EFFECT OF SMOG ON THE ENDURANCE CAPACITY OF THE FEMALE ATHLETES

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ABSTRACT: -

Environment is the surroundings or the atmosphere around us. It is the living and the non-living matter present around us. There are several environmental conditions which sometimes are beyond our control and are the byproduct of natural and man-made consequences. The present study was conducted to analyze the presence and absence of smog in the environment on the endurance capacity of the female athletes. The subjects chosen for the study were 20 physical education students of Chaudhary Devi Lal University Sirsa. The age of the subjects ranged between 19 to 25 years. The endurance capacity was analyzed using Cooper 12-minute run and walk test. The pre-and post-test results was analyzed using students "t-test". The level of significance was set at 0.05. The findings of the study concluded that the presence of smog has a negative effect on the endurance capacity of the female physical education students. Therefore, it was recommended that the training of endurance should be avoided in the presence of smog.

KEYWORDS: Endurance Capacity, Smog, athletes.

INTRODUCTION :

As it is rightly said that all the living beings are a product of the heredity and the environment. Heredity consists of the genes which we pass on to generations and the environment plays a significant role to nurture those genes and help us evolve into what we are. There are several climatic conditions which favor us both positively and negatively. To a certain extent we have learned to survive in the most severe conditions of high or low temperatures. When we talk about sports, it is not the matter of survival but we have to perform to the highest level. Fog is a natural phenomenon which occurs when moist air is cooled to its saturation point while smog occurs due to the presence of hazardous chemicals like nitrogen oxide, Sulphur oxide, carbon mono-oxide in the atmosphere due to automobile exhaustion, factories, coal plants and other smoke generating sources. Smog is dangerous hazardous to our lungs. The standard air quality is measured by two indicators namely PM 2.5 and PM 10 which is the particulate matter in the air. Particles less than 10 micrometers in diameter (less than the width of a single human hair) are so small that they can easily get into our alveoli's during respiration and can cause serious health problems. The other health risks associated are irritation of the eyes, nose and throat, shortness of breath, reduced lung function, irregular heartbeat and several other lung and heart diseases. The study became more important to analyze whether to continue sports activities during the smoggy season or to halt all the sporting activities.

METHOD AND PROCEDURE

The primary objective of the study was to compare the mean scores of the endurance capacity of the female athletes in the presence and absence of smog in the environment. The secondary objective was to analyze the endurance capacity of the female athletes.

SIGNIFICANCE OF THE STUDY

• The study will assist the female athletes to analyze their Endurance capacity both in the presence and absence of smog.
• The study will further assist to understand the effect of smog on endurance performance.
• The study will be helpful for the coaches and the Physical Education Teachers to understand the effects of smog on the respiratory capacities of the players and to formulate the training sessions during the smog.
• The study will be helpful for the general public to understand the effect of fog on the health.

Based on the literary evidence it was Hypothesized that there will be significant effect of smog on the endurance capacity of the female athletes in the presence of smog when compared to the absence of smog in the environment.

The study was delimited to the female athletes of Chaudhary Devi Lal University, Sirsa and the age group of the subjects ranged between 19-25 years. All the subjects were graduates and above.

Test Description: The Cooper 12-minute run/walk test was used to analyze the endurance capacity of the athletes. All the subjects were briefed about the test in advance to get them mentally prepared. When there is smoggy season it is for 10-12 days in continuation during the morning till noon. A rest period of 72 hours was given to the subjects to adequately recover from the previous test (absence of smog in atmosphere). During the rest period the schedule of the athletes was not tinkered with.

Table 1.1 Test Analysis of the Female Athletes

Group	N	Mean	S.D.
Absence of Smog	20	2392	178.31
Presence of Smog	20	2153	146.26

Figure 1.1
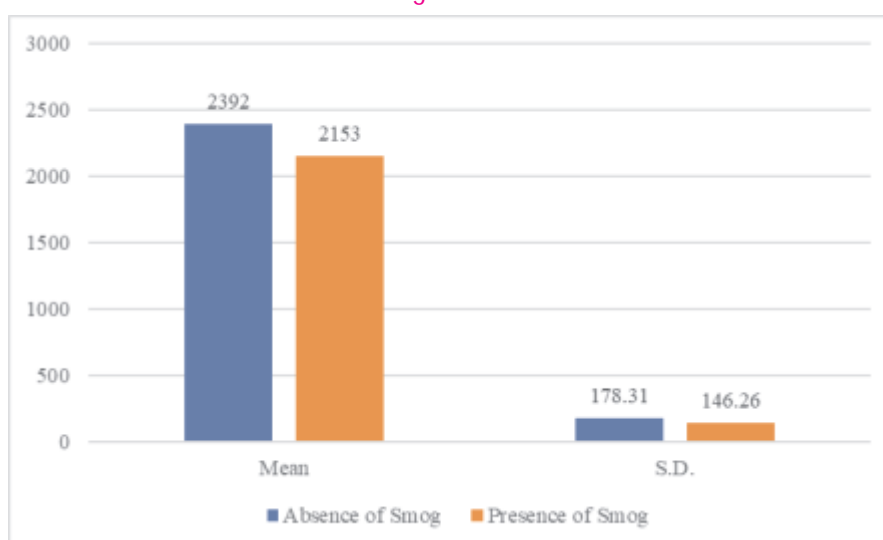
The data from the above table & figure 1.1 shows that the mean value of female athletes for the Absence of Smog is 2392 and for the presence of Smog is 2153. The Standard Deviation of the Female athletes in the Absence of Smog is 178.31 and in the presence of Smog is 146.26 which also states that the score of the athletes in the presence of Smog is more uniform or the Smog has its effect on almost all the athletes at equal intensity.

Table 4.2 Analysis of Endurance Capacity of The Female Athletes

Group	N	M	S.D.	Std. Error Mean	DF	't' Value	'p' value	Remarks
Absence of Smog	20	2392	178.31	39.87	38	4.63	.000	Significant
Presence of Smog	20	2153	146.26	32.70				

Interpretation – The mean value of female athletes on whom the Cooper Test was applied i.e. 12 minutes run and walk test in Absence of Smog is 2392 and in the Presence of Smog is 2153 and S.D. value of Absence of Smog is 178.31 and in the presence of Smog is 146.26. The standard error of Mean was calculated as 39.87 and 32.70 respectively. The calculated 't' value is 4.63, which is greater than standard table value of 1.68 at degree of freedom of 38. The results are significant at 95% level of confidence. However, the results were also checked at 0.01 level of significance and it was found that the calculated t value of 4.63 is higher than the table value of 2.428. Therefore, the results are higher significant at 99% level of confidence. We retain the hypothesis that the Smog has a significant effect of endrance capacity of the female athletes as the performance of the athletes decreased drastically in the presence of Smog. The findings of the study also coincide with other studies conducted by environmentalists and several media personal when the Smog has gas chambered Delhi in the recent days.

SUGGESTIONS OF THE STUDY

The sportspersons should avoid practicing hard during the smog and should try to practice indoor. Even cycling and brisk walks should also be avoided as it reduces visibility and ameliorates Lung and Heart risks.

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