



A STUDY ON PHYSICAL FITNESS VARIABLES BETWEEN SCHOOL CHILDREN RESIDING AT LESS POLLUTED AREA AND MORE POLLUTED AREA

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Abstract

The purpose of the study was to compare the physical fitness between school children residing at less polluted and relatively more polluted area. The subjects from more polluted zone were the students of various schools of Khetri Nagar (Rajasthan) where Hindustan Copper Plant is situated was selected, while students of schools of Chirawa (Rajasthan) where there is no industrial plant, was selected as less polluted zone. The subjects were 400 male students from each zone, studying in classes IX to XII i.e. 14 to 18 years of age. Selected physical fitness variables were shoulder strength, abdominal strength and endurance, agility, power, speed and cardio-respiratory endurance. The data were collected from both the zones and in order to find out the difference between more polluted and less polluted zone, means of each of the group were tested for significance by using the 't' test; The level of significance was 0.05. The study concluded that the subjects of class IX to XII belonging to more polluted and less polluted zones differ significantly in most of the variables from each other.

Keywords: Shoulder strength, Abdominal strength and Endurance.

Introduction

Environment means whatever surrounds the individual. In other words, whatever surrounds the individual constitute his environment. It is also known as external environment which includes the air, water, soil, noise, sun radiations etc. On the other hand, everyone has internal environment which consists of his body, his internal systems and their functions. The body maintains balance between the external and the internal environment, but sometimes the state of balance is disturbed due to the environment pollution and diseases are caused.

Out of various types of pollution (air pollution, water pollution, noise pollution etc.) air pollution is continuously increasing rapidly has become a matter of concern because the immediate environment of man comprises of air on which depends all forms of life. The release of air pollutants in atmosphere directly affects the health and physical fitness of human beings. The purpose of the study was to assess the effect of air pollution on selected physical fitness variables of school children of 14- 18 years of age belongs to more polluted and relatively less polluted area.



Methodology

Study was conducted in two zones i.e. more polluted zone for which various schools of Khetri Nagar, district Jhunjhunu (Rajasthan) where Copper plant is situated which produces copper metal as main produce along with sulphuric acid and single super phosphate fertilizer, was selected while the less polluted zone of rural area for which various schools of Chirawa, district Jhunjhunu (Rajasthan) which is purely a rural belt, with less air pollution and no industrial plant, was selected. Subjects were 400 male students from each zone studying in classes IX to XII belonging to mostly from middle class families. Thus, there was homogeneity among the subjects as they were of same group representing a class of same standard in life style, food habits, daily routine etc. the main difference was in their zonal distribution of residence.

Selected physical fitness variables were arm and shoulder strength, abdominal strength and endurance, agility, power, speed and cardio respiratory endurance. AAHPER youth fitness test was selected for measure selected physical fitness variables..

The subjects were divided into four groups according to the class of students i.e. IX, X, XI & XII as A, C, E and G of more polluted zone and B,D,F and H from less polluted zone respectively. In order to find out the difference between the means of selected physical fitness variables of more polluted and less polluted groups; the data were subjected to the 't' test. The level of significance was kept at 0.05.

Analysis of Data

The comparison of means of selected physical fitness variables of subjects of class IX-XII from more polluted and less polluted groups are presented in table no.01.

TABLE NO.01
COMPARISON OF MEANS OF SELECTED PHYSICAL FITNESS VARIABLES OF IX- XII CLASS STUDENTS FROM MORE POLLUTED AND LESS POLLUTED ZONE

Class		Arm & Shoulder Strength (nos)	Abdominal Strength & Endurance (nos.)	Agility (Sec.)	Power (feet)	Speed (Sec.)	Cardio respiratory Endurance (Sec.)
	MEAN (A)	3.37	21.79	11.27	6.89	7.64	147.93
	MEAN (B)	6.56	25.10	10.94	7.43	7.43	144.99
IX							
	DM	3.19	3.31	0.33	0.54	0.21	2.94
	't' ratio	8.67*	5.61*	4.40*	6.65*	3.89*	1.28
	MEAN (C)	4.50	23.30	10.95	7.46	7.60	140.70
	MEAN (D)	7.53	26.58	10.37	7.67	7.28	135.40
X							
	DM	3.03	3.28	0.58	0.21	0.32	5.30
	't' ratio	7.55*	6.10*	8.11*	2.96*	5.71*	2.17*
	MEAN (E)	5.57	25.47	10.71	7.30	7.36	140.42
	MEAN (F)	7.46	26.99	10.40	7.73	7.28	140.15
XI							
	DM	1.89	1.52	0.31	0.43	0.08	0.27
	't' ratio	4.46*	2.40*	4.24*	4.86*	1.17	0.12
	MEAN (G)	5.54	23.42	10.97	7.59	7.41	141.66
	MEAN (H)	8.58	25.94	10.46	7.68	7.30	139.55
XII							
	DM	3.04	2.52	0.51	0.09	0.11	2.11
	't' ratio	7.64*	3.96*	6.75*	1.42	1.90	0.88

* Significant at 0.05 level $t_{(0.05)(198)} = 1.97$



Results of the Study

Within the limitations of the study the following are the results -

The performance of subjects in pull ups showed that the subjects of all the classes belonging to less polluted zone had better shoulder strength than the subjects belonging to more polluted zone.

In case of sit ups, the performance revealed that the subjects of all the classes belonging to less polluted zone had better abdominal strength than the subjects belonging to more polluted zone.

The performance of shuttle run also revealed that the subjects of all the classes belonging to less polluted zone had better agility (coordinative ability) compare to the subjects belonging to more polluted zone.

The subjects of class IX, X and XI belonging to less polluted zone had performed better in standing broad jump which states that they have better explosive strength than the subjects of more polluted zone. But there was no significant difference found between the subjects of class XII belonging to both the zones.

The performance of 50 yard dash made it clear that the subjects of class IX and X belonging to less polluted zone had better speed than the subjects of more polluted zone. Whereas, there was no significant difference found between the subjects of class XI and XII belonging to both the zones.

In case of 600 yard run/walk the performance revealed that the subjects of only class X belonging to less polluted zone had shown better cardio respiratory endurance than the subjects of more polluted zone. Whereas, there was no significant difference found between the subjects of class IX, XI and XII belonging to both the zones.

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