EFFECT OF 12 WEEKS PHYSICAL FITNESS EXERCISE TRAINING PROGRAMME OF DIFFERENT INTENSITY ON RESTING RESPIRATORY RATE OF SELECTED AGE GROUPS OF KABADDI TEAM

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Abstract

The purpose of the study was to investigate which type of training intensity (Low, Medium, & High) was most effective for improving resting respiratory rate of 12 weeks physical fitness exercises programme for female children age groups of 10-12years and 13-15years. Sixty subjects were randomly selected for this research work from Govt. schools of Chandigarh, U.T. In both the age group of 10-12 years and 13-15 years, four groups A, B, C and D was made of 15 subjects each. Group A (Low Intensity), Group B (Medium Intensity) & Group C (High intensity) acted as Experimental groups, who had participated in 12 weeks physical fitness exercise programme. Whereas other fifteen subjects followed their usual programme and acted as Control Group D. To determine the characteristics of Resting Respiratory Rate before and after 12 weeks of training at different intensity, mean and standard deviation was used. To compare adjusted post test means of experimental groups and control group in relation to Resting Respiratory Rate of 10-12 years &13-15years female subjects, ANCOVA was used. The level of significance was set at 0.05. There was significance difference found in Resting Respiratory Rate in both the age groups i.e. 10-12 & 13-15 years of female. It was concluded that if exercises proposed in the present study performed at medium intensity i.e. 60-65% would be most suitable for improving Resting Respiratory Rate of 10-12 & 13-15 years of female.

Keywords: Resting Respiratory Rate and Intensity

Introduction

Respiratory rate is a general indicator of the health of person`s lungs and cardiovascular system. It changes very rapidly in response to excitement and stress, for example, during physical exercise. Breathing rate is a measurement of how well lungs are deliver oxygen to the body. A normal breathing rate implies that the lungs are receiving adequate oxygen and, lungs and heart are working well together. An abnormal breathing rate can either imply a normal change in oxygen requirement, such as during exercise or sleep, or it can represent a physiological problem. Tracking breathing rate over time gives an accurate measurement of cardiovascular development. Additionally, measuring the increase in respiration rate during periods of exercise gives a good measurement of the body's response to cardiovascular stress.(Wilmore & Costill, 2004). We all know that generally physical fitness is defined as ability to carry out daily task for stipulated period of time without undue fatigue, to have sufficient energy to carry out pass time activities and also to face emergencies as and when required and it is task specific. An exercise intensity is refers to how hard individual body works during physical activity. The purpose of the study was to investigate which type of training intensity (Low, Medium, & High) was most effective for improving resting respiratory rate of 12 weeks physical fitness exercises programme for female children age groups of 10-12years and 13-15years.

The World Health Organization-International Obesity Task Force estimated that 30 to 45 million children worldwide are obese and approximately 155 million are overweight with a clear inverse relationship between obesity and physical fitness. These alarming figures illustrated the public health consequence of rapid westernization, urbanization and mechanization of modern society. These lifestyle changes undoubtedly carried out unfavorable consequences on health outcomes of the children. Girls' physical education activity participation is generally less frequent and of a lower intensity than that of boys

Material and Methods

Sixty subjects were randomly selected for this research work from Govt. schools of Chandigarh, U.T. In both the age group of 10-12 years and 13-15 years, four groups A, B, C and D was made of 15 subjects each. Group A (Low Intensity), Group B (Medium Intensity) & Group C (High intensity) acted as Experimental groups, who had participated in 12 weeks physical fitness exercise programme. Whereas other fifteen subjects followed

their usual programme and acted as Control Group D. Automatic Digital Blood Pressure Monitor was used to measure Resting respiratory rate. Score were recorded number of beats per minute. A pilot study was conducted with 30 students for four weeks time duration to set the intensity and physical fitness exercise programme for both age groups (10-12 years & 13-15years).

Exercises Intensity

DIFFERENT LEVEL OF INTENSITY WAS SET BY THE TARGET HEART RATE ZONE

Low Intensity	55-60% of max. Heart rate Repetition of exercises - 8-10 (main part)
Medium Intensity	60-65% of max. Heart rate Repetition of exercises– 12-15 (main part)
High Intensity	65-70% of max. Heart rate Repetition of exercises– 15-20 (main part)

Statistical Analysis

To determine the characteristics of Resting respiratory rate before and after 12 weeks of training at different intensity, mean and standard deviation was used. To compare adjusted post test means of experimental groups and control group in relation to Resting respiratory rate of 10-12 years &13-15years female subjects, ANCOVA was used. The level of significance was set at 0.05.

Results

The findings pertaining to three experimental groups and control group mean and standard deviations were computed and data pertaining to that have been presented in table no. 1.

Table No. 1
MEAN AND STANDARD DEVIATION OF DIFFERENT INTENSITIES IN RELATION TO RESTING RESPIRATORY RATE

Age (years)	Test	Low Intensity		Medium Intensity		High Intensity		Control Group	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
10-12	Pre	23.73	3.52	24.86	3.74	23.20	3.73	23.06	2.96
	Post	21.86	3.14	20.20	2.95	20.33	2.49	23.00	3.03
13-15	Pre	21.06	5.61	21.46	4.79	20.66	2.32	19.06	1.94
	Post	19.53	4.31	18.26	1.79	19.00	2.36	19.13	1.55

The above table reveals that in case of 10-12 years girls, the mean Resting Respiratory Rate of pre test was more or less similar in all the three intensities but during post test there were increase of the entire intensities group. In medium intensity and high intensity the Resting Respiratory Rate lowered down to 20.20 (respiration/minute) and 20.33 (respiration/minute) respectively. However, low intensity Resting Respiratory Rate was decrease 21.86 (respiration/minute). Control group showed no effect from pre to post test.

Similarly in case of 13-15 years the mean of Resting Respiratory Rate during pre test was more or less similar in all the three intensities but during post test from low intensity Resting Respiratory Rate of 19.53 (respiration/minute) to medium intensity there was increase of Resting Respiratory Rate 18.26 (respiration/minute). However, during high intensity the Resting Respiratory Rate decreases 19.00 (respiration/minute). Control group showed no effect from pre to post test. The table no-2 also reveals that the mean Resting Respiratory Rate of 10-12 years was better in comparison to 13-15 years in all the three intensities. To observe the difference among experimental groups and control group the analysis of variance and co-variance was adopted and data pertaining to these have been presented in this table

Table No. 2
ANALYSIS OF CO-VARIANCE OF GROUPS IN RELATION TO RESTING HEART RATE

Tests	Groups				Sum of Squares		Means sum of square	F-ratio
	Exp. I	Exp. II	Exp. III	Control Group				
Pre-test Means	81.06	80.73	80.60	82.26	A	25.93	8.64	0.446
					W	1084.40	19.36	
Post-test Means	78.33	76.33	78.06	82.26	A	282.71	94.23	5.696*
					W	926.53	16.54	
Adjusted post test means	78.42	76.69	78.54	81.35	A	164.48	54.82	16.690*
					W	180.68	3.28	

*Significant at 0.05 level of significance

The analysis of co-variance was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to all the groups was quite successful. The post-test means of all the four groups yielded a F-ratio of 5.696 which was found significant at 0.05 level of confidence. The difference between the adjusted post test means was found insignificant as the obtained F-ratio was 16.690 The F-ratio needed for significance at 0.05 level of confidence was 2.78.

Table No. 3
POST HOC COMPARISON OF ADJUSTED MEANS SCORES OF RESTING HEART RATE IN DIFFERENT GROUPS

Low Intensity	Medium Intensity	High Intensity	Control Group	Mean Difference	Critical Difference
78.42	76.69			1.73*	1.323
78.42		78.54		0.12	
78.42			81.35	2.93*	
	76.69	78.54		1.84*	
	76.69		81.35	4.66*	
		78.54	81.35	2.81*	

*Significant at 0.05 level of significance

The above table shows that significant difference was found between Low Intensity and Medium intensity, Low Intensity and Control Group, Medium Intensity and High

Intensity, Medium Intensity and Control Group, and High Intensity and Control Group as the obtained Mean Difference was greater than the C.D. at 0.05 level of significance. Whereas no significance was found Low Intensity and High Intensity as the obtained M.D. was less than C.D. Finally, as the Adjusted mean of Medium Intensity was greater than the other Intensities, it may useful for improve Resting Heart Rate.

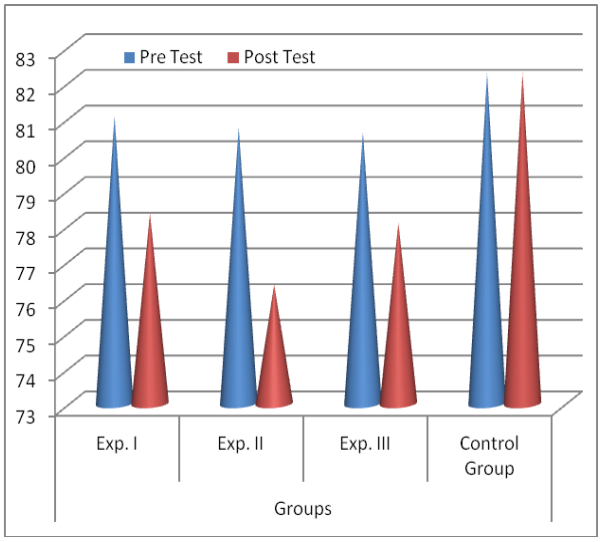

Fig. No. 1: Graphical representation of Adjusted mean of Resting Heart Rate

Discussion

All the experimental treatments found to be effective in bring out change in Resting respiratory rate of 10-12 years female subjects. Lower Intensity group found to be superior then High Intensity group and Control group in relation to Resting respiratory rate of 10-12 years female subjects. Medium Intensity group found to be superior then Low Intensity, High Intensity group and Control group in relation to Resting respiratory rate of 10-12 years female subjects. High Intensity group found to be superior then Control group in relation to Resting respiratory rate of 10-12 years female subjects. All the experimental treatment found to be effective in bring out change in Resting respiratory rate of 13-15 years female subjects. Lower Intensity group found to be superior then High Intensity group and Control group in relation to Resting respiratory rate of 13-15 years female subjects. Medium Intensity group found to be superior then Low Intensity, High Intensity group and Control group in relation to Resting respiratory rate of 13-15 years female subjects. High Intensity group found to be superior then Control group in relation to Resting respiratory rate of 13-15 years female subjects.

Conclusion

It was concluded that if exercises proposed in the present study performed at medium intensity i.e. 60-65% would be most suitable for improving Resting respiratory rate of 10-12 & 13-15 years of female.

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