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## Comparison of muscular endurance and muscular power between football and hockey players

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### Abstract

The purpose of the study was to evaluate the muscular endurance (push-up & sit-up) and muscular power (standing broad jump & vertical jump) of football and hockey players of SAI North East Regional Centre, Imphal. Fifty male players (N=50), twenty-five (25) players each from the game of football and hockey were selected as subjects of the study. The ages of the subjects were ranged from 15-20 years. The muscular endurance was measured through push-up & sit-up and muscular power through standing broad jump & vertical jump. The 't' test was employed for analysing the data and the hypotheses were tested at 0.05 level of significance. According to our findings, no significant differences were found on muscular endurance (push-up & sit-up) and muscular power (broad jump & vertical jump) between football and hockey players.

**Keywords:** muscular endurance, muscular power, football and hockey

### Introduction

Almost all physical activities incorporate elements of force, quickness, duration and range of motion. Exercises of long distance or duration, or many repetitions are endurance exercises. Combination of strength and endurance creates muscular endurance and the ability to perform many repetitions against a given resistance for a prolonged period. Power is the ability to perform and explosive movement in the shortest time possible, results from the integration of maximum strength and speed (Bompa, 1999) [2].

Muscular endurance is the ability of a muscular, or a group of muscles, to keep working against a resistance (Bizley, 2002) [1]. As the length of an event increases, athletes become more dependent on muscular endurance. Again, this is as term that is often related to strength training and reflects the ability to deliver many repetitions, normally at a low resistance. In reality, muscular endurance is no different to the common understanding of aerobic energy production – the major requirement of endurance sport and our previously explained definition of power used for endurance sports.

Sprinting, including that in all team sports requiring explosive running (football, baseball, ice hockey, rugby, and Australian football), is often misjudged. For those athletes who compete in these sports need to perform powerful action over and over after few second of interruption. To do this successfully, these athletes need a high power output and the ability to repeat it 20 to 30 times. These constitute power endurance (Bompa, 1999) [2].

### Method and Procedure

The purpose of the study was to evaluate the muscular endurance and muscular power of football and hockey players. The present study was conducted on fifty (50) male football and hockey players of SAI North East Regional Centre, Imphal. The ages of the subjects were range from 15-20 years. To find out the significance differences between football and hockey players with regard to muscular endurance (push-up & sit-up) and muscular power (standing broad jump & vertical jump) 't' tests were employed with the help of SPSS software. The level of significances was set at 0.05 level of confidence.

**Results and Findings**

For the finding of the significance differences between football and hockey players with regard to muscular

endurance (push-up & sit-up) and muscular power (standing broad jump & vertical jump) the following Tables 1 and 2 have been given as the results of the study.

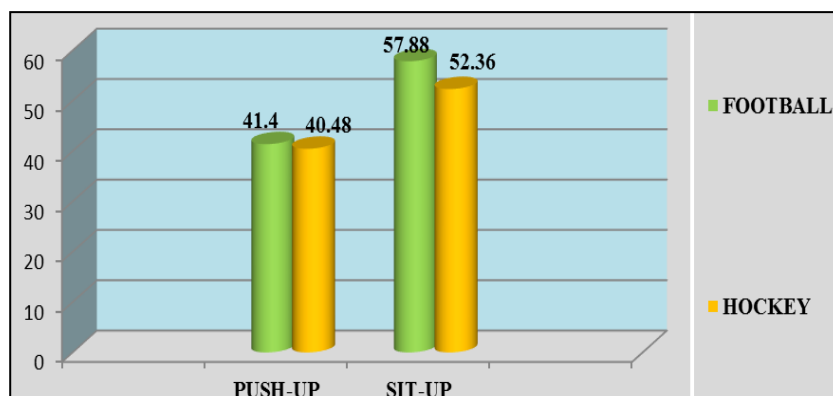
**Table 1:** Comparison of Scores on Muscular Endurance (Push-Up & Sit-Up) Between Football and Hockey Players

Variable	Group	N	Mean	SD	t-value	P-value (sig)
Push-Up	Football	25	41.40	8.07	0.37	0.61
	Hockey	25	40.48	9.46		
Sit-Up	Football	25	57.88	5.31	3.12	0.27
	Hockey	25	52.36	7.076		

\*Significant at 0.05

It can be seen from Table-1 that no significant difference were found with regard to muscular endurance (push-up & sit-up) between football and hockey players as the t-values were 0.37& 3.12 and the P-values (sig) 0.61 & 0.27 respectively,

which were found higher than 0.05 level of significance ( $p > 0.05$ ). The graphical representation of mean scores of muscular endurance (push-up & sit-up) between football and hockey players has been depicted in Figure-1.



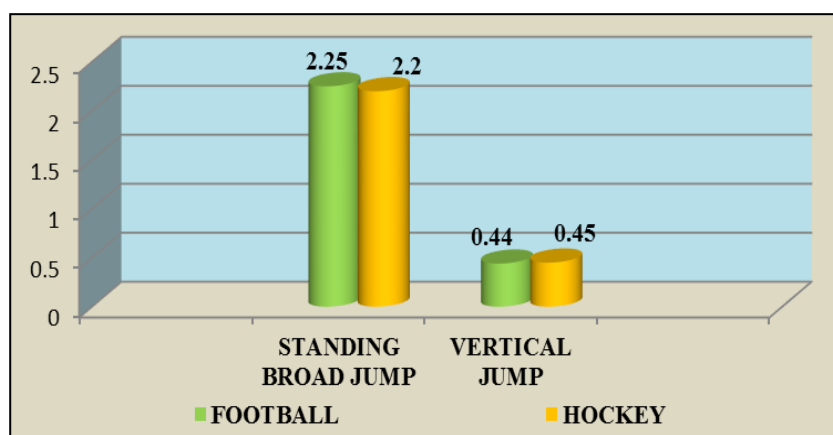
**Fig 1:** The Graphical Representation of Mean Scores of Muscular Endurance (Push-Up & Sit-Up) Between Football and Hockey Players

**Table 2:** Comparison of Scores on Muscular Endurance (Standing Broad Jump and Vertical Jump) between Football and Hockey Players

Variable	Group	N	Mean	SD	t-value	P-value (sig)
Standing Broad Jump (m)	Football	25	2.25	8.07	0.37	0.61
	Hockey	25	2.20	9.46		
Vertical Jump (m)	Football	25	0.44	0.07	0.31	0.21
	Hockey	25	0.45	0.06		

\*Significant at 0.05

It can be seen from Table-2 that no significant differences were found with regard to muscular power (standing broad jump & vertical jump) between football and hockey players as the t-values were 0.37 & 0.31 and the P-values (sig) were 0.61 & 0.21 respectively, which were found higher than 0.05 level of significance ( $p > 0.05$ ). The graphical representation of mean scores of muscular endurance (push-up & sit-up) between football and hockey players has been depicted in Figure-2.



**Fig 2:** The Graphical Representation of Mean Scores of Muscular Endurance (Standing Broad Jump & Vertical Jump) between Football and Hockey Players

**Discussion of findings**

The findings of study confirmed that there were no significant differences obtained on muscular endurance and muscular power between football and hockey players of SAI North East Regional Centre, Imphal. Das and Sharma (2016) [3]

conducted a study on female players and found that no significant differences were observed in flexibility, body composition, muscle strength and muscular endurance among football, basketball and volleyball female players. On the other hand the study conducted by Singh and Kaur (2019) [4],

there was no significant difference found on muscular strength (right hand grip and left hand grip) and significant difference was found on muscular endurance among national level male football, volleyball, basketball and hockey players.

### **Conclusions**

In the light of the findings and limitations of the present study the following conclusions were drawn:

- No significant differences were obtained on push-up and sit-up between football and hockey players of SAI North East Regional Centre, Imphal.
- No significant differences were obtained on standing broad jump and vertical jump between football and hockey players of SAI North East Regional Centre, Imphal.

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