

Effect of Visual-Cue Training With or Without Regular Salah Practice on Balance Among Elderly Population

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Abstract:- Balance, one of the intricate activities to perform, but aging greatly affects the performance of this complex movement. As we age, the ability to maintain our position in the environment deteriorates. In addition to aging, exercise experiences have effect in ability to maintain balance. This study is conducted to record and test how visual-cue training improves balance between people who regularly perform salah and those who doesn't. Total of 40 elderly men and women, aged 60 to 75, with berg balance scores of 40- 45, normal cognitive function (MMSE >24), who regularly perform salah in all the positions, five-times-per-day, for at least three months, are grouped in one group, while 20 people from the second group do not engage in any specific balance training. After obtaining the informed consent both groups underwent a 4-week, 30-minute-per-day, 4-times-per-week course of visual-cue training, and post-training assessment was taken for both groups. These pre-training and post-training values are statistically analysed and tabulated. Statistics reveals a significant difference between those who do and those who do not perform salah ($P < 0.05$), and individual group analysis additionally demonstrates a significant change in pre-training and post-training values with $P < 0.001$. Based on the findings, performing visual cue training activities has a favourable impact on balance, while practicing salah has minimal effect on balance.

Keywords:- Balance, Visual-Cue Training, Elderly Population.

I. INTRODUCTION

The word "balance" is commonly used by medical practitioners across a broad spectrum of clinical specialties. Balance is frequently used in conjunction with other words like stability and postural control. Many individuals, including those with neurological abnormalities, orthopaedic problems, and vestibular diseases, are thought to benefit from having their balance assessed. ^(1,2)

According to the definition of aging, it is "the buildup of various adverse modifications that occur in cells and tissues with getting older and are responsible for the increased risk of disease and death." As people age, their strength, endurance, agility, mobility, coordinating themselves, and balancing declines, they are afraid of falling rises, and their everyday tasks also become more difficult. ⁽³⁾

Various research carried out in India and overseas found that the incidence of falls ranged from 18.8% to 53%. Falls are a significant issue on health for older persons, with 30 to 35 percentage of residents among the community experiencing falls minimum once each year. As people age, less and fewer adopt low- to moderate-intensity exercises like walking brisk, running, yoga, meditation, or extracurricular religious pursuits. ⁽³⁾

To maintain a variety of postures and activities, postural control is necessary. The management of balance, however, has been linked to three major categories of human activity, 1) Maintaining of a particular stance, such as standing or sitting 2) Active motion, such as switching between positions and postures 3) The response to an outside disturbance, like a shove, trip, or slide. These categories cover actions taken to maintain, achieve, or recover the LOG within the BOS. ^(4,5,6)

A number of variables may be linked to balance issues in the aged population. Risk of falls, however, may be decreased by providing them with the right instruction, muscle-strengthening exercises, and physiotherapy for other associated issues. Momena Shahzad has conducted a study with 200 participants, out of which 54.5% reported balance issues, and 33.5% of these persons fell and onn comparison to men (42%), women (66%) were shown to have higher balance issues. ⁽⁷⁾

Salah/namaaz is one of the religious physical exercises used by Muslims, they must say prayers at least five times every day, which are known as salah in Arabic. It is considered as the second important pillar of Islam. Muslims pray at numerous times during the day, including Fazr, Zuhr, Asr, Maghrib, and Esha. Following the first Raq'aa, each subsequent one must be begun by standing up from either a deep squatting position or from a prostrated position, and it must be completed by rotating the neck to the right and to the left. Salah has various advantages on the musculoskeletal system. ^(8,9)

Such consistent, repetitive actions over time build the muscles throughout the entire body. These mild motions behave as a sort of endurance training which helps in preventing the osteoarthritis of the joints by preserving joint mobility and the suppleness of its supporting components. Cardiovascular salat activities on a daily basis may assist to

encourage calm, lessen anxiety, and lower cardiovascular risk. ⁽¹⁰⁾

By delivering visual clues when provided for walking, balance, and gait, visual-cue training is provided by cues in the form of visuals, which are imported feedback that are utilized to promote motor learning. Like several other cueing systems, walking to visual signals requires more concentration. A feasible and affordable solution that may be used in rural settings is needed because the majority of visually assisted training methods are expensive. Bright contrast-colored markings are used to complete it. An additional indication for clear training than other clues is the walking task with visual cues. Walking using visual cues while receiving visual input helps to facilitate training by providing external feedback that is utilized to improve motor learning. ⁽¹¹⁾

➤ *Background of the Study*

Ageing is one of the main factors contributing to balance problems. Due to the age-related muscular loss in the upper limb, lower limb, and trunk. Aging is a major component in the decline of practically all of our body's systems, which together impacts balance, posture, and gait. While balance training is vital for everyone, it should become a daily practice for the elderly since poor balance in the elderly is the main cause of falls and fractures connected to falls.

The Muslim prayer known as salah is said to be conducted five times daily. This salah practice involves various activities like standing to bending, bending to standing, standing to deep squatting and sitting. By being able to retain equilibrium, one may continuously vary their motions. Years of consistent use of this technique tend to improve the muscular strength and endurance. By giving external feedback that is used to enhance the learning of motor functions, walking while employing visual-cues while getting visual training.

There is a lot of evidence on the effect of visual-cue training among elderly population in improving the balance; hence this study was done to compare the effect of visual-cue training in people who regularly perform salah and those who doesn't perform salah.

➤ *Aim*

The aim of this research is to investigate the impact of visual-cue training on balance in older populations that routinely pray and those that don't.

➤ *Objectives*

The study's goals are to compare the effects of visual-cue training on balance in older people who routinely offer salah to those who don't. And also, to compare the results of visual-cue training on both the groups.

II. METHODS

Study Design: Experimental study

Study setting: Community participants from Bangalore

Study population: elderly male and female between 60 years to 75 years (written consent was taken from the participants)

Sampling method: Convenient method of sampling

Sample size: 20 in Group A and 20 in Group B, Total 40 participants.

➤ *DEFINITION*

A **GROUP A** covers those who regularly pray five times a day with at least three positions in the community, between the ages of 60 and 75.

A **GROUP B** covers those who doesn't perform any kind of balance activity in the community, between the ages of 60 and 75.

➤ *INCLUSION CRITERIA FOR GROUP A*

- Elderly residents of the community who are 60 years of age up to 75 years of age.
- Both sexes who regularly performing salah.
- Performing all positions of salah for five times a day and on a consistent basis for three months minimum

➤ *INCLUSION CRITERION FOR GROUP B*

- Both males and females can be community-dwelling seniors 60 years of age to 75 years who have not engaged in any sort of balancing training or exercise for at least three months.

➤ *EXCLUSION CRITERIA FOR GROUP A AND GROUP B*

- People who already perform any kind of balance training.
- Those who were unable to consent
- Was unable to understand the questions because of neurological issues.
- Serious illnesses (musculoskeletal, cardiovascular, and neurological).
- Taking prescription drugs like hypnotics, anxiolytics, sedatives, or antidepressants.
- Recent surgical history
- Elderly patients confined to beds; critically unwell patients hospitalized.

III. PROCEDURE

Before the data gathering procedure started, the study proposal was submitted to the institutional scientific approval board and authorized. Between May 2023 and July 2023, participants in the research who satisfied the inclusion criteria were chosen from a local Bangalore community center for the aged. There were 40 individuals in all—20 men and 20 women. Before starting the treatment process, the participants and those who were caring for them received thorough education about the study and gave their official, written informed permission. After collecting the Berg Balance Scale pre-training assessment, the individuals were divided into two groups utilizing the practical sample

approach, where Group A practices salah on a regular basis and Group B did not. Each group consist of 20 members out of which 10 male and 10 female participants between the age of 60 to 75 were present. Both the groups received Visual Cue Training for 30 minutes in a day, 4-times-per-week for 4-weeks and at the end of 4 weeks the post-training measurement of Berg Balance Scale was evaluated. The pre-training and post-training Berg Balance Scale (BBS) data were evaluated statistically. The comparison of the statistical analysis was done between the Group A and the Group Bs.

➤ *Training Protocol:*

Bright contrast colours were employed to provide the visual cues, which serve as external input for improving motor learning during walking, balance training, and gait. The treatment plan includes the following exercises: (1) Walking over fluorescent markings on the floor; (2) Circling over cones; (3) Tandem Walking Over Coloured Lines; (4) Marching forward on the Coloured Lines; (5) Reaching multidirectional like forward and sideways to Take the

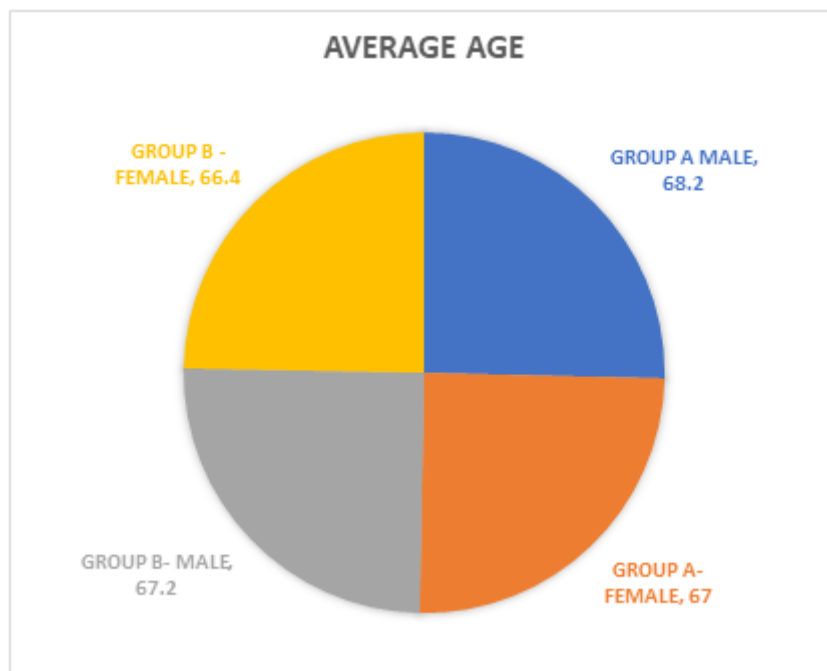
Brightly Coloured Ball from Standing; and (6) Single Legged Standing over Lines Placed On Floor.

Every above mentioned exercises were performed first with 5 repetitions, then with no change in length, it was increased to 10 repetitions. Within the allotted period, both the walking distance and the walking duration steadily increased over successive weeks. a single session per day for four weeks, four days a week.

➤ *Outcome Measure*

• *Berg Balance Scale (BBS)*

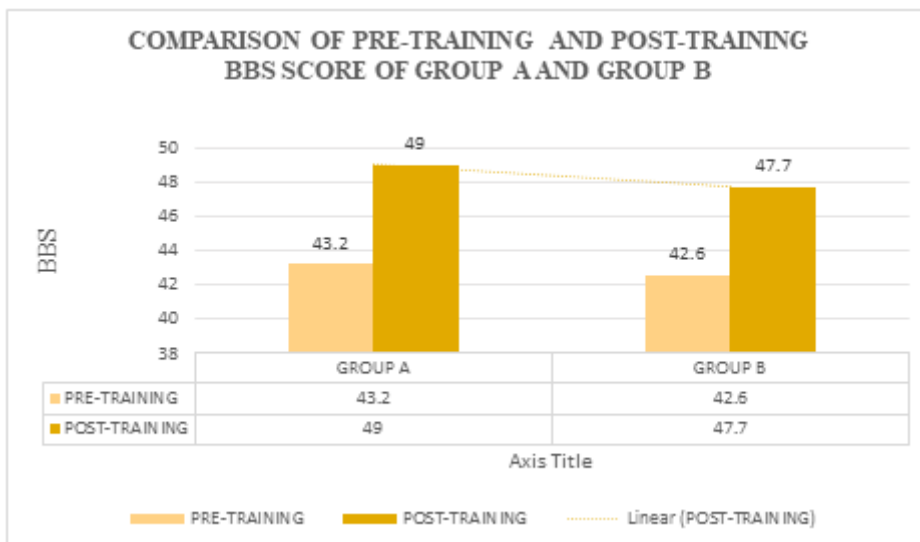
With movement-based activities, the Berg Balance Scale analyzes static and dynamic balance to determine the danger of falling. There are 14 questions in the test, and the maximum score is 4. There were collected and earned a total of 56 points. The scale has high internal consistency (Cronbach's alpha = 0.98) and great inter-rater and intra-rater reliability (ICC = 0.97 and 0.98, respectively).⁽¹²⁾



GRAPH 1: AVERAGE POPULATION IN GROUP A AND GROUP B

TABLE 1: COMPARISON OF PRE-TRAINING AND POST-TRAINING BBS SCORE OF GROUP A AND GROUP B

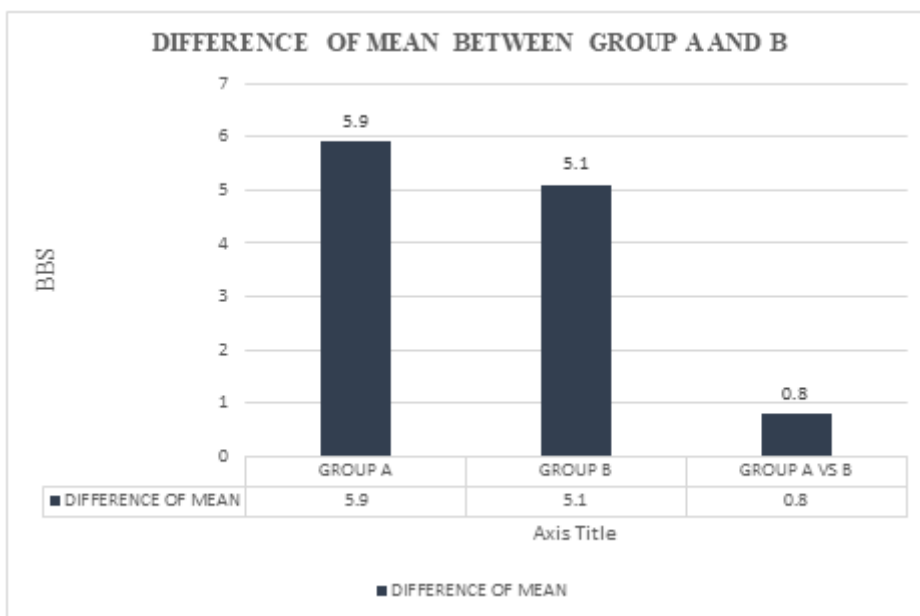
PARAMETER	TESTS	GROUP	MEAN	SD	t VALUE	p VALUE
BBS	GROUP A	PRE- TRAINING	43.1	1.62	25.85	<0.005
		POST- TRAINING	49	2.03		
	GROUP B	PRE- TRAINING	42.6	1.5	28.94	
		POST- TRAINING	47.7	2.0		



GRAPH 2: COMPARISON OF PRE-TRAINING AND POST-TRAINING BBS SCORE OF GROUP A AND GROUP B

TABLE 2: COMPARISON OF FACTORS BETWEEN GROUP A AND GROUP B

COMPARISON	DIFFERENCE OF MEANS (BBS)	t VALUE	p VALUE
GROUP A (Paired t test)	5.9	25.85	<0.005
GROUP B (Paired t test)	5.1	28.94	<0.005
GROUP A VS B (Unpaired t test)	0.8	2.04	<0.05



GRAPH 3: COMPARISON OF FACTORS BETWEEN GROUP A AND GROUP B

IV. RESULT

The pre-training and post-training findings in Groups A and B, as well as between the groups, clearly show a significant difference, Statistics reveals a significant difference between those who do and those who do not perform salah (P<0.05), also individual group analysis

additionally demonstrates a significant increase in pre-test and post-test values (P<0.005).

Twenty female and twenty male participants were split evenly between Group A and Group B for the data collection. Ten male and ten female participants each make up Group A, with a mean age of 68.2 and 67 years,

respectively (Graph 1). The statistically mean value for the pre-training value was 43.1 (SD 1.62), and the statistical mean value for the post-training value was 49 (SD 2.03). With a significant P value of less than 0.005 and a t value of 25.85. Ten male and ten female patients each make up Group B, with a mean age of 67.2 and 66.4 years, respectively (Graph 1). The statistically mean value for the pre-training value was 42.6 (SD 1.5), while the statistical mean value for the post-training value was 47.7 (SD 2.0). With a significant P value of less than 0.005 and a t value of 28.94 (Table 1) (Graph 2).

The comparison of the post-training results between Groups A and B revealed a statistical difference, with a mean value of 0.8, a t value of 2.04, and a p value of 0.05. Despite the fact that both groups improved statistically significantly, it was discovered that Group A, which regularly practices salah, improved more than Group B, which does not, among the older population. (Table2) (Graph-3)

V. DISCUSSION

In this study, participants who perform regular salah practice and who do not perform any balance activity were assessed and visual cue training is given to both the groups to compare the effect of visual-cue training on both Group A and Group B. The results obtained from the study has shown that both the Group A and Group B are benefited out of visual-cue training but the people who perform regular salah has a greater benefit from performing the visual-cue training.

Roshina Mohd Azam Khan et al in 2022 has conducted a study, which included 162 community dwelling elderly population who satisfy the eligibility of the study were categorised into 2 groups, case and control group as 81 each were assessed for balance using BBS and risk of fall by FES-I. the case includes the people who perform regular salah practice and the control includes people who doesn't perform any kind of balance activities. Their result showed that the balance and stability of the subjects practicing salah practice was significantly better than the non-practicing individuals. While comparing the result with this study, has a similarity in the effectiveness of salah practice on balance among elderly population. ⁽¹⁰⁾

The study, which was carried out in 2017 by Sumam Sunny et al, had 40 patients in total who met the qualifying criteria. All participants practice balance for 30 minutes. The experimental group received instruction in balance as well as visual inputs. Before and after therapy, the Berg Balance Scale (BBS) and Dynamic Gait Index (DGI) scores of both groups were evaluated. To assess between and between group differences, the BBS and DGI scores for the experimental and Group B participants were compared using paired and independent t-tests, respectively. Both the experimental and Group B groups exhibited a statistically significant improvement in the outcome measures between the pre- and post-test values with a p-value of 0.001, although the experimental group had a more pronounced

improvement with mean differences of 4.9 and 2.2 for BBS and DGI, respectively. When this study is contrasted with the current study, the visual cue treatment has demonstrated improvement from pre-training and post-training values in both Group A and Group B. This may account for the other study's larger improvement. ⁽¹¹⁾

VI. CONCLUSION

Based on the findings, performing visual cue training activities has a favourable impact on balance, while practicing salah has minimal effect on balance. Therefore, it is understood that the people performing regular salah practice has a better balance when a balance training is added to it.

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