

ANALYSIS OF THE SELECTED PHYSIOLOGICAL VARIABLES OF ADOLESCENT SCHOOL BOYS WITH DIFFERENT GEOGRAPHICAL REGIONS OF KARNATAKA

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Abstract: The purpose of the study is to know the physiological variables of the school boys and to compare the selected physiological variables of the adolescent school boys under plain, coastal and hills areas of Karnataka region. To achieve the purpose of the study, three hundred adolescent school boys studying in secondary schools of plain, coastal and hills of different regions of Karnataka with the age ranging from 13 to 15 years were randomly selected. The physiological variables such as Breath Holding Time measured manually in secs, pulse rate by using digital heart rate monitor in beats/minutes and VO₂ Max by administering Queen College Step Test in ml/kg/min. The One-way Analysis of Variance (ANOVA) was used to find out the significant difference among adolescent school boys of different regions of Karnataka (plain, coastal and hills region areas of Karnataka). The Scheffe's Post Hoc test was used to find out the significant difference in the paired means. The level of significance was fixed at 0.05 level. The result shows that there was significant difference in the breath holding time and pulse rate among the adolescent school boys with different geographical regions of Karnataka and no difference exists in the Vo₂ max. The adolescent boys of hills area have better breathing holding time and pulse rate when comparing with coastal and plain areas. The adolescents from hills area had more breathing capacity and better hear rate when compared with coastal and plain area it may be due to their physical activities, nature of life styles and geographical climate. The students from plain area need to participate in more physical activities and active in more endurance training for increase their breathing capacity as well as heart rate which is helpful to better health and wellbeing.

Index Terms- Pulse Rate, Breath Holding Time, VO₂ Max, Plain, Coastal, Hills, Adolescent School boys

I. INTRODUCTION

The study of physiology is, as it were, the investigation of life. It poses inquiries about the inward operations of living beings and how they interface with their general surroundings. Physiology tests how organs and frameworks inside the body work, how they impart, and how they consolidate their endeavors to make conditions optimum for survival. Human physiology, explicitly, is frequently separated into subcategories; these points spread a tremendous measure of data.

Sports physiology is the investigation of the long-and transient impacts of training and conditions on competitors. This specific field of study goes connected at the base with human life structures. Anatomy about structure, where physiology is about capacity. Sports Training Principles are vigorously established in this field. Impacts of body structure, adaptability training, hydration, natural conditions, and carbohydrate stacking on athletic execution are just a couple of the points investigated in this field. Exercise physiologists, physicians, and athletic trainers can apply and examine discoveries from concentrates to prompt competitors on subjects concerning sustenance, sport-related wounds, and different issues identified with sports prescription. Sports physiology is gotten from exercise physiology. It applies the idea of exercise physiology to training the competitor and improving the competitor's sports performance. As physiology basically centers around the elements of structures, we can't talk about physiology without knowing life structures. Likewise, we can't comprehend the life systems and physiology until and except if we know the arrangement of human body.

Breath holding time is the time taken by the subject to hold his breath as long as he can. Amid deliberate breath holding, tissues keep on using oxygen and liberate carbon dioxide. The time when breathing can never again be willfully hindered is known as the limit. Breath-holding capacity turns out to be critical in certain sports, especially free diving. Heart rate is the quantity of heartbeats per unit of time, for the most part every moment. The heart rate depends on the quantity of compressions of the ventricles (the lower councils of the heart). The heart rate might be excessively quick (tachycardia) or excessively moderate (bradycardia). The beat is a lump of a conduit from rushes of blood that course through the veins each time the heart pulsates. The beat is frequently taken at the wrist to assess the heart rate. The heart rate is the times the heart pulsates over the course of about a moment. The heart is a strong organ in the focal point of the chest. When it pulsates, the heart siphons blood containing oxygen and supplements around the body and brings back waste items. A sound heart supplies the body with simply the appropriate measure of blood at the correct rate for whatever the body is doing at that time for a normal person. For instance, being alarmed or shocked consequently discharges adrenaline, a hormone, to make the heart rate quicker. This readies the body to utilize more oxygen and vitality to escape or face potential peril.

VO₂ max, otherwise called maximal oxygen take-up, is the estimation of the maximum measure of oxygen an individual can use amid extraordinary exercise. It is a typical estimation used to build up the oxygen consuming continuance of a competitor before or over the span of training. It is one of a few tests used to decide a competitor's cardiovascular wellness and execution limit. VO₂ max is estimated in milliliters of oxygen utilized in one moment for every kilogram of body weight (mL/kg/min). It depends on the reason that the more oxygen a competitor expends amid abnormal state exercise, the more the body will generate adenosine triphosphate (ATP) vitality in cells. ATP is frequently alluded to as the "atomic unit of money" of intracellular vitality,

In geology, a plain is a level, clearing landmass that for the most part does not change much in rise. Plains happen as swamps along the bottoms of valleys or on the doorsteps of mountains, as coastal plains, and as levels or uplands. A hill is a landform that stretches out over the encompassing landscape. It frequently has an unmistakable summit, in spite of the fact that in regions with scarp/plunge geology a hill may allude to a specific segment of level landscape without a gigantic summit (e.g., Box Hill, Surrey). The coast, otherwise called the coastline or seashore, is where land meets the ocean or sea, or a line that shapes the limit between the land and the sea or a lake. An exact line that can be known as a coastline can't be resolved because of the Coastline conundrum. The present research is to know the physiological status among school boys and also to compare the selected physiological variables of the adolescent school boys from different geographical regions of Karnataka.

II. STATEMENT OF THE PROBLEM

The purpose of the study is to know the physiological variables of the school boys and to compare the selected physiological variables of the adolescent school boys under plain, coastal and hills area of Karnataka region.

III. HYPOTHESIS

It was hypothesized that there was no significant difference in the selected physiological variables (Breath Holding Time, Pulse Rate and VO₂ Max) of the adolescent school boys under plain, coastal and hills regions of Karnataka.

IV. METHODOLOGY

4.1 Selection of Subjects : To achieve the purpose of the study, three hundred adolescent school boys studying in secondary schools of plain, coastal and hills of different regions of Karnataka with the age ranging from 13 to 15 years were randomly selected.

4.2 Selection of variables and criterion measures

The following physiological variables were selected for the present investigation:

1. Breath Holding Time: Manual (In Secs.).

2. Pulse Rate : Digital Heart Rate Monitor (Beats/Minute)

3. VO2 Max : Queen College Step Test (In ml/kg/min)

4.3 Statistical Technique

The One-way Analysis of Variance (ANOVA) was used to find out the significant difference among adolescent school boys of different regions of Karnataka (plain, coastal and hills region areas of Karnataka). The Scheffe's Post Hoc test was used to find out the significant difference in the paired means. The level of significance was fixed at 0.05 level.

V. RESULTS OF THE STUDY

The One-way ANOVA (F test) results on the selected Physiological Variables scores of the adolescent school boys with different geographical areas.

Table-1: Shows One-Way ANOVA Analysis on physiological variables of adolescent school boys with different geographical areas.

Physiological Variables	Groups	Sum of Squares	df	Mean Squares	F Value	Level of Sig.
Breath Holding Time	Between Groups	241.719	2	120.859	4.51	Significant at 0.05
	Within Groups	7954.921	297	26.784		
	Total	8196.640	299			
Pulse Rate	Between Groups	815.447	2	407.723	5.07	Significant at 0.05
	Within Groups	23865.470	297	80.355		
	Total	24680.917	299			
VO2 Max	Between Groups	2.795	2	1.398	0.10	Not Significant
	Within Groups	4069.222	297	13.701		
	Total	4072.018	299			

Groups: Plain, Coastal and Hills (Each N=100) ; Table value at 0.05(df-2, 297); 3.03

The table-1 shows that the obtained 'F' value of 0.10 for VO2 max is less than the table value of 3.03 for df '2 and 297' required for the significance at 0.05 level of confidence. The results of the study indicate that there is no significant difference in the VO2 max among the adolescent boys with different geographical regions of Karnataka (Plain, Coastal and Hills area).

The above table also shows that the obtained 'F' values of 4.51 and 5.07 for the breath holding time and pulse rate are greater than the table value of 3.03 for df '2 and 297' required for the significance at 0.05 level of confidence. The results of the study indicate that there is significant difference in the breath holding time and pulse rate among the adolescent boys with different geographical regions of Karnataka (Plain, Coastal and Hills area). To determine the significant difference in the said criterion variables among these paired means, the Scheffe's test was applied as the Post hoc analysis and the results are presented in Table-2.

Table-2: Scheffe's Post Hoc Analysis on physiological variables scores of the adolescent school boys with different regions of Karnataka.

Physiological Variables	Different Regions			Mean Difference	Critical Difference
	Plain	Coastal	Hills		
Breath Holding Time	30.569	29.418		1.151	1.801
		29.418	28.371	1.047	
	30.569		28.371	2.198*	

Pulse Rate	84.300	85.380		1.080	3.120
		85.380	81.470	3.910*	
	84.300		81.470	2.830	

*Significant at 0.05 level of confidence.

The above table shows significant paired mean differences in breath holding time between plain & hilly areas and the value is 2.198 which was greater than the critical difference value 1.801 at 0.05 level of confidence. It is concluded that there is a significant difference in breath holding time between the plain & hilly areas, and no difference exist between the plain & coastal areas; coastal & hilly areas. The adolescent boys of hills area have better breath holding time when compared with the coastal and plain area.

The table also shows significant paired mean differences in the pulse rate between the coastal & hilly areas and the value is 3.910 which was greater than the critical difference value 3.120 at 0.05 level of confidence. It is concluded that there is a significant difference in pulse rate between the coastal & hilly areas and no difference exist between the plain & coastal areas and plain & hills area. The adolescent boys of the hills area have better pulse rate when compared with the plain and coastal areas.

The following bar graph shows the comparison of mean scores on the breath holding time and pulse rate of the adolescent school boys with different geographical regions of Karnataka.

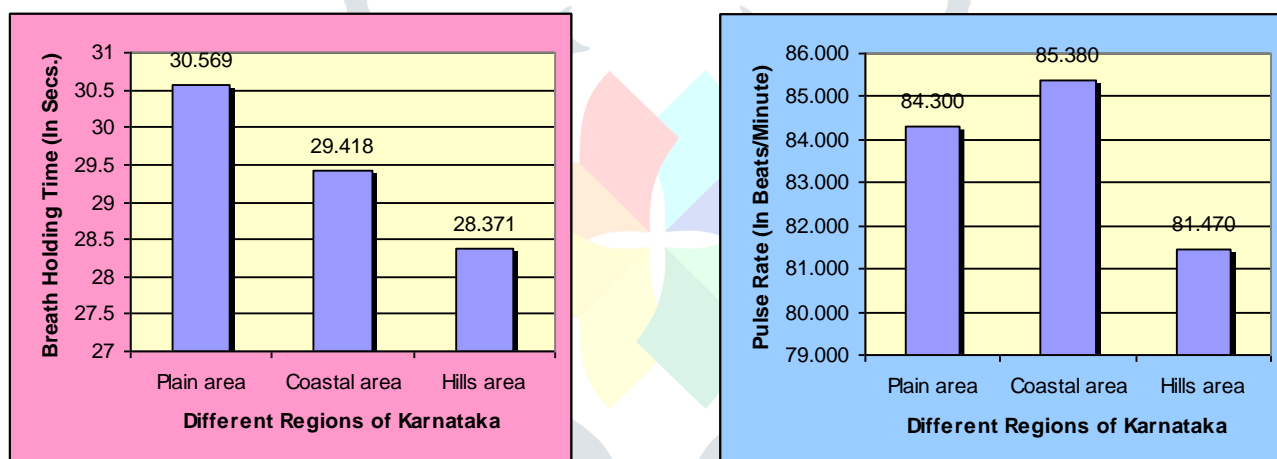


Fig.1: Comparison of mean scores on physiological variables of the adolescent school boys with different geographical regions of Karnataka.

VI. FINDINGS OF THE STUDY

The findings of the study as follows

1. There was a significant difference in Breath Holding Time among the adolescent boys with different geographical regions of Karnataka. The adolescent boys of hills area have better breath holding time when compared with the coastal and plain area.
2. There was a significant difference in Pulse Rate among the adolescent boys with different geographical regions of Karnataka. The adolescent boys of the hills area have better pulse rate when compared with the plain and coastal areas.
3. There was no significant difference in VO2 Max among the adolescent boys with different geographical regions of Karnataka.

VII. CONCLUSION

The result shows that there was significant difference in breath holding time and pulse rate among the adolescent school boys with different geographical regions of Karnataka and no difference exists in the Vo_2 max. The adolescent school boys from different regions of Karnataka had similar in resting heart time and VO_2 max. This may be due to geographical environment, nature of activities and food habits does not affect on their physiological components of resting heart rate and VO_2 max. The adolescent boys of hills area have better breathing holding time and pulse rate when comparing with coastal and plain areas. The adolescents from hills area had more breathing capacity and better heart rate when compared with coastal and plain area it may be due to their physical activities, nature of life styles and geographical climate. The students from plain area need to participate in more physical activities and active in more endurance training for increase their breathing capacity as well as heart rate which is helpful to better health and wellbeing.

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