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COMPARATIVE STUDY OF SELECTED RESPIRATORY PARAMETERS BETWEEN INDIVIDUAL AND TEAM SPORT ATHLETES

Sandeep

Research Scholar, Department of Physical Education,
Guru Nanak Dev University, Amritsar, India.

Abstract:-The purpose of this study was to study and compare the selected respiratory parameters between inter-college level male individual and team sport athletes. A sample of Sixty (N=60) male athletes, which includes thirty each individual and team sport athletes of age ranging from 18 to 25 years, who actually participated in inter-college competitions of Guru Nanak Dev University, Amritsar, Punjab, India, was selected. All the participants were informed about aim and methodology of the study and they agreed to participate in this study. The study was conducted on selected respiratory parameters i.e. vital capacity, expiratory reserve volume and inspiratory reserve volume. Independent sample student t test was applied to find out the significance of differences with regard to selected respiratory parameters between individual and team sport athletes. The alpha level was set at 0.05. Results revealed significant differences between inter-college level male individual and team sport athletes with regard to vital capacity ($p < 0.05$), expiratory reserve volume ($p < 0.05$) and inspiratory reserve volume ($p < 0.05$) respectively. While comparing the means, it revealed that team sport players had better vital capacity, expiratory reserve volume and inspiratory reserve volume than their counterparts; individual sport athletes.

Keywords: Respiratory functions, vital capacity, expiratory reserve volume, inspiratory reserve volume.

INTRODUCTION

Human sports performance is determined by a combination of several physical, anthropometrical, physiological, and psychological factors. The relative importance of each of these depends on the nature of the sports. The physiological variables play an important role for the attainment of high level performance in sports. Respiratory function values are influenced by race, age, sex, height, weight, physical activity, as well as environmental, genetic, socioeconomic and technical parameters (Woolcock et al., 1972; Budhiraja et al., 2010). Among the various physiological parameters, lungs functions form the basis to undertake sports efforts successfully. The respiratory function tests, like other physiological tests must be of the utmost importance for measuring the fitness of an individual from physiological point of view (Astrand and Rodahl, 1970). Athletes had better respiratory functions than non-athletes (Singh et al., 2012). Adaptations of respiratory parameters achieved by players vary with the type of sports training involved in each discipline of games i.e. individual and team. Respiratory functions increases by training depend upon the specific playing abilities. The individual and team game players requires different types of physical and physiological demands. Respiratory function tests provide qualitative and quantitative evaluation of respiratory

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functions (Belman & Mittman, 1980; Robinson & Kjeldgard, 1982). Therefore, the purpose of this study was to compare the selected respiratory parameters between individual sports and team sports athletes.

MATERIALS AND METHODS

Subjects:

A sample of Sixty (N=60) male athletes, which includes thirty each individual and team sport athletes of age ranging from 18 to 25 years, who actually participated in inter-college competitions of Guru Nanak Dev University, Amritsar, Punjab, India, was selected. All the participants were informed about aim and methodology of the study and they agreed to participate in this study. The purposive sampling technique was used to select the subjects.

Methodology:

Measurements of Respiratory Functions:

Respiratory functions were measured with a computerized spirometer. Before recording the respiratory function tests, subjects were shown a demonstration of the tests. It was made sure that subject's vital capacity was measured when the subject was exhaling with maximal speed and effort. Consequently, a minimum of three readings were recorded of each test for every subject and the best of the three was considered for having reproducibility and validity of the recorded test. The Respiratory functions like, vital capacity (VC), expiratory reserve volume (ERV) and inspiratory reserve volume (IRV) were taken into consideration for this study.

Statistical Analysis:

Values are presented as mean values and SD. Independent sample student t test was employed. Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, IL, USA).

RESULTS

Table 1. Mean and SD values of selected Respiratory Parameters of Inter-College Level Male Individual and Team Sport Athletes.

Variables	Sports Groups				t value	Sig.
	Individual Sports		Team Sports			
	Mean	SD	Mean	SD		
Vital Capacity (VC)	4.46	0.42	4.97	0.16	6.155	0.000
Expiratory Reserve Volume (ERV)	1.49	0.29	1.98	0.37	5.721	0.000
Inspiratory Reserve Volume (IRV)	2.02	0.23	2.42	0.35	5.186	0.000

Table 1 exhibited the Mean and SD values of selected respiratory parameters of inter-college level male individual and team sport athletes. While comparing the means, it revealed that team sport athletes had better vital capacity, expiratory reserve volume and inspiratory reserve volume. It also shows that team sport athletes have exhibited statistically significant ($p < 0.05$) differences with individual sport athletes on all the three selected respiratory parameters i.e. vital capacity, expiratory reserve volume and inspiratory reserve volume.

DISCUSSION

Exercise physiology has become an increasingly important topic for research and discussion. Respiratory system is an important system of human body where gaseous exchange takes place with diffusion of enormous amounts of oxygen into the blood during physical activity (Khurana, 2005). The current study was designed to compare the selected respiratory parameters, including vital capacity (VC), expiratory reserve volume (ERV) and inspiratory reserve volume (IRV) between inter-college level male individual and team sport athletes. The respiratory parameters tests are very important in assessing a player's level of physiological fitness. Results of the present study indicated that significant differences between inter-college level male individual and team sport athletes with regard to vital capacity, expiratory reserve volume and inspiratory reserve volume were found respectively. These differences may be the result of differences in the sporting activity and levels of training. Due to regular exercise, athletes tend to have an increase in respiratory capacity, especially when the exercise is strenuous (Adegoke & Arogundade, 2002). While comparing the means, it revealed that team sport players had better vital capacity, expiratory reserve volume and inspiratory reserve volume than their counterparts; individual sport athletes. This difference may be due to lower level of physical fitness in individual sport athletes as compare to team game athletes. It is suggested that physically fit athletes possess superior respiratory functions relative to less fit subjects (Johnson et al., 1981; Johnson et al., 1991). The findings of the present study supported by the study of Holmen et al. (2002). They performed a study on non-smokers in athletes who were 13-19 years old, and they determined that athletes engaged with team sports like football, volleyball, basketball and handball had higher respiratory values in compare to individual sports i.e. swimmers, long-distance runners and skiers.

CONCLUSIONS

It is concluded that, significant differences were found between inter-college level male individual and team sport players with regard to selected respiratory parameters i.e. vital capacity, expiratory reserve volume and inspiratory reserve volume respectively. Team sport players had better vital capacity, expiratory reserve volume and inspiratory reserve volume than their counterparts; individual sport players.

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Sandeep

Research Scholar, Department of Physical Education, Guru Nanak Dev University, Amritsar, India.

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258/34 Raviwar Peth Solapur-413005, Maharashtra
Contact-9595359435
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