



## Cardio Respiratory Endurance Among Adolescence School Boys of Kerala

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### ABSTRACT

Endurance refers to the length of time that an individual can perform work of a given intensity. Regular participation in moderate and vigorous levels of exercise increases physical fitness, which can lead to many health benefits. Aerobic exercise develops cardio respiratory endurance and reduced risk of Coronary Heart Disease (CHD). There is strong evidence that the onset and rapid development of CHD, can begin during youth, leading to an irreversible condition. It is therefore important to encourage young people to adopt lifestyles their energy base through improved aerobic endurance and in turn, decrease their risk of developing CHD. To achieve this purpose total N=3000 boys each age group (n=750) ranged from 13 to 16 years from various schools of (Tiruvananthapuram, Kottaiyam, Thrissur, Malapuram and Kannur districts) Kerala, India, by boys selected in schools stratified random sampling method. Cardio respiratory endurance was assessed by Tuttle pulse ratio test. The individual physical efficiency rating was calculated and obtained data treated with ANOVA. If the obtained 'F' value is significant, scheffe's post hoc test was used to find out the paired mean difference. Pearson product moment correlation was used to find out the relationship between age and cardio respiratory endurance. To test the significant at the level of confidence was fixed at 0.05. From the result it was concluded in adolescence, when age increases their cardio respiratory endurance increases positively.

**Keywords :** Tuttle Pulse Ratio Test, ANOVA, CHD-Coronary Heart Disease, Cardio Respiratory Endurance and Pearson Product Moment Correlation

### INTRODUCTION

Regular physical activity would be important for life's quality even if it had no relationship to disease or longevity. Physical activity is significant in gradient in the quality of life, because it increases energy and promotes physical, mental and sociological and psychological well being in addition to conferring health benefits<sup>(1)</sup>. Regular exercise as well as diet, abstinence from smoking, proper amount of sleep and relaxation will help to maintain health related fitness; children need exposure to wide variety of sport and fitness activities. Children and youth will hopefully develop interest in the type of physical activities that will promote and maintain physical fitness throughout the life. Physically fit children generally have better memory, concentration and energy levels. Endurance is the ability which enables to do a sport activity without getting tired and to recover quickly from fatigue during after activity<sup>(2)</sup>. Aerobic exercise develops cardio respiratory endurance and reduced risk of CHD<sup>(3)</sup>. The primary purpose of the study was analyze to cardio respiratory endurance of ado-

lescent school boys of Kerala. The secondary purpose was to find out relationship between age and cardio respiratory endurance.

### METHODOLOGY

To achieve this purpose total N=3000 boys each age group (n=750) ranged from 13 to 16 years from various schools of (Tiruvananthapuram, Kottaiyam, Thrissur, Malapuram and Kannur districts) Kerala, India, schools boys selected by stratified random sampling method. Cardio respiratory endurance was assessed by Tuttle pulse ratio test<sup>(4)</sup>. The individual physical efficiency rating was calculated and obtained data treated with ANOVA. If the obtained 'F' value is significant, scheffe's post hoc test was used to find out the paired mean difference. Pearson product moment correlation was used to find out the relationship between age and cardio respiratory endurance. To test the significant at the level of confidence was fixed at 0.05.

### RESULTS

Table-1

#### ANOVA FOR CARDIO RESPIRATORY ENDURANCE (%) OF ADOLESCENT SCHOOL BOYS OF KERALA

Variable	13 yrs	14 yrs	15 yrs	16 yrs	Group	Sum of Squares	df	Mean Square	'F'
X	65.97	68.13	70.0	72.0	Between	14931.733	3	4977.244	96.788*
σ	6.33	7.43	7.09	7.74	Within	154066.133	2996	51.424	

\*Significant Table value  $P \leq 2.60$  With df 3 & 2996

Table – 1 shows the cardio respiratory endurance of adolescent boys of different age groups of Kerala state. From the table it was clear the obtained 'F'- values are greater than table value (2.60) required for significant at 0.05 level with df 3 and 2996. The results of the study indicates that among the age group significant difference were found on cardio respiratory endurance for 13 yrs, 14 yrs, 15 yrs and 16 yrs adolescent boys. Hence, to find out the paired mean difference scheffe's post hoc test was applied and the results were presented in table – 2

**Table:-2**  
**SCHEFFE'S POST HOC TEST FOR CARDIO RESPIRATORY ENDURANCE OF ADOLESCENT SCHOOL BOYS OF KERALA**

13 Vs 14	13 Vs 15	13 Vs 16	14 Vs 15	14 Vs 16	15 Vs 16	C.I
2.16*	4.03*	6.03*	1.83*	3.87*	2.0*	1.28

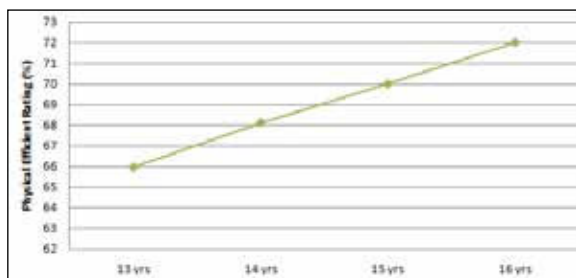
\*Significant

**Table:-3**  
**RELATIONSHIP BETWEEN AGE AND CARDIO RESPIRATORY ENDURANCE OF ADOLESCENT SCHOOL BOYS KERALA**

Age (Years)	13	14	15	16
13	1	0.089*	0.072*	0.015
14		1	0.064*	0.624*
15			1	0.230
16				1

\*Significant Table value r = 0.062

**FIGURE: 1 CARDIO RESPIRATORY ENDURANCE OF ADOLESCENT SCHOOL BOYS OF KERALA**



The table-1 shows that a significant difference among different age group on cardio respiratory endurance. From the table-2 it was clear that, when age increases cardio respiratory endurance increases. Further the result of Product moment correlation also supports same.

**DISCUSSION ON FINDINGS**

The above said results are conformity with others studies. Cardio respiratory fitness was increased in boys and girls were more stable across the ages (5). Cardio respiratory performance of school boy's continuously decreased and habitual physical exercise and life style (6). Endurance of different geographical region increased, according their age increases (7). Cardio respiratory endurance of adolescent boys increased the endurance depending on development period of adolescence (8). Adolescence are high physical fitness, especially high levels of cardio respiratory fitness are associated with increased levels of physical activity (9). Physical performance increased in grade levels and with the boys having higher percentile values comparing than the girls (10 & 11). Age associated with fitness correlation the development of period of higher ages (12). British boys were superior to American at all the physical fitness tests (13). Rural male students were found to superior in strength, endurance, speed and agility comparing the girls (14).

**CONCLUSIONS**

The results show that, cardio respiratory endurance was significant between the age groups. Age of 13 to 16 yrs adolescent school boys getting results of cardio respiratory endurance results increasing the depending age development. From the results it was concluded that in adolescence, when age increases their cardio respiratory endurance increases positively.

**IMPLICATIONS**

Health promotion policies and physical activity programs should be designed to improve cardio respiratory fitness of adolescent school boys; the school should play a major role in helping to identify adolescents with low physical fitness by promoting positive health behaviors such as encouraging children to be active, to special emphasis on the intensity of the activity. The resolve the problem requires combined efforts at the educational, corporate and governmental levels.

**REFERENCES**

1. Shephard,R.,(1996), " Exercise, Independence and quality of life in elderly", Quest,48(3). | 2. Hardayal Singh.,(1991),"Science of sports training", New Delhi, DVS Publications p-130 | 3. Pate, R (1983), "A New definition of a youth fitness physician and sports medicine" Vol-2 pp.77-83. | 4. Tuttle WW (1938), "A Simplification of the pulse ratio technique for rating physical efficiency and present condition", Research quarterly Vol.11 no.2 | 5. Ortega FB et al.,(2011), " Physical fitness levels among European adolescents", British Journal of Sports Medicine, 45, pp.20-29. | 6. Photiou A et al.,(2008), " Life style, body composition and physical fitness changes in Hungarian school boys", Res Q Exerc Sport 79(2), pp.166-173. | 7. Sanjeev,S and Gopinath,V (2011), "Assessment and construction of norms, different geographical region boys on endurance", International Journal of Arts and Education. Vol. 1 issue – 1 pp.21-23 | 8. Verma, SK (1988), "Work capacity and physiological response to exercise with special reference to age changes" Doctoral thesis (Unpublished),Punjab University, Patiala. | 9. Bailey, DA (1973), " Exercise, fitness and physical education for the growing child", a concern, Cana J.Public Health, 64: pp.421-430. | 10. Amusa .L.O et al.,(2011), " Health related physical fitness among rural primary school children in Tshannnda", South Africa Scientific Research and Essays, Vol(22),pp.4665-4680. | 11. Monyeki MA (2006), "Health and physical fitness status of rural primary school children living in Ellisras", South Africa, (Unpublished) Doctoral thesis, Vrije University, Amsterdam, The Netherland. | 12. Prista A, Malia AJR (1997), "Relationship between physical activity socio economic status and physical fitness of 8-15 years old youth Mozambique", AM J Human Biol. 9 pp.449-457. | 13. Solan AW (1966), "Physical fitness of South African compared with British and American high school children", South Indian Journal of Laboratory and Medicine LKW-52 pp.688-690. | 14. Manmeet Gill et al., (2010), " Comparative study of physical fitness components of rural and urban male & female students of Punjabi"Anthropologist 12 (1), pp.17-21. |