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Anaerobic power levels of high school children

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Abstract

The purpose of the study was to analyze anaerobic power levels of High School children. Total number of 126 subjects were taken from the class 8th and 9th from the Kashmir region. The subjects were taken from High school in which only male students were used as samples, the subjects were officially informed regarding the study, and they voluntarily participate in this study. Anaerobic power was measured with Running Anaerobic Sprint Test (RAST). The researcher found that anaerobic power level of anantnag high school children is higher than the anaerobic power level of Kulgam and Budgam high school children. On the other hand, that the researcher didn't found significant differences between the three district of high school children. The researcher, did not find significant difference between the three districts as the 'f' value is less than the table value which is (3.04). Scheffe's post hoc test was done to see the mean difference of between the three districts on physiological parameter (anaerobic power) of high school children. In addition, anaerobic power level of anantnag high school children from the distinct areas of anantnag district is high than the Kulgam and Budgam districts ($P < 0.05$) to find out the significant difference at the level of (0.05). The analysis and interpretation of the data was done by applying analysis of covariance (ANCOVA) and Scheffe's post hoc test. The data was analyzed by using the SPSS version 20.0 was used.

Keywords: Anaerobic power, sports, physiological, parameter, RAST

Introduction

In individuals with having high intensity of anaerobic power, recovery after workout becomes faster and muscle fatigue does not take place at once. Relevant power which is utilized throughout maximal workout is provided from fats, and therefore, if athletes have high anaerobic power, their power for sweating off is higher (Eniseler, 2010) [4]. Moreover, important athletes' anaerobic power levels are in sportive activities, more prominently their aerobic power levels are shown in performance level during taking part in the any kind of physical activity. Because, anaerobic power is an effective physiological criteria for athletes' performance capacity. Anaerobic effort is an exercise type resulting from fatigue, a load over anaerobic threshold value called occurrence of maximum power. It is impossible to perform an anaerobic activity for a longtime. Because muscles involvement for more than they operate more they steady the rate of O₂ metabolism. This level of blood and lactate level in muscle increase, Ph. level decreases with increases in carbon dioxide emission and fatigue in muscles occur (Jonathan & Euan, 1997) [6]. Explosive power, muscle strength regarding lower and upper extremities, speed, agility and stamina which are very much necessary for individuals to show performance in their sport at a maximum level, in which activities needed a high level of anaerobic power in individuals (Stone, 2007) [10]. To be more successful in sport activities and screening high presentation in related game ways are common in objectives of individuals presenting activity. Individuals require to carry out their training program in a certain way and discipline in order to show successful performance and to maintain this performance in their related sport activity. At this time the, related scientific studies make important contributions to them about these issues (Wanderford & Stewart, 2005) [11]. Dimensions regarding physiological performance in individuals doing activities are important practices which estimate athletes' advantages and disadvantages for their related sport ways. According to measurement results, individuals doing sport activities should having an information about their physical and physiological power capabilities and arrange their training policy towards these data (Bangso, 2006) [1].

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The ability of degree for executing any activity in persons doing sport is regarded as individuals' maximum performance (Joyner & Coyle, 2008) [7].

Anaerobic power is in physiological terms the ability of all living beings' organs and systems, in particular the central nervous system, to function at high intensity, but it is also related to technique and degree of economy in movement. In addition to aerobic endurance, which is the term used when referring to the distance covered (Kemi, Hoff, Engen, Helgerud, & Wisloff, 2003) [8], sports such as soccer require performance of anaerobic activities like sprinting and acceleration (Little & Williams, 2003) [9]. This rule also applies to handball and basketball that have similar but not exactly the same physical needs predominately due to the respective size of playing areas. For example, in basketball a significant rule change has been introduced in 2000 by which the maximum duration of an offense was decreased from 30 seconds to 24 seconds, thus leading to an increase in speed of the game (Cormery, Marcil, & Bouvard, 2008) [2].

Anaerobic effort is a kind of effort ensuing from tiredness, a total load on the anaerobic threshold that is known to be presence of volatile energy. It is not possible to do an anaerobic workout for a long duration. Because muscles operate more than steady rate oxygen metabolism. This level of blood and lactate level in muscle increase, due to the level of Ph decreases with increases in carbon dioxide excretion and over burden in the muscles happen (Jonathan & Euan, 1997) [6].

Methods

Subjects

For the purpose of the study 126 pre-adolescent school children were selected in which (42) of subjects were selected from anantnag district and similarly, (42) from kulgam and (42) from budgam districts. All subjects were selected from the Govt. high schools from their proper permission from the head of the institutions were taken as they were initially informed about the collection of data regarding the research topic. The heads of the institution gives full support and was very much cooperative. The procedure for the conducting of test and data was briefly discussed with the subjects and the physical education teacher. The subjects were selected by stratified sampling technique for the purpose of the study. It seems to be good that the subjects show good interest while taking the test.

Variables and tests

RAST tests selected for the accomplishment of the study for the measurement of the anaerobic power levels of the pre-adolescent school children. For the accomplishment of the test 400m athletic track was needed. The variable anaerobic power was selected as physiological parameter of the selected subjects. The test provides information about athlete's ability to maintain power and anaerobic performance.

Statistical technique

Present investigation was statistically analyzed by applying ANCOVA and Scheffe's post hoc test was also applied for the mean difference of the districts. By applying these tests the researcher would found the significant difference on the physiological parameter of pre-adolescent high school children of Kashmir region.

Results

Anaerobic Power

(RAST)

The mean, standard deviation and 'f' value of anaerobic power for different districts of Kashmir region of pre-adolescent school children in Jammu and Kashmir State. Which is shown in the below table 1.

Table 1: Ancova for Different Districts of Pre-Adolescent School Children on the Physiological Parameter Anaerobic Power

Districts	Mean	SD	SOV	SS	df	MS	F
Anantnag	17.68	2.95	BG	38.46	2	19.23	2.99
Kulgam	16.75	2.07					
Budgam	16.36	2.49	WG	789.54	123	6.41	

*Significant at 0.05 level

Table 1, shows the anaerobic power of pre-adolescent school children of Kashmir region. From the above table it was clear that the obtained 'f' value is less than the table value (3.04) which is required for significant at 0.05 level with df 2 and 123. The results of the study indicate that among the three districts insignificant difference were found on anaerobic power of pre-adolescent school children. Hence, to find out the paired mean difference Scheffe's post hoc test was applied and the results were presented in the table 2.

Table 2: Scheffe's test for mean difference of different districts of Kashmir region of school children on anaerobic power parameter

Anantnag	Kulgam	Budgam	Mean Difference	C.I.
17.68	16.75		0.93	1.81
	16.75	16.36	0.39	
17.68		16.36	1.32	

*Significant at 0.05 level

The table 2, shows that paired mean difference between Anantnag, Kulgam and Budgam districts of pre-adolescent school children on the anaerobic power parameter. The mean difference of Anantnag vs Kulgam were found insignificant also Kulgam vs Budgam were found insignificant at, 0.05 level of confidence. Further, shows insignificant difference between Anantnag vs Budgam school children on anaerobic power. From the above results, it was clear that Anantnag pre-adolescent school children were better in anaerobic power than Kulgam and Budgam school children. Also, it is clear from the above results that there were insignificant difference between the districts of Kashmir region on the selected anaerobic power parameter.

The results of paired mean difference of pre-adolescent school children of Kashmir region in the Jammu and Kashmir state on anaerobic power parameter, indicates the paired mean of Anantnag vs Kulgam were found insignificant. Further, Kulgam vs Budgam shows, insignificant difference at 0.05 level of confidence on anaerobic power, but indicates the paired mean of Anantnag vs Budgam are insignificant difference at 0.05 level of confidence on anaerobic power. From the above results it was clear that in anaerobic power of Anantnag school children's were better followed by Kulgam and Budgam respectively. The results are graphically represented in the below figure 1.

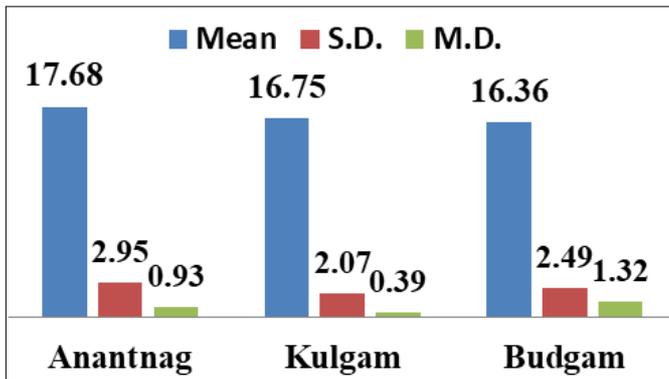


Fig 1: Mean, standard deviation and Mean Difference of pre-adolescent school children on anaerobic power parameter of Kashmir region.

Discussion

The present study was done on the physiological parameter of pre-adolescent school children from the Kashmir region. In the study the researcher has done the study on the physiological parameter anaerobic power of school children. The study shows insignificant difference at the 0.05 level of significance, which is clearly shown in the table 1, that the table value (3.04), which was greater than the calculated 'F' value (2.99). The researcher has also analyzed the data by the Scheffe's post hoc test to see the mean difference between the three districts of Kashmir region. The mean differences of the three districts were also found insignificant because the mean difference (M.D.) is lower than the confidence interval (C.I.). Similar study were carried by (Cengiz Taskin, 2016)^[3], on university level students from the department of physical education and department of business on the variable anaerobic power level, in which the results show that minimum aerobic capacity of business students ($p < 0.05$). On the other way, researcher didn't find difference between physical education students and business students in maximum anaerobic capacity. Study on anaerobic endurance capacity of soccer, handball and basketball players reveals that the significant difference in values of the anaerobic power, but shows insignificant difference was found between the soccer and basketball players on anaerobic capacity values (Goran Sporis, 2011)^[5].

Conclusion

Physiological parameter play considerable role in performing the physiological fitness of school children. According to the current study pre-adolescent school children of Anantnag district shows high mean value instead of Kulgam and Budgam. It means that the anaerobic power of Anantnag pre-adolescent school children are better than the Kulgam and Budgam respectively. But shows insignificant difference because the table value is greater than calculated 'f' value. Similarly, the mean difference is also insignificant between the districts.

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