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A comparative profile study of West Bengal University level Kho-Kho players

Biswajit Garai and Dr. Sudarsan Biswas

Abstract

Introduction: Kho-Kho is one of the most important game through which develops Intellectual capability and Physical Efficiency. Among the traditional sports in India, Kho-Kho is one of the most important.

Aim: To prepare and compare the fitness Profile of West Bengal University Level Kho-Kho Players.

Methodology: Selection of the subject: One Hundred Five Male Kho-Kho player were selected for the subject for the present study. Study area: Seven Universities in West Bengal Kho-Kho Players were selected. Their age range was 18-27 years. Criterion Measure: Speed, Explosive Strength, VO₂ Max, Agility and Flexibility were measure to prepare the fitness profile for West Bengal University Kho-Kho Players. Statistic: Descriptive statistics were applied for the Present study.

Result: Mean value of Speed (sec.), Explosive Strength (mtr.), VO₂ Max (ml./kg./min.), Agility (sec.) and Flexibility (cm.) were found (6.88 ± 22 sec.), (2.40 ± 11 mtr.), and (48.71 ± 2.59 ml./kg./min.), (10.28 ± 82sec.), (17.20 ± 6.22 cm.).

Conclusion: After complete this study I am found that the North Bengal University, Kalyani University and Vidyasagar University Kho-Kho players has better physical fitness, due to their selection procedure, durance of coaching camp, Training, practice procedure, food habits and weather condition was very well. So their team get better result in the Inter University Competition.

Keywords: Profile, Physical fitness, Speed, Agility, VO₂ Max, Explosive Strength, Flexibility

Introduction

Now a day's Sports has become a very competitive in nature. Every States, Nation are try to put their best performance at the time of competition by means of Intellectual capability and Physical Efficiency. Kho-Kho is one of the most important game through which develop Intellectual capability and Physical Efficiency which one among the traditional sports in India, Kho-Kho is one of the most important. According to most historians, the game is a modified form of 'Run-Chase', which mainly includes the act of chasing and touching a person (of opposite team).

This game is simple, inexpensive and highly enjoyable, so it is very popular in a developing country like India. It is a game which can develop easily the fitness, timing, reflex and stamina etc. To catch by pursuit-to chase, rather than run- is the main theme of Kho-Kho. This game also involves a sense of sportsmanship, loyalty between team members, obedience and discipline^[1].

Objectives

The objective of the present study was:

- To prepare the fitness Profile of West Bengal University Level Kho-Kho Players.
- To compare the Fitness Profile of West Bengal University Level Kho-Kho Players.

Significant of the Study

- This study will help to the coaches during selection.
- It will help for further study on National level Kho-Kho players.
- This study will provide a data source for University Kho-Kho team and Physical Education Department.
- It will help the Coaches, Teachers, Players and Scholars for their various purposes.

- This study may provide a list of experts, examiners, and specialized person in different areas.
- As the Profile study on Kho-Kho game is not available in West Bengal, therefore this study will contribution enormously to the Kho-Kho game in West Bengal.

Methodology

Selection of the Subject

One Hundred Five Male Kho-Kho player was randomly selected from Seven Universities i.e. North Bengal University, Visva-Bharati, Burdwan University, Calcutta University, Kalyani University, Jadavpur University and Vidyasagar University in West Bengal for the subject for the present study.

Study Area

Seven Universities i.e. North Bengal University, Visva-Bharati, Burdwan University, Calcutta University, Kalyani University, Jadavpur University and Vidyasagar University in West Bengal University level Kho-Kho Players were selected. Their age range was 18-27 years.

Selection of the variables

Following variables and test was taken for the present study.

Variables

- Height
- Weight
- Speed
- Agility
- VO₂ Max
- Flexibility
- Explosive strength

Test/Instrument

- Steel tape
- Weighing Machine
- 50 mt. Sprint
- 4 x 10 mt. Shuttle Run
- Beep test
- Sit and reach
- Standing Broad jump

Criterion Measures

- The speed was measure by 50 mt. Sprint test and recorded 1/100 of a sec.
- The agility was measure by 4 x 10 mt. shuttle run test and recorded 1/100 of a sec.
- The Endurance was measure by beep test and calculates to VO₂ Max recorded in ml/kg./min.
- The flexibility was measure by sit and reach test and would be recorded in cm.
- Explosive strength was measure by Standing Broad jump test and recorded in mt.

Result

Analysis and Interpretation of Data

Objective 1: To prepare the fitness Profile of West Bengal University Level Kho-Kho Players.

Table 1: Values of different statistics for fitness parameters

Statistics									
	Age (yrs.)	Ht. (Cm.)	Wt. (Kg.)	BMI	Speed (Sec.)	Exp. Strength (mtr.)	Endurance VO2 Max (ml/kg/min.)	Agility (Sec.)	Flexibility (cm.)
N	105	105	105	105	105	105	105	105	105
Mean	21.73	165.56	64.59	20.63	6.88	2.40	48.71	10.28	17.20
Std. Error of Mean	.17	.47	.62	.22	.021	.01	.253	.08	.60
Std. Deviation	1.82	4.86	6.36	2.28	.22	.11	2.59	.82	6.22
Skewness	-.14	-.27	-.55	1.33	-.82	-.97	-.49	-.01	-1.14
Std. Error of skewness	.23	.23	.23	.23	.23	.23	.23	.23	.23
Kurtosis	-1.17	-.01	1.03	2.07	-.47	.87	-.20	-.95	-.02
Std. Error of Kurtosis	.467	.467	.467	.467	.467	.467	.46	.467	.467
Minimum	18.00	154.00	46.00	15.71	6.45	2.10	42.50	8.91	2.00
Maximum	25.00	175.00	80.00	28.22	7.11	2.59	52.90	11.80	24.00

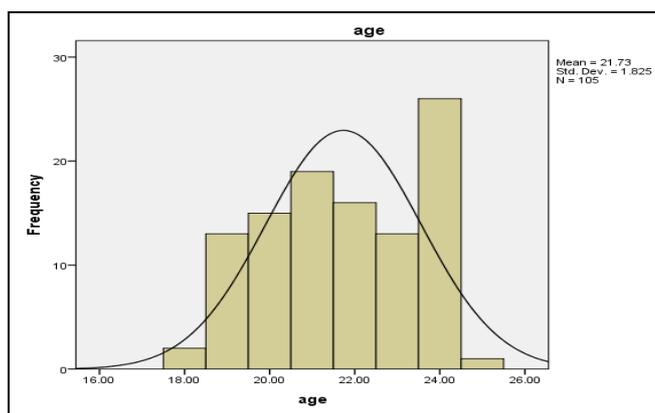


Fig 1: Graphical representation of Probability curve of AGE

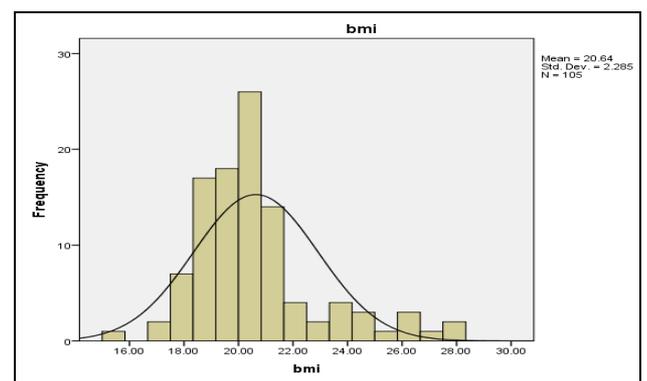


Fig 2: Graphical representation of Probability curve of BMI

For a normal distribution, kurtosis value is 0. If for any variable the value of kurtosis is positive, its distribution is known as leptokurtic, which indicates low level of data variation around its mean value whereas negative value of kurtosis indicates large degree of variance among the data and the distribution is known as platykurtic. Here the kurtosis value of Age is negative (-1.172) which means the age of the subjects are varied and heterogeneous.

As a guideline, a skewness value more than twice its standard error indicates a departure from regularity. Owing to this principle BMI is positively skewed as its value is 1.339 that is more than twice its standard error (2×0.222). Thus, it can be interpreted that the BMI value of the subjects is more on the lower side. Therefore it can be said that Kho-kho players have less fat in their body. This is rightly so as the kho-kho players need to be very quick and agile due the very nature of the game.

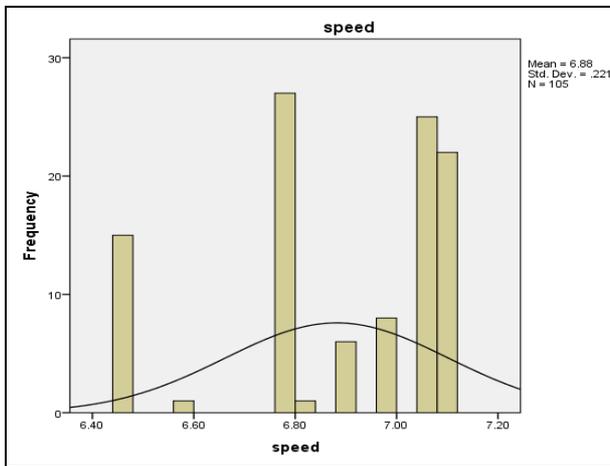


Fig 3: Graphical representation of Probability curve of Speed

In case of speed the kurtosis value is negative (-0.475) which indicates large degree of variance among the data and the distribution is platykurtic. Again the skewness value of speed (-0.828) is also more than twice of its standard error (2×0.021). This indicates that performance value of speed is more on the side and needs to be improved accordingly.

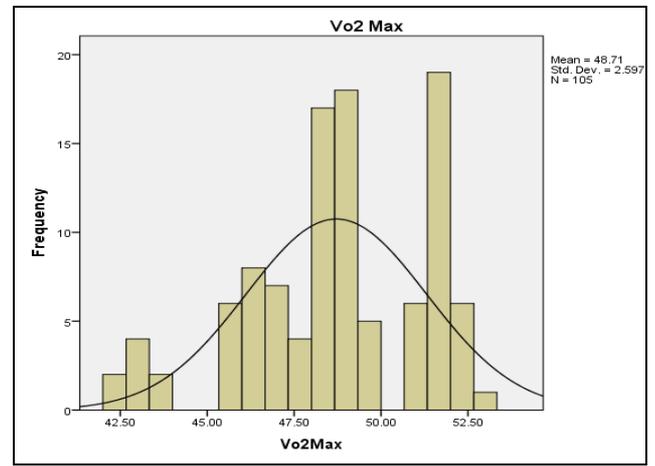


Fig 5: Graphical representation of Probability curve of VO₂ Max

In case of Endurance (VO₂ Max) the kurtosis value is negative (-0.20) which indicates large degree of variance among the data and the distribution is platykurtic. Again the skewness value of endurance (-0.49) is also more than twice of its standard error (2×0.23). This indicates that performance value of endurance is more on the lower side and needs to be improved accordingly.

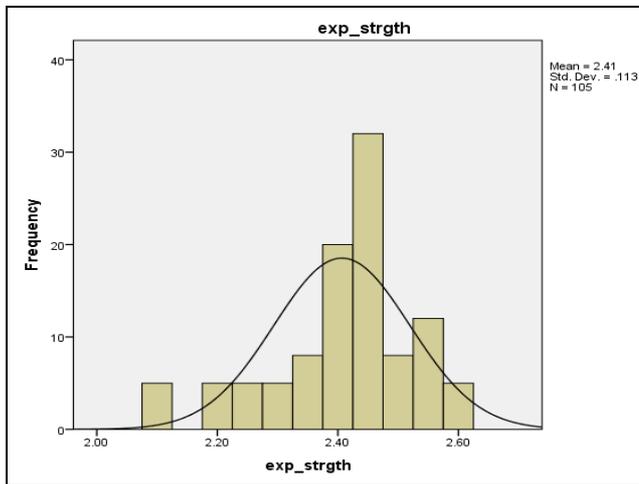


Fig 4: Graphical representation of Probability curve of Explosive Strength

In this study, kurtosis for the Explosive strength is 0.847 this indicates less variation exists among subject's explosive strength performance around their mean value and therefore the distribution is leptokurtic. Which indicates less data fluctuations around its mean and there is regularity in the data of Explosive strength.

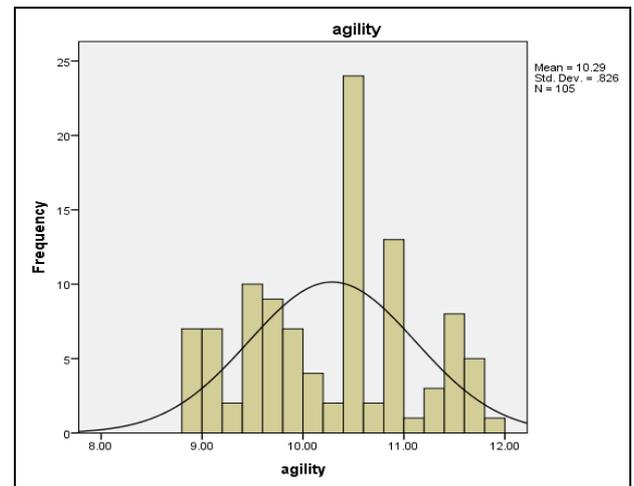


Fig 6: Graphical representation of Probability curve of Agility

In case of Agility the kurtosis value is negative (-0.950) which indicates large degree of variance among the data and the distribution is platykurtic. Again the skewness value of endurance (-0.018) is not more than twice of its standard error (2×0.80). This indicates that performance value of endurance is more on the higher side and that is good.

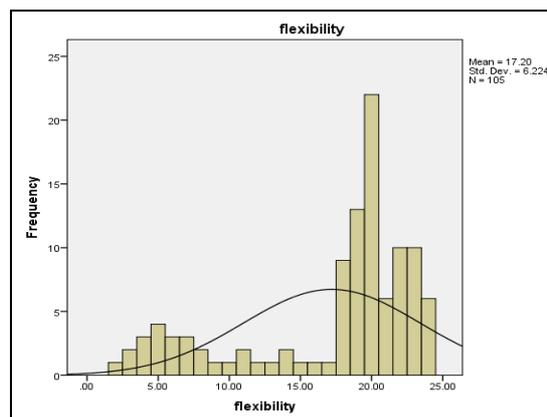


Fig 7: Graphical representation of Probability curve of Flexibility

Here the kurtosis value of Flexibility is negative (-0.02) which means the flexibility of the subjects is varied and heterogeneous. Also the skewness is not twice than the standard error which indicates the flexibility of the subjects is on the higher side.

Table 2: Selected descriptive statistics of the fitness parameters of University Kho-Kho players.

	MIN	MAX	MEAN	SD
Age (yrs.)	18	25	21.73	1.82
BMI	15.71	28.22	20.63	2.28
Speed (sec.)	6.45	7.11	6.88	0.22
Explosive Strength (mtr.)	2.1	2.59	2.4	0.11
Vo ₂ Max (ml/kg./min.)	42.50	52.90	48.71	2.59
Agility (sec.)	8.91	11.8	10.28	0.82
Flexibility (cm.)	2	24	17.2	6.22

Table 3: Standard Scores of minimum, maximum and average of all the fitness variables of University Kho-kho players.

	MIN (z)	MEAN (z)	MAX (z)
AGE (yrs.)	-2.04	0	1.79
BMI	-2.15	0	3.32
Speed (sec.)	-1.95	0	1.04
Explosive Strength (mtr.)	-2.72	0	1.72
VO ₂ MAX (ml/kg./min.)	-2.39	0	1.61
Agility (sec.)	-1.67	0	1.85
Flexibility (cm.)	-2.44	0	1.09

Table 4: Transformed standard scores of minimum, maximum and average of all the fitness variables of University Kho-Kho players.

	MIN	MEAN	MAX
Age (yrs.)	29.50	50	67.96
BMI	28.42	50	83.28
Speed (sec.)	30.45	50	60.45
Explosive Strength (mtr.)	22.72	50	67.27
VO ₂ MAX (ml/kg./min.)	26.08	50	66.12
Agility (sec.)	33.29	50	68.53
Flexibility (cm.)	25.56	50	60.93

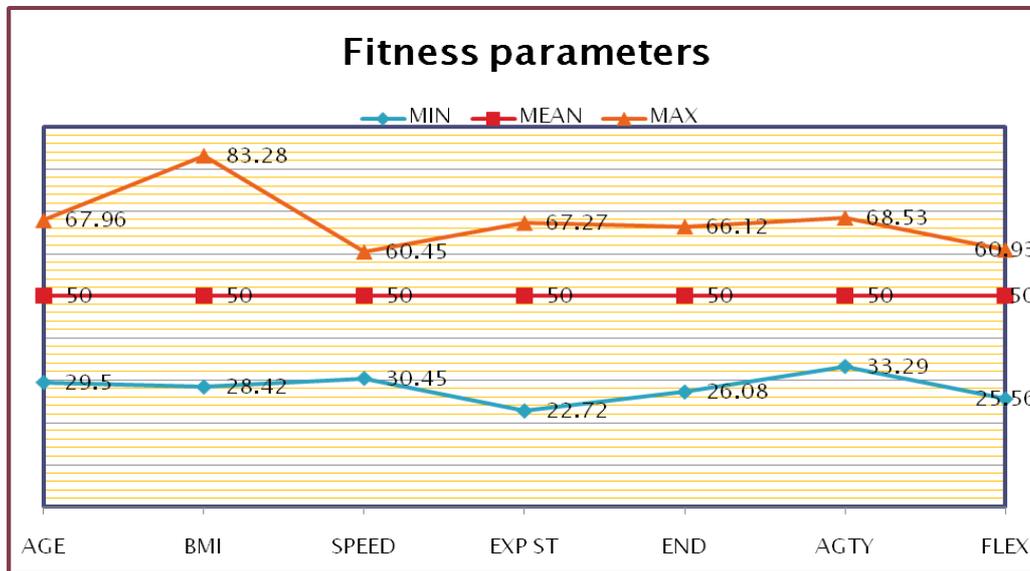


Fig 8: Graphical representation of Fitness Profile of University Kho-Kho Players on the basis of Standard Scores

Objective 2: To compare the Fitness Profile of West Bengal University Level Kho-Kho Players.

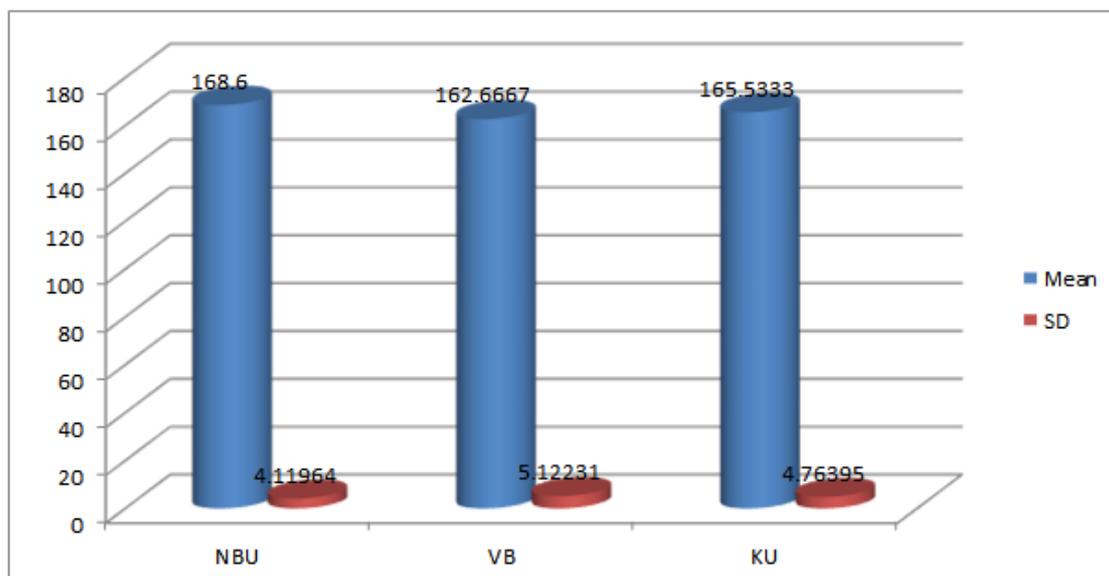


Fig 9: Graphical representation of Height

Table 5.

Height (cm.)		
Name of the University	Mean	S. D.
North Bengal University	168.6	4.11
Visva-Bharati	162.66	5.12
Kalyani University	165.53	4.76

criteria of North Bengal University Kho-Kho players were found to 168.60 ± 4.11 cm. Visva-Bharati University Kho-Kho players were found to 162.66 ± 5.12 cm. and Kalyani University Kho-Kho players were found to 165.53 ± 4.76 cm. The mean score of the Height criteria of North Bengal University Kho-Kho players were higher from the Visva-Bharati and Kalyani University Kho-Kho players.

It was observed from Table-5 that the mean score in Height

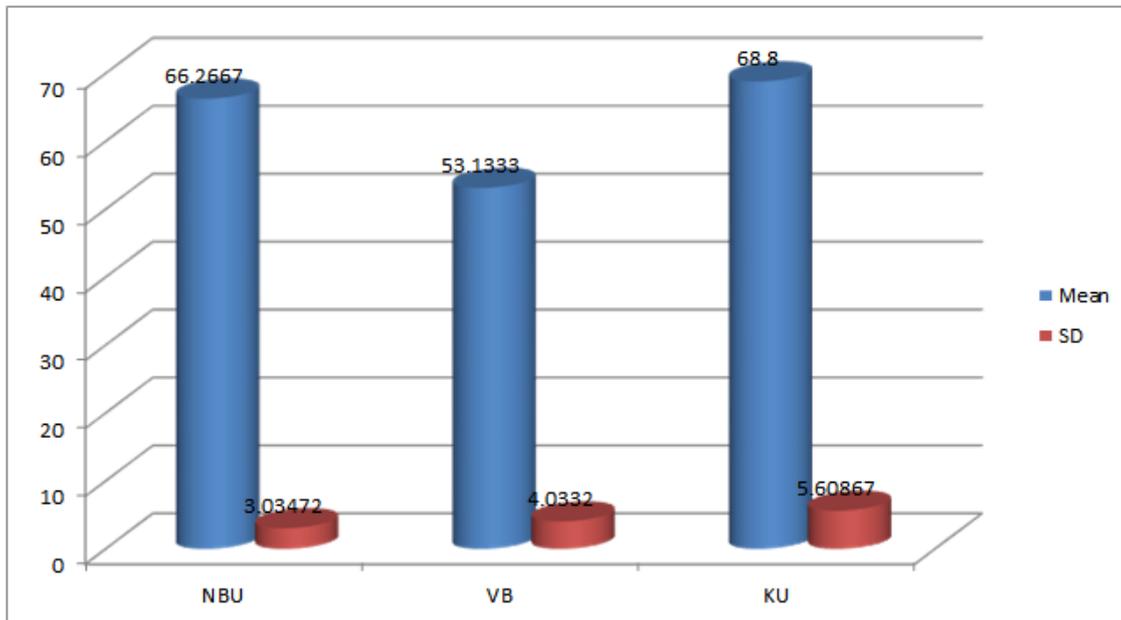


Fig 10: Graphical representation of Weight

Table 6.

Weight (kg.)		
Name of the University	Mean	S.D.
North Bengal University	66.26	3.03
Visva-Bharati	53.13	4.03
Kalyani University	68.8	5.60

criteria of North Bengal University Kho-Kho players were found to 66.26 ± 3.03 kg., Visva-Bharati University Kho-Kho players were found to 53.13 ± 4.03 kg. and Kalyani University Kho-Kho players were found to 68.8 ± 5.60 kg. The mean score of the Weight criteria of Kalyani University Kho-Kho players were higher from the Visva-Bharati and North Bengal University Kho-Kho players.

It was observed from Table-6 that the mean score in Weight

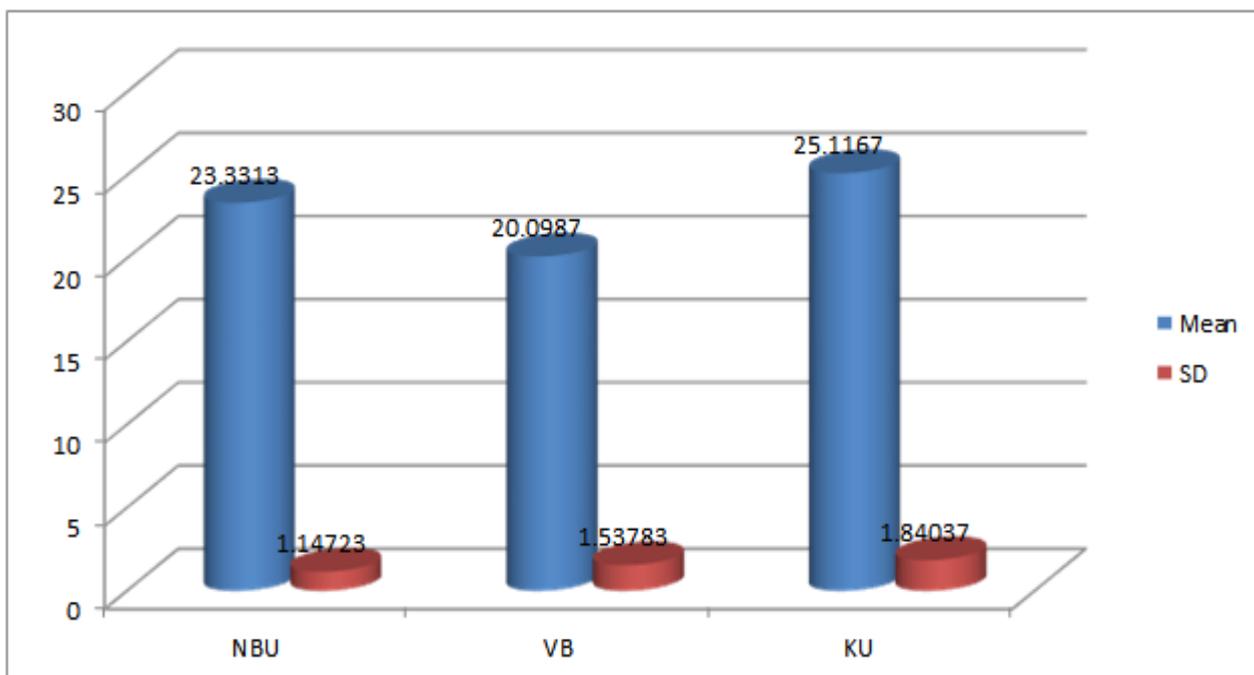


Fig 11: Graphical representation of BMI

Table 7.

BMI		
Name of the University	Mean	S. D.
North Bengal University	23.33	1.14
Visva-Bharati	20.09	1.53
Kalyani University	25.11	1.84

North Bengal University Kho-Kho players were found to 23.33 ± 1.14 , Visva-Bharati University Kho-Kho players were found to 20.09 ± 1.53 and Kalyani University Kho-Kho players were found to 25.11 ± 1.84

The mean score of the BMI of Kalyani University Kho-Kho players were higher from the Visva-Bharati and North Bengal University Kho-Kho players.

It was observed from Table-7 that the mean score in BMI of

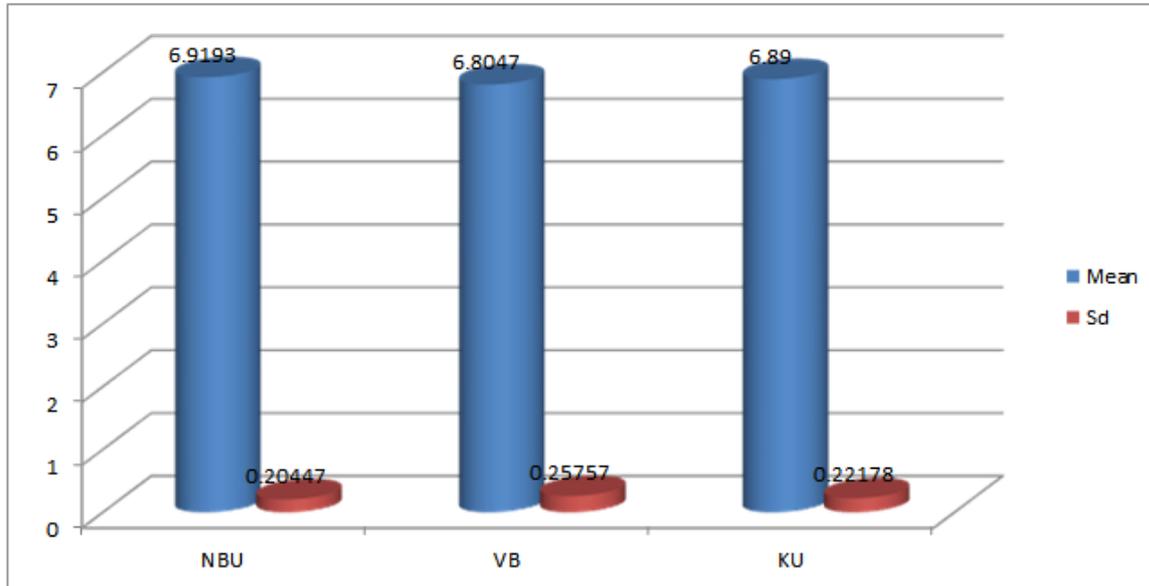


Fig 12: Graphical representation of Speed

Table 8.

Speed (sec.)		
Name of the University	Mean	S. D.
North Bengal University	6.91	0.20
Visva-Bharati	6.80	0.25
Kalyani University	6.89	0.22

criteria of North Bengal University Kho-Kho players were found to 6.91 ± 0.21 sec., Visva-Bharati University Kho-Kho players were found to 6.80 ± 0.25 sec. and Kalyani University Kho-Kho players were found to 6.89 ± 0.22 cm.

The mean score of the Speed criteria of North Bengal University Kho-Kho players were higher from the Visva-Bharati and Kalyani University Kho-Kho players.

It was observed from Table-8 that the mean score in Speed

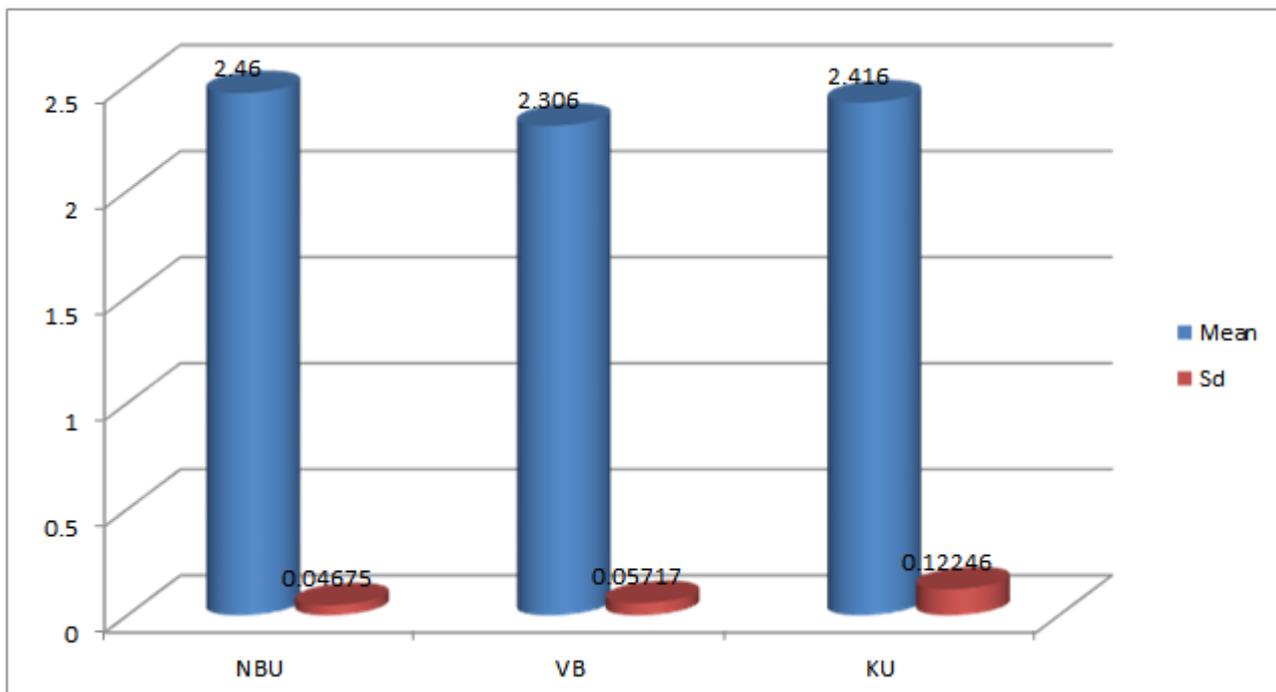


Fig 13: Graphical representation of Explosive Strength

Table 9:

Explosive Strength (mt.)		
Name of the University	Mean	S. D.
North Bengal University	2.46	0.04
Visva-Bharati	2.30	0.05
Kalyani University	2.41	0.12

It was observed from Table-9 that the mean score in Explosive Strength criteria of North Bengal University Kho-

Kho players were found to 2.46 ± 0.04 mt., Visva-Bharati University Kho-Kho players were found to 2.30 ± 0.05 mt. and Kalyani University Kho-Kho players were found to 2.41 ± 0.12 mt.

The mean score of the Explosive Strength criteria of North Bengal University Kho-Kho players were better from the Visva-Bharati and Kalyani University Kho-Kho players.

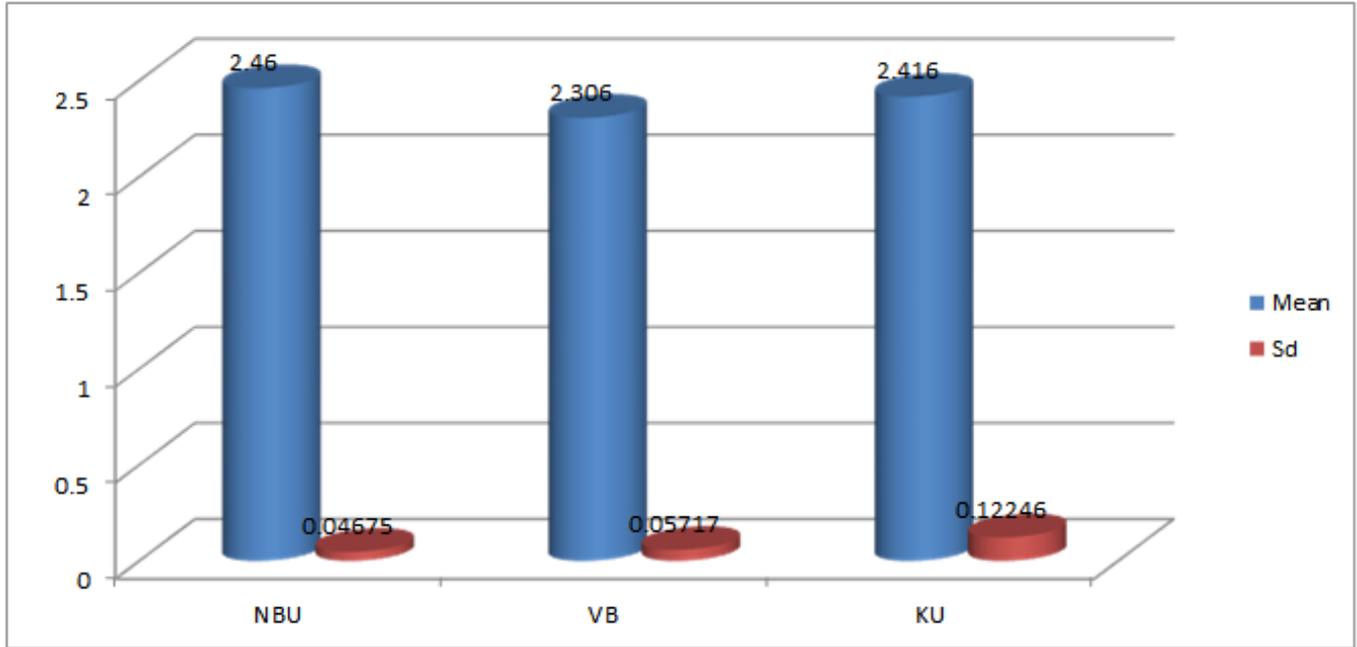


Fig 14: Graphical representation of Agility

Table 10.

Agility (sec.)		
Name of the University	Mean	S. D.
North Bengal University	9.30	0.35
Visva-Bharati	10.70	0.59
Kalyani University	10.13	0.82

It was observed from Table-10 that the mean score in Agility

criteria of North Bengal University Kho-Kho players were found to 9.30 ± 0.35 sec., Visva-Bharati University Kho-Kho players were found to 10.70 ± 0.59 sec. and Kalyani University Kho-Kho players were found to 10.13 ± 0.82 mt.

The mean score of the Agility criteria of North Bengal University Kho-Kho players were better from the Visva-Bharati and Kalyani University Kho-Kho players.

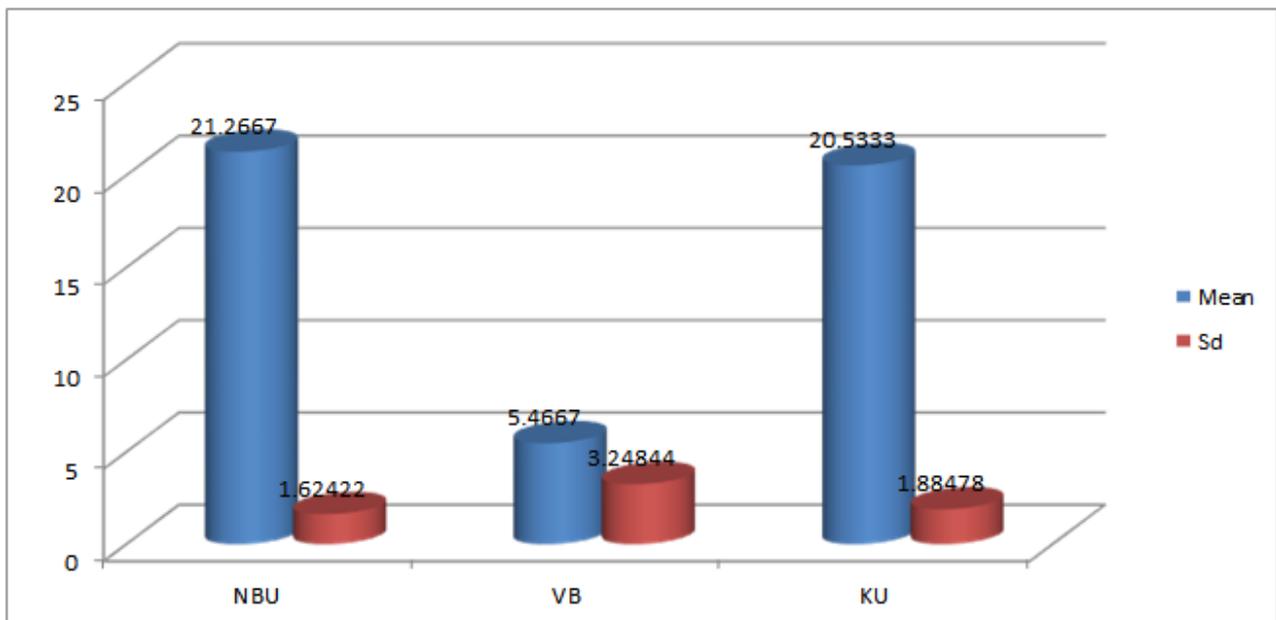


Fig 15: Graphical representation of Flexibility

Table 11.

Flexibility (cm.)		
Name of the University	Mean	S. D.
North Bengal University	21.26	1.62
Visva-Bharati	05.46	3.24
Kalyani University	20.53	1.88

It was observed from Table-11 that the mean score in Flexibility criteria of North Bengal University Kho-Kho players were found to 21.26 ± 1.62 cm., Visva-Bharati University Kho-Kho players were found to 05.46 ± 3.24 cm. and Kalyani University Kho-Kho players were found to 20.53 ± 1.88 cm.

The mean score of the Flexibility criteria of North Bengal University Kho-Kho players were better from the Visva-Bharati and Kalyani University Kho-Kho players.

Discussion

With reference the present study show that thus, it can be interpreted that the BMI value of the subjects is more on the lower side. Therefore it can be said that Kho-Kho players have less fat in their body. This is rightly so as the Kho-Kho players need to be very quick and agile due the very nature of the game. This study indicates that performance value of speed is more on the lower side and needs to be improved accordingly. The Explosive strength is 0.847 this indicates less variation exists among subject's explosive strength performance around their mean value and therefore the distribution is leptokurtic. Which indicates less data fluctuations around its mean and there is symmetry in the data of Explosive strength.

Endurance the kurtosis value is negative (-0.20) which indicates large degree of variance among the data and the distribution is platykurtic. Again the skewness value of endurance (0.23) is also more than twice of its standard error (2×0.49). This study indicates that performance value of endurance is more on the lower side and needs to be improved accordingly. This indicates that performance value of endurance is more on the higher side and that is good. Here the kurtosis value of Flexibility is negative (-0.02) which means the flexibility of the subjects is varied and heterogeneous. Also the skewness is not twice than the standard error which indicates the flexibility of the subjects is on the higher side.

Conclusion & Recommendation

On the basis of the result it was concluded that the Mean and SD value of Kho-Kho players in Speed is 6.88 ± 0.22 sec, in Explosive Strength is 2.40 ± 0.11 mt, in VO_2 Max is 48.71 ± 2.59 ml/Kg./min., in agility is 10.28 ± 0.82 sec., in flexibility is 17.20 ± 6.22 cm.

On the basis of the result the researcher was found that the North Bengal University, Kalyani University and Vidyasagar University Kho-Kho players has better physical fitness, due to their selection procedure, duration of coaching camp, Training, practice procedure, food habits and weather condition was very well. So their team get better result in the Inter University Competition.

After complete the present study the researcher conclude that this study allow specific insight into the physical fitness of University level Kho-Kho players and allow coaches to design a specific training program to develop their physical fitness for a better performance of higher level.

The current study findings may enable coaches and trainers to manage training programs more efficiently in order to obtain

tailor-made training, identify specific physical fitness training requirements and reach better results during competitions.

Also the researcher conclude this type of profile study was clearly idea to coaches, selector and other members what kind of Kho-Kho players will selected for their team. Because every coaches and team members can achieved their goal how to get better performance.

The various fitness variables i.e. Speed, Explosive Strength, VO_2 Max, Agility, Flexibility etc. is importance variables to develop Physical Fitness of Kho-Kho players. If it is develop then the Intellectual Capability and Physical Efficiency will develop automatically and then the performance will be better.

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