

## STUDIES ON SELECTED MOTOR FITNESS AND PHYSIOLOGICAL VARIABLES OF THE INTER-UNIVERSITY BASKETBALL AND HANDBALL PLAYERS OF MANIPUR UNIVERSITY

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### **Abstract:**

**Purpose:** The purpose of this study was to find out the relationship on selected motor fitness and Physiological variables and further, examined the comparison on selected motor fitness and Physiological variable between the inter-university basketball and handball players.

**Methods:** For this study, 16 Basketball 16 Handball players who had been selected for Manipur University team for the Inter University tournament were taken as the subject of the study. Sit and reach for Flexibility, Sit up (30 sec) for muscular strength and endurance, Standing Broad Jump (Meter) to see the explosive power of legs and Lungs Capacity variables are selected. To determine the relationship of the selected motor and physiological fitness variable of the players the Pearson Product Moment Correlation Coefficient is employed. Further, t-Test: Two-Sample Assuming Equal Variances was employed. The variables were analysed in two approach i.e. critical value approach and p-value approach. Hypothesis Testing was done through 0.05 level of significant was employed to see the null hypothesis were accepted or rejected.

**Results:** We see that Manipur University inter university basketball and handball team mean score of flexibility 40.7, muscular endurance 31.15, explosive leg power 2.41 and lungs capacity 585. In this study see explosive power of legs and muscular strength and endurance of abdominal are correlated to each other and also lungs capacity correlated to abdominal power too. In all the selected variables except flexibility basketball players seem better when comparing the mean score. Only muscular strength and endurance of abdominal the t stat value 2.80015 is greater than t critical one-tail values 1.697. There is significant difference of muscular strength and endurance.

**Conclusion:** It was conclude that basketball players are significantly higher from Handball players at 0.05 level of confidence. The remaining variable we see the somewhat better in basketball players but no significant difference found there is no significant difference of flexibility, explosive leg power and Lungs power between the inter University team

basketball players and the Handball players. All the P value are greater than the 0.05 we accept the Null hypothesis there will be no significant difference between the inter university Basketball and Handball Player of Manipur University team.

**Keywords:** *Flexibility, muscular strength and endurance, explosive legs power, lungs capacity, Motor fitness, Physiological variables, Basketball, Handball Players and Manipur University*

### **Introduction:**

Motor fitness and Physiological variables are the important factors that directly link with the performance of the players. In every sports even to participate in University level direct trial or inter college tournament are conducted through the process selection of the Manipur university team constituted to take part in different Zonal or direct University tournament. To identify the motor fitness and physiological level is also helpful for the selection committee as well as for the players. Keeping in mind the all the important the study some selected motor fitness and Physiological variables are drawn out and selected Basketball and Handball of the Manipur University team are taken so that some output may see from this research. Motor fitness are essential for basketball players included in these motor fitness are balance, speed, power, agility and coordination. Such movements as dribbling and shooting require the mentioned skills as well as defending on the court. Hence, through strength and conditioning exercises targeted at these motor abilities, drills and regular practice, players can enhance their motor abilities. Basketballers' overall performances are enhanced when they concentrate more on such motor capabilities thus becoming more effective contributors to their teams' overall performance. The handball players' performance and motor fitness are very important and carried out on the motor abilities of handball players revealed that speed, agility, power and coordination directly affect a player's success in the game. (Singh, L.Santosh et al., 2024).

**Objective of study:** The purpose of this study was to find out the relationship on selected motor fitness and Physiological variables and further, examined the comparison on selected motor fitness and Physiological variable between the inter-university basketball and handball players.

**Design and Method of study:** In this study, 16 Basketball 16 Handball players who had been selected for Manipur University team for the Inter University tournament were taken as the subject of the study. Sit and reach for Flexibility, Sit up (30 sec) for muscular strength and endurance, Standing Broad Jump (Meter) to see the explosive power of legs and Lungs Capacity were taken from both basketball and Handball Players.

**Analysis of data:** Testing of the data for various statistical properties has been carried out for descriptive statistics such as minimum score, maximum score, mean and standard deviation<sup>1</sup> etc. To determine the relationship of the selected motor and physiological fitness variable of the players the Pearson Product Moment Correlation Coefficient is employed<sup>2</sup>. Further, t-Test: Two-Sample Assuming Equal Variances was employed. The variables were analysed in two approach i.e. critical value approach and p-value approach. Hypothesis Testing was done through 0.05 level of significant was employed to see the null hypothesis were accepted or rejected.

### **Finding:**

The descriptive analysis of the Motor fitness and Physiological variables Manipur University inter university basketball and handball team mean score of flexibility 40.7, muscular endurance 31.15, explosive leg power 2.41 and lungs capacity 585 respective.

Table -1: descriptive statistic of Motor fitness and Physiological variables

	<i>Flexibility (Cm)</i>	<i>Muscular Endurance</i>	<i>Standing Broad Jump (Meter)</i>	<i>Lungs Capacity</i>
Mean	40.71875	31.15625	2.41125	585
Median	40	30.5	2.4	570
Mode	40	30	2.1	540
Standard Deviation	4.244422336	3.83624	0.189579	75.56241
Range	18	16	0.7	290
Minimum	31	24	2.1	440
Maximum	49	40	2.8	730

Table - 2: Correlation of selected Motor fitness and Physiological variables of the Inter university team

	<i>Flexibility (Cm)</i>	<i>Muscular Endurance (No. Sit-up in 30 sec)</i>	<i>Standing Broad Jump (Meter)</i>
Muscular Endurance (No. Sit-up in 30 sec)	-0.225044516		
Standing Broad Jump (Meter)	0.156799367	0.437505643*	
Lungs Capacity	-0.048781558	-0.327726908*	- 0.139615368

From the table -2 the motor fitness variable i.e explosive power of legs and muscular strength and endurance of abdominal are correlated to each other and also lungs capacity correlated to abdominal power.

Table -3: Mean comparison the level of Flexibility between the inter university Basketball and Handball Player Flexibility (Cm)

	Mean	SD
BASKETBALL PLAYERS	40.1875	3.70978436
HANDBALL PLAYERS	41.25	4.781910357

Table - 4: Comparison of Flexibility between the inter university Basketball and Handball Player

	<i>BASKETBALL PLAYERS</i>	<i>HANDBALL PLAYERS</i>
Mean	40.1875	41.25
Variance	13.7625	22.86666667
Observations	16	16
Pooled Variance	18.31458333	
Df	30	
t Stat	-0.702223584	
P(T<=t) one-tail	0.243976404	

t Critical one-tail	1.697260851	
P(T<=t) two-tail	0.487952808	
t Critical two-tail	2.042272449	

The table-4, indicated that t stat value -0.70222 is smaller than t critical one-tail values 1.697 there is no significant difference of flexibility among the inter University team basketball players and the Handball players. The P value 0.243 is greater than the 0.05 we accept the Null hypothesis there will be no significant difference of flexibility between the inter university Basketball and Handball Player of Manipur University team.

Table - 5: Mean comparison of Muscular strength and endurance between the inter university Basketball and Handball Player

Muscular Endurance (No. Sit-up in 30 sec)		
	Mean	SD
BASKETBALL PLAYERS	32.875	3.981205847
HANDBALL PLAYERS	29.4375	2.87445647

Table - 6: Comparison of Muscular strength and endurance between the inter university Basketball and Handball Play

	<i>BASKETBALL PLAYERS</i>	<i>HANDBALL PLAYERS</i>
Mean	32.875	29.4375
Variance	15.85	8.2625
Observations	16	16
Pooled Variance	12.05625	
Hypothesized Mean Difference	0	
Df	30	
t Stat	2.800151814	
P(T<=t) one-tail	0.004424911	
t Critical one-tail	1.697260851	
P(T<=t) two-tail	0.008849823	
t Critical two-tail	2.042272449	

From the above table – 6 t stat value 2.80015 is greater than t critical one-tail values 1.697 the basketball players are having greater mean value then the Handball players. Since the P value 0.0044 is smaller than the 0.05 we reject the Null hypothesis there will be no significant difference of muscular strength and endurance between the inter university Basketball and Handball Player of Manipur University team. It is evidence that basketball players are significantly higher Muscular strength and endurance measured with the help of Sit-up in 30 sec test from Handball players at 0.05 level of confidence.

Table - 7: Mean comparison of Standing Broad Jump (explosive leg power) between the inter university Basketball and Handball Player

Standing Broad Jump (Meter)		
	Mean	SD
BASKETBALL PLAYERS	2.445	0.209539177
HANDBALL PLAYERS	2.3775	0.167152625

Table - 8: Comparison of Explosive leg power between the inter university Basketball and Handball Player

	<i>BASKETBALL PLAYERS</i>	<i>HANDBALL PLAYERS</i>
Mean	2.445	2.3775
Variance	0.043906667	0.02794
Observations	16	16
Pooled Variance	0.035923333	
Df	30	
t Stat	1.007303753	
P(T<=t) one-tail	0.16092241	
t Critical one-tail	1.697260851	
P(T<=t) two-tail	0.32184482	
t Critical two-tail	2.042272449	

The table no. 8, indicated that t stat value 1.0073 is smaller than t critical one-tail values 1.697 there is no significant difference of explosive leg power among the inter University team basketball players and the Handball players measure with standing broad Jump in Meter. The P value

0.160 is greater than the 0.05 we accept the Null hypothesis there will be no significant difference of explosive leg power between the inter university Basketball and Handball Player of Manipur University team.

Table -9: Mean comparison of Lungs Capacity between the inter university Basketball and Handball Player

Lungs Capacity		
	Mean	SD
BASKETBALL PLAYERS	585	83.66600265
HANDBALL PLAYERS	585	69.2820323

Table 10: Comparison of Lungs Capacity between the inter university Basketball and Handball Player

	<i>BASKETBALL PLAYERS</i>	<i>HANDBALL PLAYERS</i>
Mean	585	585
Variance	7000	4800
Observations	16	16
Pooled Variance	5900	

Df	30	
t Stat	0	
P(T<=t) one-tail	0.5	
t Critical one-tail	1.697260851	
P(T<=t) two-tail	1	
t Critical two-tail	2.042272449	

The table no. 10, indicated that t stat value 0 is smaller than t critical one-tail values 1.697 there is no significant difference of Lungs power among the inter University team basketball players and the Handball players measure with standing broad Jump in Meter. The P value 0.5 is greater than the 0.05 we accept the Null hypothesis there will be no significant difference of Lungs capacity between the inter university Basketball and Handball Player of Manipur University team.

**Discussions** :The relevant studies were carried out by **Singh L. Santosh (2019)** also conducted a study on comparative study on selected motor abilities among cricket and softball players and the final results shows there is no significant difference found in speed, agility, spine flexibility and leg power between cricket and softball players. **Kumar Anil et al. (2019)** comparison of physical fitness between basketball and handball players of Jammu and Kashmir. The study concluded that insignificant differences were found in flexibility and significant differences were found in the variable of speed and agility endurance between basketball and handball players. **Yadav Devesh Singh and Chaudhary Manju (2016)** conducted a study on selected physical fitness variables of Basketball and Handball Players of Lucknow. The researcher randomly selected (Basketball players: N=25 and Handball players: =25) from Lucknow District. Their age range between 14-18 years. The study concluded that significant differences were found in speed and insignificant found in flexibility of basketball and handball players. **Singh Bhubnehsvar (2019)** conducted a similar study on the comparison of selected physical fitness components between basketball and volleyball players. The results shows that there was a significant difference in speed, agility, cardiovascular endurance and muscular strength between basketball and volleyball players. **Mini Thomas and Babu.P(2019)** on the speed and agility of Bishop Kurialacherry College between basketball and handball players. The results show that there was a significant difference between basketball and handball players in speed and agility. **Sharma H. Surendra et al., (2018)** Comparison of Speed, Endurance and Agility between the Lawn and Soft Tennis players of Manipur. The results shows that there is no significant difference between Lawn and Soft Tennis Players of Manipur. **Dar Riyaz Ahmad (2016)** also conducted a study to compare the Motor fitness of Basketball players and Handball players of Jammu and Kashmir State. The results concluded that there was no significant difference in agility component between Basketball and Handball players. But in speed, there was a significant difference between Basketball players and Handball players. **Kumar Ch Ravi (2021)** studied the comparative study of speed among basketball and handball players of Khammam District in Telangana State and the results found that handball players have better speed compared to basketball Players. Singh L. Santosh (2022) also studied the Analysis of Selected Motor Abilities among team games. The study concluded that there were insignificant differences between football and hockey players in muscular endurance and speed, whereas there was a significant difference in power between football and hockey players. A relevant study also conducted by Singh L. Santosh (2023, comparative study on selected motor abilities between badminton and table tennis players. The results concluded that there was a significant difference obtained in Speed between the two groups. However, no significant differences were found in Muscular

Strength and Muscular Endurance between Badminton and Table Tennis Players of Dhanamanjuri University, Manipur

### Conclusion:

Motor fitness and Physiological variables are the important factors that directly link with the performance of the players. We see that Manipur University inter university basketball and handball team mean score of flexibility 40.7, muscular endurance 31.15, explosive leg power 2.41 and lungs capacity 585 in this study see explosive power of legs and muscular strength and endurance of abdominal are correlated to each other and also lungs capacity correlated to abdominal power too. When we split out Basketball and Handball players and see the comparison of the selected variables. For flexibility mean score 40.18 and 41.25, muscular strength and endurance score 32.87 and 29.43, explosive legs power score 2.44 and 2.37 (meter) and lungs capacity score 585 same for the respective players group. When we the significant level at 0.05 the only significant muscular strength and endurance of abdominal t stat value 2.80015 is greater than t critical one-tail values 1.697 the basketball players are having greater mean value then the Handball players. Since the P value 0.0044 is smaller than the 0.05 we reject the Null hypothesis there will be no significant difference of muscular strength and endurance between the inter university Basketball and Handball Player of Manipur University team. It is evidence that basketball players are significantly higher Muscular strength and endurance measured with the help of Sit-up in 30 sec test from Handball players at 0.05 level of confidence. For the remaining variable we see the somewhat better in basketball players but no significant difference found t stat value -0.70222 is smaller than t critical one-tail values 1.697 there is no significant difference of flexibility among the inter University team basketball players and the Handball players. Since, the P value 0.243 is greater than the 0.05 we accept the Null hypothesis there will be no significant difference of flexibility between the inter university Basketball and Handball Player of Manipur University team. In explosive legs power t stat value 1.0073 is smaller than t critical one-tail values 1.697 there is no significant difference of explosive leg power among the inter University team basketball players and the Handball players measure with standing broad Jump in Meter. The P value 0.160 is greater than the 0.05 we accept the Null hypothesis there will be no significant difference of explosive leg power between the inter university Basketball and Handball Player of Manipur University team. Similarly, for Lungs capacity t stat value 0 is smaller than t critical one-tail values 1.697 there is no significant difference of Lungs power among the inter University team basketball players and the Handball players measure with standing broad Jump in Meter. The P value 0.5 is greater than the 0.05 we accept the Null hypothesis there will be no significant difference of Lungs capacity between the inter university Basketball and Handball Player of Manipur University team.

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