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ASCENDS TO A HEIGHT OF PHYSIOLOGICAL INDEX PULSE AND OXYGEN SATURATION (SPO2) IN NON-ATHLETES

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ABSTRACT

Certainly the balance of nature and human history can be traced to human life; humans have always had an impact the nature or have been influenced by the environment and natural disasters. People, who climb very long mountains, were physical complications such as headaches, nausea and shortness of breath. Thus, given the importance of tourism as a fun and engaging activity present study examined the effect of male non-athletes required to upgrade the pso2, before climbing to altitude, climb rate stability changes after 48 hours, and 72 hours after the return is high. In this study, the height of 4400 meters to test the use of semi-empirical spo2 interferes with variable height. Among non-athletic men between the ages of 30 and 50 years who were purposefully selected, the effect of the independent variable (height) before the climb, climb 48 hours and 72 hours after landing on the dependent variable under study was spo2. To measure spo2 a portable ox meter was used. In order to analyze the test data of repeated measures (Repeated Measure) level (05/0> α) and using the software spss version 15. The results

showed that the difference between the average of the three variable pulse (05/0> α) was significant. Pulse rate, 48 hours, before climbing to an altitude of increased and this increase was partially remaining stable until 72 hours after returning home. Rate spo2, 48 hours in the presence of altitude before climbing down and this decrease relative to 72 hours after returning remain stable. According to the above results, the humidity is too low respiration rates increased in height and followed by increases in cardiac output and heart rate. Low levels of oxygen in the inspired air volume at high altitude reduces the alveolar and capillary pressure in the lungs oxygen contribution by and looking down, Hemo-globin saturation (spo2) is reduced.

Keywords: Height, Measure Pulse Rate, Spo2, Non-Athletes

INTRODUCTION

In the last two centuries, trekking activity as fun and engaging as a physical activity that has a special place among nations. Benefits of physical activity for people of different heights are that the coaches and athletes are used to [**1]** but the benefits may be problems for people in height. Spo2 the amount of oxygen that can be said with arterial blood (hemoglobin) combined with pulse oximetry is measurable **[2]**. At the height of the problem, not the lack or reduction of oxygen. Oxygen is the main contribution in reducing pressure Barometric pressure occurs **[3]**. The number of oxygen molecules per unit volume of air at a height decreased and reduced oxygen pressure to share, the lack of oxygen in the air is caused due to climb to altitude hypoxia **[1]**. Central nervous system may show the greatest sensitivity to hypo someone and irreparable harm to the patient, but the unit - used for respiratory conditions tolerates more moderate hypoxia **[3]**. Various researches seeks to answer questions such as length of stay at altitude, height and type of training and its impact on the performance of the human body are different devices. Oxygen plays a vital material for living organisms. And its lack of sensitivity differs for different devices depending on their body can vary in these circumstances **[3]**. Normally, about 97 percent oxygen transport in the body, red blood cells and hemoglobin in the blood is dependent on the chemical composition and the remaining three percent soluble form in plasma is transported into cells, High concentration of hemoglobin in the red blood cells ability to have 34 grams per deciliter **[2]**. Important factor affecting the physiological reactions of the air pressure and oxygen is reduced at altitude. The investigation found that the concentration of hemoglobin in the blood after a week's stay at an altitude of 3940

meters, As much as 25% increase, while plasma volume represents 14% reduced. Because of the increased concentration of hemoglobin, the oxygen delivered to the tissues increases the hematocrit rises to 50%, Decrease in plasma volume, blood viscosity increases, which means that it increases blood flow resistance changes and the amount of work the heart has more **[4]**. According to the above basic features, while climbing to altitude, climate change, environment so that the height of the oxygen concentration is reduced. This contributes to the pressure of oxygen; especially hypoxia in body height is created that causes the body's physiological responses to hypoxia. Elevations of physiological changes in the body are very important. Physiological changes with various factors such as length of stay in the height and duration of height climbers ascend changes **[5]**. Perform physical activities to enhance oxygen transport to muscles in the body depends and consumption of oxygen by the muscles is also important. Any disruption in this process hurts athletic performance **[6]**. However, the increase in blood factors should be carefully that the duration and intensity of exposure to hypoxic conditions is important, Physiological adaptation of staying in someone's height or hypothyroidism are varied and complex **[7]**. So according to the above main objective of this research work completed on the upgrade spo2 male non-athletes, before climbing to altitude, climb rate and stability of change after 48 hours, 72 hours after it is returned from a height. Also, the relationship between length of stay in the height and duration of height climbers climb with spo2 and pulse rate were also studied.

MATERIALS AND METHODS

Methods sampling and quasi-experimental research participants in this study population was non-athlete male workers employed in medical science has been the 325 subjects among them, 17 people between the ages of 5 and 30 years were selected purposefully. Before moving weights were determined using scales and by the professionals (nurses) in the first measurement and pulse spo2, pulse oximetry by Marc ForceHeal Prince-100 model was investigated. In the 48 hours after the subjects at an altitude of 4400 meters, people began to descend from the heights. The last 72 hours after landing from a height of physiological parameters (pulse rate and spo2) were measured. Certainly sampling stages and tested by technicians, tools, materials and equipment were identical. In order to analyze the data from the test of repeated measures (Repeated Measure) level

(05/0> α) and using the software spss version 15.

RESULTS

In order to describe variables, indicators of central tendency, measures of dispersion from the mean values, standard deviations were used. In order to assess the distribution of numerical variables, the theoretical normal distribution is used in compliance with the Kolmogorov – Aspirnof test. Since the P values in any of the variables studied was significantly lower than 05 / ≥ α were not so distributed variables with normal distribution theory can therefore adapt a parametric test was used to compare variables **(Table 1)**. The results showed that pulse rate, 48 hours, before climbing to an altitude of increased and the increase relative to 72 hours after the return has remained stable **(Table 1)**. Spo2 much as 48 hours at a height decreased compared to pre-qualify and this decrease relative to 72 hours after the return has remained stable.

To investigate the changes in the dependent variables, ANOVA for repeated measurements was used and the test results are significant variations between different frequency measurements on all variables showed, to compare the mean values of each variable with each of the multiple comparison tests by calculating the least significant difference was found between the number of measurements used in this work that ANOVA showed significant changes were observed in the frequency of which is determined according to the ANOVA showed significant changes in all variables **(Tables 2 and 3)**.

Table 1: Mean and Standard Deviation of Age and Physiologic Variables

Upper limit	Lower limit	Mean ± standard deviation	Time	Unit of measure	Variable	Row
50	30	38.7 ± 5.1	**Before**	**Year**	**Age**	1
114	61	77.1 ± 13.7	**Before**	**Kg**	**Weight**	2
62	94	**77.41 ± 11.29**	**Before**	**Number of minutes**	**Pulse**	**3**
80	125	**99.59± 11.15**	**48 hours**			
72	98	**86.41 ± 8.31**	**72 hours**			
92	98	**95.71± 1.64**	**Before**	**Percent**	**spo2**	4
74	89	**82.29 ± 4.79**	**48 hours**			
87	**95**	**91.29 ± 2.56**	**72 hours**			

Table 2: Results of ANOVA Test for Repeated Measurements of the Dependent Variables

Significant level	F ratio	Mean square	Degrees of freedom	Square	Index	Row
*0.001	1.56	131061.98	2	131061.98	**Pulse**	1
*0.001	2.43	136980.94	2	136980.94	**spo2**	2

NOTE: As seen in Table test out all the different variables on three consecutive and as in Table 3 marked with an asterisk (*) were also found between different frequency measurements there are significant changes in all variables

Table 3: Results of the Comparison of Pairs of Variables Related to the LSD Test

Significant level	Standard deviation	Average difference	Column index	Row index	Variable	Row
*0.001	2.41	-22.17	2	1	**Pulse**	1
*0.001	1.27	- 9	3			
*0.001	2.23	13.17	3	2		
*0.001	1.03	13.41	2	1	**spo2**	2
*0.001	0.522	4.41	3			

DISCUSSION

The aim of this study was to examine the effect of altitude on the selected factors (pulse and spo2 48) the first time after climbing high and stable rate of change is 72 hours after returning from a height. The difference between the average of the three variable pulse (05/0> α) was significant. According to the findings, heart rate, concentrations of up to 48 hours before the increased and 72 hours after returning from a height decreased while the amount but returned to the level before moving on to clarify the differences between the various stages of testing for multiple comparisons by calculating the least significant difference was used to measure the frequency, it was found that the changes are significant in the ANOVA between all phases existed in other words the pulse rate, 48 hours at an altitude of before climbing increased and this increase relative to 72 hours after returning remains stable. Interpretation of the results can be stated that due to the high humidity, very low breathing rate increases. Dry air through the evaporation of sweat when activity increases and this reduces plasma volume and the plasma volume and total blood volume form should be compensated accordingly. This is done to compensate by increasing cardiac output, we cardiac output, stroke volume and heart rate, thus multiplying the increase in cardiac output will increase each of them. However, the amount of oxygen that reaches a certain volume of blood to the muscles, the height is limited; Climbed to altitude, barometric pressure and density under conditions of low oxygen, increased resting heart rate and exercise **[8]**. It seems logical way to compensate for this limitation is to increase blood volume is transferred to the active muscles that perhaps the easiest way to do this is to increase the heart rate. However, as the observed difference between the means of the three variables spo2 (05/0> α) was significant, According to research findings,

spo2 48 hours after ascent rate dropped compared to before and 72 hours after returning from the height of the amounts. But returned to the level before moving on to clarify the differences between the different stages, test for multiple comparisons by calculating the least significant difference was used to measure the frequency, it was found that significant changes were observed in the ANOVA between all stages. The result of the research results Pihel *et al*., 1998, **[9]** and Sawyer *et al*., 1996, **[10]** are aligned. As we know, the percentage of respiratory gases in the air, from sea level to high altitude does not change. Only part of the pressure they exert pressure oxygen molecules at different altitudes, air pressure is directly affected by the change in pressure of oxygen contributes a significant impact on pressure gradient between the blood and body tissues will contribute. Pulmonary alveolar oxygen tension difference and venous blood at height decreased oxygen in arterial blood pressure followed by falls **[4]**. Since the gradient driving the diffusion of oxygen from the blood to the tissues, changes in arterial oxygen pressure and the height issue is a very important contribution, thus, low levels of oxygen in the inspired air volume at high altitude reduces the alveolar and capillary pressure in the lungs oxygen contribution by and looking down, Hemo-globin saturation (spo2) is reduce. Thus, due to lack of oxygen molecules in a certain volume of air at height should be breathing more air to breathe oxygen than normal.

CONCLUSIONS

Humidity is very low due to the high respiration rate increases as well as many other factors mentioned, Also an increase in stroke volume and cardiac output are increased, so is the heart. Also, low levels of oxygen in the inspired air volume at high altitude reduces the alveolar and capillary pressure of oxygen in the lungs and contribute to this decline, Hemo-globin saturation (spo2) is also reduced. The results also indicated that the duration of stay at altitude and after descent from altitude changes and spo2 pulse is effective.

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