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THE IMPACT OF PHYSIOLOGICAL FACTORS ON RURAL AND URBAN ATHLETES

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ABSTRACT

It is widely recognized that the body's physiological functions enhance with activity and diminish with inactivity. In particular, the heart, lungs, and muscles grow stronger and more resilient the more they are exercised. Physical activity boosts the heart muscle. Increased demands on the heart lead it to enlarge and become more powerful through exercise. An individual who engages in regular exercise has a lower heart rate, and this rate normalizes more rapidly post-exercise compared to that of a sedentary individual (William and Charles, 1988). Considering the primary goals of the study, the suitable design is implemented. The research involved a sample of 200 athletes (male and female, rural and urban) randomly chosen from different colleges in the Mysore division, based on participation levels. Heart rate or pulse rate refers to the number of heartbeats per minute (Morehouse and Miller, 1976). Systolic blood pressure refers to the highest level of blood pressure. It happens during the heart's systole (Range 100-120 mm Hg) (Selvam, 2000).

Keywords: Resting Pulse Rate, Systolic Blood Pressure, and Diastolic Pressure etc.

INTRODUCTION

It is widely recognized that the body's physiological functions enhance with regular use and diminish with a lack of use. In particular, with increased use, the heart, lungs, and muscles grow stronger and more resilient.

Physical activity enhances the strength of the heart muscle. Increased demands on the heart lead to its enlargement and strength enhancement through activity. Individuals who engage in regular physical activity tend to have a lower heart rate, and this rate normalizes more rapidly following exercise compared to that of an inactive person (William and Charles, 1988).

Heart rate rises linearly as oxygen consumption grows in both trained and untrained people. Endurance training typically results in a decrease in the resting heart rate (Bradycardia). For example, the resting heart rates of well-trained athletes can be as low as or even lower than 40 to 45 beats per minute. Conversely, in healthy individuals who are not physically trained, resting heart rates can reach between 90 and 100 beats per minute. Therefore, the trained individual is typically identified by a low resting heart rate, while the untrained individual exhibits a high resting heart rate (Larry, 1982).

From the beginning of competitive sports, humans have sought a component that would create a remarkable athlete. Sports and games have grown swiftly with the systematization of abilities, methods, and approaches. The majority of scientific proof indicates the necessity of particular elements for every game or sport. Every element relies on a scientific method. In other terms, each game imposes particular requirements on the player based on the game's type, duration, participation intensity, skill execution level, and game strategy.

Significance of the study

The application of physiological factors makes the players more successful.

questions

The present study raised the following questions and attempted to answer them:

1. Is there any effect of physiological factors pulse rate and blood pressure on the performance of sports persons?
2. Are there any significant differences between/among different sample sub groups?

Objectives

The following are the objectives of the present study:

1. To assess the effect of pulse rate on the performance of rural and urban sports persons.
2. To assess the effect of blood pressure on the performance of rural and urban sports persons.

Hypotheses

The following are the hypotheses of the study and attempt is made to prove them:

1. There would be effect of pulse rate on the performance of players in motor tests.
2. There would be effect of blood pressure on the performance of players on motor test.

METHOD

The Sample:

Keeping the major ojectives of study in view, the appropriate deisgn is followed. The study was conducted on the sample of 200 sports persons (both male and female & rural and urban) selected randomly from varius colleges of Mysore division was done on the criterion of level of a particiaption.

Table –1 : Distribution of Sample

Age group	Male	Female	Total
Below 20 years	50	50	**100**
Above 20years	50	50	**100**
Total	**100**	**100**	**200**

Physiological variables:

Physiological is a science that deals with the functions of the normal human body. It is closely linked with the study of all living things (Fox, 1984).

- **Resting Pulse Rate:** Pulse rate or heart rate is the rate of beats of the heart per minute (Morehouse and Miller, 1976).
- **Systolic Blood Pressure:** Systolic blood pressure is the maximum blood pressure. It occurs during the systolic of the heart (Range 100-120 mm Hg) (Selvam, 2000).
- **Diastolic Blood Pressure:** Diastolic blood pressure is the minimum blood pressure. Occurs during the diastolic of the heart (Range 60-80 mm Hg) (Selvam, 2000).
- **Breathe Holding Time:** It is the duration of time through which one can hold his breath without inhaling or exhaling after a deep inhalation (Strukic, 1981).

Table – 1: Tests selection

Sl. No.	Continuous variables	Test items	Unit of measurements
1	Resting pulse rate	Radial pulse method	In numbers
2	Blood pressure	Electronic BP meter	In mm/Hg
3	Breath holding time	Manual nose clip method	Seconds

Table – 2: Intra class co-efficient of correlation on selected variables

Sl. No.	Variables	'R' value
1.	Resting pulse rate	0.98*
2.	Blood pressure	0.93*
3.	Breath holding time	0.94*

* Significant at 0.01 level of confidence

ADMINISTRATION OF TESTS:

- **Resting pulse Rate:**

Purpose : To record the resting pulse rate per minutes.

Equipments : Stop watch and chair were used.

Procedure

The pulse rate of all the subject were recorded in a sitting position in the morning session between 6 AM before taking the pulse rate, the subjects were asked to sit in a chair and relax for 15 min. To record the pulse rate, the three finger tips were placed or the left radial artery at the wrist in such a manner that pulse was clear and the number of pulse were conducted for 15 seconds and then multiplies by four to record for full minute.

Blood pressure (Systolic pressure)

Purpose

To measure the resting systolic blood pressure of subjects.

Equipment

Electronic blood pressure meter, stethoscope and stop watch.

Procedure and scoring

The subjects were given instructions regarding the procedures of the systolic blood pressure at resting period. The cuff of the electronic blood pressure meter was wrapped around the bare arm above the elbow. Now the electronic BP meter was switched on by using the button then the machine showed the blood pressure measurements in mm/Hg automatically. The scoring was given on the basis of systolic blood pressure.

Blood pressure (Diastolic pressure)

Purpose

To measure the resting diastolic blood pressure of subjects.

Equipment

Electronic blood pressure meter, stethoscope and stop watch.

Procedure and scoring

The subjects were given instructions regarding the procedures of the diastolic blood pressure at resting period. The cuff of the electronic blood pressure meter was wrapped around the bare arm above the elbow. Now the electronic BP meter was switched on by using the button then the machine showed the blood pressure measurements in mm/Hg automatically. The scoring was given on the basis of diastolic blood pressure.

Breathe holding time:

Purpose

The purpose was to measure the ability of the subject hold the breath for longer time.

Equipments: A stop watch, score sheet, were used to administer this test.

Procedure

The subject stood at ease and inhaled deeply after which he held his breath for length of time possible to him. The index finger of the respondent served as an indicator to the investigator to know the start and end of the recording time the thumb and middle finger were used to hold the nose to avoid letting the air through the nostrils. The subjects were requested not to let the air out by opening the mouth while recording the breath holding time.

Scoring:

The time of holding the breath till one subject let the air out was clocked by using the stopwatch to the nearest one tenth of a second as breath holding time.

Statistical Tools:

- t-test to compare the sample sub-groups.
- Correlation-r to examine the relationship between the variables.
- Analysis of Variance (ANOVA) to assess independent effect of each independent variable on dependent variable.

RESULT:

The physiological performances of the variables are explained below in the tables.

Respiratory Rate:

The average score across the physiological fitness test respiratory rate, among the rural and urban sports persons of Mysore division were 20.89 and 20.82 respectively. The standard deviations were 2.35 and 2.33 respectively. The‘t’ test score was 0.25. There was no significant difference as per the‘t’ test at 0.05 level.

Pulse Rate:

The average score across the physiological fitness test pulse rate were 79.35 and 79.26 respectively. The standard deviation was 6.20 and 4.76 respectively. The ‘t’ test score was 0.14. There is no significant difference as per the ‘t’ test at 0.05 level.

Systolic Blood:

The average score across the physiological fitness test systolic blood pressure is 106.93 and 107.67 respectively. The standard deviations were 8.11 and 7.37 respectively. The‘t’ test score was 0.82. There was no significant difference as per the‘t’ test at 0.05 level.

Diastolic Blood Pressure:

The average score across the physiological fitness test diastolic blood pressure were 70.73 and 71.53 respectively. The standard deviations are 4.50 and 3.62 respectively. The't' test score was 1.70. There was no significant difference as per the't' test at 0.05 level.

CONCLUSION

There is a significant difference in physiological variables i.e., respiratory rate, pulse rate, systolic and diastolic blood pressure on the performance of players.

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