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Study of physiological profile of professional cricketers of Jammu and Kashmir

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Abstract
The main purpose of the study was to find out the Study of Physiological Profile of Professional Cricketers of Jammu And Kashmir. The data collected quantitatively on Physiological profile of professional cricketers variables i.e. Exhale Capacity, Haemoglobin, Pulse Rate, Blood Pressure and $VO_{2\ Max}$. The subjects were selected Fourty (40), twenty (20) from 1st division club and twenty (20) from 2nd division Club Players from Jammu and Kashmir state by applying random sampling method. The data were collected on Physiological variables, (Exhale Capacity, Haemoglobin, Pulse Rate, Blood Pressure and $VO_{2\ Max}$) after that collected data was put in Microsoft excel to develop master chart and then 't' test was used for this statistical treatment. The subjects were selected by using purposive sampling method. To test the hypothesis, the level of significant was set at 0.05 level of confidence which was considered adequate and reliable for the purpose of this study. It was hypothesized that there was significant difference in Physiological variables of Exhale Capacity, Haemoglobin, Pulse Rate, Blood Pressure and $VO_{2\ Max}$ of who play 1st and 2nd division Club in Jammu and Kashmir.

Keywords: physiological, exhale capacity, haemoglobin, pulse rate, blood pressure and $VO_{2\ Max}$

Introduction
In physiology we study how different parts of organs of an organism work together to achieve a particular function in our body, for example the digestion of food involves the action of hormones and their chemicals produced by the stomach, liver and pancreas, muscle contraction occur through the action of chemical massages produced by nerves that supply the muscles. If we learn how the body functions normally, then we can understand what happens when organs function abnormally and we can take care of our body. With training and conditioning the heart becomes more efficient and is able to circulate more blood while bearing less frequently for standard amount of work, the heart beats slowly as the training period proceeds. The heart rate changes indicate a decreasing load on the cardiovascular adaptation to exercise.

Sports physiology is derived from exercise physiology. It applies the concept of exercise physiology to training the athlete and enhancing the athlete's sports performance. As physiology mainly focuses on the functions of structures, we con not discuss physiology without knowing anatomy. Similarly, we cannot understand the anatomy and physiology until unless we know the composition of human body. The human body consists of atoms of chemical elements such as carbon, hydrogen, nitrogen and oxygen. It also contains smaller amounts of many other elements including, calcium, iron, phosphorus, potassium and sodium. Atoms of chemical elements combine and make thin structures called molecules. Water is the most common molecules in our body. A molecule of water consists of two atoms of hydrogen and one atom of oxygen. About 65 percent of our body and most of the chemical reactions that take places in our body require water. Exercise physiology is the study of the effect of exercise on the body specifically. Exercise physiology concerned with the players responses and adaptation to exercise at the system as well as sub cellular level.

Haemoglobin
Haemoglobin is a complex compound found in Red Blood Cells that contain iron (haemo) and protein (globin) and is capable of combining with oxygen. Haemoglobin is basically organic material with a very interested organic structure known as haemo. The interesting thing about this structure is that it contains iron and this iron is capable of combining with oxygen to form oxy Heamoglobin in Red Blood Cells by means of this function oxygen is carried to the tissues from the lungs. The determination of blood constituents are of great importance in relation to health and disease in human beings. Physically fit consumes more oxygen. In fact, the hemoglobin is responsible for the transport of oxygen wherever the concentration of hemoglobin increases which helps in the required supply of oxygen. The normal average Red Blood Cells count in adult male is taken as 5.5 million per cubic millimeter and female 4.8 million per cubic millimeter. Status of an individual it is necessary to evaluate the hemoglobin percentage.

Haemoglobin is basically organic material with a very interested organic structure known as haeme. The interesting thing about this structure is that it contains iron and this iron is capable of combining with oxygen to form oxy hemoglobin in Red Blood Cells by means of this function oxygen is carried to the tissues from the lungs.

Exhale Capacity
Exhale capacity is the total amounts of air that can be forcibly expire after a complete inspiration has been used frequently as a measure of adequacy of the respiratory system. Although it measures the approximately capacity of the lungs, recent information indicates it is of little use in

predicting ability to perform tasks of endurance. Obviously other factors are more important. For example, any limitations of the oxygen delivery system to the cells will reduce the effectiveness of the delivery; regardless of vital capacity is the ability to take in more air per unit of time with fewer, but deeper inspiration, thus prolonging the onset of fatigue in the respiratory muscle.

Function of the lungs is the interchange of the gases O2 and CO2 Oxygen is taken in through the nose mouth in breathing, if flows along the trachea and bronchial tubes to the alveoli, where is comes into intimate contact with blood in pulmonary capillaries O2 passes across the cellular – capillary membrane and taken up by the hemoglobin of the R.B.C. cell and 95% HB is saturated. Modern competitive sports also call for immediate attention of the coaches, trainers and sport educators for developing the cardio respiratory of an individual as per requirement. Cardio respiratory endurance is counted upon the factors like vital capacity, cardic output, breath holding (anaerobic capacity), heart rate blood, pressure and recovery time, differs in proportion from sports to sports and depends upon the nature of activity.

Physiology

"Physiology is the science dealing with study of Human Body function."

Exhale Capacity

"Maximal volume forcefully expired after maximal inspiration is called exhale capacity".

Haemoglobin Percentage

Haemoglobin is Oxygen carrying pigment of Blood, the principle protein in the erythrocyte. Haemoglobin content is defined as gram Percentage of Haemoglobin for each 100 ml of Blood.

Pulse Rate

Pulse Rate is actually the frequency of pressure waves (waves per minute) propagated along the arteries such as carotid as radial arteries.

Blood Pressure

The Blood Pressure is defined as the force of the blood against the wall of the blood vessels.

Systolic Blood Pressure

It is a maximum lateral pressure during the system of the heart. It indicates the pressure of the blood volume in (mm Hg) at a given point and movement in the circulation.

Diastolic Blood Pressure

It is a minimum internal pressure during the phase of caroliac diastole.

Physiological Profile

The combination of all those variables which are related to the total internal functioning of the body responsible for regulating the life of any Sportsperson.

Professional Cricketers

Those who plays the game in a professional manner and fulfills their basic requirements in a very precise and reliable manner after taking full responsibility of the above mentioned game.

VO2 max

It may be defined as the amount of oxygen that can be used by our body for getting energy to regulate various body functions.

Methodology

Sources of data: The present researcher was taken the male subjects (Professional Cricketers) for the study. The Professional cricketers were taken from state Jammu and Kashmir.

Selection of Subject: The researcher was select 40 Professional Cricketers from State Jammu and Kashmir for collection of data.

Sampling Method: The 40 Subjects was selected by simple random sampling method.

Administration of Test: The testing in all selected parameters was done of the professional Cricketers from Jammu and Kashmir for 1st and 2nd division club.

Statistical, analysis and interpretation of data

The researcher conducted the study entitled as, "Physiological Profile of Professional Cricketers of Jammu and Kashmir"

Table 1: Mean value, Average and Standard Deviation of Hemoglobin percentage, Exhale Capacity, Blood Pressure, Pulse Rate and $VO_{2\ Max}$ of Professional Cricketers

Group	Hemoglobin	Exhale Capacity	Blood Pressure		Pulse Rate	$VO_{2\ Max}$
			Diastolic	Systolic		
Mean	14.96	421.25	77.5	111.32	70.17	65.45
Average Deviation	0.75	61.93	2.3	4.10	1.63	1.42
Standard Deviation	0.97	77.94	3.16	5.06	2.11	1.69

Table 2: Quartile deviation of heamoglobin, exhale capacity, blood pressure, pulse rate and $VO_{2\ Max}$ of professional cricketers

	Hemoglobin	Exhale Capacity	Blood Pressure		Pulse Rate	$VO_{2\ Max}$
			Diastolic	Systolic		
Q_1	14.4	375	76	107	69	64.29
Q_2	15	400	78	112	70	65.55
Q_3	16	450	80	115	72	66.81
Q_4	16.4	600	82	120	76	68.49
Quartile Deviation	0.8	37.5	2	4	1.5	1.26

Table 3: Percentile of Heamoglobin, Exhale Capacity, Blood Pressure, Pulse Rate and $VO_{2\ Max}$ of Professional Cricketers

	Hemoglobin	Exhale Capacity	Blood Pressure		Pulse Rate	$VO_{2\ Max}$
			Diastolic	Systolic		
P_{10}	13.6	350	74	103	68	63.45
P_{20}	14.2	350	75	107	68	63.87
P_{30}	14.6	375	76	108	69	64.29
P_{40}	14.8	400	78	111	69	64.71
P_{50}	15	400	78	112	70	65.55
P_{60}	15	450	78	113	70	65.97
P_{70}	15.6	450	80	114	71	66.81
P_{80}	16	500	80	116	72	66.81
P_{90}	16.2	500	80	117	73	67.65
P_{100}	16.4	600	82	120	76	68.49

Table 4: Comparision of Haemoglobin of Kashmir Club Players with Professional Cricketers of Jammu and Kashmir

Haemoglobin Percentage Value between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir		
	Hemoglobin	
	Kashmir Club Players	Professional Cricketers of Jammu and Kashmir
Range	13.8 - 17.2	12.6 - 16.4
Mean	15.5	14.96

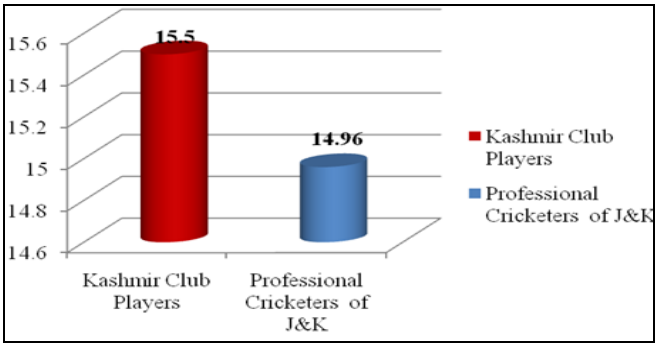

Fig 1: Physical Representation of Hemoglobin between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir

Table 5: Comparision Exhale Capacity of Kashmir Club Players with Professional Cricketers of Jammu and Kashmir

Exhale Capacity Value between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir		
	Exhale Capacity	
	Kashmir Club Players	Professional Cricketers of Jammu and Kashmir
Range	400-450	250 – 600
Mean	425	421.25

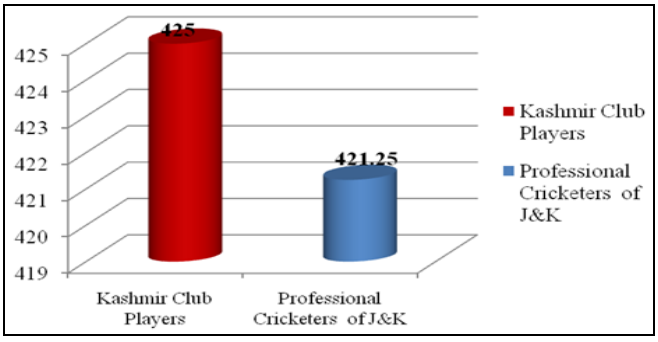

Fig 2: Physical Representation of Exhale Capacity between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir

Table 6: Comparision of Blood Pressure (Diastolic) of Kashmir Club Players with Professional Cricketers of Jammu and Kashmir

Blood Pressure (Diastolic) Value between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir		
	Blood Pressure (Diastolic)	
	Kashmir Club Players	Professional Cricketers of Jammu and Kashmir
Range	60–79	67 - 82
Mean	69.5	77.5

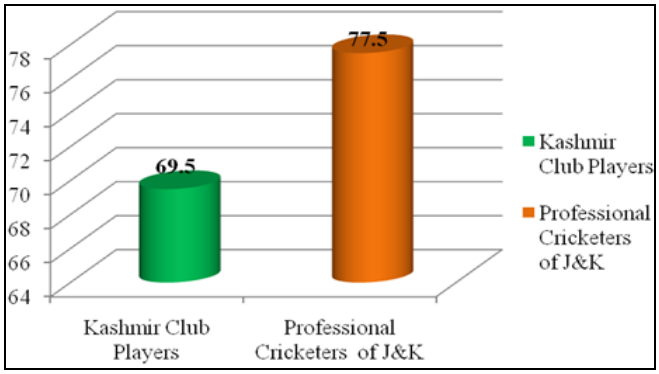

Fig 3: Physical Representation of Blood Pressure (Diastolic) between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir

Table 7: Comparision of Blood Pressure (Systolic) of Kashmir Club Players with Professional Cricketers of Jammu and Kashmir

Blood Pressure (Systolic) Value between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir		
	Blood Pressure (Systolic)	
	Kashmir Club Players	Professional Cricketers of Jammu and Kashmir
Range	90–119	101 - 120
Mean	104.5	111.32

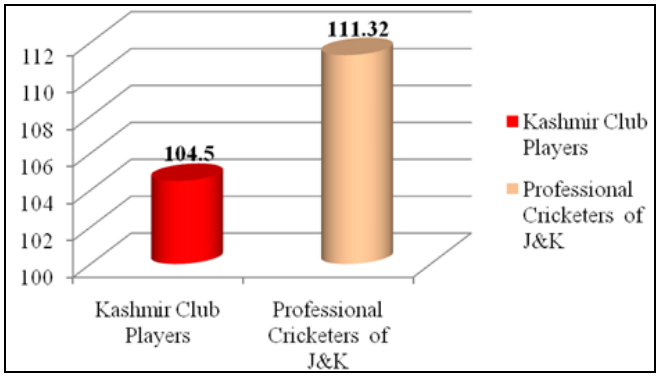

Fig 4: Physical Representation of Blood Pressure (Systolic) between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir

Table 8: Comparision of Pulse Rate of Kashmir Club Players with Professional Cricketers of Jammu and Kashmir

Pulse Rate Value between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir		
	Pulse Rate	
	Kashmir Club Players	Professional Cricketers of Jammu and Kashmir
Range	49-55	66 - 76
Mean	52	70.17

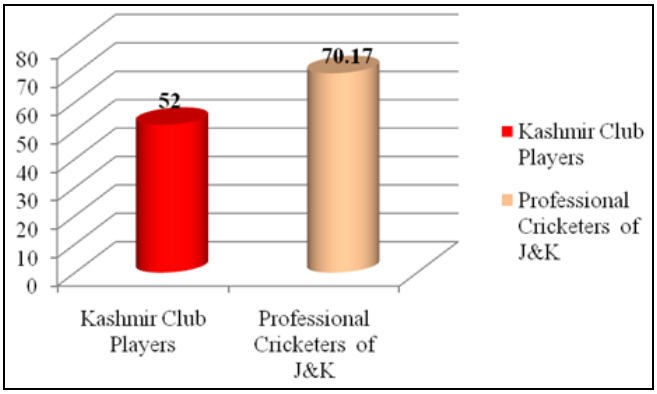

Fig 5: Physical Representation Pulse Rate between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir

Table 9: Comparision of $VO_{2\ Max}$ of Kashmir Club Players with Professional Cricketers of Jammu and Kashmir

$VO_{2\ Max}$ Value between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir		
	$VO_{2\ Max}$	
	Kashmir Club Players	**Professional Cricketers of Jammu and Kashmir**
Range	52-60	61.77 - 68.49
Mean	56	65.45

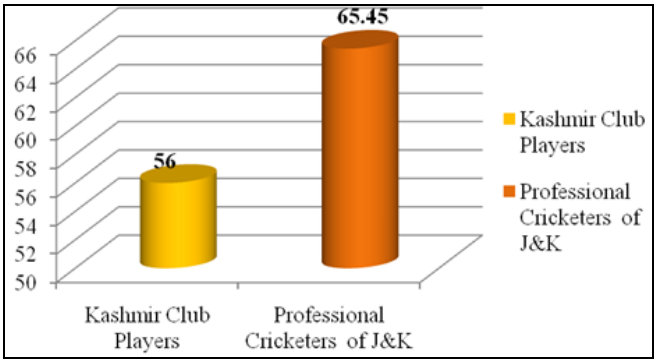

Fig 6: Physical Representation $VO_{2\ Max}$ between Kashmir Club Players and Professional Cricketers of Jammu and Kashmir

Conclusion

From the statistical analysis of the data the conclusion of the study has been drawn.

It was hypothesized that the physiological profile of the professional cricketers is good but the study has shown that the physiological profile of the professional cricketers is not as than that of physiological profile of the players of Jammu and Kashmir for 1st and 2nd division club. Hence the hypothesis of the researcher gets rejected.

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