COMPARISON OF MAXIMAL AEROBIC POWER BETWEEN ADOLESCENT BOYS AND ADOLESCENT GIRLS OF THE COSTAL BAY OF BENGAL

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Abstract

The present investigation was undertaken by the investigator in an attempt to compare the Maximal Aerobic Power between Adolescent Boys and Adolescent Girls of the Costal Bay of Bengal of India. The subjects for this study were total of 2010 subjects viz. 1005 boys and 1005 girls. 1005 boys and 1005 girls belonged to three age categories i.e. 12 to below 14 years, 14 to below 16 years and 16 to below 18 years of age. Thus, each age group of boys and girls consisted of 335 subjects. The subjects of the study were selected at random. Only healthy adolescents were selected on the basis of teacher's appraisal. The selected physiological variables was considered important for research because it will provide us a true picture of cardiovascular endurance in general and VO_2 max in particular of adolescent boys and girls in Costal Bay of Bengal. It will help the trainers as well as their teachers to know the physical standard of the children and accordingly they will be trained. To compare the Maximal Aerobic Power between Adolescent Boys and Adolescent Girls of Costal Bay of Bengal of India. The descriptive statistics and 't' test was used. The average values of Maximal aerobic power of Boys: 12 to below 14 Years (18.28±1.79 ml/kg/min), 14 to below 16 Years (26.20± 2.96 ml/kg/min) and 16 to below 18 Years (37.10±3.14 ml/kg/min) respectively. The average values of Maximal aerobic power of Girls: 12 to below 14 Years (17.48± 2.03 ml/kg/min), 14 to below 16 Years (25.31± 2.48 ml/kg/min) and 16 to below18 Years (36.00± 2.50 ml/kg/min) respectively. The present study reveals that significant difference exists between adolescent boys and adolescent girls at different age group (i.e. 12 to below 14 years, 14 to below 16 years and 16 to below 18 years of age) in relation to maximal aerobic power.

Introduction

The modern age is an age of space adventurism and technology. Machines which man built for the purpose of adding comforts to his life, have, now so much pervaded his existence that it is somewhat difficult to do away with the human dependence upon machines, they have became part and parcel of our life and in this process man himself has become an automation. Modern man in comparison to the primitive man is poorer and inferior with regard to physical fitness. Physical fitness is prime necessity to get the outmost out of life and to enable us to live most and serve best. The comment of late J. F. Kennedy, former President of United State of America, emphasized physical fitness as not one of the important keys to a healthy body but as the basis of dynamic and creative intellectual activity. Children are said to be the citizens of tomorrow and builders of the nation. Their smiles inspire the hope and they are the pioneers of a brighter tomorrow. But the state of children in this country is miserably languishing in innocence and silence. The findings of national and international organizations reveal the plight of our children and call for an all out effort to save these withering blossoms from further degeneration and disruption.

Both heredity and environment provide for greater variations in growth. These variations complicate the job of the educator, especially physical educator. An important step in establishing the educational process for children is to understand the nature of the child as revealed by his biological, psychological, emotional and social needs. Teachers, coaches and researchers, who work with children, must understand the needs and characteristics of these children that motivate and structure the behavior of the various age levels (Harold M. Barrow) . The physical education teacher must understand the children and their level of physical development and maturity. Several research studies have been undertaken in this field to find out the degree of differences of boys and girls at the same age level in their physical development and maturation. In early childhood, the growth and development of the child goes in a uniform manner. A person with a high VO_2 max necessarily has good function in each of these determinants. Conversely, a sedentary person has relatively poor function for each determinant, which results in a low VO_2 max. The outcome of the study might help physical educators or coaches to evaluate and modify the training programs pertaining to cardiovascular fitness for both boys and girls.

Materials and Methods

The subjects for this study were a total of 2010 subjects viz. 1005 boys and 1005 girls. 1005 boys and 1005 girls belonged to three age categories i.e. 12 to below 14 years, 14 to below 16 years and 16 to below 18 years of age. Thus, each age group of boys and girls consisted of 335 subjects. The subjects of the study were selected at random. Only healthy adolescents were selected on the basis of their teacher's appraisal. For the true representation of the subjects the scholar selected those who were born and brought up in that particular area. The subjects belonged to different socio-economic status.

Indirect measurement of maximal aerobic power was applied by using Astrand and Astrand Nomogram. Indirect measurement of maximal aerobic power was conducted because of reliability and administrative feasibility on a large number. To obtain required data for the study a step up test was adopted to assess VO_2 max of adolescent boys and girls by Astrand and Astrand Nomogram. For the step up test the subjects were asked to step all the way up on the bench each time with the body erect. The stepping process was performed in four counts as: The stronger foot placed on bench; other foot placed on the bench; stronger foot placed on floor; other foot placed on floor. Soon after the cessation of 5 min. exercise on the bench, heart rate was recorded from 0 to 10 seconds, which was further converted to 60 seconds in terms of number of beats/min. Maximal Aerobic Power (VO_2max) was measured in ml/kg./min using Astrand and Astrand Nomogram.

Results

Table-1

Mean and Standard Deviation of Different age group Adolescent Boys and Girls in Relation to Maximal Aerobic Power

Age category	GENDER	Mean (ml/kg/min)	S.D.
12 to below 14 Years	Boys	18.28	1.79
	Girls	17.48	2.03
14 to below 16 Years	Boys	26.20	2.96
	Girls	25.31	2.48
16 to below 18 Years	Boys	37.10	3.14
	Girls	36.00	2.50

The average values of Maximal aerobic power of Boys: 12 to below 14 Years (18.28±1.79 ml/kg/min), 14 to below 16 Years (26.20± 2.03 ml/kg/min) and 16 to below 18 Years (37.10±3.14 ml/kg/min) respectively. The average values of Maximal aerobic power of Girls: 12 to below 14 Years (17.48± 2.03 ml/kg/min), 14 to below 16 Years (25.31± 2.48 ml/kg/min) and 16 to below18 Years (36.00± 2.50 ml/kg/min) respectively.

Table-2

Mean Comparison of Maximal Aerobic Power between Adolescent Boys and Adolescent Girls (12 to below 14 Years) in Costal Bay of Bengal of India

Adolescent Boys	Adolescent Girls	Mean Difference	Std. Error Difference	df	t
18.28	17.48	0.8	0.148	668	5.00*

*Significant at 0.05 level of significance t.05 (668) = 1.96

The above table reveals that significant mean differences was found between Adolescent boys and adolescent girls in relation to Maximal aerobic power as the calculated value of 't' = 5.00 is greater than the tabulated t.05 (668) = 1.96.

Table-3
Mean Comparison of Maximal Aerobic Power between Adolescent Boys and Adolescent Girls (14 to below 16 Years) in Costal Bay of Bengal of India

Adolescent Boys	Adolescent Girls	Mean Difference	Std. Error Difference	df	t
26.20	25.31	0.89	0.211	668	4.218*

*Significant at 0.05 level of significance t.05 (668) = 1.96

The above table reveals that significant mean differences was found between Adolescent boys and adolescent girls in relation to Maximal aerobic power as the calculated value of 't' = 4.218 is greater than the tabulated t.05 (668) = 1.96.

Table-4
Mean Comparison of Maximal Aerobic Power between Adolescent Boys and Adolescent Girls (16 to below 18 Years) in Costal Bay of Bengal of India

Adolescent Boys	Adolescent Girls	Mean Difference	Std. Error Difference	df	t
37.10	36.00	1.10	0.219	668	5.016*

*Significant at 0.05 level of significance t.05 (668) = 1.96

The above table reveals that significant mean differences was found between Adolescent boys and adolescent girls in relation to Maximal aerobic power as the calculated value of 't' = 5.016 is greater than the tabulated t.05 (668) = 1.96.

Discussion and Conclusions

The present study revealed that significant difference was found in case of adolescent boys and adolescent girls of Costal Bay of Bengal of India. The present study can be support by the findings of Andersen L. B and et.al in which they have stated that when comparing maximal oxygen uptake per kg lean body mass in the two sexes, the boys had 18.4% higher values than the girls, indicating that girls of this age have the lower fitness level. Moreover, Eiberg. S and et.al has concluded that Vo2 max is higher in boys than girls (+11%), even when related to body mass (+8%) and LBM (+2%). Most of the difference in Vo2 max relative to body mass was explained by the larger percentage body fat in girls. When boys and girls with the same Vo2 max were compared, boys engaged in more minutes of exercise of at least moderate intensity. Thus it is concluded that Adolescent girls possess lesser maximal aerobic power in comparison to adolescent boys.

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