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A Comparative Study of Cardio Respiratory Efficiency between Aquatic and Track and Field Performers

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Abstract : The present study was conducted to explore the basic pulmonary functions which may generally vary according to the bio-physical characteristics including age, height, body weight, and environment etc. of the sports performers. Regular and specific training exercises also change the characteristics of an athlete’s prowess and produce a positive effect on the physiological functioning, mostly upon cardio-pulmonary efficiency and thereby improving the body mechanism. The objective of the present study was to compare the differences in cardio-respiratory functions between aquatics and track and field performers. As cardio-respiratory functions are influenced by pulse rate and blood pressure (systolic and diastolic), so both of the factors were also taken into consideration. The component selected under cardio-respiratory functions for the present study were i) FEVI/FVC ratio (forced expiratory volume divided by forced vital capacity ratio, i.e. the number represents the percentage of lung capacity to exhale in one second) ii) FVC1 (this is the amount of air which can force out of lungs in one second) and iii) FVC (forced vital capacity is the greatest total amount of air forcefully breathe out after breathing in as deeply as possible). All the three selected components of the cardio-respiratory efficiency were measured by spirometry method. Pulse rate was determined manually. The radial artery which is located on the thumb side of our wrist was used to assess the pulse rate. Blood pressure was assessed by sphygmomanometer. All the data were taken in the resting condition. 36subjects were selected for the present study out of which 18were water polo players and rest were sprinters. The age group of the subjects was considered between 18 to 23 years. In this study the obtained data inform of digital score were treated statistically to get result and draw conclusions. The Mean and Standard Deviation (SD) were used as descriptive statistics and the significant difference between the two subject groups was assessed with the help of statistical ‘t’-test. It was found from the study that all the three components i.e. FEVI/FVC ratio (p-value 0.0148 < 0.01), FVC1 (p-value 0.0010 < 0.01) and FVC (p-value 0.0067 < 0.01) differ significantly as water polo players proved to be better in terms of cardio-respiratory functions than sprinters. Thus study clearly suggests that the exercise training as well as the medium of practice arena associated with water polo players has played an important role to determine better cardio respiratory efficiency than track and field athletes. The outcome of the present study revealed that the lung function in land-based activities may not provide much impact than that of in water activities.

Keywords : cardio-respiratory efficiency, spirometry, water polo players, sprinters
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