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Comparison of physiological and psychomotor variables among football, handball and cricket game players

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Abstract
The present study has been designed to investigate the Comparison of Physiological and Psychomotor variables among Football, Handball and Cricket game players who participated at College, University, District, State and National level tournament. For accomplish the study total 60 players selected from different game i.e. (20 Football, 20 Handball and 20 Cricket) were randomly selected as sample. All samples were selected from Different College and Sports Academy in Rohtak District. The age of the subjects was ranged from 17-25 years. One-way ANOVA method was applied for analyzing the data obtained from the present study if there were significant difference than the LSD post-hoc test was use to analyze the mean differences and their significance.
For testing the Hypothesis the level of significance was set at 0.05.

Keywords: physiological, psychomotor, football, handball & cricket

Introduction
Physical activity is an inherent trait of a human being. It becomes all the way imperative to identify the nature and the degree of this natural talent and to nurture, modifies and refines it to get the cherished outcomes. The children perform a lot of activities such as running, jumping, throwing, catching, kicking and striking etc. The activities are known as natural or universal skills. Sports Physiology is the study of the effects of training on the bodies of athletes. Coaches can improve training methods by knowing how and why specific training regimens and conditions affect athletes' performances. Understanding the internal effects of exercise on athletes sets the stage for designing fitness training programs that match the physical demands of specific sports. Internal changes in athlete's bodies are one piece of the training puzzle. Solid fitness training plans should combine important pieces of mental training, sport biomechanics and other aspects of performance.
Maximum Aerobic capacity (VO2 max) is very important concept in the field of exercise physiology; it is defined as the volume of oxygen consumed at maximum effort in the last 30 sec breathing air of sea-level. Aerobic capacity or VO2 max is related to body size, body fat%, diffusion capacity, functional capacity of cardiovascular system, the cellular metabolic process and cardiac output.
Exploring the possibilities of Psychomotor abilities the mystery of body and mind has long occupied researchers within fields such as phenomenology, psychology and cognitive science. The traditional psychological approach is that the relationship is dualistic.

VO2 Max
Bye, had written the volume of oxygen we can consume while exercising at our maximum capacity can measure fitness. VO2 max is the maximum amount of oxygen in millimeters, one can use one minute per kilogram of body weight.
VO2 max is defined as, "The height rate of oxygen consumption attainable during maximal or exhaustive exercise.

Speed
The ability to move the body or any 1 of its parts rapidly. Be cause speed is generally directly related to muscle power = force/time.

Agility
According to Singh "Agility is defined as the ability of the body parts to change direction rapidly and accurately".

Problem Statement
The purpose of the study was to investigate the Comparison of Physiological and Psychomotor variables among Football, Handball and Cricket game players.

Hypothesis
- It was hypothesized that there will be significant difference in Physiological factor among Football, Handball and Cricket game players.
- It was hypothesized that there will be significant difference in Psychomotor Variables among Football, Handball and Cricket game players.

Methodology
Selection of subjects
For this study 60 players of different game (20 Football, 20 Handball and 20 Cricket) were selected from Different college of Rohtak district who had participated at college and university

level tournament were randomly selected. The age of the subjects were ranged from 17 - 25 years.

Tools

Vo2max (maximum oxygen consumption)

Criterion measures: vo2max (maximum oxygen consumption) was Measured with the help of Rockport calculator software.

Speed

Criterion measures: a standard test of 50 yards dash is applied to measure speed.

Agility

Criterion measures: shuttle run 10x10 yards is applied to measure agility.

Statistical Analysis

One-way Anova method was applied for analyzing the data obtained from the present study if there were significant difference than the LSD post-hoc test was use to analyze the mean differences and their significance. For testing the hypothesis the level of significance was set at 0.05.

Result of the study

Table 1: Shows the value of f-ratio for three different groups i.e. football, handball and cricket game players for their physiological variable (VO2 max).

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
VO2 Max	Between Groups	1477.900	2	738.950	41.559	.000
	Within Groups	1013.500	57	17.781		
	Total	2491.400	59			

An analysis of Table -1 reveals that there is a significant difference in VO2 among Football, Handball and Cricket players. Because significant value is less than level of significance which is 0.05 since the calculated significance value is found significant, therefore to determine the pair mean difference among the selected different levels LSD post hoc test was computed and its shows in Table no 2.

Table 2: Mean difference of vo2 among football, handball and cricket game players

LSD					
Dependent Variable	**(I) GAME**	**(J) GAME**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
VO2	Football	Handball	-8.95000*	1.33344	.000
		Cricket	-11.60000*	1.33344	.000
	Handball	Football	8.95000*	1.33344	.000
		Cricket	-2.65000	1.33344	.052
	Cricket	Football	11.60000*	1.33344	.000
		Handball	2.65000	1.33344	.052

Table-2 The post-hoc test result reveals that all the three groups means were significantly different from one another for their physiological variable (vo2 max) i.e. football, handball and cricket game players. It shows that all the three group Players were significantly different for vo2 max. Mean of VO2 of Cricket players is higher than Football and Handball players. It seems that cricket players consume higher oxygen than football and handball players. It may be because of age factor, maturity etc.

The estimated mean value of the players VO2 is illustrated below in Figure no 1.

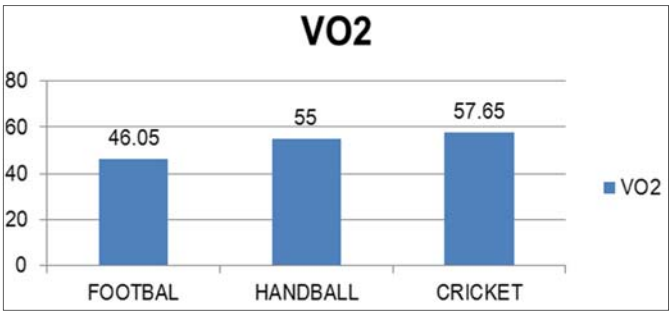

Fig 1

Table 3: Shows the value of f-ratio for three different groups i.e. football, handball and cricket game players for their psychomotor variable (Speed).

ANOVA		Sum of squares	df	Mean Square	F	SIG.
Speed	Between Groups	19.790	2	9.895	9.450	.000
	Within Groups	59.686	57	1.047		
	Total	79.476	59			

An analysis of Table -3 reveals that there is a significant difference in SPEED among Football, Handball and Cricket players. Because significant value is less than level of significance which is 0.05 since the calculated significance value is found significant, therefore to determine the pair mean difference among the selected different levels LSD post hoc test was computed and its shows in Table no 4.

Table 4: Mean difference of speed among football, handball and cricket game players

LSD					
Dependent Variable	**(I) GAME**	**(J) GAME**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Speed	Football	Handball	-.81950*	.32359	.014
		Cricket	.58050	.32359	.078
	Handball	Football	.81950*	.32359	.014
		Cricket	1.40000*	.32359	.000
	Cricket	Football	-.58050	.32359	.078
		Handball	-1.40000*	.32359	.000

Table-4

The post-hoc test result revealed that Significant difference was found between the (Football and Handball) and (Handball and cricket) players but there would be no significant difference found in (football and cricket) game players. Mean of Speed of handball players is higher than Football and cricket players. It may be because of age factor, maturity etc.

The estimated mean value of the players Speed is illustrated below in figure no 2.

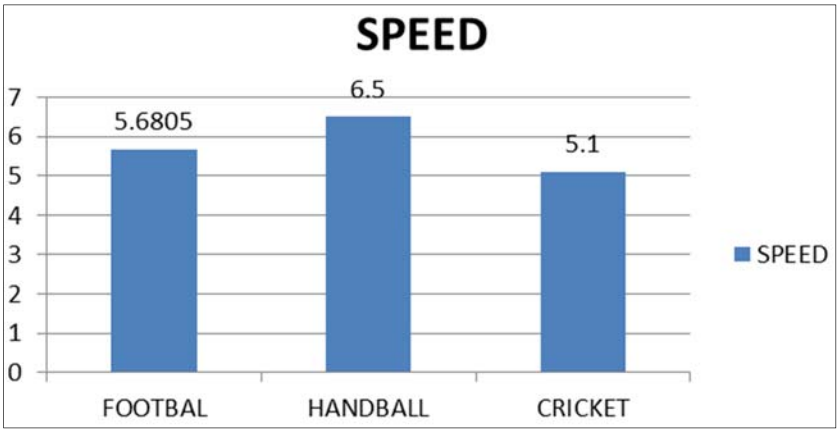

Fig 2

Table 5: Shows the value of f-ratio for three different groups i.e. football, handball and cricket game players for their psychomotor variable (Agility)

ANOVA						
Agility	**Between Groups**	**149.571**	**2**	**74.785**	**48.514**	**.000**
	Within Groups	87.867	57	1.542		
	Total	237.438	59			

An analysis of Table -5 reveals that there is a significant difference in AGILITY among Football, Handball and Cricket players. Because significant value is less than level of significance which is 0.05 since the calculated significance value is found significant, therefore to determine the pair mean difference among the selected different levels LSD post hoc test was computed and its shows in Table no 4.

Table 6: Mean difference of agility among football, handball and cricket game players

Dependent Variable	**(I) GAME**	**(J) GAME**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Agility	Football	Handball	-1.55800*	.39262	.000
		Cricket	-3.84450*	.39262	.000
	Handball	Football	1.55800*	.39262	.000
		Cricket	-2.28650*	.39262	.000
	Cricket	Football	3.84450*	.39262	.000
		Handball	2.28650*	.39262	.000

*. The mean difference is significant at the 0.05 level.

Table-6 The post-hoc test result reveals that all the three groups means were significantly different from one another for their Agility i.e. football, handball and cricket game players. It shows that all the three group Players were significantly different for Agility. Mean of Agility of Cricket players is higher than Football and Handball players. It may be because of age factor, maturity etc.

The estimated mean value of the players Agility is illustrated below in Figure no 3.

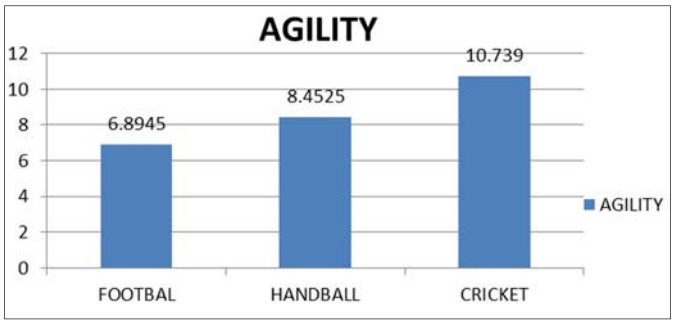

Fig 3

Discussion

The findings of the study that there were significant difference in the obtained value of Physiological and Psychomotor Variables among Football, Handball and Cricket Game Players. So the hypothesis of our study is accepted in this case that there would be significant difference of Physiological and Psychomotor Variables among Football, Handball and Cricket game players. But in Psychomotor (Speed) variable case no difference found between Football and Cricket Game Players. Mean of VO2 of Cricket players is higher than Football and Handball players. It seems that cricket players consume higher oxygen than football and handball players. Mean of Speed of handball players is higher than Football and cricket players. Mean of Agility of Cricket players is higher than Football and Handball players. It may be because of age factor, maturity etc.

Conclusion

On the basis of result obtained from the study, following conclusions are drowning:-

The data showed that significant difference observed in Physiological and Psychomotor Variables among Football, Handball and Cricket Game Players who participated at college, university, district, state and national level tournaments. Significant difference was found between the Football, Handball and Cricket Game players in their Physiological and psychomotor variables but in psychomotor SPEED variable case no difference found between football and cricket game players.

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