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PSYCHOLOGICAL ATTRIBUTES IN SUB-ELITE HANDBALL PLAYERS: A COMPARATIVE STUDY

Keisham Borish Singh
Ph.d Scholar, Department of Physical Education and Sports, National Sports University, Ministry of Youth Affairs & Sports, Govt. of India.
Dr. Sorokhaibam Premananda Singh
Assistant Professor, Department of Physical Education and Sports, National Sports University, Ministry of Youth Affairs & Sports, Govt. of India.
Dr. Laishram Bikram Singh
Assistant Professor, Dhanamanjuri College of Teacher Education, Government of Manipur.

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ABSTRACT

The enhancement of performance of handball players are influenced by their psychological attributes and also aid in their greater execution of their skills and their performance. The primary objective of the study was to compare the selected Psychological attributes which are associated with handball players. For the purpose of the study, twenty-one (N=21) male Sub-elite handball players of three professional handball team from Senior State Handball Tournament, Manipur with age 22.5 ± 2.5 were selected. The following psychological variables were selected: Reaction Speed and Motor Speed (Reaction Test); Median Reaction Time and Correct Reactions (Determination Test). The data were collected through the administration of the standardized test in Vienna Testing System (VTS) to assess the psychological variable among the handball players. Statistical analysis were performed using Descriptive statistics; ANOVA, and Post-hoc tests, with a level of significance set at 0.05. For the analysis of data, IBM SPSS (version 27) software was utilized. The results of the study specify that there were significant difference on Median Reaction Time and Correct reactions whereas insignificant differences on Reaction Speed and Motor Speed among the selected three professional handball team from Senior State Handball Tournament.

Keywords: Handball, Reaction Speed, Motor Speed, Median Reaction Time and Correct Reactions.

INTRODUCTION

The sports psychology, as a branch of the applied psychology in the sports field, has as an object of study the human being's adaptation, in terms of mental processes, to the requirement of competitive activity and of sportive training. Sport is a voluntary, motivationally supported activity, it solicits the sportsperson, what he/she has the most dynamical in his being, in terms of both movements and intellectual, affective issues, as a tendency to self-improvement. The purpose of the high performance sport activity can

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be considered to be an activity at the limit of human possibilities that is the multilateral in the areas of mental and physical development in sportsperson. The sportsperson has to be mentally prepared to be able to cope with states of psychological discomfort which result from stressful effects of some cantonments in isolated areas, monotonous training, possible interpersonal strained relations and conflictive situations. The sports psychology, as a branch of the applied psychology in the sports field, has as an object of study the human being's adaptation, in terms of mental processes, to the requirement of competitive activity and of sportive training.

The Vienna Test System (VTS) provides you with a psychometrically valid and proven instrument for talent identification, selection as well as training planning and talent development in sports. Since the VTS covers a wide range of sport-relevant cognitive dimensions and personality traits, the tests can be used flexibly in many different sports. From a sport psychological point of view, measurable factors can be divided into three groups: Cognitive factors include: stress, attention, memory, reaction time, anticipation skills that can be improved from one to the next.

The Vienna Test System (VTS) is a computerized test system program that can be used to present a number of tests. Test administration is done automatically, in a standard way. During the entire examination, there is a test leader who prepares the tools for the examination, receives the test person, and tells the information and instructions. Starts the test package on your computer, responds to questions asked by the test person, or even interrupt the test administration if needed (for example, due to a question or a sudden problem). After the interruption, you can restart the tests (Hőgye-Nagy and Kurucz, 2014).[1]

The psychological analysis would be beneficial for analysis their team neurological memory, their concentration towards target and their reaction towards while playing handball. Identification of their weakness and strength in these areas would be beneficial for their training they could create a huge impact in the performance during the game.

METHOD

The purpose of the study was to compare the selected Psychological variables among the Sub-elite handball players of Manipur. To achieve the purpose of the study, twenty-one (N=21) handball players from Manipur has been selected. Seven (n=07) each from 3 teams of Manipur has been selected. The age of the subjects were 22.5 ± 2.5 years. The selected handball players were divided into three groups according to their teams. Group I consist of (n=07) Manipur Police Team, Group II consists of (n=07) Yaipha Lamjing Kanglup (YLK) and Group III consists of (n=07) Brave Boy Association (BBA).

SELECTION OF THE VARIABLES

Table 1.1

Selection of Variables and Its Criterion Measure

Sl. No.	Variable	Test	Criterion Measure

[1]https://psycho.unideb.hu/sportpszichodiagnosztika/fejezetek/cscs_angol_itsdp/_book/sports-psychological-methods.html

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1.	Reaction Speed	Reaction Test	Raw Score
2.	Motor Speed	Reaction Test	Raw Score
3.	Median Reaction Time	Determination Test	Seconds
4.	Correct Reactions	Determination Test	Raw Score

SELECTION OF TEST ITEMS AND EQUIPMENTS

The following are the equipment which were adopted to measure the test.

1. Reaction Speed and Motor Speed of the subjects was determined by using the Reaction test through administration of VIENNA Testing System.
2. Median Reaction Time and Correct Reactions of the subjects was determined through administration of VIENNA Testing System.

RELIABILITY OF INSTRUMENTS: Equipment used for this study were in good condition. Their calibration was tested and found to be accurate enough to serve the purpose of this study.

TESTER'S RELIABILITY: To ensure that the investigator was well versed with the technique of conducting the test. He had a number of practice sessions in testing procedures under the guidance of an expert.

STATISTICAL ANAYSIS:

To determine whether there is significantly different in selected variables among the three professional handball teams the following statistics techniques was applied and level of significance was set at 0.05 level.

1. Descriptive Statistics
2. ANOVA
3. Post Hoc Test

TEST OF SIGNIFICANCE

This is the crucial point in the analysis of data in arriving at conclusions by examining the hypothesis in accordance with the result obtained relation to the level of significance was considered sufficient for the study. The level of significance was fixed at 0.05 level ($p< 0.05$) of confidence.

LEVEL OF SIGNIFICANCE

The probability level rejects the hypothesis is termed as level of significance; the ANOVA was compared to 0.05 level of significance which was considered adequate. The table value required for level of significance at 0.05 level for ANOVA with degree of freedom (df) 18 is 3.16.

RESULTS:

ANALYSIS ON SELECTED PSYCHOLOGY VARIABLES

1. REACTION TEST

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RESULT OF REACTION SPEED

The data obtained for Reaction Speed of Sub-elite Handball players of Manipur have been analyzed and presented in Table-1.2 as Descriptive Statistics and Table-1.3 as ANOVA and Table-1.4 as Post Hoc Tests respectively.

Table 1.2

Descriptive Statistics on Reaction Speed (Reaction Test)

Reaction Speed	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Manipur Police Team	7	279.57	27.324	10.328	254.30	304.84	250	320
Yaipha Lamjing Kanglup	7	292.29	44.571	16.846	251.06	333.51	229	341
Brave Boy Association	7	293.14	23.097	8.730	271.78	314.50	265	334
Total	21	288.33	31.944	6.971	273.79	302.87	229	341

The Mean Score of Reaction Speed among the Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **279.57, 292.29** and **293.14** respectively as shown in Table-1.1.

The Standard Deviation of Reaction Speed among the Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **27.324, 44.571,** and **23.097** respectively as shown in Table-4.13.

From the result it indicates that there is difference in their Mean Score and Standard Deviation values of their Reaction Speed of Sub-elite Handball players of Manipur among the selected three teams.

The ANOVA analysis table of Sub-elite Handball players of Manipur on Reaction Speed are represented in the Table-1.3.

Table 1.3

ANOVA on Reaction Speed (Reaction Test)

Reaction Speed	Sum of Squares	df	Mean Square	F	Sig.	η^2
Between Groups	808.667	2	404.333	**.371**	**.695**	**.040**
Within Groups	19600.000	18	1088.889			
Total	20408.667	20				

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*Significant at 0.05 level

Table value shown that there is no significant difference on Reaction Speed **F(2, 18) = 371, p = .695, η^2 = .040**.

From the Table-1.2, the Mean Square value obtained for between group and within group are **404.333** and **1088.889** respectively, F value is **0.371** and p value **0.695**, Since the obtained F value is greater than the table value of 3.16 with degree of freedom (df) 18 at 0.05 level of confidence, it was conclude that the of Sub-elite Handball players of Manipur among the selected three teams had no significant difference in Reaction Speed.

Table 1.3

Post Hoc Tests (Multiple Comparisons, Dependent Variable: Reaction Speed (Reaction Test), LSD)

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Manipur Police Team	**Yaipha Lamjing Kanglup**	-12.714	17.638	.480	-49.77	24.34
Yaipha Lamjing Kanglup	**Brave Boy Association**	-.857	17.638	.962	-37.91	36.20
Brave Boy Association	**Manipur Police Team**	13.571	17.638	.452	-23.49	50.63

From the Table-1.3, it shows that there are no significant on Reaction Speed difference when compared between Manipur Police Team and Yaipha Lamjing Kanglup (0.480), Yaipha Lamjing Kanglup and Brave Boy Association (0.452) and Brave Boy Association and Manipur Police Team (0.962). Since their significant values are more than 0.05 level of significance.

The Mean Value of Sub-elite Handball players of Manipur on Reaction Speed are graphically represented in the Fig-1.1.

Figure 1.1

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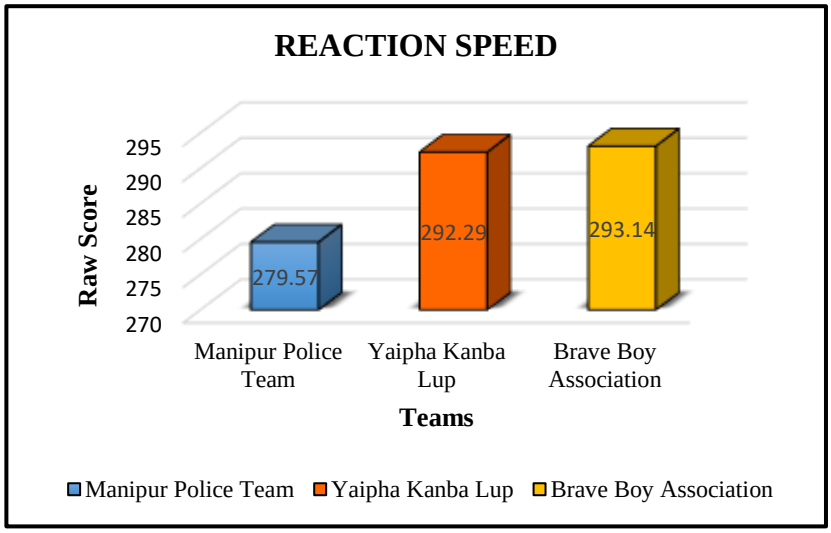
Graphical representation of Means of Reaction Speed (Reaction Test) among the selected three teams of Sub-elite Handball Players of Manipur



RESULT ON MOTOR SPEED

The data obtained for Motor Speed of Sub-elite Handball players of Manipur have been analyzed and presented in Table-1.5 as Descriptive Statistics and Table-1.6 as ANOVA and Table-1.7 as Post Hoc Tests respectively.

Table 1.5
Descriptive Statistics on Motor Speed (Reaction Test)

Motor Speed	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Manipur Police Team	7	165.57	38.336	14.489	130.12	201.03	106	218
Yaipha Lamjing Kanglup	7	164.43	20.895	7.898	145.10	183.75	137	192
Brave Boy Association	7	167.00	25.923	9.798	143.03	190.97	130	212
Total	21	165.67	27.832	6.073	153.00	178.34	106	218

The Mean Score of Motor Speed among the Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **165.57, 164.43** and **167.00** respectively as shown in Table-1.5.

The Standard Deviation of Motor Speed among the Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha

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Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **38.336, 20.895** and **25.923** respectively as shown in Table-1.5.

From the result it indicates that there is difference in their Mean Score and Standard Deviation values of their Motor Speed of Sub-elite Handball players of Manipur among the selected three teams.

The ANOVA analysis table of Sub-elite Handball players of Manipur on Motor Speed are represented in the Table-1.6.

Table 1.6

ANOVA on Motor Speed (Reaction Test)

Motor Speed	Sum of Squares	df	Mean Square	F	Sig.	η^2
Between Groups	23.238	2	11.619	.014	.987	.001
Within Groups	15469.429	18	859.413			
Total	15492.667	20				

*Significant at 0.05 level

Table value shown that there is no significant difference on Motor Speed **F(2, 18) = 0.014, p = .987, η^2 = .001**.

From the Table-1.6, the Mean Square value obtained for between group and within group are **23.238** and **15469.429** respectively, F value is **0.014** and p value **0.987**, Since the obtained F value is greater than the table value of 3.16 with degree of freedom (df) 18 at 0.05 level of confidence, it was conclude that the of Sub-elite Handball players of Manipur among the selected three teams had no significant difference in Motor Speed.

Table 1.7

Post Hoc Tests (Multiple Comparisons, Dependent Variable: Motor Speed (Reaction Test), LSD)

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Manipur Police Team	**Yaipha Lamjing Kanglup**	1.143	15.670	.943	-31.78	34.06
Yaipha Lamjing Kanglup	**Brave Boy Association**	-2.571	15.670	.871	-35.49	30.35
Brave Boy Association	**Manipur Police Team**	1.429	15.670	.928	-31.49	34.35

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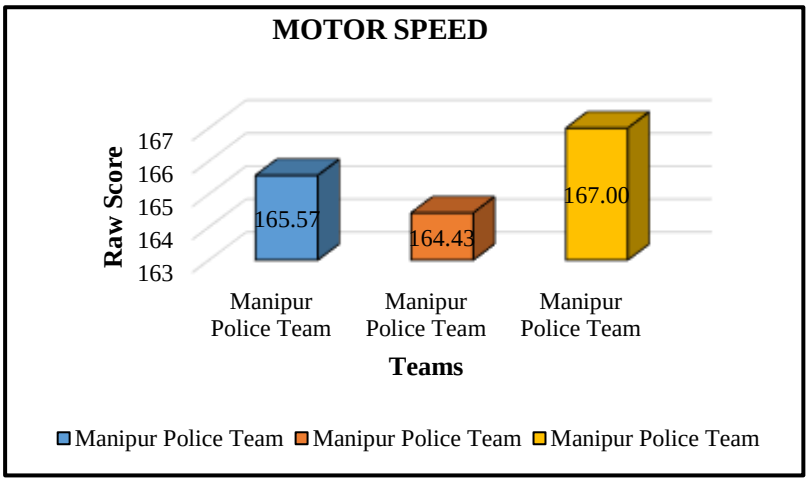
From the Table-1.7, it shows that there are no significant on Motor Speed difference when compared between Manipur Police Team and Yaipha Lamjing Kanglup (0.943), Yaipha Lamjing Kanglup and Brave Boy Association (0.871) and Brave Boy Association and Manipur Police Team (0.928). Since their significant values are more than 0.05 level of significance.

The Mean Value of Sub-elite Handball players of Manipur on Motor Speed (Reaction Test) are graphically represented in the Fig-1.2.

Figure 1.2
Means of Motor Speed (Reaction Test) among the Sub-elite Handball Players of Manipur



2. DETERMINATION TEST

RESULT OF MEDIAN REACTION TIME

The data for Median Reaction Time of Sub-elite Handball players of Manipur were obtained from Determination Test which have been analyzed and presented in Table-2.1 as Descriptive Statistics and Table-2.2 as ANOVA and Table-2.3 as Post Hoc Tests respectively.

Table 2.1
Descriptive Statistics on Median Reaction time (Determination Test)

Median Reaction Time	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Manipur Police Team	7	.893	.027	.010	.867	.918	.86	.93
Yaipha Lamjing Kanglup	7	.824	.084	.032	.747	.902	.73	.92
Brave Boy Association	7	.820	.021	.008	.801	.839	.80	.86
Total	21	.846	.060	.013	.818	.873	.73	.93

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The Mean Score of Correct Reactions among the Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **0.893, 0.824** and **0.820** respectively as shown in Table-2.1.

The Standard Deviation of among the Correct Reactions Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **0.027, 0.084** and **0.021** respectively as shown in Table-2.1.

From the result it indicates that there are differences in their Mean Score and Standard Deviation values of their Median Reaction Time of Sub-elite Handball players of Manipur among the selected three teams.

The ANOVA analysis table of Sub-elite Handball players of Manipur on Correct Reactions (Determination Test) is represented in the Table-2.2.

Table 2.2

ANOVA on Median Reaction Time (Determination Test)

Median Reaction Time	Sum of Squares	df	Mean Square	F	Sig.	η^2
Between Groups	.023	2	.012	4.253	.031*	.321
Within Groups	.050	18	.003			
Total	.073	20				

*Significant at 0.05 level

Table value shown that there highly significant difference on Median Reaction Time (Determination Test) **$F(2, 18) = 4.253$, $p = .031$*, $\eta^2 = .321$**.

From the Table-2.2, the Mean Square value obtained for between group and within group are **0.023** and **0.050** respectively, F value is **4.253** and p value **0.031***, Since the obtained F value is greater than the table value of 3.16 with degree of freedom (df) 18 at 0.05 level of significance, it was concluded that the of Sub-elite Handball players of Manipur among the selected three teams had significant difference in Median Reaction Time (Determination Test).

Table 2.3

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Manipur Police Team	**Yaipha Lamjing Kanglup**	.069*	.028	.025*	.010	.128
Yaipha Lamjing Kanglup	**Brave Boy Association**	.004	.028	.880	-.055	.063

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Brave Boy Association	**Manipur Police Team**	-.073*	.028	.018*	-.132	-.014

Post Hoc Tests (Multiple Comparisons, Dependent Variable: Median Reaction Time (Determination Test), LSD)

*The mean difference is significant at the 0.05 level.

From the Table-2.3 it shows that there are significant differences in Median Reaction Time (Determination Test) when compared between:

- Manipur Police Team and Yaipha Lamjing Kanglup (0.025*)
- Brave Boy Association and Manipur Police Team (0.018*)

Since their significant values are less than 0.05 level of significance.

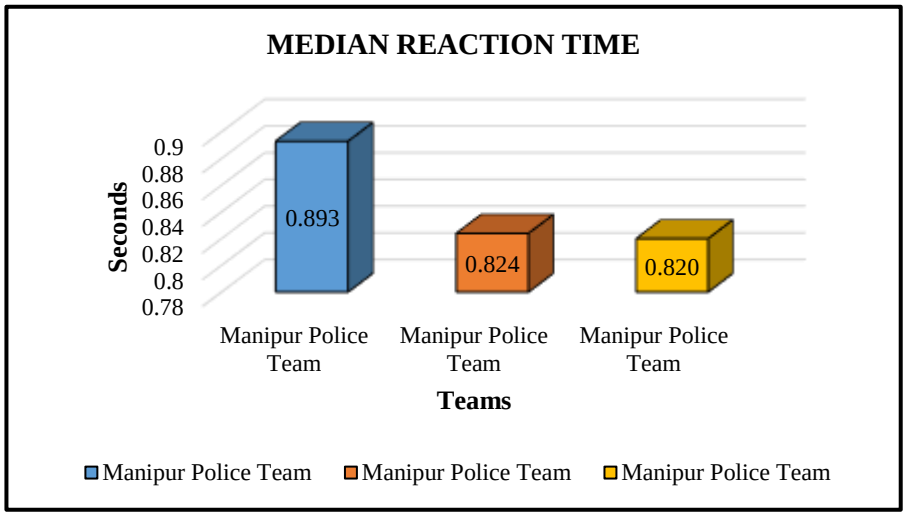
And, it shows there is no significant difference of Median Reaction Time (Determination Test) when compared between:

- Yaipha Lamjing Kanglup and Brave Boy Association (0.880)

Since their significant value is more than 0.05 level of significance.

The Mean Value of Sub-elite Handball players of Manipur on Median Reaction Time (Determination Test) are graphically represented in the Figure-2.1.

Figure 2.1
Means of Median Reaction Time (Determination Test) among the Sub-elite Handball Players of Manipur



RESULT OF CORRECT REACTIONS

The data for Correct Reactions of Sub-elite Handball players of Manipur were obtained from Determination Test which have been analyzed and presented in Table-2.4 as Descriptive Statistics and Table-2.5 as ANOVA and Table-2.6 as Post Hoc Tests respectively.

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Table 2.4

Descriptive Statistics on Correct Reactions (Determination Test)

The Mean Score of Correct Reactions among the Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **175.00, 214.14** and **212.43** respectively as shown in Table-2.4.

The Standard Deviation of among the Correct Reactions Sub-elite Handball players of Manipur of three teams namely Group I - Manipur Police Team, Group II - Yaipha Lamjing Kanglup (YLK) and Group III - Brave Boy Association (BBA) were **18.930, 23.667** and **22.082** respectively as shown in Table-2.4.

From the result it indicates that there are differences in their Mean Score and Standard Deviation values of their Correct Reactions in Determination Test of Sub-elite Handball players of Manipur among the selected three teams.

The ANOVA analysis table of Sub-elite Handball players of Manipur on Correct Reactions (Determination Test) is represented in the Table-2.5.

Table 2.5

ANOVA on Correct Reactions (Determination Test)

Correct Reactions	Sum of Squares	df	Mean Square	F	Sig.	η^2
Between Groups	6850.667	2	3425.333	7.308	.005**	.448
Within Groups	8436.571	18	468.698			
Total	15287.238	20				

*Significant at 0.05 level

Teams	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Manipur Police Team	7	175.00	18.930	7.155	157.49	192.51	149	195
Yaipha Lamjing Kanglup	7	214.14	23.667	8.945	192.25	236.03	173	237
Brave Boy Association	7	212.43	22.082	8.346	192.01	232.85	185	250
Total	21	200.52	27.647	6.033	187.94	213.11	149	250

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Table value shown that there highly significant difference on Correct Reactions (Determination Test) as **F(2, 18) = 7.308, p = .005**, η^2 = .448**.

(I) Groups	(J) Groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Manipur Police Team	**Yaipha Lamjing Kanglup**	-39.143*	11.572	.003**	-63.45	-14.83
Yaipha Lamjing Kanglup	**Brave Boy Association**	1.714	11.572	.884	-22.60	26.03
Brave Boy Association	**Manipur Police Team**	37.429*	11.572	.005**	13.12	61.74

From the Table-4.17, the Mean Square value obtained for between group and within group are **3425.333** and **486.698** respectively, F value is **7.308** and p value **0.005****, Since the obtained F value is greater than the table value of 3.16 with degree of freedom (df) 18 at 0.05 level of confidence, it was conclude that the of Sub-elite Handball players of Manipur among the selected three teams had significant difference in Correct Reactions of Determination Test.

The Post Hoc Tests table of Sub-elite Handball players of Manipur on Correct Reactions of Determination Test is represented in the Table-2.6.

Table 2.6

Post Hoc Tests (Multiple Comparisons, Dependent Variable: Correct Reactions (Determination Test), LSD)

*The mean difference is significant at the 0.05 level.

From the Table-4.18, it shows that there are highly significant differences in Correct Reactions of Determination Test when compared between:

- Manipur Police Team and Yaipha Lamjing Kanglup (0.003**)
- Brave Boy Association and Manipur Police Team (0.005**)

Since their significant values are less than 0.05 level of significance.

And, it shows there is no significant difference of Correct Reactions of Determination Test when compared between:

- Yaipha Lamjing Kanglup and Brave Boy Association (0.884)

Since their significant value is more than 0.05 level of significance.

The Mean Value of Sub-elite Handball players of Manipur on Correct Reactions of Determination Test are graphically represented in the Figure-2.2.

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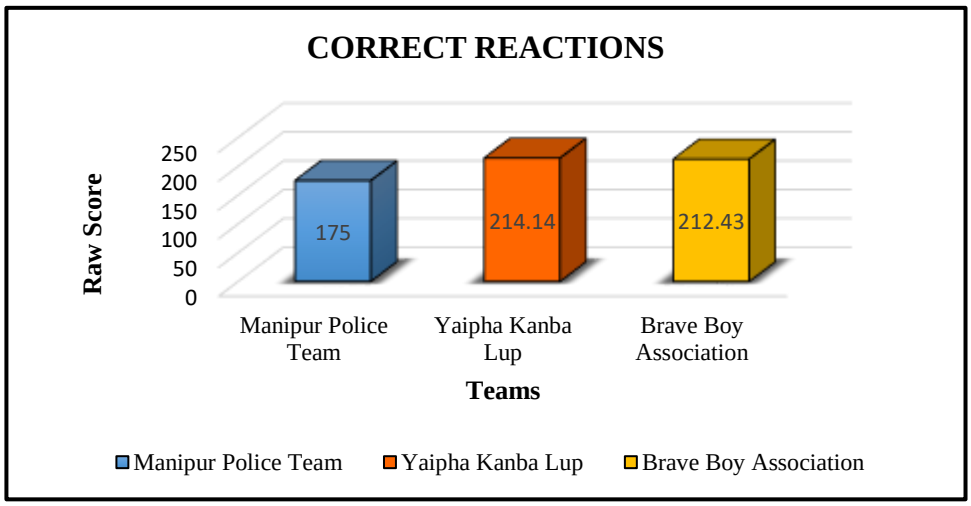
Figure 2.2

Means of Correct Reactions in Determination Test among the selected Sub-elite Handball Players of Manipur



DISCUSSION ON FINDINGS

The result of the study specifies that there were significant difference on selected Psychological Variables such as Median Reaction Time and Correct Reactions (Determination Test), among the selected Sub- Sub-elite Handball Players of Manipur. The result of the study also indicates that when they are compared between two teams while performing the Post Hoc test it was found that there was significant in Median Reaction Time and highly significant in Correct Reactions in the Determination Test. The outcome of the study also specifies, there was no significant difference on selected Psychological Variables such as Reaction Speed and Motor Speed (Reaction Test), among the selected Sub-elite Handball Players of Manipur. The result of the study indicates, there was no significant difference when they are compared between two teams while performing the Post Hoc Test, it was found only insignificant difference between them in the Reaction Test. The findings also align with recent sport-specific research emphasizing the benefits of intermittent load-based training. Singh, Singh, and Mola (2025) confirmed that interval training enhanced motor abilities in youth football players, while Mola and Bayısa (2020) reported circuit training improvements in health-related fitness among sport science students. Likewise, Husain, Mola, and Shaw (2024) demonstrated how external loads affect gait mechanics, paralleling handball's fluctuating sprinting, decelerating, and jumping demands that Fartlek effectively replicates. Moreover, nutritional awareness and stakeholder involvement have been shown to influence training outcomes (Taye, Mola, & Rahman, 2024; Taye et al., 2025), indicating that biochemical adaptations may be maximized when training is integrated with recovery, diet, and psychosocial support. Finally, long-term adaptations reported in a 12-week program for long jumpers (Mola et al., 2025) reinforce the present study's evidence that systematic Fartlek training can enhance endurance, regulate lipid metabolism, reduce fatigue-related biochemical imbalances, and improve recovery efficiency. This study provides strong evidence that Fartlek training positively influences the biochemical profiles of basketball players, particularly haemoglobin and triglycerides, which are crucial for oxygen delivery and energy metabolism. Its sport-specific value lies in replicating the variable intensity patterns of basketball, thereby promoting physiological

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resilience and metabolic efficiency. However, its optimal effectiveness requires integration with nutritional, managerial, and psychosocial strategies to support holistic athlete development (Mola & Shaw, 2024; Taye et al., 2025). It was inferred from the literature and results that, the teams vary from each other so the mode of training may be different for each team. The selected dependent variables are very important qualities for better performance in Handball so each team performance also directly or indirectly depends on these variables for better enhancement in their game. Hence, it was concluded from the results that systematically and scientifically designed training programme may be administered in respect to recognition and will be complemented properly in the training programme of all the games in order to achieve maximum performance.

DISCUSSION ON HYPOTHESIS

At the beginning of the study the investigator had formulated the hypothesis that there might be significant difference on selected Psychological Variables among the selected Sub-elite Handball Players of Manipur. The findings of the study showed some similar results. So the researcher's first hypothesis was rejected. Since, some variables are found to be significant and some are found to be insignificant. It was hypothesis that the selected Sub-elite Handball Players of Manipur would show considerable differences on selected Psychological Variables. But, only some results showed considerable differences and some showed no differences.

CONCLUSION

On the basis of the findings of the study the following conclusion were drawn.

i. It was found that there were no significant difference on Reaction Speed and Motor Speed in Reaction Test among the selected three professional teams Handball Players of Manipur.
ii. It was found that there were significant difference on Median Reaction Time and Correct Reactions in Determination Test among the selected three professional teams Handball Players of Manipur

References

Brigitta, K., & László, B. (2019). A study of key cognitive skills in handball using the Vienna test system. *Journal of Physical Education and Sport.* 19(1), 733 – 741. https://doi.org/10.7752/jpes.2019.01105.

Brigitta, K., László, B., Ákos, M., & Csillacsukonyi (2020). A sport-psychological diagnostic examination of young EHF handball referees with a focus on mental skills. *Journal of Physical Education and Sport,* 20 (4), 1984 – 1995. https://doi.org/10.7752/jpes.2020.04268

Dr. CP Singh (2020). An analytical study of comparison of reaction and determination test among advanced and intermediate handball players. *International Journal of Advanced Academic Studies*. 2(4): 297-299.

Henrieta, H., Michal, J., & Erika, Z. (2021). Determinants of Reactive Agility in Tests with Different Demands on Sensory and Motor Components in Handball Players. *Applied Science.* https://doi.org/10.3390/app11146531.

ISSN:1517-4492 | **E-ISSN**:2178-7727
Vol. 8, No. 1 (2025)

Husain, R., Mola, D. W., & Shaw, D. (2024). Effect of selected backpack loads carried for selected durations on temporal pattern of peak forces of walking gait of school-going boys. International Journal of Kinesiology and Sports Science, 12(4), 48-56.

Husain, R., Mola, D. W., & Shaw, D. (2024). Understanding the Effects of Selected Backpack Loads Carried for Certain Durations on Peak Forces of Walking Gait in School-Going Boys. Journal of Learning Theory and Methodology, 5(3), 144-152.

Jan, B., Krzysztof, W., Małgorzata, S., Tadeusz, A., & Michał, S. (2022). Cognitive Factors in Elite Handball: Do Players' Positions Determine Their Cognitive Processes? Journal of Human Kinetics. 82: 213–221.

Mola, D. W., & Bayısa, G. T. (2020). Effect of circuit training on selected health-related physical fitness components: the case of sport science students. Turkish Journal of Kinesiology, 6(4), 142-148.

Mola, D. W., & Shaw, D. (2024). Significance of managerial skills for talent development in ethiopian athletes. International Journal of Kinesiology and Sports Science, 12(2), 21-29.

Mola, D. W., Rahman, M. H., Uvinha, R. R., Adane, A. K., Tyagi, S., Adili, D., & Islam, M. S. (2025). Effect of 12-week Training Program on the Fitness and Performance of Long Jumpers. International Journal of Kinesiology and Sports Science, 13(1), 45-53.

Singh, A. J., Singh, L. S., & Mola, D. W. (2025). Effect of Interval Training on Selected Motor Abilities of Youth Football Players. Slobozhanskyi Herald of Science and Sport, 29(2), 167-175.

Taye, A. G., Bouchh, H., Rahman, M. H., Uvinha, R. R., Legesse, A. K., Adili, D., & Mola, D. W. (2025). Determining the Influence of Coaches, Parents, and Stakeholders on the Development of Youth Football: A Comprehensive Analysis. Physical Education Theory and Methodology, 25(3), 556-565.

Taye, A. G., Mola, D. W., & Rahman, M. H. (2024). Analyzing the nutritional awareness, dietary practices, attitudes, and performance of U-17 football players in Ethiopia. Physical Education Theory and Methodology, 24(1), 110-117.

Tyagi, S., Vanaik, A. K., Wasuja, M., & Mola, D. W. (2025). Comparing Physical Attribute Distinctions in Male Kho-Kho Positions. Physical Education Theory and Methodology, 25(1), 66-71.

ISSN:1517-4492 | **E-ISSN**:2178-7727