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Comparative analysis of anthropometric measures and cardio respiratory endurance among hill and plain area adolescent girls

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Abstract

This study compared the existing structural measures and endurance capacity among the school going girls of 12yrs old belonging to Hill and Plain areas. 100 girls were selected randomly from Paschim Medinipur considered in this study as plain area and 60 girls were randomly selected from Jalpaiguri district considered in this study as the Hill area. The measurements were the weight, standing height, sitting height, lower limb length and cardio respiratory endurance. All the anthropometric measures were taken ISAK approved apparatus and the endurance capacity was measured by 600 yards run. It was found from the study that in case of the weight no significant difference exist between the two groups but in case of standing height, sitting height, lower limb length and cardio respiratory endurance the difference found significantly. The height of the students of plain area were significantly greater than the students of the hill area. The sitting heights of the students of plain area were significantly greater than the students of the hill area. The Lower Limb Length of the students of plain area was significantly greater than the students of the hill area. In case of Cardio respiratory endurance, it was found that the endurance of the hill area people was significantly better than the people of the plain area.

Keywords: Cardio respiratory endurance, anthropometric

Introduction

Each and every living organism is a product of heredity and guided by environment. The geographical location, the climate, soil character, weather etc. influence a lot in the process of growth and development of an individual. The unicellular body converts into multicellular body through cell division and this cell division totally depend upon movement. The movement pattern activates by the musculoskeletal system and co-ordinates by the nerve system. Different anthropometrical measures generally show the structural boundaries with the influence of the lung and heart capacity about the execution of different movement and locomotion.

Demographically there are many reasons which are liable to motivate, stimulate and guide the existing life style. Due to the very active life style and low oxygen concentration in the air and low atmospheric pressure the inhabitants of the hill area are physically fit and physiologically much active in comparison to the plain people. The lower center of gravity provides extra advantage in maintaining balance resulted in to better flexibility, agility, suppleness and body part coordination. It ultimately shapes their psychological characteristics. The short height gives some advantage in case of stability and helps to carry extra weight in comparison to the plain area people. The structural configuration in both areas provides some interest to search some relative information to assess the social, cultural bonding. The oxygen deficiency level habituated them to become more active in comparison to the plain area people. It ultimately shapes their physiological characteristics. In this context the present researcher took the responsibility to find out whether there was any difference in case of Cardio respiratory Endurance.

The study related to the comparative analysis of selected anthropometric measures among hill and plain area adolescents' girls are not very new in different advanced countries. In India, these trends are rather new. At first it was the grasps area of the medical practitioners and gradually the physical education professionals enter into this area for their own area of search.

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Numerous studies already have carried out with a limited study in India. Till now there is no specific information about the anthropometric variables and the status of cardio respiratory endurance in hill and plain area adolescent's girls. The present study concerned only with the anthropometrical measures and cardio respiratory endurance in hill and plain area adolescent's girls.

Methodology

60 girls' students (N=60) of age of 12 years (11 to up to below 12 years) from two schools belonging to Daukimari DN High School and Gadheyarkuthi High School of Jalpaiguri District were considered as the Hill area subject and 100 students (N=100) of age of 12 years (11 to up to below 12 years) from 3 schools belonging to Paschim Midnapore District were considered as the Plain area subject. Those schools were Andhichak High School, Ghoshhdiya High School, and Goatgaria High School. All students selected in this study were studying in standard VII. Only the standing height, sitting height, lower limb length, weight and

the cardio respiratory endurance were considered as the measured variables. The said criterions were measured for three days in both the areas.

At the beginning the name and age were recorded. Then the different anthropometrical measures such as the standing height, sitting height, lower limb length and weight were recorded with in two days. Following day the cardio respiratory endurance was measured and recorded.

Results & discussion

Through measurement quantitative aspect of variables were being determined. Whereas through evaluation the extent to which objectives being achieved were determine. The data obtained from the variables such as weight, standing height, sitting height, lower limb length and cardio respiratory endurance were statistically analyzed adopting standard methods such as mean, standard deviation and standard error. For testing the significance of the difference between two means 't' test was employed and the level of significances were chosen at .05 level.

Mean standard deviation, standard error, and 't' ratio of selected anthropometric measurements and cardio respiratory endurance

Variables	Mean S.D. (Hill area)	Mean S.D. (Plain area)	S.E.		't' ratio
			(Hill Area)	(Plain Area)	
Weight (in Kg.)	35.6±5.24	34.92±6.67	0.68	0.66	0.63
St. Height (in Cm.)	118.84±21.10	147.62±7.42	2.72	0.74	12.46*
Sit. Height (in Cm.)	58.22±12.62	71.74±3.74	1.63	0.37	9.39*
Lower Limb length (in Cm.)	63.05±10.48	75.57±6.07	1.35	0.60	8.97*
Cardio respiratory Endurance (in Sec.)	154.5±30.36	174.89±29.75	3.91	2.97	3.89*

0.05 levels of significance

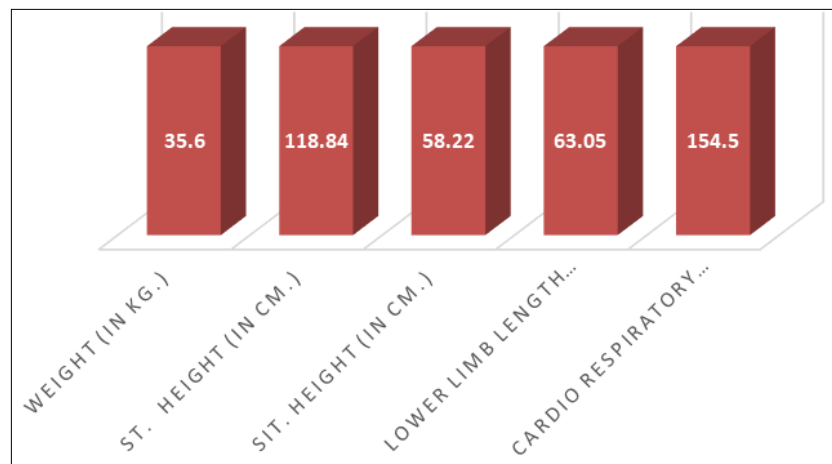


Fig 1: Mean (Hill Area)

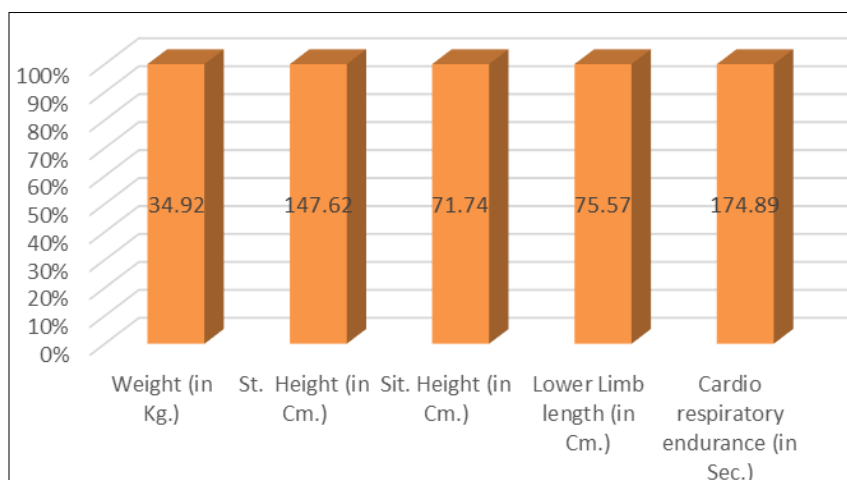


Fig 2: Mean (Plain Area)

Weight: The mean and standard deviation of weight of the hill area and the Plain areas students were 35.6k.g, 5.24k.g. and 34.92k.g, 6.67k.g. Respectively. The computed t (0.63) was found to be lower than the critical t (1.960) value. So, it may be concluded that the mean body weight of hill & plain area students at the age group of 12 years did not differ significantly.

Standing Height: the mean and standard deviation of weight of the hill area and the plain areas students were 118.84 cm, 21.10c.m. and 147.62 cm, 7.42c.m. Respectively. The computed t (12.46) was found to be higher than the critical t (1.960) value. So, it may be concluded that the standing height of hill & plain area students at the age group of 12 years differed significantly.

Sitting Height: the mean and standard deviation of weight of the hill area and the plain areas students were 58.22cm, 12.62c.m. and 71.74cm, 3.74 cm. respectively. The computed t (9.39) was found to be higher than the critical t (1.960) value. So, it may be concluded that the sitting height of hill & plain area students at the age group of 12 years differed significantly.

Lower Limb Length: the mean and standard deviation of weight of the hill area and the plain areas students were 63.05c.m, 10.48c.m. and 75.57c.m.6.07c.m. Respectively. The computed t (8.97) was found to be higher than the critical t (1.96) value. So, it may be concluded that the lower limb length of hill & plain area students at the age group of 12 years differed significantly.

Cardio Respiratory Endurance: the mean and standard deviation of cardio respiratory endurance of the hill area and the plain area students were and respectively. The computed t (3.89) was found to be higher than the critical t (1.960) value. So, it may be concluded that the cardio respiratory endurance of hill & plain area students at the age group of 12 years differ significantly.

The weight of the student of hill and plain area did not differ significantly but the standing height, sitting height, lower limb length of the plain area students found significantly greater than the hill area students. This could be due to the genetic factor. Genetically the height of the hill area people is short having the lower point of Centre of Gravity thus having greater balance, stability in comparison to that of people belonging to plain area. The cardio respiratory endurance of the hill area students is significantly better than the plain area students as due to the low pressure and low oxygen density in the atmosphere of the altitude. Due to this Oxygen depletion layer the internal respiratory system adapted to work more efficiently and economically than the plain area students.

Conclusions

- a. There was no significant difference of weight between the students of the plain area and the hill area.
- b. The height of the students of plain area was significantly greater than the students of the hill area.
- c. The sitting height of the students of plain area was significantly greater than the students of the hill area.
- d. The lower limb length of the students of plain area was significantly greater than the students of the hill area.
- e. The cardiorespiratory endurance of the hill area students were significantly higher than the students of the plain area.

References

1. Astrand, Per-Olaf, Kare Rudael. Text Book as Work Physiology, New York: McGraw Hill Company, 1977.
2. Clarke Harrison H, David Clarke H. Application of Measurement in Physical Education, Engle Wood Cliffs, New Jersey: Prentice Hall Ink, 1987.
3. Strukie PJ. Basic Physiology, New York: Sprinter viviegInc, 1981.
4. Johnson Barry L, Nelson Jack K. Practical Measurements for Evaluation in Physical Education-3rd Surjeet Publications. Delhi, 2008.
5. Gill Jagtar Singh, Brar RS, Rathee Nirmaljit Kaur. Essentials of Physical Education-3rd enlarged edition, Kalyani Publisher, 2008.