

ANALYSIS OF SELECTED PHYSICAL AND PHYSIOLOGICAL DIFFERENCES BETWEEN RURAL AND URBAN SCHOOL BOYS

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ABSTRACT

The purpose of this study is to analysis of selected physical and physiological difference between rural and urban school boys. A total of one hundred (100) boys participants were selected and they were divided into two groups (50) fifty in each. They were classified into by school location. Based on the availability of instruments, feasibility and also based on reviews, the selected variables were tested by using standardised test items. Significant difference between two groups on selected variables, “t” ratio was used to find out the significance difference on selected physical and physiological parameter.

INTRODUCTION

Growth refers to measurable changes in size, physique and body composition and various systems of the body whereas maturation refers to progress towards the mature state. Maturation is variable among bodily systems and also in timing and tempo of progress. The process of growth and maturation are related, and both influence physical performance. Chronological age (CA) is the common reference in studies of growth and performance. However, there is considerable variation in growth, maturity, and performance status among individual of the same CA, especially during the pubertal years.

Inter relationship among growth, maturation, and performance during childhood and adolescence are the focus of this chapter. It specifically considers:

1. Age, sex and maturity-associated variation in physical performance;
2. Growth and maturity characteristics of young athletes; and
3. The influence of training on growth and maturation.

Overview of growth and performance

SOMATIC GROWTH

Growth in stature is rapid in infancy and early childhood, rather steady during middle childhood, rapid during the adolescent spurt, and then slow as adult stature is attained. This pattern of the growth (size-attained and rate) is generally similar for body

weight and other dimension with the exception of subcutaneous fat and fat distribution. The growth rate of stature is highest during the first year of life then gradually declines until the onset (take-off) of the adolescent growth spurt (about 10 year in girls). With the spurt, growth rate increases, reaching a peak (peak height velocity, PHV) at about 12 years in girls and then gradually declines and eventually ceases with the attainment of adult stature.

PHYSICAL PERFORMANCE

Physical performance is commonly measured as the outcome (product) of standardized motor tasks requiring speed, agility, balance, flexibility, explosive strength, muscular endurance.

Isometric strength increases linearly with age during childhood and the transition into adolescence in both sexes. At approximately 13 years, strength development accelerates considerably in boys (adolescence spurt), but continues to increase linearly in girls through about 15 years with less evidence for a clear adolescent spurt, although data vary among specific strength tests. Sex differences in strength are consistent, although small, although childhood and the transition into adolescence. Thereafter, the differences become increasingly larger so that at the age of 16 years and later only a few girls perform at the same level as the average boy.

ADOLESCENT SPURTS IN PERFORMANCE

Most data for performance are derived from cross-sectional samples which are inadequate for qualifying the timings and tempo of the adolescent growth spurt. Individual pass through adolescence at their own pace and consequently have their growth spurts over a wide range of CA's the so-called time spreading effect. Only longitudinal or mixed longitudinal data properly analysed provide adequate information about tempo and timing of spurts in a variety of characteristics.

MATERIAL AND METHOD

Boys participants (N-100) were selected from CBSE affiliated school of Uttar Pradesh. Out of 100 participants they were divided into two groups (50) fifty each. All participants were oriented about the purpose of the study and the role of the subjects was clearly explained with demonstration and was required to sign an informed consent to participants in the study.

INSTRUMENTATION

Standard measuring tape, stop watch and vertical jump board. Since the reliability of instruments used ensured by their manufacturers, they were considered adequately reliable and valid. Omron monitor HEM-780 blood pressure monitor with comfit cuff was used for collecting heart rate and blood pressure.

DATA ANALYSIS

The significant difference between two groups on selected variables, 't' ratio was used to analysis the significant difference on selected physical and physiological parameters. The

level of confidence to the test the 't' ratio was fixed at 0.05 levels for significance.

RESULTS

The analysis of 't' ratio for significance mean difference between rural and urban school children on speed are presented in the following tables.

Table-I

THE MEAN, STANDARD DEVIATION AND 't' RATIO OF RURAL AND URBAN SCHOOL BOYS ON SPEED

Groups	No of subjects	Mean	Standard Deviation	t-ratio
Rural	50	7.24	0.32	14.76*
Urban	50	6.93	0.15	

*Significant at 0.05 level of confidence

The mean and standard deviation values of rural and urban school boys were 7.24 and 6.93 respectively. The obtained 't' ratio of 14.76 on speed was greater than the required table value 1.985 for significance with 98 df at .05 level of confidence. The result of the study showed that there was a significant difference existing between rural and urban school boys on speed. Urban school boys showed better performance in speed when compared to rural boys.

Table-II

THE MEAN, STANDARD DEVIATION AND 't' RATIO OF RURAL AND URBAN SCHOOL BOYS ON POWER

Groups	No of subjects	Mean	Standard Deviation	t-ratio
Rural	50	49	8.01	5.52*
Urban	50	58	12.83	

*Significant at 0.05 level of confidence

The mean and standard deviation values of rural and urban school boys were 49 and 58 respectively. The obtained 't' ratio of 3.65 on Power was greater than the required table value 5.52 for significance with 98 df at .05 level of confidence. The result of the study showed that there was a significant difference existing between rural and urban school boys on power. Urban school boys showed better performance in power when compared to rural boys.

Table-III

THE MEAN, STANDARD DEVIATION AND 't' RATIO OF RURAL AND URBAN SCHOOL BOYS ON ENDURANCE

Groups	No of subjects	Mean	Standard Deviation	t-ratio
Rural	50	2.45	0.17	18.25*
Urban	50	3.18	0.27	

*Significant at 0.05 level of confidence

The mean and standard deviation values of rural and urban school boys were 2.45 and 3.18 respectively. The obtained 't' ratio of 2.01 on endurance was greater than the required table value 18.25 for significance with 98 df at .05 level of confidence. The result of the study showed that there was a significant difference existing between rural and urban school boys on endurance. Urban school boys showed better performance in endurance when compared to rural boys.

Table-IV

THE MEAN, STANDARD DEVIATION AND 't' RATIO OF RURAL AND URBAN SCHOOL BOYS ON HEART RATE

Groups	No of subjects	Mean	Standard Deviation	t-ratio
Rural	50	77.7	1.05	1.33*
Urban	50	78.1	1.89	

*Significant at 0.05 level of confidence

The mean and standard deviation values of rural and urban school boys were 77.7 and 78.1 respectively. The obtained 't' ratio of 1.33 on heart rate was Less than the required table value 1.985 for significance with 98 df at .05 level of confidence. The result of the study showed that there was a significant difference existing between rural and urban school boys on heart rate. Urban school boys showed better performance in heart rate when compared to rural boys.

Table-V

THE MEAN, STANDARD DEVIATION AND 't' RATIO OF RURAL AND URBAN SCHOOL BOYS ON SYSTOLIC BLOOD PRESSURE

Groups	No of subjects	Mean	Standard Deviation	t-ratio
Rural	50	104.7	2.5	3.76*
Urban	50	107.6	4.9	

*Significant at 0.05 level of confidence

The mean and standard deviation values of rural and urban school boys were 104.7 and 107.6 respectively. The obtained 't' ratio of 3.76 on systolic blood pressure was greater than the required table value 1.985 for significance with 98 df at .05 level of confidence. The result of the study showed that there was a significant difference existing between rural and urban school boys on blood pressure. Urban school boys showed better performance in systolic blood pressure when compared to rural boys.

Table-V

THE MEAN, STANDARD DEVIATION AND 't' RATIO OF RURAL AND URBAN SCHOOL BOYS ON DIASTOLIC BLOOD PRESSURE

Groups	No of subjects	Mean	Standard Deviation	t-ratio
Rural	50	62.3	0.98	1.05*
Urban	50	62.5	1.01	

*Significant at 0.05 level of confidence

The mean and standard deviation values of rural and urban school boys were 62.3 and 62.5 respectively. The obtained' ratio of 1.05 on diastolic blood pressure was Less than the required table value 1.985 for significance with 98 df at .05 level of confidence. The result of the study showed that there was a significant difference existing between rural and urban school boys on diastolic blood pressure Urban school boys showed better performance in diastolic blood pressure when compared to rural boys.

DISCUSSION ON FINDINGS

Environmental influences: After standardization of variables, comparisons between urban and rural children were done: Urban children better than rural children in all tests except for endurance run and systolic blood pressure. However urban children were heavier and taller than rural children. The observed differences may be related to activity habits associated with school physical education and lifestyle in the respective communities.

Low or restricted energy intakes reduce the physical activity of infants and children, even at a very early age. When this is transient, it will be reversed rapidly with nutritional improvement, and it may have no important morphologic, functional, or behavioral consequences. However, a prolonged reduction in physical activity due to sustained low energy intake may limit or reduce the child's social interactions and exploration of its environment. This is more evident under circumstances where children are encouraged or forced to participate in very energy-demanding activities. These include games, sport completions and the need to work in rural areas.

Such limitations may contribute to slower cognitive development, suboptimal social performance, smaller body size and reduced productivity in physical work. All this , in turn, will hinder the child's development to its full biological potential, reduce its quality of life in a broad sense, and limit its contributions to family welfare, either in childhood and adolescence, or in later adult life. Therefore, interventions to improve nutrition and function at an early age, and maintaining them through childhood, will have important biological, social and economic implications. These are the reasons for the difference between rural and urban school boys in Ghaziabad district in Uttar Pradesh.

CONCLUSIONS

The following conclusions were made based on the analysis and results of the data.

1. The findings of the study indicated that rural and urban school boys show statistically significant difference exist in all parameters except diastolic blood pressure and heart rate.
2. The findings of the study also indicate the rural and urban school boys show statistical significant difference exists in physical parameters.

3. Urban school boys show better performance on power and speed compared to rural boys.
4. Rural school boys show better performance on systolic blood pressure and endurance compared to rural boys.

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