Original Research Paper

Volume - 10 | Issue - 6 | June - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Physiotherapy

COMPARISION OF RHYTHMIC AEROBIC EXERCISE RHYTHMICLLY WITH MUSIC AND AUDITORY CUEING ON BALANCE IN ELDERLY FEMALES

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ABSTRACT

Background: Aerobic exercise has been enforced as a secure and efficient exercise to the elderly and is efficient in nullifying and diminishing the degradation of daily life physical fitness and intellectual function.

Objective: To improve balance, To reduce risk of falls.

Methodology: Total number of 30 subjects met inclusion criteria and proceeds for further study procedure.

Outcome measure: BBS has been used for the evaluation of pre and post test.

Procedure: Subjects were selected and performed BBS scores before exercise protocol and aerobic exercise was given for 8 weeks and post test should be performed.

Result: The mean value of balance for BBS is found to be 43.60 & 49.20 respectively and both p-value found to be $p<0.0001$ in case of Group-A. The mean value of BBS is found to be 45.60 & 47.60 respectively and both the p-values were found to be $p<0.0001$ in case of Group-B.

Conclusion: Aerobic exercise with music is very effective in improving balance in elderly females.

KEYWORDS : Berg Balance Scale (BBS), Aerobic exercise.

INTRODUCTION:

The result of inexplicable analogues between genetic , metabolic, hormonal, and structural factors which makes an impact on cellular, tissue levels and physical structure as well as their function is called as ageing [5]. A quantitative loss of muscle mass (sarcopenia) is one of the most decisive changes that occur during ageing. Muscle mass is dwindled about 3% to 6% per decade.The peak of the muscle strength occurs between the second and third decade of life. There is also a qualitative reduction in muscle strength with atrophy of fast fibers (typeII fibers),reduction in tendon elasticity and low activation of agonist and higher antagonist muscles.[6,7]

The mobility performance and skills tend to decrease as the older individuals become more physically and psychologically impaired[9]. The muscle function and the level of physical activity (LPA) is also reduced.[10,11]

In normal process of ageing the skeletal muscle function is reduced and limited [12].

Lower muscle strength, muscle endurance, flexibility, and balance are improved by aerobic exercise [16]. By comparing general muscle strength-aerobic exercise increases the physical fitness.

Balance is the core element required to execute functional activities in elderly population shuratova N et al.,assessed the variations while walking and reported that decreased stride and step length was observed amongst elderly in an attempt to guard stability when compared with young adults. These alteration in balance expose the elderly dwellers in the community to catastrophe of falls.

Aerobic exercise is an effective activity,which prevents depression because the practitioner follows this exercise in a grouped manner in the form of predetermined and balanced muscular movements; it is also very effective in strengthening group behaviours.[18]

Increasing the level of physical activity in the elderly can increase the blood flow to the brain and increases the amount of available oxygen in nerve cells[17]. This training has positive effect on cognitive and physical impairment[19].

Based on previous studies aerobic exercises are very much efficient for the elderly and the assimilation of rhythmic movement has a positive outcome on Physical health and emotional health constituent of the elderly (females). Therefore the purpose of this study was to investigate the effects of aerobic exercise rhythmically with music and auditory cueing on balance potency of the elderly females.[1]

PROCEDURE:

This study is a quazi experimental study which was carried out for 8 weeks. A total of 30 female subjects with risk of fall or fall history aging from 70-80 years were randomly chosen from an old age home and were divided into rhythmic aerobic exercise group (n=15)and auditory cueing aerobic exercise group (n=15) 20minutes of intervention was executed twice a week for a total of 8 weeks. Patients with Uncontrolled hypertension, Myocardial infarction, Unstable angina, Recent injury /surgery & Neurological disorder were excluded from the study.

The training program consists of preparatory exercise for 5 minutes, exercise of 10 minutes restorative exercise in both groups for 5 minutes. Both the groups execute the same functional movements like Moving the foot in right and left as well as up and down directions, Rotating in place, Clock reach, Stair climbing ,Side steps and Marching in a place.

To enhance muscle strength and balance sustaining ability . Rhythmic aerobic exercises (Group A)are done in association with the music. Initially it is done with a music of 8 beats then later continued to 16 beats During the first week exercise was done with approximately 125 beats per minute(bpm) and then it was increased; every week to 10-15bpm. During the final week music was given with 160bpm.

The same functional movements were used for the auditory cueing aerobic exercise (Group B) using metronome beats.

Fig1

Fig2

Fig3

DATA ANALYSIS:

To investigate the effect of aerobic training in each group, the paired t-test was conducted and an independent t-test was used to compare the intergroup training effect. Statistical significant was set at 0.05.

Table1.1 GROUP A

Mean		Standard Deviation		t value	P value
pre	post	pre	post	34.2929	<0.0001
43.60	49.20	2.47	2.68		

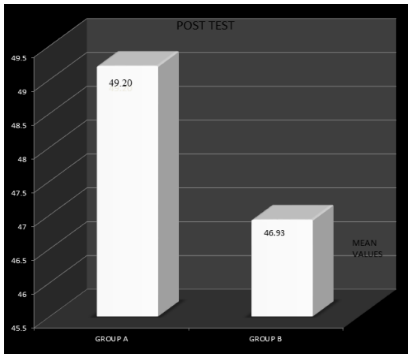
Table2.1 GROUP B

Mean		Standard Deviation		t value	P value
pre	post	pre	post	10.2470	<0.0001
45.60	47.60	3.60	3.60		

Table 3 POST TEST

	Mean	t value	p value
Group A	49.20	1.94456	.030968
Group B	46.93		

Fig 3.1



RESULT:

The mean value of balance for berg balance scale is found to be 43.60 & 49.20 respectively and both p-value found to be p<0.0001 in case of Group-A.

The mean value of balance for berg balance scale is found to be 45.60 & 47.60 respectively and both the p-values were found to be p<0.0001 in case of Group-B.

DISCUSSION:

The purpose of this study was to investigate the effect of an exercise program consisting of rhythmic functional exercises by promoting balance and daily life motions based on balance on elderly people. Music – based programs like rhythmic aerobic exercise plays an important role on emotion by means of treatment for balance and gait. Lee et al[20] reported that BBS has a high correlation with falls and that is an appropriate tool to be used for early prediction of all incidences for the elderly who are at high risk of fall. Out of BBS appraisal, the important factor in appraising balance is the one-legged stance and walking with arms spread apart. [21] Since both groups achieved functional movements of the foot by lower extremity stretches, the BBS scores were consequently improved in both groups after the intervention. However when comparing the change in values, the rhythmic aerobic training group with music showed greater improvements than auditory cueing group. This may have been due to the fact that the tempo of the music was increased every week, which has provided more dynamic balance training effect when compared with the rhythmic auditory cueing, resulting in a significant difference in dynamic balance scores which was assessed by BBS.

Both groups showed extremely significant improvements in BBS. This suggests that the improvement of balance function is affected by psychological self-confidence. Having psychological anxiety about falling actually results in a decrease in balance ability, which indicates that the physical function and the psychological state are connected and they work together[22]. In the rhythmic aerobic training groups, It is considered that the addition of music created an even greater amount of emotional and psychological influence. This is supported by the results which is proved in previous studies by son and Bang [23] and Kim et al. [25]

According to the results of this study, it was observed that when functional movements were applied rhythmically with music, there was a positive influence on static and dynamic balance ability while comparing the value changes in Group A and Group B. This study had confirmed that the rhythmic aerobic exercise with music and with auditory cueing when applied, all elderly subjects showed extremely significant improvement in balance ability, and that the rhythmic aerobic exercise with music were more effective on improving balance when compared with the auditory cueing.This study only embrace female subjects, further studies can be done with elderly male subjects who are not regular or ordinary to rhythmic movements to observe if the same effects are noticed. Since the improvement of balance ability is related with the speed of the rhythmic movement it is necessary for further studies to investigate the effects of the various paces used for exercise performance on balance ability. Based on this study the clinical use of rhythmic exercise for improving balance ability for fall prevention in the elderly population is highly predictable.

CONCLUSION:

It is concluded that aerobic exercise improves balance by increasing the cerebral blood flow to the brain. Aerobic exercise with music is very effective in improving balance in elderly females.

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