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ORIGINAL RESEARCH

COMPARISON OF SELECTED PHYSIOLOGICAL VARIABLES OF PLAYERS BELONGING TO VARIOUS DISTANCE RUNNERS

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Abstract:

The purpose of the study was to compare the selected physiological variables namely; maximum oxygen consumption, vital capacity, resting heart rate and hemoglobin content among various distance runners. The subjects were selected from the male athlete's of Gwalior district of various distance runners i.e. short, middle and long distance runners for this study. Ten (10) male athletes from each groups namely short, middle and long distance groups were selected as the subject for the study. Selected physiological variables such as maximum oxygen consumption, vital capacity, resting heart rate and hemoglobin content were presented to compare the players belonging to various distance runners namely short, middle and long distance. To see the significant difference of selected physiological variables among the players belonging to various distance runners the analysis of variance "F-ratio" was applied at .05 level of significance. For further analysis "Post-Hoc Test" (LSD Test) was applied. The short distance runners had shown significantly different level of VO₂ max (72.727) in comparison to middle distance (75.854) and long distance (77.094) runners. However, the middle and long distance runners had shown more or less same level of VO₂. Further long distance runners had shown better efficiency of heart as its mean value (56.3) was lowest among all the three groups in relation to resting heart rate. On the other hand long, middle and short distance runners had shown more or less same vital capacity and hemoglobin content with a small range of variation.

Keywords: VO₂, Vital capacity, Resting heart rate, Hemoglobin, Distance runners

INTRODUCTION

With all round advancement in the science of sports the new disciplines are emerging with micro-specialization. The elements, of scientific basis of selection are being inducted in the procedure of selection of athletes at various levels in some of the advanced countries. The knowledge from many scientific disciplines is being used for improving criteria for the selection of talents. The physical educationists have designed test procedures for evaluating the fitness of young children. The structures of performance for different games and events are being worked out. The general physical fitness of top – ranking athletes has been evaluated. Human

growth and performance is also an important field in this regard. The physiological factors limiting one's performance in sports are also well known. It is the understanding of interaction of all these factors that can help us in designing the way for selecting the children for appropriate game and training. Among all the factors, the physiological characteristics play an important role for the attainment of high level sports performance. Among the various physiological parameters, cardiovascular efficiency forms the basis to undertake sports efforts successfully. Cardio-vascular efficiency reflects the capacity of an individual to undertake and continues physical efforts of sub-maximal nature for a relatively longer period of time. To measure cardio-vascular efficiency, tests of physical works capacity and VO_2 max. have been developed to use in laboratory and field situations to assists the scientist, physical educators and coaches.^[1]

If sophisticated instruments are not available making use of the aergometry certain indirect methods of estimation of VO_2 max. have been suggested. Austrian nomogram is one of such method.³ The performance of athletes is affected by different factors like physiological, psychological, motor traits etc. Many studies had been done in respect of physiological factor, psychological factor on the performance level and so on. So, the researcher is interested to compare the physiological variables among the various distance runners.^[2]

STUDY AIM

To compare the selected physiological variables of players belonging to various distance runners

METHODS

SUBJECTS

The subjects were selected from the male athlete's of Gwalior district out of various distance runners i.e. short, middle and long distance runners for this study. Ten (10) male athletes from each groups namely short, middle and long distance groups were selected as the subject for the study.

CRITERION MEASURE AND RELIABILITY OF DATA

Criterion measure for this study was to compare the Physiological variables such as Maximum oxygen consumption (VO_2 max), Vital capacity, Resting heart rate, Hemoglobin contents between the various distance runners i.e. short, middle and long distance runners. The reliability of data was ensured by establishing the instrument reliability and testers competence. Thirty male distance runners were selected by random method throughout district of Gwalior. In order to determine the consistency of measurements such as VO_2 max., vital capacity, resting heart rate, hemoglobin content which were taken two times and reading were correlated to ascertain consistency in measurements, In case of selected physiological variables the test retest were employed. Retesting was done after one day gap. The attempt to conducting the test was under similar condition to those on the first day. The scores of first day test and retest were correlated to establish reliability of scores by using product moment correlation method. The statistical analysis of data pertaining to this presented in table-1.

Table-1
RELIABILITY CO-EFFICIENTS OF PHYSIOLOGICAL VARIABLES

Variables	Coefficient of correlation
Maximum oxygen consumption	0.89
Vital capacity	0.88
Resting heart rate	0.90
Hemoglobin content	0.91

