COMPARATIVE STUDY OF SELECTED HAEMATOLOGICAL VARIABLES BETWEEN SHORT AND MIDDLE DISTANCE RUNNERS

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ABSTRACT

The purpose of the study was to compare the selected hematological variables between short and middle distance runners. The present study was conducted on a sample of one hundred and twenty (N=120) inter university level male athletes of 18-25 years of age. They were further divided into two groups i.e. Group 1: Short Distance Runners (N₁=60) and Group 2: Middle Distance Runners (N₂=60). Purposive sampling technique was used. All the subjects were informed about the aim and methodology of the study and they volunteered to participate in this study. Subjects were assessed for selected hematological variables i.e. Hemoglobin, RBC Count, WBC Count and Platelet Count. Blood samples of all subjects were taken carefully by a professional laboratory assistant. The independent samples t-test was applied to assess the differences between short and middle distance runners. Significant differences were observed between short and middle distance runners with regard to selected hematological variables i.e. Hemoglobin (p<0.05), RBC Count (p<0.05), WBC Count and Platelets Count (p<0.05). Results revealed that short distance runners had significantly greater hemoglobin, WBC Count and Platelet Count as compared to middle distance runners.
whereas middle distance runners had significantly better in respect to RBC Count than their counterparts short distance runners.

**Keywords:** Short Distance Runners, Middle Distance Runner, Hemoglobin, RBC Count, WBC Count, Platelet Count.

**INTRODUCTION**

The skilled manpower works as a valuable asset to the coach as well as athlete in implementing the training schedule in a practical way. Apart from this, in the present era, scientific training of the athletes is the key concepts to enhance the sports performance. But, the same needs a strong scientific backup. More recently, it is believed that hematological parameters can provide the said backup and also play a crucial role in predicting optimal physical performance (Schumacher 2002). But, unfortunately, very little attention has been given to the assessment and monitoring of hematological parameters in short and middle distance runners. Hematologic and biochemical tests are used widely to assess health and fitness of the intensively training athlete. Studies, mainly on adults, have revealed that athletes exhibit resting values of certain parameters that differ from those of the general population (Crespo 1995, Hartmann 2000, Malczewska 2000, Telford 1991). However, the influence of physical activity on the levels of many routinely measured blood variables seems to be ambiguous.

Athletes are usually monitored by using biochemical and hematological indices for evaluating possible pathologies and performance status (Dolci et al., 2007). It is possible that the stability of the players’ hematologic status that associates with good health may be considered as key determinants of athletic performance. Hematological parameters are influenced by several factors within the apparently healthy population. These factors include training, age, sex, ethnicity, nutrition, and altitude (Evans, 1999, Ostojic 2009, Schumacher 2002). Any one or all of these factors can have a positive or negative influence on hematocrit (Hct), hemoglobin (Hb), and red blood cell (RBC) count. In particular, all three are often decreased by resistance training (Convertino 1991, Schumacher 2002). Physical and physiological response also plays an important role, in hematology (Astrand 1986). When hematology is analyzed, the effect of acute exercise on hematological levels is seen different. It is stated that these differences depend on the
severity, duration, exercise at different times of day and frequency of exercise as well as physical and physiological conditions of subjects (Koc 2012). Hematologic parameters, plasma, leukocytes and platelets, are very responsive to exercises which are done different time of day and different exercise (Kenney 2012). Thus, the purpose of this study was to compare the selected hematological parameters components between short and middle distance runners.

MATERIALS AND METHODS

SUBJECTS:
A sample of one hundred and twenty (N=120) inter university level male athletes of 18-25 years of age were selected for the present study. The subjects were further divided into two groups i.e. Group 1: Short Distance Runners (N₁=60) and Group 2: Middle Distance Runners (N₂=60). Purposive sampling technique was used to select the subjects.

METHODOLOGY:
Blood samples of all subjects were taken carefully by a professional laboratory assistant. Further the collected samples were assessed in a pathological lab.

STATISTICAL ANALYSIS
Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, and Chicago, IL, USA). Independent samples t-test was used to test if population means estimated by two independent samples differed significantly. The level of significance was set at 0.05.

Table-1
Mean values (±SD) and test statistic t of selected Hematological variables between Short and Middle Distance Runners

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Short Runners (N₁ = 60)</th>
<th>Distance</th>
<th>Middle Runners (N₂ = 60)</th>
<th>Distance</th>
<th>t-value</th>
<th>Sig.</th>
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</table>

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RESULTS & DISCUSSION

In the present study selected hematological variables of the inter-university level short and middle distance runners have been evaluated and compared with each other. This study indicates the existence of selected hematological variables differences between the short and middle distance runners. The findings of in respect to Haemoglobin is partially in line with the results of Minj, A. et al. (2014) study, in which they concluded that Sprinters had significantly higher value of Haemoglobin than Middle Distance and Long Distance Runners. Result is also partially in line with the results of study done by Brotherhood, J. et al. (1975). They concluded that athletes have higher Haemoglobin than Non-Athletes. The findings of present study in respect to Red Blood Cell Count is partially in line with the results of Boyadjiev, N. & Taralov, Z. (2000), as they concluded that trained group had significantly lower values for red blood count than the control group. The current result is similarly in line with the outcomes drawn out by the study of Parmar, D. (2013). He stated that University level football men had significantly better percentage of Red Blood Cell than University level Basketball and Volleyball men. The results of current investigation on the account of White Blood Cell Count is partially in line with the results of Elioz, M. (2012), as he concluded in his study that elite female wrestlers had significantly better white blood cell count than sedentary subjects. Result is also supported by the findings of Umarani, K. & Shelvam, P.V. (2013), as they determined that athletes had significantly lower white blood cell count than non-athletes group. The results of current study on the account of Platelet Count is partially in line with the results of Elioz, M. (2012), as he concluded in his study that elite female wrestlers had significantly differ than sedentary subjects on the account of Platelets Count. Result is also supported by the findings of Nikolaidis, M.G. et al. (2003), as they found significant differences according to age, sex, and physical activity in the juvenile and adult athletes and non-athletes of both sexes on the account of Platelets Count.
REFERENCES


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