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Comparison of selected physical fitness components among selected sport groups

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Abstract
Background: The purpose of this study was to compare the Selected Physical fitness components among different groups of Selected Match Practice groups.
Method: For achieve the purpose fifty male students from MATS University Raipur, CG, were selected as the subject. All subjects were practicing regularly and related from different team games like Hockey, Football, volleyball, basketball and handball, who had participated in Inter-university and as well as in state championship were selected as the subject for this study. Their age ranged from 23 to 27 year old, the study was confined to the selected Physical fitness components namely Muscular Endurance, Muscular Strength, and Agility. The data of selected subject for Physical fitness components (muscular endurance, Muscular Strength, and Agility) were recorded by different measures, for muscular endurance, Muscular Strength and Agility, data were observed by performing the 600 meter run/walk, 50 meter dash and Shuttle Run.
Result: The analysis of data reveals that there is insignificant difference in Muscular Strength between different match practice groups were obtained. The insignificant difference may be due to the type of test selected. Usually hockey players, football players, volleyball players, basketball players and handball players are employ same type of Muscular Strength of movement while taking part in a game. A significant difference in muscular endurance between hockey and football, hockey and volleyball, hockey and basketball, hockey and handball, football and volleyball, football and basketball, football and handball, volleyball and basketball, volleyball and handball and basketball and handball were obtained. A significant difference in Agility between hockey and football, hockey and volleyball, hockey and basketball, football and volleyball, football and basketball, football and handball, volleyball and basketball, volleyball and handball and basketball and handball were obtained. An insignificant difference in Agility between hockey and handball was also obtained.
Conclusion: With the limitations of the study it may be concluded that, there was no significant difference found between the different match practice groups i.e. Hockey, Football, Basketball, Volleyball, and Handball in relation to their Physical fitness component (Muscular Strength) and there was also no significant difference found between the hockey and handball in relation to their Physical fitness component (Agility). On the other hand there was significant difference found between the different match group i.e. Hockey, Football, Basketball, Volleyball, and Handball in relation to their muscular endurance and Agility (accept hockey and handball), when the subjects were involved in similar type of daily routine.

Keywords: muscular strength, muscular endurance, agility

Introduction
Sports is one of the avenues of mankind's never ceasing strive for excellence. Its uniqueness lies in the intimacy between the physical happenings of our bodies and their repercussions on our minds, as well as in the general re-cognoscibility of the social and aesthetic value. Sports evoke experience that is exclusively human and independent of the changing forms, patterns customs of a civilization, which involves profoundly modifying concepts of our environment. From its very simple form, a sport has emerged into highly organized form of play and play is a general innate tendency. Play is very important for preservation, growth and development of organism.
Over the years physical fitness has become the well-built foundation of a structure that supports many concrete blocks on it which represents all the activities that make life worth living: intellectual life, spiritual life, family life and social life.

Fitness tests, often referred to as fitness evaluations or fitness assessments, includes a series of measurements that help determine the health status and physical fitness of an individual. These tests are often the starting point for designing an appropriate exercise program. The specific tests used in an assessment depend on the health and fitness goals of the individual, the trainer's experience and the type of workout routines being performed. Performance of an athlete in the sports is not only depend upon the Physical fitness components but other factors also contribute to the success of an athlete in the sports arena such as scientific good quality equipments, clothing, training schedule competition frequency & psychological preparation and the most important balanced diet. All these factors together make the athletes prepared for the competition and the only the fruitful result can be expected from the athlete in the competition. An individual to succeed in the competition must develop the Physical fitness factor that is Muscular Strength, Agility, Agility, strength and power. Physical fitness is the final criterion through which all other elements of physical fitness are seen and measured in man. How continuously and efficiently he performs his daily work in industry, on the farm, in the armed forces, or in athletic performance was at one time the only criterion that man had of physical fitness. He might know little or nothing about scientific facts of body structure, physiology or functioning the organs, strength test on dynamometer, or organic efficiency tests. But he could understand an outstanding performance displaying power, Muscular Strength and endurance.

Objectives

The purpose of the study was to compare the Physical fitness components among Selected Sport Groups.

Methodology

The purpose of the study was to compare the Physical fitness components among different match practice group, for achieve this purpose fifty male students from MATS University Raipur, CG, who had participated in Inter-university and as well as in state championship were selected as the subject for this study. All subjects were practicing regularly and related from different team games like Hockey, Football, volleyball, basketball and handball. Their age ranged from 23 to 27 year old. Their age ranged from 23 to 27 year old, the study was confined to the selected Physical fitness components namely Muscular Endurance, Muscular Strength, and Agility. The data of selected subject for Physical fitness components (muscular endurance, Muscular Strength, and Agility) were recorded by different measures, for muscular endurance, Muscular Strength and Agility, data were observed by performing the 600 meter run/walk, 50 meter dash and Shuttle Run.

Statistical Method

The Descriptive statistics and one-way analysis of variance (ANOVA) were applied to finding out the difference in selected Physical fitness components at 0.05 level of significance among different Match Practice Group of different Team Games.

Findings

After collecting the data of selected Physical fitness components of different match practice group players, score of each category of subjects were subjected of F analysis of variance (ANOVA) and LSD test applied for finding out the critical difference in mean performance of selected Physical fitness components among different match practice groups. The findings are presented in Tables.

Table 1: Descriptive and one way analysis of variance of physical fitness component (muscular endurance) among selected sport groups

Descriptive Analysis

Variables	Groups	N	Mean	Standard Deviation
Muscular endurance	Hockey	10	1.46	0.034
	Football	10	2.49	0.124
	Volleyball	10	2.40	0.234
	Basketball	10	2.10	0.231
	Handball	10	2.25	0.091
	Total	50	2.14	0.401

ANOVA table

Variable	Sources of Variance	Sum of Squares	Degree of Freedom	Mean Square	F
Muscular Endurance	Between Groups	6.694	4	1.674	62.665
	Within Groups	1.202	45	0.027	
	Total	7.896	49		

* Significant at 0.05 level.

Tab $F_{.05}(4,45) = 2.58$

Here Cal F>Tab $F_{.05}$

The table shows that there is significant difference found between the mean values of Physical fitness components (Muscular Endurance) among selected sport groups.

Least significant difference (post hoc test) for mean of physical fitness component (muscular endurance) among selected sport groups

Hockey	Football	Volleyball	Basketball	Handball	Mean Difference	CD at 0.05 level
1.46	2.49				-1.034*	0.066
1.46		2.39			-0.939*	
1.46			2.10		-0.645*	
1.46				2.25	-0.796*	
	2.49	2.39			0.095*	
	2.49		2.10		0.389*	

	2.49			2.25	0.238*	
		2.39	2.10		0.294*	
		2.39		2.25	0.143*	
			2.10	2.25	-0.151*	

* Significant at 0.05 level of confidence.

The table shows that there is significant difference found between the mean value of Physical fitness components (muscular endurance) among selected sport groups.

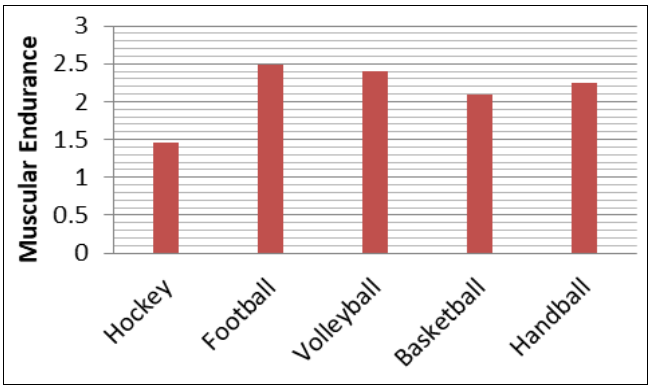

Fig 1: Physical Fitness Component (Muscular Endurance) among Selected Sport Groups

Table 2: Descriptive and one way analysis of variance of physical fitness component (muscular strength) among selected sport groups

Descriptive Analysis

Variables	Groups	N	Mean	Standard Deviation
Muscular Strength	Hockey	10	5.46	0.295
	Football	10	5.62	0.456
	Volleyball	10	5.50	0.374
	Basketball	10	5.22	0.187
	Handball	10	5.65	0.427
	Total	50	5.49	0.379

ANOVA table

Variable	Sources of Variance	Sum of Squares	Degree of Freedom	Mean Square	F
Muscular Strength	Between Groups	1.164	4	0.291	2.227
	Within Groups	5.881	45	0.131	
	Total	7.045	49		

* Significant at 0.05 level.
Tab $F_{.05}(4,45)= 2.58$
Here Cal F<Tab $F_{.05}$

The table shows that there is insignificant difference found between the mean values of Physical fitness components (Muscular Strength) among selected sport groups.

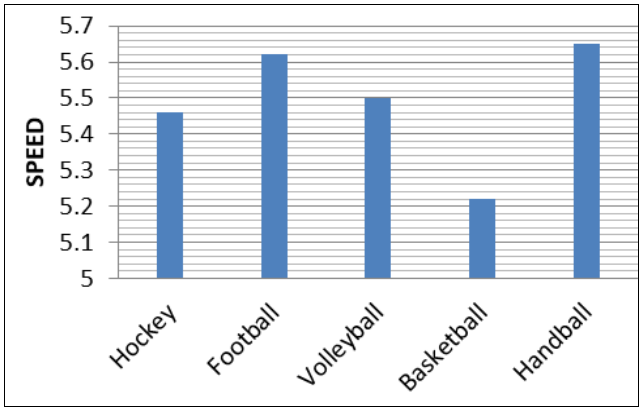

Fig 2: Physical Fitness Component (Muscular Strength) among Selected Sport Groups

Table 3: Descriptive and one way analysis of variance of physical fitness component (agility) among selected sport groups

Descriptive Analysis

Variable	Groups	N	Mean	Standard Deviation
Agility	Hockey	10	6.96	0.607
	Football	10	6.81	0.570
	Volleyball	10	7.20	0.371
	Basketball	10	6.45	0.287
	Handball	10	6.89	0.530
	Total	50	6.86	0.529

ANOVA table

Variable	Sources of Variance	Sum of Squares	Degree of Freedom	Mean Square	F
Agility	Between Groups	2.971	4	0.743	3.104
	Within Groups	10.767	45	0.239	
	Total	13.738	49		

* Significant at 0.05 level.
Tab $F_{.05}(4,45) = 2.58$
Here Cal F>Tab $F_{.05}$

The table shows that there is insignificant difference found between the mean values of Physical fitness components (Agility) among different match practice group.

Least significant difference (post hoc test) for mean of physical fitness component (agility) among selected sport groups

Hockey	Football	Volleyball	Basketball	Handball	Mean Difference	CD at 0.05 level
6.96	6.81				0.150*	0.195
6.96		6.45			0.510*	
6.96			7.20		-0.240*	
6.96				6.89	0.070	
	6.81	6.45			0.360*	
	6.81		7.20		-0.390*	
	6.81			6.89	-0.080	
		6.45	7.20		-0.750*	
		6.4		6.89	-0.440*	
			7.20	6.89	0.310*	

* Significant at 0.05 level

The table shows that there is significant difference found between the mean values of Physical fitness components (Agility) among different match practice group.

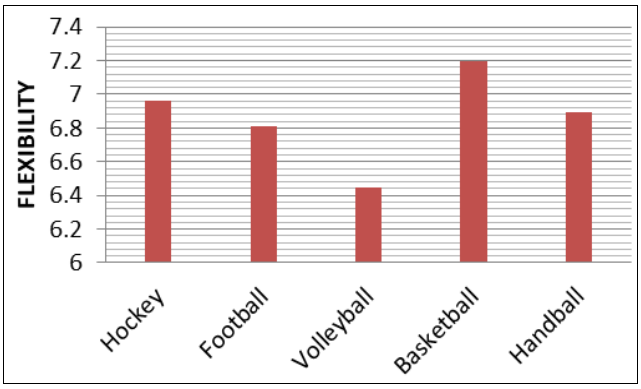

Fig 3: Physical Fitness Component (Agility) among Selected Sport Groups

Discussion

The analysis of data reveals that there is insignificant difference in Muscular Strength between different match practice groups were obtained. The insignificant difference may be due to the type of test selected. Usually hockey players, football players, volleyball players, basketball players and handball players are employ same type of Muscular Strength of movement while taking part in a game.

A significant difference in muscular endurance between hockey and football, hockey and volleyball, hockey and basketball, hockey and handball, football and volleyball, football and basketball, football and handball, volleyball and basketball, volleyball and handball and basketball and handball were obtained.

A significant difference in Agility between hockey and football, hockey and volleyball, hockey and basketball, football and volleyball, football and basketball, football and handball, volleyball and basketball, volleyball and handball and basketball and handball were obtained.

An insignificant difference in Agility between hockey and handball was also obtained.

Conclusions

With the limitations of the study it may be concluded that, there was no significant difference found between the different match practice groups i.e. Hockey, Football, Basketball, Volleyball, and Handball in relation to their Physical fitness component (Muscular Strength) and there was also no significant difference found between the hockey and handball in relation to their Physical fitness component (Agility).

On the other hand there was significant difference found between the different match group i.e. Hockey, Football, Basketball, Volleyball, and Handball in relation to their muscular endurance and Agility (accept hockey and handball), when the subjects were involved in similar type of daily routine.

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