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Senior citizens and Peak flow rate

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Abstract: *This study was focused on impact of light aerobic exercise and Yogic exercise programs on Peak flow rate of senior citizens of rural area of dist. Bulandshahr. The researchers administrated the brisk walk/ slow jogging (light aerobic exercise program) and common yoga protocol given by Ministry of AYUSH (yogic exercise program) as research tool, for this study. 90 subjects of age 60-65 years has taken, yogic exercise program was given for 16 weeks on alternate days for 45-60 minutes. ANOVA, ANCOVA and Post hoc (LSD) test were used as statistical technique. Significant improvement was found in Peak flow rate as a result of the experimental treatments namely Light aerobic exercise and yogic exercise and both the programs are equally beneficial for the improvement of Peak flow rate of rural senior citizen.*

Keywords: *Rural, Senior citizens, Peak flow rate, Light aerobic, yogic*

INTRODUCTION

This study was focused on impact of light aerobic exercise and Yogic exercise programs on Peak flow rate of senior citizens of rural area of district Bulandshahr. Peak expiratory flow rate (PEFR) is the volume of air forcefully expelled from the lungs in one quick exhalation, and is a reliable indicator of ventilation adequacy as well as airflow obstruction. The normal peak flow value can range from person to person and is dependent upon factors such as sex, age and height. Peak flow rate is one of the most commonly measured clinical parameters and Peak flow rate values are major determinants of therapeutic decisions.

It is a statement of aerobic proverb, "Health is a crown on the well person's head but only the sick seems to see it". *Nieman* rightly said, "Health promotion is defined as the science and art of helping people change their lifestyle to move towards a state of optimal health". This quote significantly attached on the health improvement and inspired in the past time by World Health Organization definition of health "Health is a state of complete physical, mental and social well being and not merely the absence of disease or infirmity". These four aspects of health may be gained through Physical Education as the main objective of physical education is to make an individual physically fit, mentally alert and attentive, emotionally balanced and socially adjustable with the society (Nieman and Facsm, 1986).

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METHODOLOGY

The researcher administrated the brisk walk/ slow jogging (light aerobic exercise program) and common yoga protocol given by Ministry of AYUSH (yogic exercise program) as research tool, for this study. 90 subjects of age 60-65 years has taken, two investigational groups (A, and B) and one control group (group C) of 30 subjects each were formed randomly. Administered various duration of light aerobic and yogic exercise programs 3 session /week for 16 weeks duration and each group trained on alternative days. The group C didn't take part in any exercise program except their daily schedule. The pre and post test were taken for all the subjects before and after the training respectively.

Peak flow rate is measured by hand held equipment (Peak flow meter) with a mouthpiece on one side and a measuring scale on the other. If air is blown into the mouthpiece an indicator moves. To take the test, after inhaling deeply blow into the mouthpiece as rapidly and hard as one can. The test is repeated thrice and the best of three scores were recorded in litre/minute.

Light Aerobic Exercise Program

Warm-up	(5-10 Minutes)
Main Training	(25-40 Minutes)
Cool down/ Stretching Exercise	(10 Minutes)

For First Month:	Mode	-	Brisk Walking/Slow Jogging
	Intensity	-	50-55%
	Frequency	-	Three Times Per Week (Alternative Days)
	Total Duration	-	45mins
For Second Month:	Mode	-	Brisk Walking/Slow Jogging
	Intensity	-	55-60%
	Frequency	-	Three Times Per Week (Alternative Days)
	Total Duration	-	45mins
For Third Month:	Mode	-	Brisk Walking/Slow Jogging
	Intensity	-	55-60%
	Frequency	-	Three Times Per Week (Alternative Days)
	Total Duration	-	60 mins.
For Forth Month:	Mode	-	Brisk Walking/Slow Jogging
	Intensity	-	60-65%,
	Frequency	-	Three Times Per Week (Alternative Days)
	Total Duration	-	60 mins.

Karvonen Method for Determining Intensity:

Target heart rate =X% Intensity (HR max.- RHR) +RHR
HR max. = (220-age), RHR=Resting Heart rate

Yogic Exercise Program

COMMON YOGA PROTOCOL **Duration:** 45–60 minutes

PRAYER: **Namaskara Mudra** **2 minutes**
Sanghachhadhwam samvadadhwam
Sam vo manaamsi jaanataam
Devaa bhaagam yathaa poorve
Samjaanaanaa upaasate
Shantih Shantih Shantih

WARM UP / SADILAJA / CHAALAN KRIYA **6 minutes**
(Neck, Shoulders, Trunk & Knees movements etc.)

YOGA ASANA (YOGA POSTURES) **18 minutes**
Standing Postures - Tadasana, Vrkshasana, Padhastasana, Ardha-cakrasana, Trikonasana.
Sitting Postures - Bhadrasana, Vajrasana, Ardha-ushtraasana, Shashakasana, Uttanamandukasana, Vakrasana.
Prone Lying Postures - Makarasana, Bhujangasana, Salabhasana
Supine Lying Postures - Setubandhasana, Uttanapadasana, Ardhahalasana, Pavanamuktasana, Savasana

KAPAALABHAATI **3-6 minutes**
Each cycle will be followed deep breathing

PRANAYAMA **6-12minutes**
Anuloma-viloma Pranayama (5rounds)
Sheetali Pranayama (5rounds)
Bhrahmari Pranayama (5rounds)
Bhastrika Pranayama 5rounds)

DHYANA/MEDITATION **8 minutes**
Meditative Posture (eyes closed) and hands in Gyana Mudra .

SHAANTI PAATHA **2 Minutes**

Statistical techniques:

In order to investigate the fitness programs impact on Peak flow rate assessment among rural senior citizens, descriptive statistics (Mean, SD and Range), analysis of variance ANOVA and analysis of covariance (ANCOVA) were used at the 0.05 level of significance.

Further for comparing adjusted mean scores of Experimental Groups and Control Group of systolic and diastolic blood pressure Least Significant difference (LSD) Post Hoc test was used if F value was found significant in ANCOVA.

RESULTS AND FINDINGS

Table – 1: ***Descriptive Statistics of Pre-Test and Post-Test of Experimental Groups and Control Group in Peak Flow Rate***

Groups		Mean	SD	Minimum	Maximum	Range
Group A	Pre-Test	287.83	80.44	130.00	430.00	300.00
	Post-Test	332.83	92.89	200.00	670.00	470.00
Group B	Pre-Test	275.00	82.95	120.00	430.00	310.00
	Post-Test	315.66	58.17	155.00	425.00	270.00
Group C	Pre-Test	267.50	72.92	120.00	380.00	260.00
	Post-Test	269.66	63.43	140.00	360.00	220.00

Table 1 showed that Group C (control group) pre mean scores 267.50 with standard deviation values 72.92 was found lowest and Group A (light aerobic exercise Group) pre mean scores 287.83 with standard deviation values 80.44 was found highest in peak flow rate among all the groups. Although post mean scores 269.66 with standard deviation values 63.43 was found lowest in Group C whereas post mean scores 332.83 with standard deviation values 92.89 was found highest in Group A among all the groups.

Table – 1A: ***Analysis of Variance of Means of Experimental Groups and Control Group in Peak Flow Rate***

		Sum of Squares	Df	Mean Square	F	Sig.
Post Test	Between Groups	64007.222	2	32003.611	5.987	.004
	Within Groups	465067.500	87	5345.603		
	Total	529074.722	89			
Pre Test	Between Groups	6343.889	2	3171.944	0.510	.602
	Within Groups	541471.667	87	6223.812		
	Total	547815.556	89			

*Significant at .05 level

F value required to be significant at 2, 87 df =3.09

In relation to post test, Table – 1A revealed that the obtained 'F' value of 5.987 was found to be significant at 0.05 level, in case of peak flow rate since this value was found greater than the tabulated value 3.09 at 2, 87 df.

In relation to pre test, insignificant difference was found among experimental groupsand control grouppertaining to peak flow rate, since 'F' value of 0.510 was found lower than the tabulated value 3.09 at 2, 87 df at 0.05 level. It means that experimental groups and control group pre experimental differences were not found significant.

Table – 1B: ***Analysis of Co-Variance of Comparison of Adjusted Post Test Means of Experimental Groups and Control Group in Peak Flow Rate***

	Sum of Squares	Df	Mean Square	F	Sig.
Contrast	43080.075	2	21540.037	7.238	.001
Error	255936.670	86	2976.008		

*Significant at .05 level

F value required to be significant at 2, 86 df =3.09

Table – 1B revealed that the obtained 'F' value of 7.238 was found to be significant at 0.05 level, in case of peak flow rate, since this value was found greater than the tabulated value 3.09 at 2, 86 df. It evident that the adjusted mean scores of peak flow rate of Group A (light aerobic exercise Group), Group B (yogic exercise Group) and Group C (control group) differ significantly by taking their pre peak flow rate as covariate. In order to know which group adjusted mean score of peak flow rate differ significantly from other, the data were further analyzed with the help of LSD post-hoc test and the results are given in table-1C.

Table – 1C: ***Post Hoc Comparison of Adjusted Post Test Means of Experimental Groupsand Control Group in Relation to Peak Flow Rate***

Group A	Group B	Group C	Mean Difference	Sig.
325.963	316.772		9.191	.517
325.963		275.433	50.530*	.001
	316.772	275.433	41.339*	.004

Table – 1C showed adjusted post test means of experimental groups and control group. The adjusted means of experimental group A (light aerobic exercise Group), experimental group B (yogic exercise Group) and control group C were 325.963, 316.772 and 275.433 respectively. The mean difference between experimental group A and experimental group B was 9.191 which is insignificant at 0.05 level. It may therefore be said that both groups were found to have the peal flow rate to the same extent. The mean difference between experimental group A and control group C was 50.530 and experimental group B and control group C was 41.339 which are significant at 0.05 level. It may therefore said that group A and group B were found to have significantly higher peak flow rate as compared to control group C.

The graphical representation of adjusted mean score of peak flow rate between experimental groups and control group is presented in Figure-1.

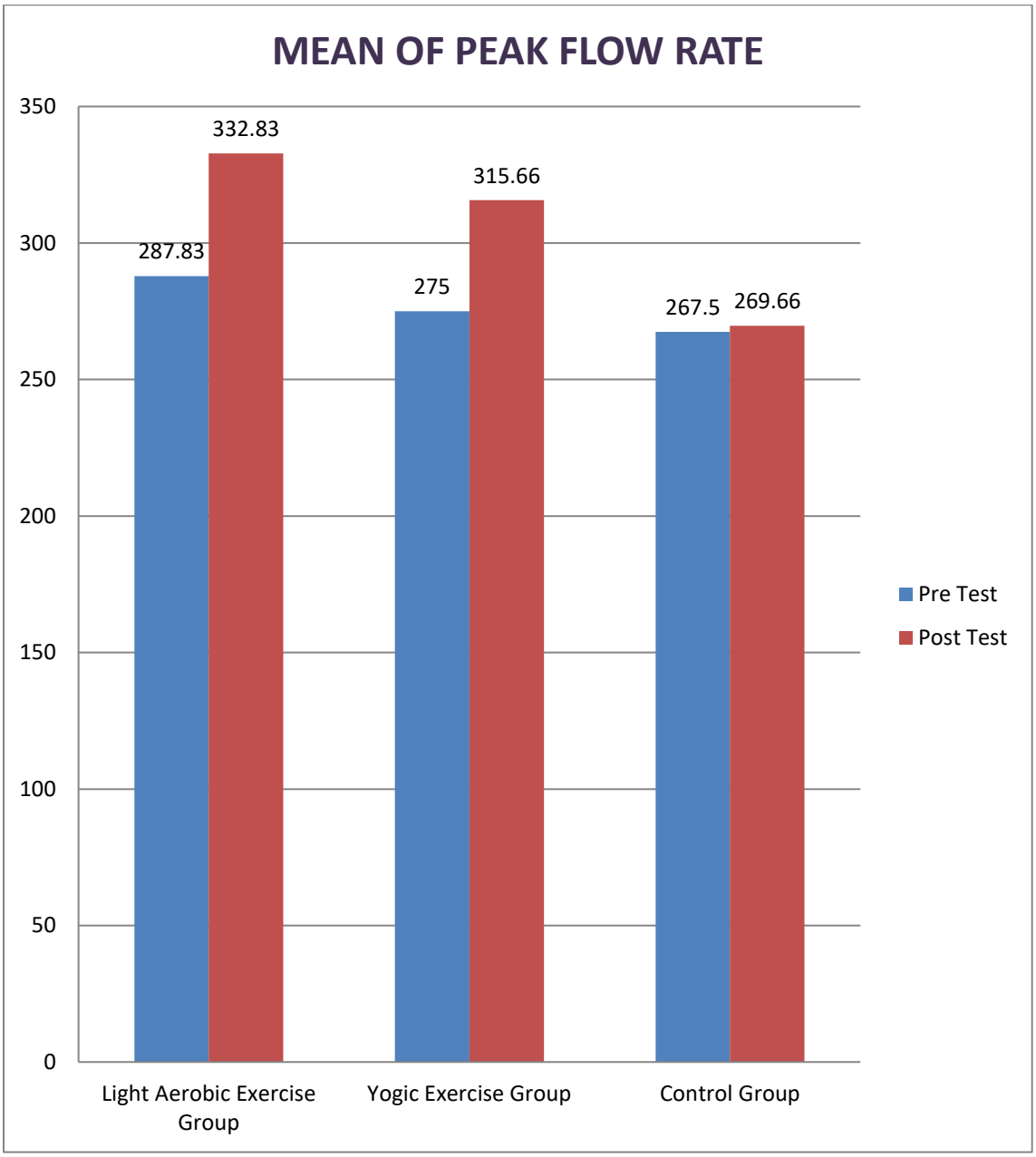

***Figure 1*: Mean of Peak Flow Rate with Experimental Groups and Control Group**

CONCLUSION

In view of the Results and discoveries and inside the impediments of the present investigation, the accompanying conclusions were drawn and significant improvement was found in peak flow rate as a result of the experimental treatments namely Light aerobic exercise and yogic exercise.

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