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Comparative analysis on anthropometry and body composition among Andhra Pradesh sports school children and non sports school children in relation to their blood groups

V Satyanarayana

Abstract
The study was conducted to know biological entity. In fact, this very quality of contemplation separates him very acutely from other animals that occupy space on this Globe. That is why he is the apex of creation. The tremendous progress in the sphere of culture and civilization has been the result of mass high thinking. The innumerable changes have occurred in human structure and that man has been labouring hard, since the very days when consciousness dawned on him, to make the natural environment suitable for his living.

Keywords: sports school children, blood groups

Introduction
Whatever the man is today, whatever he has achieved or built up, must be ascribed to his thinking ability. If 'activity' or movement is his biological property, reflection is his mental attribute. No doubt, each human being is an animal, because he strives hard to make his living as comfortable as possible on the basis of his own experiences and the ones he receives from others. A common man only sees the things or happenings around him, and tries to become wiser, because of his experience or by going through books, which he easily comprehends, or by coaching or teachings of a teacher.
Today's Education has undergone phenomenon changes and it should now be taken as the result of unparalleled development of human mind and wisdom it has been corroborated that Physical Education is an inextricable part of general Education land that the ideal of "sound mind" cannot be realized without due emphasis on "sound body". The discipline of Physical Education is now so much entrenched in total spectrum of Education that is very difficult to conceive "Education" as something complete without the presence of large muscle activity.

Significance of the Study
The present investigation will focus the significant contribution as shown in the following:
The talent selection in sports school in relation to their blood groups and in various sports is greatly improves performance. Potential of the sports probable with the help of the measurements and evaluation procedures. It is very important to predict the students and to find out the children among these trainees with the help of appropriate measurement and evaluation techniques.
A critical Analysis is made to find out the importance of developing musculature and body composition among the sports students and non-sports students and their performance in the field of sports. The study under report envisages the facts about the body measurement of sports students and non-sports students and their relation with the blood groups.

Objectives of the Study

- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Body Mass Index in relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Lean Body Weight – 1 [LWB1]in relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Lean Body Weight – 2 [LWB2]in relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Peak Flow Rate [PFR]n relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Vital Capacity [VC] in relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Force Expiratory Volume [FEV] in relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Force Inspiratory Volume [FIV] in relation to their Blood groups.
- To find out the existing difference between A.P. Sports School Children and Non-sports school children of Physical Efficiency Index [PEI] in relation to their Blood groups.

Hypothesis

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Body Mass Index in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Lean Body Weight – 1 [LWB1]in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Lean Body Weight – 2 [LWB2]in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Peak Flow Rate [PFR] in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Vital Capacity [VC] in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Force Expiratory Volume [FEV] in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Force Inspiratory Volume [FIV] in relation to their Blood groups.

There may not be significant difference between A.P. Sports School Children and Non-sports school children of Physical Efficiency Index [PEI] in relation to their Blood groups.

Limitations

The study was limited to the following aspects:

1. The factors like food habits, climatic conditions, life style, and financial position were beyond the control of the Investigator.
2. The psychological factors of the subjects will not be considered.
3. The parental background will not be considered for the study.
4. The Socio-Economic status for the subjects will not be considered for the study.
5. Rh factor is not considered for the studies.

Review of Literature

The researcher reviewed the literature at the libraries of Government P.G. College of Physical Education, Hyderabad, University College of Physical Education, Osmania University, Hyderabad. The researcher could not find out much literature on studies of Anthropometric Measurements, Body Composition and Cardio Vascular Efficiency in relation to their Blood Groups of Andhra Pradesh related to the problem. However, similar literature has been taken from internet. A study of related literature is of paramount importance in general to have a clear picture of what has to said and done. With the problem under study, the investigator took advantage of the knowledge, which has been accumulated in the past as a result of constant human endeavourer. A serious and scholarly attempt was made by the investigator to study the research journals, books, dissertations and these to collect the related literature. Such a review brings about a deep in sight and a clear perceptive of the overall field.

The present study is intended to investigate and study to a critical analysis in relation to Anthropometric Measurements in relation to their Blood groups.

Practically all human knowledge can be found in books and libraries unlike other animals, man builds upon the accumulated and recorded knowledge of the past, while discussion of the significance of old literature may serve to avoid unnecessary work and may help to make progress towards the solution and successful completion of new ones, without wasting time.

Methodology

This chapter is concerned with methodology of investigation. The chapter describes of the study collection, tools used to measure the Anthropometric measurements and Body Composition in relation to the Blood Groups.The chapter deals with the administration of tests and procedure by using the Statistical Techniques. In the preceding / previous chapters the researcher has presented the review of related literature pertaining to the present study. The problem was discussed, the significance of the problem stated, the objectives were focused and formulated the hypotheses, the delimitations of the study, were specified. The discussion on the methodology of the researcher is proposed to be presented. This chapter focuses about the design of the study, sample considered, tools used, the methods followed for data collection and finally the statistical techniques adopted.

Design of the Study

The Design of the Study presented here under.

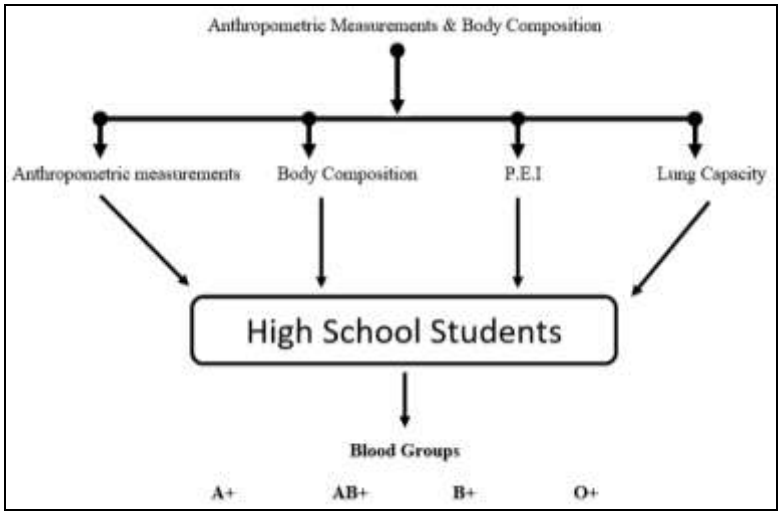

Fig 1

Sample of the Study

300 High School Students were considered as the sample of the study. The 150 students from Andhra Pradesh Sports School, Shameerpet, Ranga Reddy District, Andhra Pradesh. Who were pursuing the Education from Class VI to X with age group of 11 to 15+ were considered as a sports students were tested.The group of 150 students were considered as Non-Sports group from different Educational Institutions of Hyderabad and R.R. District with the age group of 11 to 15+ were from VI to X Classes were taken for the test administration for the study.

Showing the Sample of the Study

Table 1

Sl. No.	Name of the category	Students
1.	A.P. Sports School Students	150
2.	Non - Sports School Students of R.R. Dist. & Hyderabad Dist.	150
	Total	300

300 subjects were taken for the study those who were pursuing the Education in Classes VI to X, age group from 11 to 15 years.

Tools Used

The following tools were used for the present study.
Anthropometric Measurements kit.
Weighing Machine
Anthropometer Rod
Cross bar
Measuring Tape
Sliding Clipper
Skinfold Caliper
Stethoscope.
Digital blood pressure apparatus
Cardio Vascular Efficiency Test (P.E.T.)
20" height step
Stop Watch
Metronam
Score Sheet
(a) Spirometer
(b) Peak Flow Meter
(4) Antigents A, B, O
Slides, Disposable needles, Cotton, Sprit, etc.

Various changes in volume represent only one factor in the determination of pulmonary ventilation, which is the amount of air breathed in and out in one minute. The other important factor is respiratory rate, which averages twelve breaths per minute.

Pulmonary ventilation = Total volume x Respiratory rate
(ml/min) (ml/breadth) (breaths/min)

At an average tidal volume of 500 ml/breath and a respiratory rate of 12 breaths per min, pulmonary ventilation is 6,000 ml or 6 litres of air breathed in and out in one minute under resting conditions. For a brief period of time, a healthy young adult male can voluntarily increase his total pulmonary ventilation twenty-five-fold, to 150 litres/min. To increase pulmonary ventilation, both tidal volume and respiratory rate increase, but depth of breathing is increased more than frequency of breathing. When increasing pulmonary ventilation, it is more advantageous to have a greater increase in tidal volume than in respiratory rate because of the presence of anatomic dead space. Not all of the inspired air gets down to the site of gas exchange in the aveoli. Part of it remains in the conducting airways, where it is not available for gas exchange. The volume of the conducting passages in an adult averages about 150 ml. This volume is considered to be anatomic dead space because air within these conducting airways is useless for exchange purposes. Anatomic dead space has a pronounced effect on the efficiency of pulmonary ventilation. In effect, even though 500 ml are moved in and out with each breath, only 350 ml of air are actually exchanged between the atmosphere and alveoli for every tidal volume because of the 150 ml volume occupied by the anatomic dead space.
Since the amount of atmospheric air actually available for exchange with the blood is of more importance than the total amount breathed in and out, alveolar ventilation – the volume of air exchanged between the atmosphere and alveoli per minute – is more important than pulmonary ventilation. In determining alveolar ventilation, the amount of wasted air moved in and out through the anatomic dead space must be taken into account, as follows:

Table 2: Effect of Different Patterns on Alveolar Ventilation

Breathing Pattern	Total volume (ml/min)	Respiratory Rate (breaths/ min)	Dead-Space volume (ml)	Pulmonary Ventilation (ml/min) Equals Tidal Volume Times Respiratory Rate	Alveolar Ventilation (ml/min) Equals (Total Volume Minus Dead-Space Volume) Times Respiratory Rate
Normal, quiet breathing	500	12	150	6,000	4,200
Deep, slow breathing	1,200	5	150	6,000	5,250
Shallow, rapid breathing	150	40	150	6,000	0

Alveolar ventilation = (Total volume – Dead space volume) X Respiratory rate

With quiet breathing, alveolar ventilation is 4,200 ml/min [(500 ml/breath – 150 ml dead-space volume) x 12 breaths/min =4,200 ml/min], whereas pulmonary ventilation is 6,000 ml/min.

To emphasize how important dead-space volume is in determining the magnitude of alveolar ventilation, examine the effect of various breathing patters on alveolar ventilation in Table 2. If a person deliberately breathes deeply (for example, a tidal volume of 1,200 ml) and slowly (for example, a respiratory rate of 5 breaths/min), pulmonary ventilation is 6,000 ml/min, the same as when breathing normally, but alveolar ventilation is increased to 5,250 ml/min compared to the normal of 4,200 ml/min. In contrast, if a person were to deliberately breath shallowly (for example, a tidal volume of 150 ml) and rapidly (a frequency of 40 breaths/min), pulmonary ventilation would still be 6,000 ml/min; however, alveolar ventilation would be 0 ml/min. In effect, the person would only be drawing air in and out of the anatomic dead space without any atmospheric air being exchanged with the alveoli, where it could be useful. Such a breathing pattern could be voluntarily maintained for only a few minutes before the person lost consciousness, at which time normal breathing would resume.

When pulmonary ventilation is increased during exercise, it should now be apparent why it is valuable that a correspondingly larger increase in depth of breathing than in rate of breathing is reflexly brought about. It is the most efficient means of elevating alveolar ventilation. When tidal volume is increased, the entire increase goes toward elevating alveolar ventilation, yet an increase in respiratory rate does not go entirely toward increasing alveolar ventilation. When respiratory rate is increased, the frequency with which air is wasted in the dead space is also increased, because apportion of each breath must move in and out of the dead space. As needs vary, ventilation is normally adjusted to a tidal volume and respiratory rate that meet those needs most efficiently in terms of energy cost.

We have assumed that air entering the alveoli exchanges O_2 and CO_2 with pulmonary blood. However, the match between air and blood is not always perfect, because not all alveoli are equally ventilated with air and perfused with blood. Any ventilated alveoli that do not participate in gas exchange with blood because they are inadequately perfused are considered to be alveolar dead space. Total or physiological dead space refers to the anatomic dead space plus alveolar dead space, both of which represent ventilated space that is functionally wasted. In normal persons, alveolar dead space is quite small and of no importance, but it can be increased to even lethal levels in several types of pulmonary disease. When alveolar dead space is increased, the tidal volume must be correspondingly increased, if possible, so that the functional portion of the alveoli (that which is non dead space) can still receive a normal tidal volume's worth of air

Data Collection Procedure.

The sample of the study was age group ranging from 11 to 15+. The first group consisting of 150 A.P. Sports school children and 150 students from the Non –sports school children. The subjects selected considering the factors like Anthropometric Measurements, Body composition, Lung capacity & Cardio vascular efficiency in relation to their Blood groups.The researchers are collected data separately for sports and non sports pertaining to Eight variables *viz*., Anthropometric Measurements, Body composition, Lung capacity & Cardio vascular efficiency in relation to their Blood groups.

The data was collected accurately for the total sample selected. The data collection procedures were completed.

Results and Discussion on Hypothesis-I

Results pertaining to the Hypothesis-I "There may not be any significant difference on Body mass Index to AP sports school children and non sports school children of Body Mass Index in relation to their blood groups" were presented in Table Showing the Mean values, SD, 't' value and p-value between A.P sports school children and non sports school children in Body Mass Index in relation to their blood groups of A.P Sports students Blood Group 'A' Vs Non sports students Blood Group 'A'.

Table 3

SI. No	Subjects	No. of	Mean	SD	t-value	P-value
1.	A.P. Sports Children [29]	29	18.67	1.94	3.29	0.01
2.	A.P Non Sports children [27]	27	16.36	1.34		

ANOVA Table

Showing the Mean values, SD, 't' value and p-value between A.P sports school children and non sports school children in Body Mass Index in relation to their blood groups of Sports 'A' group Vs Non sports 'A' group

Table 4

		Sum of Squares	df	Mean Square
Sbmi	Between Groups	26.408	7	3.773
	Within Groups	.000	0	.
	Total	26.408	7	
nsbmi	Between Groups	12.625	7	1.804
	Within Groups	.000	0	.
	Total	12.625	7	

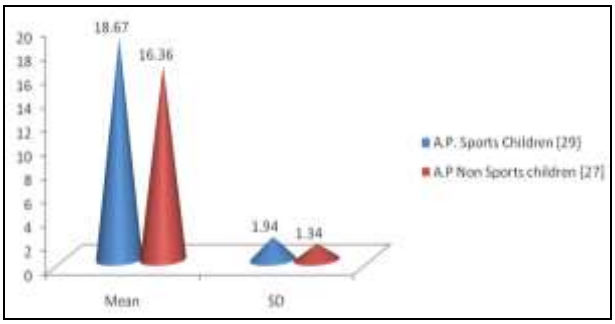

Fig 2

The results presented in the table 4.1.0.1 reveal the scores on Body Mass Index. The results do not yield any significant difference in Body Mass index between the A.P. sports school children and Non sports school children in relation to Blood Group 'A'.

The p-values of all the segments of body mass index presented in the table are found to be significant at 0.05 level.

Thus, it can be concluded that the sports students and non sports students in Body Mass Index shown significant difference.

Showing the Mean values, SD, 't' value and p-value between A.P sports school children and non sports school children in Body Mass Index in relation to their blood groups of A.P Sports students Blood Group 'A' Vs Non sports students Blood Group 'B'.

Table 6

SI. No	Subjects	No. of	Mean	SD	t-value	P-value
1.	A.P. Sports Children [29]	29	18.67	1.94	1.97	0.09
2.	A.P Non Sports children [62]	62	16.17	2.35		

ANOVA Table

Showing the Mean values, SD, 't' value and p-value between A.P sports school children and non sports school children in Body Mass Index in relation to their blood groups of A.P Sports students Blood Group 'A' Vs Non sports students Blood Group 'B'.

Table 7

		Sum of Squares	df	Mean Square
Sbmia	Between Groups	26.408	7	3.773
	Within Groups	.000	0	.
	Total	26.408	7	
nsbmib	Between Groups	38.766	7	5.538
	Within Groups	.000	0	.
	Total	38.766	7	

Conclusions

The perusal of the entire presentation with a special reference to the chapter covering results and discussion would help in drawing the final conclusions for the present investigation.

The following conclusions were drawn from the attempted study:

1. It is concluded that the Blood Group 'A' of sports students and Blood Group 'A' of non sports students shown a significant difference in relation to Body Mass Index
2. It is concluded that the Blood Group 'A' of sports students and Blood Group 'B' of non sports students shown insignificant difference in relation to Body Mass Index.
3. It is concluded that the Blood Group 'A' of sports students and Blood Group 'AB' of non sports students shown a significant difference in relation to Body Mass Index.
4. It is concluded that the Blood Group 'A' of sports students and Blood Group 'O' of non sports students shown insignificant difference in relation to Body Mass Index.
5. It is concluded that the Blood Group 'B' of sports students and Blood Group 'A' of non sports students shown insignificant difference in relation to Body Mass Index.
6. It is concluded that the Blood Group 'B' of sports students and Blood Group 'B' of non sports students shown insignificant difference in relation to Body Mass Index.
7. It is concluded that the Blood Group 'B' of sports students and Blood Group 'AB' of non sports students shown a significant difference in relation to Body Mass Index.
8. It is concluded that the Blood Group 'B' of sports students and Blood Group 'O' of non sports students shown a significant difference in relation to Body Mass Index.
9. It is concluded that the Blood Group 'AB' of sports students and Blood Group 'A' of non sports students shown insignificant difference in relation to Body Mass Index.
10. It is concluded that the Blood Group 'AB' of sports students and Blood Group 'B' of non sports students shown insignificant difference in relation to Body Mass Index.
11. It is concluded that the Blood Group 'AB' of sports students and Blood Group 'AB' of non sports students shown insignificant difference in relation to Body Mass Index.

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