe raises with and without hold support
5.Calf raises with and without hold support
6.pelvic bridging
All the above-mentioned exercises will be giving to subjects of control group to perform in 10 repetitions with two sets of each for 8 weeks and 4 times in one week[14].

DATA COLLECTION:

A total of 40 participants included in the study through random sampling method. Participants were screened using Romberg test and divided into 2 equal groups, experimental and control group. There was fourteen male and six female in both experimental and in control group, out of forty participants in the study. In experimental group Frenkel balance exercise and Otago home based program was given to the participants for duration of 8 weeks, 4 sessions per week for 45min. In control group conventional occupational therapy program was given to the participants for duration of 8 weeks, 4 sessions per week for 45 min. Participants selected according to inclusion & exclusion criteria, and consent was taken from all subjects of experimental and control group and participants were explained about the purpose of the study. Demographic details of all participants were collected through data collection form then administration of outcome measures BBS and EMS scale was done for pre assessment of both groups. After duration of 8 weeks,4 session per week for 45 minutes under the supervision of an occupational therapist, the re-administration of outcome measures was done for post assessment of experimental and control group, and responses were recorded to calculate the pre and post data of experimental and control group. t-test was used for pre and post analysis.

DATA ANALYSIS:

After completion of all (pre-treatment and post-treatment) evaluation, results were collected and data were put in the master chart and analyzed by using IBM SPSS 26.0 Version for statistical significance result.
The Pre-test and Post-test scoring of experimental and control group were analyses through parametric test, T-test was used to analyze the berg balance scale and elderly mobility scale scores for analysis of balance and functional mobility.

RESULT:

The result presented in two phases: Pretest and Post test assessment and the significance of Frenkel balance exercise and Otago home based exercises was determined through BBS and EMS Outcome measures. In phase one: the pretest assessment of the BBS and EMS administered to the participants before providing intervention and in second phase the posttest assessment of the BBS and EMS was re-administered after duration of 8 weeks, per week 4 sessions for 45 minutes for intervention interval of experimental and control group.
The analysis of data gives the following tables showing demographic characteristics and test results.

Table 4 Demographic Characteristics of the participants

S.NO.	BASELINE CHARACTERISTICS	GROUP A (Experimental group)	GROUP B (Control group)
1.	No. Of participants	20	20
2.	Age range (years)	60-75	60-75
3.	Gender Male/Female	14/6	14/6
4.	Interventions	Frenkel exercises + Otago home based program	Conventional exercises

Table 4: shows the demographic characteristics the number of subjects in each group is 20. The age range of all the participants in all groups is 60-75 years.

Table 5 Descriptive Statistics of Pre-Post Berg Balance and Elderly Mobility Scale in Experimental Group

	PRE-SCORING BERG BALANCE SCALE	PRE-SCORING ELDERLY MOBILITY SCALE	POST-SCORING BERG BALANCE SCALE	POST-SCORING ELDERLY MOBILITY SCALE
Mean	36.3	14.25	49.1	18.9
Standard Error	0.86	0.70	1.16	0.52
Standard Deviation	3.84	3.14	5.20	2.31
Sample Variance	14.75	9.88	27.04	5.36

Graph 1: Descriptive Statistics of Pre-Post Berg Balance and Elderly Mobility Scale - Experimental Group

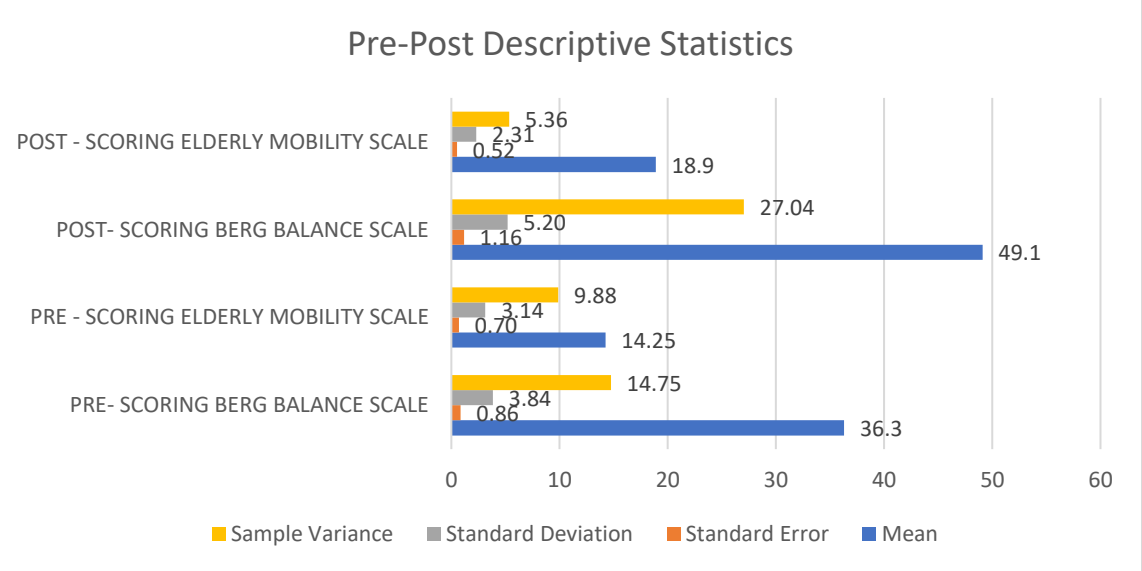

Table 6 Pre-Post t-Test of Berg Balance Scale in Experimental Group

t-Test: Paired Two Sample for Means

	PRE- SCORING BERG BALANCE SCALE	POST- SCORING BERG BALANCE SCALE
Mean	36.3	49.1
Variance	14.74737	27.042105
Pearson Correlation	0.707378	
P(T<=t) two-tail	2.89E-12	
t Critical two-tai	2.093024	

Table: shows the Pre-Post t-Test of Berg Balance Scale in Experimental group.

Graph 2: Pre-Post t-Test of Berg Balance Scale –Experimental Group

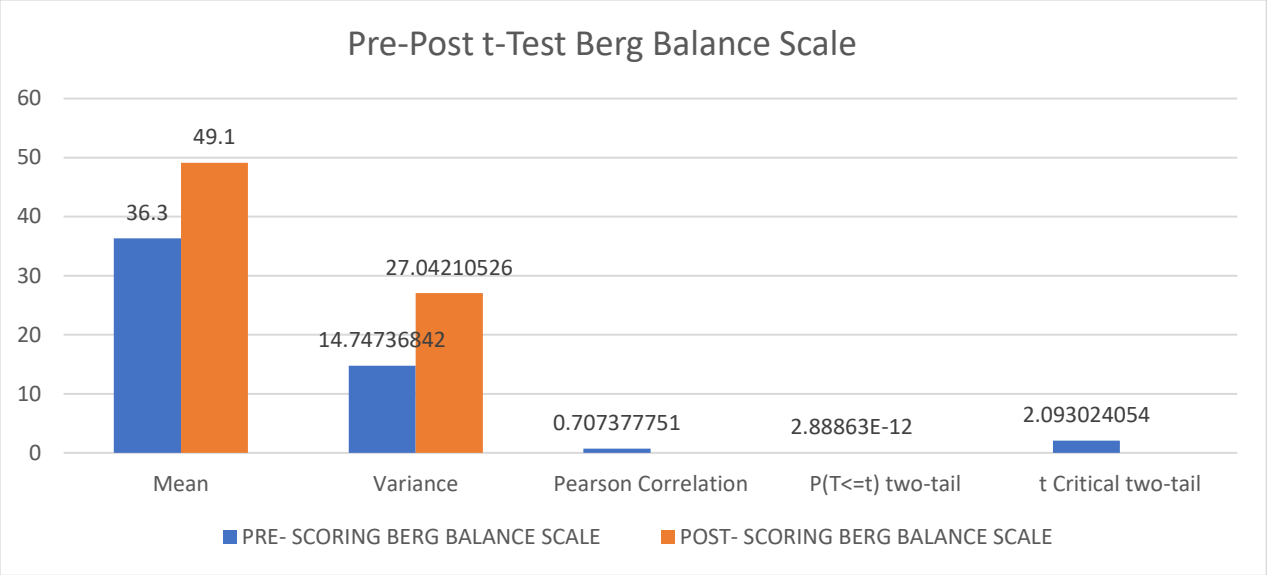

Table 7 Pre-Post t-Test of Elderly Mobility Scale in Experimental Group

t-Test: Paired Two Sample for Means		
	PRE – SCORING ELDERLY MOBILITY SCALE	POST – SCORING ELDERLY MOBILITY SCALE
Mean	14.25	18.9
Variance	9.881579	5.357895
Pearson Correlation	0.64738	
P(T<=t) two-tail	5.42E-08	
t Critical two-tai	2.09302	

Graph 3: Pre-Post t-Test of Elderly Mobility Scale -Experimental Group

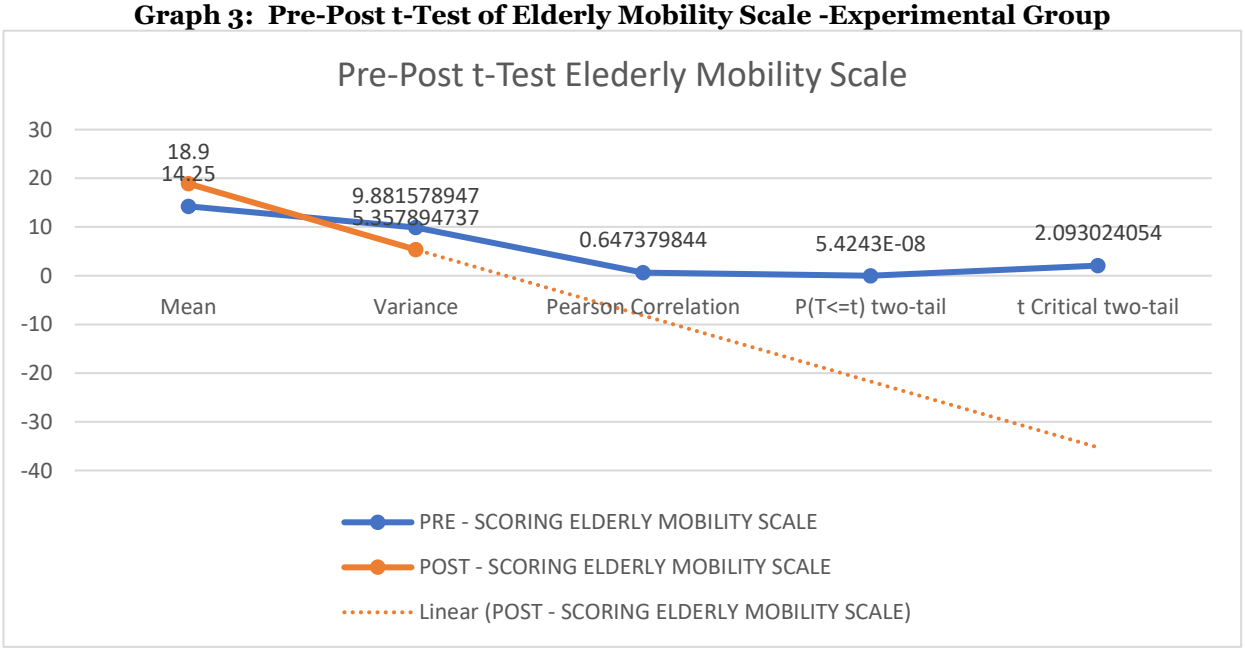

Table 8 Descriptive Statistics of Pre-Post Berg Balance and Elderly Mobility Scale in Control Group

	PRE- SCORING BERG BALANCE SCALE	PRE- SCORING ELDERLY MOBILITY SCALE	POST- SCORING BERG BALANCE SCALE	POST- SCORING ELDERLY MOBILITY SCALE
Mean	38.45	15.35	41.85	17.25
Standard Error	0.359	0.554	0.591	0.652
Standard Deviation	1.61	2.48	2.64	2.92
Sample Variance	2.58	6.13	6.98	8.51

Graph 4: Descriptive Statistics of Pre-Post Berg Balance and Elderly Mobility Scale -Control Group

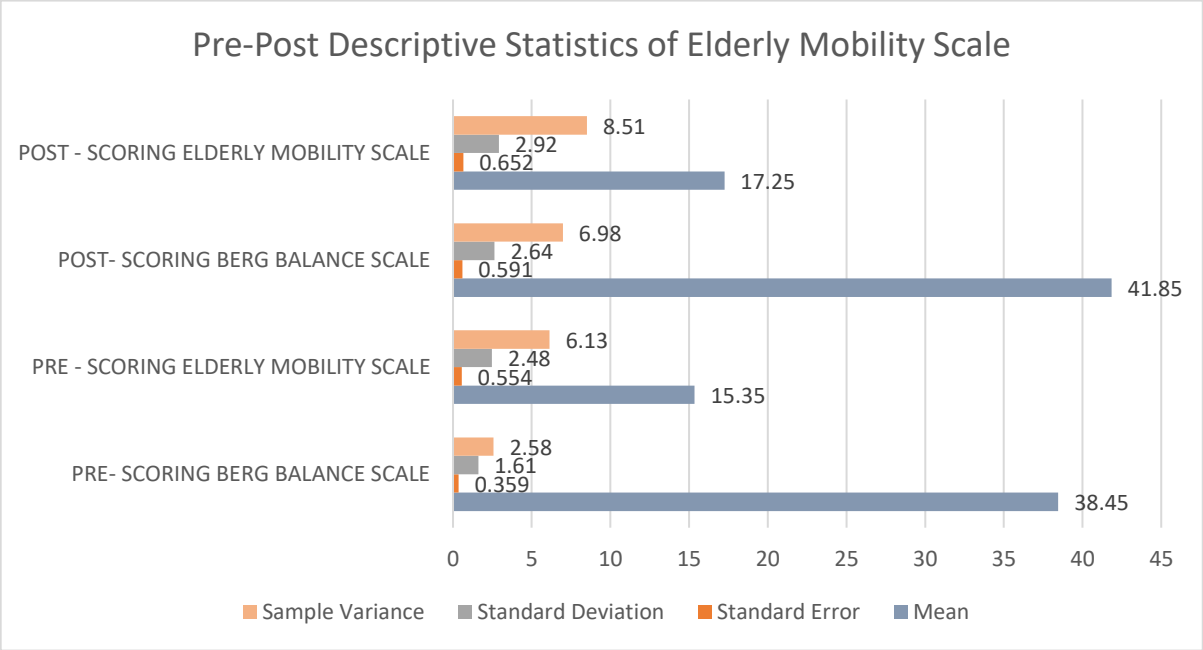

Table 9 Pre-Post t-Test of Berg Balance Scale in Control Group

t-Test: Paired Two Sample for Means		
	PRE- SCORING BERG BALANCE SCALE	POST- SCORING BERG BALANCE SCALE
Mean	38.45	41.85
Variance	2.5763	6.9763
Pearson Correlation	0.7120	
P(T<=t) two-tail	0.000000137	
t Critical two-tai	2.0930	

Graph 5: Pre-Post t-Test of Berg Balance Scale – Control Group

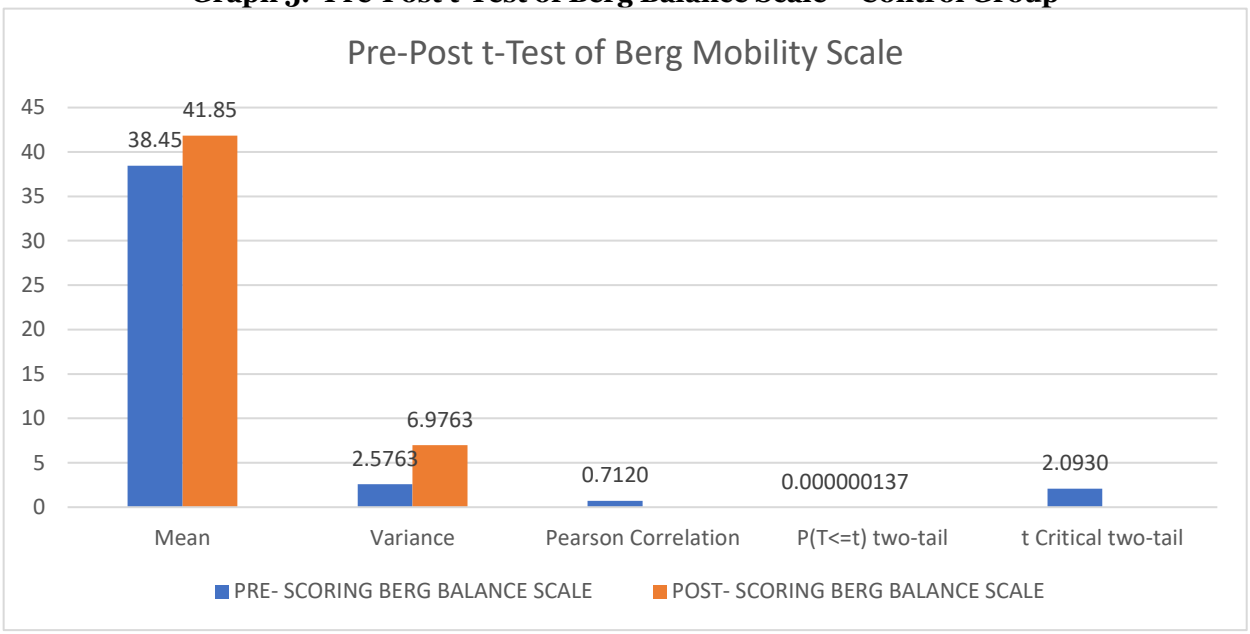

Table 10 Pre-Post t-Test of Elderly Mobility Scale in Control Group

t-Test: Paired Two Sample for Means		
	PRE – SCORING ELDERLY MOBILITY SCALE	POST – SCORING ELDERLY MOBILITY SCALE
Mean	15.35	17.25
Variance	6.134	8.513
Pearson Correlation	0.854	
P(T<=t) two-tail	2.1E-05	
t Critical two-tail	2.093	

Graph 6: Pre-Post t-Test of Elderly Mobility Scale – Control Group

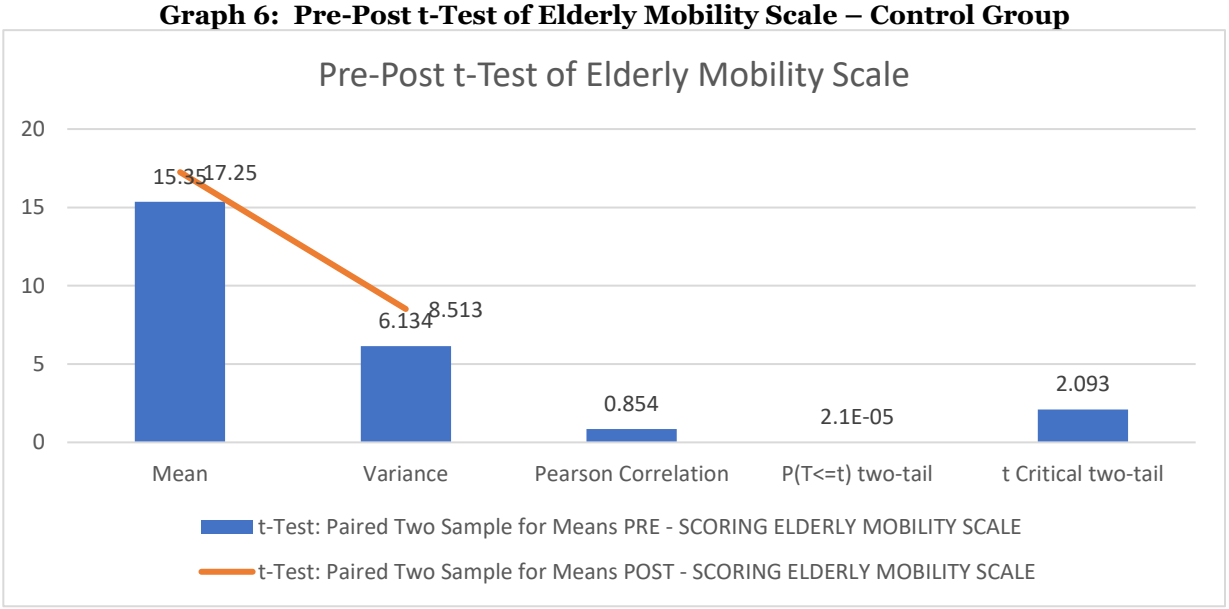

Table 11 showing the result of Mann-Whitney U test between the differences of group A and group B.

	Group	N	Mean rank	Sun of rank
Pre BBS	Group A	20	17.70	354.00
	Group B	20	23.30	466.00
Pre EMS	Group A	20	18.50	370.00
	Group B	20	22.50	450.00
Post BBS	Group A	20	28.15	563.00
	Group B	20	12.85	257.00
Post EMS	Group A	20	24.30	486.00
	Group B	20	16.70	334.00

Table 12 showing the significant results of Mann-Whitney U test between the differences of Group A and Group B.

	Pre BBS	Pre EMS	Post BBS	Post EMS
Mann-Whitney U	144.000	160.000	47.000	124.000
Asymp. sig.(2-tailed)	.122	.276	<.001	.026

DISCUSSION:

The present study explores the impact of Frenkel's exercises and Otago home based exercises in improving functional mobility and Balance among elderly population.

In this study, 40 participants were chosen based on inclusion criteria. The subjects were divided into two groups: the control group and the experimental group. The administration of BBS and EMS scales to the participants for the pre and post-test of the control and experimental groups was done. After the collection of data collection, the pre- and post-tests score were analyzed and interpreted for the statistical significance of the intervention for both groups.

For the experimental group, the BBS scores showed notable changes. Pre-intervention statistics which shown in table no. 8 have a mean of 36.3, with a standard error of 0.86, a standard deviation of 3.84, and a sample variance of 14.75. Post-intervention, the mean score improved significantly to 49.1. This increase was accompanied by a standard error of 1.16, a standard deviation of 5.20, and a sample variance of 27.04. This substantial improvement in the mean score reflects a decreased risk of falls.

The statistical analysis, including a t-test which shown in table no. 9, confirmed these findings. The variance increased from 14.75 to 27.04, and the Pearson correlation coefficient of 0.7073 indicates a strong positive relationship between the home-based exercises and balance improvements. With a p-value less than 0.05 ($p < 0.05$), we rejected the null hypothesis, affirming that the exercises positively impact balance. The t-critical value further supports this conclusion, highlighting significant improvements in balance.

Similar positive trends were observed with the EMS. The pre-intervention scores are showing in table 8 have a mean was 14.25, with a standard error of 0.70, a standard deviation of 3.14, and a sample variance of 9.88. Post-intervention, the mean increased to 18.9, supported by a standard error of 0.52, a standard deviation of 2.31, and a sample variance of 5.36. This improvement reflects enhanced functional mobility and a reduced fall risk, given that the post-intervention mean exceeded the threshold of 14.

The statistical results were shown in table no. 10 also significant here. The variance increased from 5.35 to 9.88, indicating improved functional mobility. A Pearson correlation coefficient of 0.6473 supports the positive relationship between the exercises and mobility improvements. With a p-value of 5.42E-08 (well below 0.05), we rejected the null hypothesis and accepted the alternative hypothesis, confirming that the exercises enhance functional mobility and balance among the elderly. The t-critical value corroborates these findings, indicating improved functional mobility and greater ease of movement without fear of falling.

In the control group, BBS scores shown in table no. 11 have a pre-intervention mean of 38.45, with a standard error of 0.359, a standard deviation of 1.61, and a sample variance of 2.58. Post-intervention, the mean increased to 41.85, with a standard error of 0.591, a standard deviation of 2.64, and a sample variance of 6.98. This indicates a positive impact on balance, with a post-intervention mean suggesting a low fall risk.

Statistical analysis for the control group showed that the exercises led to significant improvements. The p-value was below 0.05 ($p < 0.05$), leading to the rejection of the null hypothesis and the acceptance of the alternative hypothesis. The t-critical value supports these findings, demonstrating improvements in balance and reduced fall risk. For the BBS the values shown in the table no.12, the variance increased from 2.5763 to 6.9763, indicating enhanced balance. The Pearson correlation coefficient of 0.7120 reflects a strong positive relationship between the exercises and balance improvements. The p-value of 0.000000137, which is significantly less than 0.05 ($p < 0.05$), supports the rejection of the null hypothesis and acceptance of the

alternative hypothesis. The t-critical value further confirms the significance of these findings, illustrating enhanced balance.

For the EMS in the control group scores which shown in table no.11, the pre-intervention mean was 15.35, with a standard error of 0.554, a standard deviation of 2.48, and a sample variance of 6.13. Post-intervention values rise to a mean of 17.25, with a standard error of 0.652, a standard deviation of 2.92, and a sample variance of 8.51. These improvements also reflect positive effects on balance and functional mobility.

Statistical analysis for the control group showed that the exercises led to significant improvements. The p-value was below 0.05 ($p < 0.05$), leading to the rejection of the null hypothesis and the acceptance of the alternative hypothesis. The t-critical value supports these findings, demonstrating improvements in functional mobility. For the EMS the values shown in the table no.13, the variance increased from 6.13 to 8.51, indicating enhanced mobility. The Pearson correlation coefficient of 0.854 reflects a strong positive relationship between the exercises and functional mobility improvements. The p-value of 2.1E-05, which is significantly less than 0.05 ($p < 0.05$), supports the rejection of the null hypothesis and acceptance of the alternative hypothesis. The t-critical value further confirms the significance of these findings, illustrating enhanced functional mobility and increased confidence in movement.

The exercises administered to produced positive outcomes, enabling better balance and functional mobility in adults which showing in the table no. 14, the significant results of Mann-Whitney U test between the differences of Group A and Group B. In table no. 14, the pre and post increased mean rank value of group A and Group B indicating improvement. And also the pre and post sum of rank value of group A and Group B shown the improvement. The Asymptotic significance value was below the significance level of 0.05 in post reading of BBS and EMS, which leading to the rejection of the null hypothesis, which claimed that "there is no impact of Frenkel exercise and Otago home-based exercises on improving functional mobility and balance among the elderly population." Consequently, the alternative hypothesis, asserting that "there is an impact of Frenkel exercise and Otago home-based exercises on improving functional mobility and balance among the elderly population," was accepted. The t-critical value further supports the significance of the alternative hypothesis, indicating an improvement in balance and functional mobility among the Elderly population.

In contrast to the above-mentioned results, Manisha Rathi and Nargis Hamdulay, in their study and stated that Frenkel's exercises were effective in improving balance using the Timed Up and Go test[14]. Another study conducted by Manisha Rathi and Reema Joshi, in their study and concluded that Otago Exercise Programme is effective in improving Strength, Balance and Mobility in the elderly, thus preventing falls in them[16]. In another study, Abenle Tep and Trishna Saikia Baruah, in their study and concluded that the home-Based Otago exercise program and Frenkel's exercise were equally effective in improving the balance of the patients. However, compared to the risk and fear of falling, home-Based Otago exercise was more effective than Frenkel's[8].

In the study conducted by Nancy N. Patel and Shweta Pachpute, in their study and Concluded that The Otago exercise programme is significantly effective increasing strength of lower limb and improving in balance, gait and therefore ultimately preventing fall in community dwelling Indian elder people. Hence, Otago exercise protocol can be used in day-to-day clinical practice and also as a home exercise program[15].

CONCLUSION:

This study concluded that the impact of Frenkel balance exercises and Otago home based exercises is more significant than only conventional occupational therapy exercises in Improving functional mobility and balance of elderly population. This study makes elderly people more mobile and independent in their activity of daily living.

LIMITATION OF THE STUDY:

- The Limitations of this study include that it consisted of a short duration.
- The long-term effects of the interventions were not assessed.

FUTURE RECOMMENDATION:

The future scope can include, the study can be done with a larger sample size with a longer duration of the study, specific condition can be taken like stroke, Parkinson's disease and other combined intervention can be taken into account. Also, study could be done in hospital setup for more accurate result.

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