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Sport Imagery among Basketball Players from Indian Institutes of Science Education and Research

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Abstract

Background: The present research aimed at measuring sport imagery among basketball players from Indian Institutes of Science Education and Research (IISER). Method: Sixty (N=60) male basketball players of inter IISER sports meet with the age group of 18 to 28 years were selected through purposive sampling technique to act as subjects from Indian Institute of Science Education and Research. They were further divided into five groups: Group-A twelve (N=12) from IISER Mohali, (n=12), Group-B twelve (n=12) from IISER Pune, Group-C twelve (n=12) from IISER Bhopal, Group-D twelve (n=12) from IISER Kolkata, Group-E twelve (n=12) from IISER Thiruvananthapuram. Statistical analysis: One Way Analysis of Variance (ANOVA) was employed to compare the entire groups. Where 'P' values found significant then Least Significant Differences (LSD) Post-hoc test was applied to find out the direction and degree of difference. The level of significance was set at P>0.05. Conclusions: It is concluded that results revealed significant differences among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameters; cognitive general($f=2.45, P<0.05$), motivational specific($f=2.61, P<0.05$), , motivational general-arousal($f=2.58, P<0.05$), motivational general-mastery($f=4.26, P<0.05$) and parameter sport imagery (Total) ($f=2.86, P<0.05$). However no significant differences have been observed on the sub-parameter cognitive specific ($f=.70$, $P>0.05$) and cognitive general ($f=2.46$, $P>0.05$) among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram.

Keywords: Sport imagery, Basketball, IISER

Introduction

The Indian Institutes of Science Education and Research (IISERs) are a group of premier science education and research institutes in India. These institutions have been declared by Act of Parliament as institutions of national importance, and are intended to be the IITs of basic sciences. The institutes were created by the Government of India, through the Ministry of Human Resource Development (MHRD), under The National Institutes of Technology (Amendment) Bill, 2010 (an amendment of the National Institutes of Technology Act, 2007), which was passed by the Rajya Sabha on 30 April 2012. Imagery is a part of sport psychology skill (mental skill), where it effect to athletes to success in their tournament or game. In addition many athletes and coaches today recognize the power of imagery in sport performance. In fact, athletes from most sport attribute at least part of their success to their use of imagery. Murphy and Martin (2002) said imagery that have better in relationship between imagery ability and sport performance. Both athletes and exercisers use imagery to aid in their performances (Haunsenblas et al., 1999). But not all athletes are able to verbally describe exactly how they use imagery, but some can. Clearly, imagery has been useful for great athletes. Many athletes use imagery both as an important psychological skill, and also to improve performance. This type of imagery practice usually involves more than one sensory modality, and the effective use of polysensory imagery is positively correlated with sport performance. The two most important sensory modalities used in imagery are the visual and the kinesthetic (Farahatet, 2004). Visual imagery is the ability to clearly see the specified images, whereas kinesthetic imagery is the ability to clearly feel imaged body movements and other physical sensations (Abma et al., 2002). Thus the kinesthetic sense is often recommended for athletes (Gould et al., 2002; Murphy, 1994; Weinberg & Gould, 2007). Imagery is defined as "using all the senses to create or recreate an experience in the mind" (Vealey & Walter, 1993).

Everyone has the ability to use imagery; nevertheless, people sometimes choose not to use it even in situations in which it could be helpful. It can also be seen as an experience that mimics real experience in which the individual is aware of seeing on image, feeling movement of an image, experiencing an image of smell, taste or sound without experiencing the real thing (White & Hardy, 1998). Imagery also involves both external and internal perspectives. In the external imagery perspective, the athlete takes a third-person viewpoint, as if watching him or herself in a film, whereas in the internal imagery perspective, the athlete imagines his or her performance while simultaneously seeing and feeling himself or herself physically doing the skill (Farahatet et al., 2004). Athletes who are able to create accurate and life like images benefit more than those who can create only a blurry, fleeting image (Isaac, 1992). Athletes with strong imagery skills are able to create vivid and controlled images. Increasing imagery vividness is like focusing a camera-a vividness image contains sharp, clear details but athletes also need to be able to manipulate the content of their imagery to create images that do what they want them to do. Without strong imagery control, athletes, especially those low in self-confidence, may find they repeating mistakes in their imagery. Therefore, the present study was designed to investigate the sport imagery among basketball players from Indian Institutes of Science Education and Research.

Method and Procedure

Sample: Sixty (N=60) male basketball players of inter IISER sports meet with the age group of 18 to 28 years were selected through purposive sampling technique to act as subjects from

Indian Institute of Science Education and Research. They were further divided into five groups: Group-A twelve (N=12) from IISER Mohali, (n=12), Group-B twelve (n=12) from IISER Pune, Group-C twelve (n=12) from IISER Bhopal, Group-D twelve (n=12) from IISER Kolkata, Group-E twelve (n=12) from IISER Thiruvananthapuram. The data was collected in the 4th Inter IISER Sports Meet 2015 held at Bhopal, Madhya Pradesh, India from 15th to 21st December, 2015.

Tool: The sport imagery questionnaire was developed by Hall et al. 1998. This questionnaire was designed to assess the extent to which your incorporate imagery into your sports. This questionnaire had 30 questions .Questionnaire had 5 subscales: -Cognitive General, Cognitive Specific Motivational Specific, Motivational General-Arousal, Motivational General-Mastery. The mean subscale (CS, CG, MS, MG-A, & MG-M) can be calculated for a respondent by summing the items scores for each subscale and dividing by the number of item in the subscale. Each item is on a 7-point scale from 1=rarely to 7=often: therefore, a higher score reflects greater imagery use.

Ethical Committee: This study was approved by the Research Board (RB) of Post Graduate Government College, Sector-11, Chandigarh (Union Territory), India.

Statistical Techniques: One Way Analysis of Variance (ANOVA) was employed to compare the entire groups. Where 'P' values found significant then Least Significant Differences (LSD) Post-hoc test was applied to find out the direction and degree of difference. The level of significance was set at $P<0.05$.

Results

Table 1. Descriptive Analysis among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Cognitive Specific

S. No.	Groups	N	Mean	Std. Deviation	Std. Error
1.	IISER Mohali	12	4.67	1.22	.35
2.	IISER Pune	12	4.98	.70	.20
3.	IISER Bhopal	12	5.10	.74	.21
4.	IISER Kolkata	12	5.19	1.46	.42
5.	IISER Thiruvananthapuram	12	4.59	1.11	.32
	Total	60	4.91	1.07	.13

Table 1 depicts the results among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter cognitive specific. The scores of IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram basketball players showed the Mean and SD values as 4.67 and 1.22, 4.98 and .70, 5.10 and .74, 5.19 and 1.46, 4.59 and 1.11 respectively.

Table 2. One Way Analysis of Variance (ANOVA) results among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Cognitive Specific

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	3.33	4	.83	.70	.59
Within Groups	65.29	55	1.18		
Total	68.62	59			

Significant at 0.05

It can be seen from table 2 that insignificant differences were found with regard to the sub-parameter cognitive specific among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram as the P-value (Sig.) .59 was found higher than the 0.05 level of significance (P>0.05). Since P-value was found insignificant, therefore, there is no need to apply Post-hoc test.

Table 3. Descriptive Analysis among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Cognitive General

S. No.	Groups	N	Mean	Std. Deviation	Std. Error
1.	IISER Mohali	12	4.41	1.05	.30
2.	IISER Pune	12	4.20	.95	.27
3.	IISER Bhopal	12	4.78	1.15	.33
4.	IISER Kolkata	12	5.33	1.13	.32
5.	IISER Thiruvananthapuram	12	4.12	1.17	.33
	Total	60	4.57	1.14	.14

Table 3 depicts the results among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter cognitive general. The scores of IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram basketball players showed the Mean and SD values as 4.41 and 1.05, 4.20 and .95, 4.78 and 1.15, 5.33 and 1.13, 4.12 and 1.17 respectively.

Table 4. One Way Analysis of Variance (ANOVA) results among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Cognitive General

Source of Variation	Sum of Squares	Degree	Mean Square	F-Value	P-Value
Between Groups	11.79	4	2.94	2.45	.06
Within Groups	66.19	55	1.20		
Total	77.99	59			

Significant at 0.05

It can be seen from table 4 that insignificant differences were found with regard to the sub-parameter cognitive general among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram as the P-value (Sig.) .06 was found higher with 0.05 level of significance (P>0.05). Since P-value was found insignificant, therefore, there is no need to apply Post-hoc test.

Table 5. Descriptive Analysis among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational-Specific

S. No.	Groups	N	Mean	Std. Deviation	Std. Error
1.	IISER Mohali	12	4.85	.99	.28
2.	IISER Pune	12	4.06	.87	.25
3.	IISER Bhopal	12	4.01	.99	.28
4.	IISER Kolkata	12	5.13	1.33	.38
5.	IISER Thiruvananthapuram	12	4.16	1.24	.35
	Total	60	4.44	1.16	.14

Table 5 depicts the results among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter motivational-specific. The scores of IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram basketball players showed the Mean and SD values as 4.85 and .99, 4.06 and .87, 4.01 and .99, 5.13 and 1.33, 4.16 and 1.24 respectively.

Table 6. One Way Analysis of Variance (ANOVA) results among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational-Specific

Source of	Sum of	Degree	Mean Square	F-Value	P-Value
Between Groups	12.73	4	3.18	2.61	.04*
Within Groups	66.88	55	1.21		
Total	79.62	59			

**Significant at 0.05*

It can be seen from table-6 that significant differences were found with regard to the sub-parameter motivational-specific among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram as the P-value (Sig.) .04 was found smaller than the 0.05 level of significance (P<0.05). Since the obtained P-value was found significant, therefore, least significant difference (LSD) Post-hoc test was employed to study the direction and significance of difference between paired means among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter motivational-specific. The results of LSD Post-hoc test have been presented in Table 7.

Table 7. Analysis of Least Significant Difference (LSD) Post-hoc test among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational-Specific

Means		Mean	P-Value
IISER Mohali (4.85)	IISER Pune (4.06)	.79	.08
	IISER Bhopal (4.01)	.84	.06
	IISER Kolkata (5.13)	.27	.53
	IISER Thiruvananthapuram	.69	.12
IISER Pune (4.06)	IISER Mohali (4.85)	.79	.08
	IISER Bhopal (4.01)	.05	.90
	IISER Kolkata (5.13)	1.07	.02*
	IISER Thiruvananthapuram	.09	.82
IISER Bhopal (4.01)	IISER Mohali (4.85)	.84	.06
	IISER Pune (4.06)	.05	.90
	IISER Kolkata (5.13)	1.12	.01*
	IISER Thiruvananthapuram	.15	.73
IISER Kolkata (5.13)	IISER Mohali (4.85)	.27	.53
	IISER Pune (4.06)	1.07	.02*
	IISER Bhopal (4.01)	1.12	.01*
	IISER Thiruvananthapuram	.97	.03*
IISER Thiruvananthapuram	IISER Mohali (4.85)	.69	.12
	IISER Pune (4.06)	.09	.82
	IISER Bhopal (4.01)	.15	.73
	IISER Kolkata (5.13)	.97*	.035

**Significant at 0.05*

It can be seen in the table 7 that insignificant differences between IISER Mohali and IISER Pune, IISER Mohali and IISER Bhopal, IISER Mohali and IISER Kolkata, IISER Mohali and IISER Thiruvananthapuram, IISER Pune and IISER Bhopal, IISER Pune and IISER

Thiruvananthapuram, IISER Bhopal and IISER Thiruvananthapuram basketball players as P-value (Sig.) .08, .06, .53, .12, .90, .82, .73 were found greater than 0.05 level of significance (P>0.05) on the sub-parameter motivational-specific.

It has been observed that significant differences between IISER Pune and IISER Kolkata, IISER Bhopal and IISER Kolkata, IISER Kolkata and IISER Thiruvananthapuram basketball players as P-value (Sig.) .02, .01, .03 were found lesser than 0.05 level of significance (P<0.05) on the sub-parameter motivational-specific. The graphical representation of means scores of motivational-specific male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram has been exhibited in figure 1.

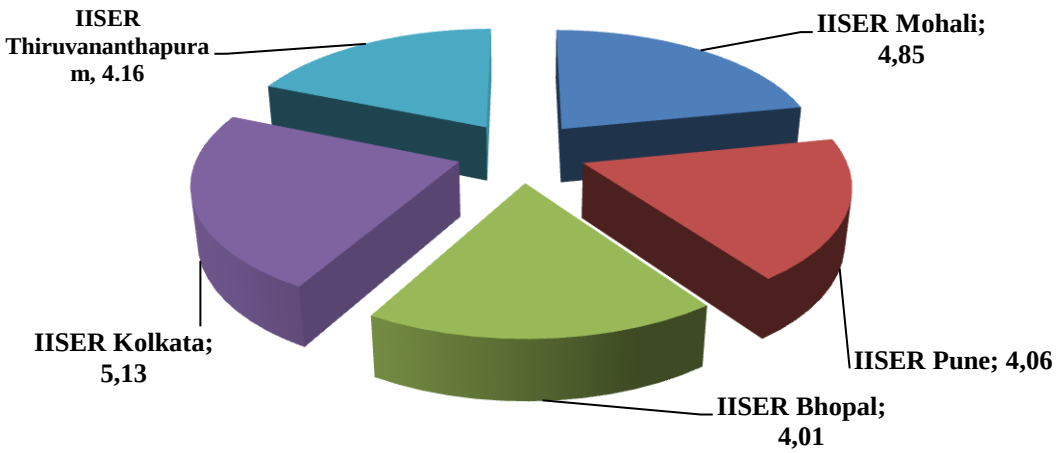

Figure 1. The Graphical Representation of Means Scores with regard to Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub parameter Motivational-Specific

Table 8. Descriptive Analysis among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Arousal

S. No.	Groups	N	Mean	Std. Deviation	Std. Error
1.	IISER Mohali	12	4.41	.83	.24
2.	IISER Pune	12	5.02	1.62	.46
3.	IISER Bhopal	12	4.55	1.01	.29
4.	IISER Kolkata	12	5.48	.76	.22
5.	IISER Thiruvananthapuram	12	4.20	1.09	.31
	Total	60	4.73	1.16	.15

Table 8 depicts the results among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Arousal. The scores of IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram

basketball players showed the Mean and SD values as 4.41 and .83, 5.02 and 1.62, 4.55 and 1.01, 5.48 and .76, 4.20 and 1.09 respectively.

Table 9. One Way Analysis of Variance (ANOVA) results among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Arousal

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	12.70	4	3.17	2.58	.04*
Within Groups	67.62	55	1.23		
Total	80.32	59			

**Significant at 0.05*

It can be seen from table 9 that significant differences were found with regard to the sub-parameter motivational general-arousal among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram as the P-value (Sig.) .04 was found smaller than the 0.05 level of significance ($P<0.05$). Since the obtained P-value was found significant, therefore, least significant difference (LSD) Post-hoc test was employed to study the direction and significance of difference between paired means among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter motivational general-arousal. The results of LSD Post-hoc test have been presented in table 10.

Table 10. Analysis of Least Significant Difference (LSD) Post-hoc test among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Arousal

Means		**Mean Difference**	**P-Value (Sig.)**
IISER Mohali (4.41)	IISER Pune (5.02)	.60	.18
	IISER Bhopal (4.55)	.14	.75
	IISER Kolkata (5.48)	1.06	.02*
	IISER Thiruvananthapuram (4.20)	.20	.64
IISER Pune (5.02)	IISER Mohali (4.41)	.60	.18
	IISER Bhopal (4.55)	.46	.30
	IISER Kolkata (5.48)	.46	.31
	IISER Thiruvananthapuram (4.20)	.81	.07
IISER Bhopal (4.55)	IISER Mohali (4.41)	.14	.75
	IISER Pune (4.41)	.46	.30
	IISER Kolkata (5.48)	.92	.04*
	IISER Thiruvananthapuram (4.20)	.34	.44
IISER Kolkata (5.48)	IISER Mohali (4.41)	1.06	.02*
	IISER Pune (4.41)	.46	.31
	IISER Bhopal (4.55)	.92	.04*
	IISER Thiruvananthapuram (4.20)	1.27	.00*
IISER Thiruvananthapuram (4.20)	IISER Mohali (4.41)	.20	.64
	IISER Pune (4.41)	.81	.07
	IISER Bhopal (4.55)	.34	.44
	IISER Kolkata (5.48)	1.27	.00*

**Significant at 0.05*

It has been observed from the table 10 that insignificant differences between IISER Mohali and IISER Pune, IISER Mohali and IISER Bhopal, IISER Mohali and IISER Kolkata, IISER Pune and IISER Bhopal, IISER Pune and IISER Kolkata, IISER Pune and IISER Thiruvananthapuram, IISER Bhopal and IISER Thiruvananthapuram basketball players as P-value (Sig.) .18, .75, .64, .30, .31, .07, .44 were found greater than 0.05 level of significance (P>0.05) on the sub-parameter Motivational General-Arousal

It has been observed that significant differences between IISER Mohali and IISER Kolkata, IISER Bhopal and IISER Kolkata, IISER Kolkata and IISER Thiruvananthapuram basketball players as P-value (Sig.) .02, .04, .00 were found lesser than 0.05 level of significance (P<0.05) on the sub-parameter Motivational General-Arousal. The graphical representation of means scores of motivational general-arousal male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram has been exhibited in figure 2.

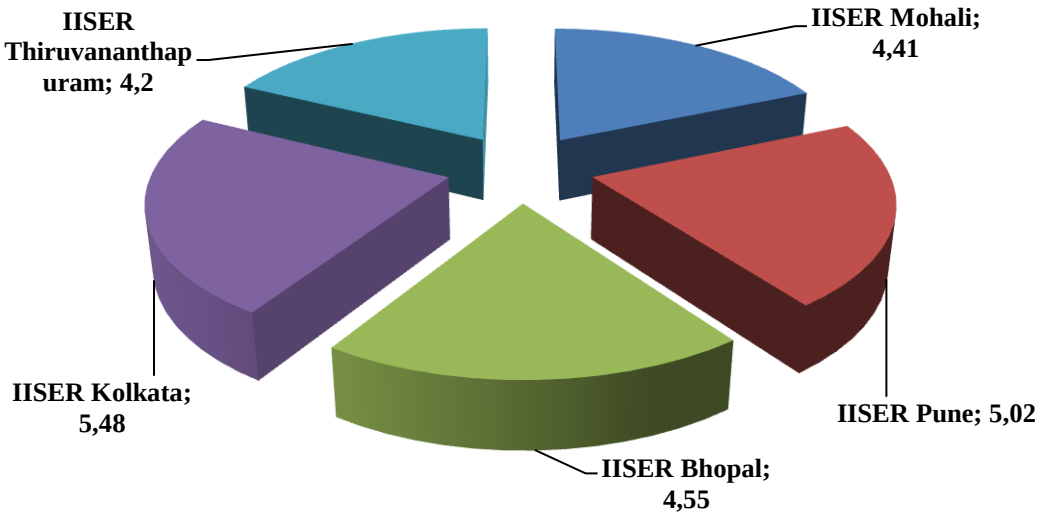

Figure 2. The Graphical Representation of Means Scores with regard to Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub parameter Motivational General-Arousal

Table 11. Descriptive Analysis among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Mastery

S. No.	Groups	N	Mean	Std. Deviation	Std. Error
1.	IISER Mohali	12	4.77	.80	.23
2.	IISER Pune	12	4.77	.87	.25
3.	IISER Bhopal	12	4.82	.69	.20
4.	IISER Kolkata	12	5.58	.73	.21
5.	IISER Thiruvananthapuram	12	4.21	.93	.27
	Total	60	4.83	.89	.11

Table 11 depicts the results among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter motivational general-mastery. The scores of IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram basketball players showed the Mean and SD values as 4.77 and .80, 4.77 and .87, 4.82 and .69, 5.58 and .73, 4.21 and .93 respectively.

Table 12. One Way Analysis of Variance (ANOVA) results among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Mastery

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	11.31	4	2.82	4.26	.00*
Within Groups	36.45	55	.66		
Total	47.76	59			

**Significant at 0.05*

It can be seen from table 12 that significant differences were found with regard to the sub-parameter motivational general-mastery among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram as the P-value (Sig.) .00 was found smaller than the 0.05 level of significance ($P<0.05$). Since the obtained P-value was found significant, therefore, least significant difference (LSD) Post-hoc test was employed to study the direction and significance of difference between paired means among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER

Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter motivational general-mastery. The results of LSD Post-hoc test have been presented in table 13.

Table 13. Analysis of Least Significant Difference (LSD) Post-hoc test among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameter Motivational General-Mastery

Means		**Mean Difference**	**P-Value (Sig.)**
IISER Mohali (4.77)	IISER Pune (4.77)	.00	1.00
	IISER Bhopal (4.82)	.05	.86
	IISER Kolkata (5.58)	.80	.01*
	IISER Thiruvananthapuram (4.21)	.55	.10
IISER Pune (4.77)	IISER Mohali (4.77)	.00	1.00
	IISER Bhopal (4.82)	.05	.86
	IISER Kolkata (5.58)	.80	.01*
	IISER Thiruvananthapuram (4.21)	.55	.10
IISER Bhopal (4.82)	IISER Mohali (4.77)	.05	.86
	IISER Pune (4.77)	.05	.86
	IISER Kolkata (5.58)	.75	.02*
	IISER Thiruvananthapuram (4.21)	.61	.07
IISER Kolkata (5.58)	IISER Mohali (4.77)	.80	.01*
	IISER Pune (4.77)	.80	.01*
	IISER Bhopal (4.82)	75	.02*
	IISER Thiruvananthapuram (4.21)	1.36	.00*
IISER Thiruvananthapuram (4.21)	IISER Mohali (4.77)	.55	.10
	IISER Pune (4.77)	.55	.10
	IISER Bhopal (4.82)	.61	.07
	IISER Kolkata (5.58)	1.36	.00*

**Significant at 0.05*

It can be seen in table 13 that insignificant differences between IISER Mohali and IISER Pune, IISER Mohali and IISER Bhopal, IISER Mohali and IISER Thiruvananthapuram, IISER Pune and IISER Bhopal, IISER Pune and IISER Thiruvananthapuram, IISER Bhopal and IISER Thiruvananthapuram basketball players as P-value (Sig.) 1.00, .86, .10, .86, .10, .07 were found greater than 0.05 level of significance (P>0.05) on the sub-parameter motivational general-mastery.

It has been observed that significant difference between IISER Mohali and IISER Kolkata, IISER Pune and IISER Kolkata, IISER Bhopal and IISER Kolkata, IISER Kolkata and IISER Thiruvananthapuram basketball players as P-value (Sig.) .01, .01, .02, .00 were found lesser than 0.05 level of significance (P<0.05) on the sub-parameter motivational general-mastery.

The graphical representation of means scores of motivational general-mastery male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram has been exhibited in figure 3.

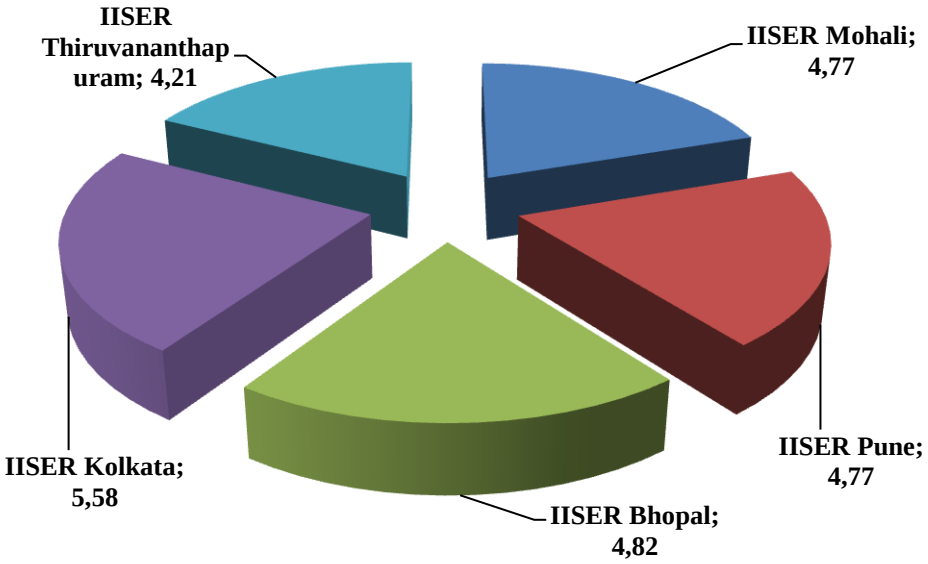

Figure 3. The Graphical Representation of Means Scores with regard to Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub parameter Motivational General-Mastery

Table 14. Descriptive Analysis among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the parameter Sport Imagery (Total)

S. No.	Groups	N	Mean	Std. Deviation	Std. Error
1.	IISER Mohali	12	23.93	4.46	1.28
2.	IISER Pune	12	23.09	3.39	.97
3.	IISER Bhopal	12	23.36	3.68	1.06
4.	IISER Kolkata	12	26.80	4.41	1.27
5.	IISER Thiruvananthapuram	12	21.27	4.41	1.27
	Total	60	24.06	4.02	.51

Table 14 depicts the results among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the parameter sport imagery (total). The scores of IISER

Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram basketball players showed the Mean and SD values as 23.93 and 4.46, 23.09 and 3.39, 23.36 and 3.68, 26.80 and 4.41, 21.27 and 4.41 respectively.

Table 15. One Way Analysis of Variance (ANOVA) results among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the parameter Sport Imagery (Total)

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	192.54	4	48.13	2.86	.03*
Within Groups	924.06	55	16.80		
Total	1116.60	59			

**Significant at 0.05*

It can be seen from table 15 that significant differences were found with regard to the parameter sport imagery (total) among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram as the P-value (Sig.) .03 was found smaller than the 0.05 level of significance ($P<0.05$). Since the obtained F-value was found significant, therefore, least significant difference (LSD) Post-hoc test was employed to study the direction and significance of difference between paired means among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on parameter sport imagery (total) The results of LSD Post-hoc test have been presented in table 16.

Table 16. Analysis of Least Significant Difference (LSD) Post-hoc test among Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the parameter Sport Imagery (Total)

Means		Mean Difference	P-Value (Sig.)
IISER Mohali (23.9)	IISER Pune (23.0)	.84	.61
	IISER Bhopal (23.3)	.57	.73
	IISER Kolkata (26.8)	2.86	.09
	IISER Thiruvananthapuram	2.66	.11
IISER Pune (23.0)	IISER Mohali (23.9)	.84	.61
	IISER Bhopal (23.3)	.26	.87
	IISER Kolkata (26.8)	3.70*	.03
	IISER Thiruvananthapuram	1.81	.28
IISER Bhopal (23.3)	IISER Mohali (23.9)	-.57	.73
	IISER Pune (23.0)	.26	.87
	IISER Kolkata (26.8)	3.44*	.04
	IISER Thiruvananthapuram	2.08	.21
IISER Kolkata (26.8)	IISER Mohali (23.9)	2.86	.09
	IISER Pune (23.0)	3.70*	.03
	IISER Bhopal (23.3)	3.44*	.04
	IISER Thiruvananthapuram	5.52*	.00
IISER Thiruvananthapuram	IISER Mohali (23.9)	2.66	.11
	IISER Pune (23.0)	1.81	.28
	IISER Bhopal (23.3)	2.08	.21
	IISER Kolkata (26.8)	5.52*	.00

**Significant at 0.05*

It can be seen in table 16 showed that insignificant differences between IISER Mohali and IISER Pune, IISER Mohali and IISER Bhopal, IISER Mohali and IISER Kolkata, IISER Mohali and IISER Thiruvananthapuram, IISER Pune and IISER Bhopal, IISER Pune and IISER Thiruvananthapuram, IISER Bhopal and IISER Thiruvananthapuram basketball players as P-value (Sig.) .61, .73, .19, .11, .87, .28, .21 were found greater than 0.05 level of significance (P>0.05) on the parameter sport imagery (total). It has been observed that significant differences between IISER Pune and IISER Kolkata, IISER Bhopal and IISER Kolkata, IISER Kolkata and IISER Thiruvananthapuram basketball players as P-value (Sig.) .03, .04, .00 were found lesser than 0.05 level of significance (P<0.05) on the parameter sport imagery (total). The graphical representation of means scores of sport imagery (total) male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram has been exhibited in figure 4.

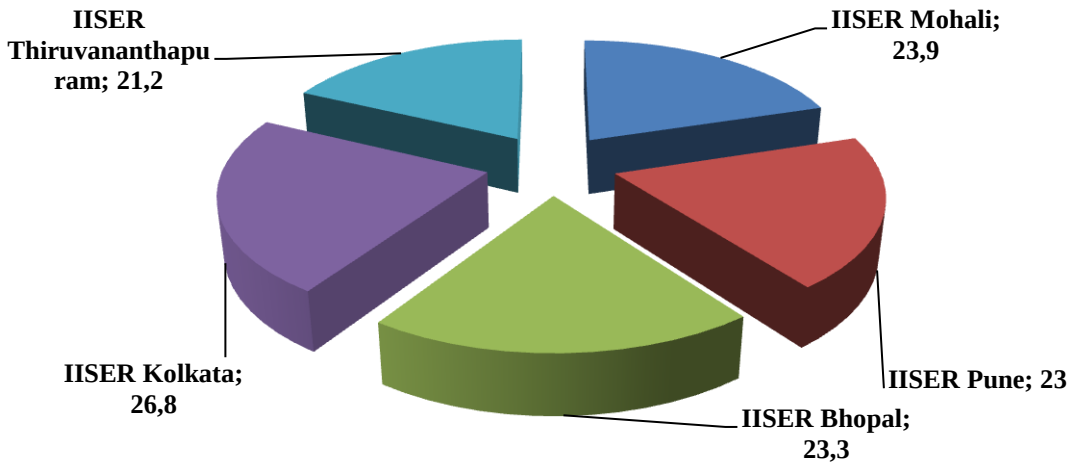

Figure 4. The Graphical Representation of Means Scores with regard to Male Basketball Players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the parameter Sport Imagery (Total)

Discussion and Conclusion

Imagery can give you a short-cut by helping reinforce these groups of brain cells responsible for new skills simply by just thinking about those skills. Athletes can also use imagery to assist them in setting their daily goals, as well as to stay motivated during tough training sessions. This study aimed to evaluate the sport imagery among basketball from Indian institute of science education and research. The significant differences were obtained among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameters; motivational specific, motivational general-arousal, motivational general-mastery and parameter sport imagery (Total). While comparing the mean values of all the groups, it was observed that male basketball players from IISER Kolkata players had exhibited significantly better on the sub-parameters such as motivations general-arousal, motivational general-mastery and parameter sport imagery (total). The results might be attributed to the fact that IISER Kolkata players were able to working successfully through tough situations, they were imagine to winning medal before the match, they were also imagine alternative strategies in case their own event/game plan fails. Although visualization can help improve an athlete's performance, it does have its limitations and will not turn an average athlete into an elite superstar (Cooper & Stollings, 2009). Adegbesan (2010) suggested that imagery relationship could be used for team building and a team intervention tool with other cognitive variables. Dureja and Mishra (2014) explored that Significant differences have been observed on the sub-variables; cognitive specific, cognitive general, motivational general arousal, motivational general-mastery and on the variable sport imagery (total). Thomas et al. (2012) showed that golfers improvement in their ability to use imagery and indicated the imagery training program was effective. Sandra et al. (2012) concluded that athletes were confident in their ability to use imagery and in most cases confidence was positively correlated with imagery use among high school, college and professional hockey players. However no significant differences have been observed on the sub-parameters cognitive specific and cognitive general among male basketball players from Indian Institutes

of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram. Bal and Dureja (2012) explored that cognitive general, motivational general-arousal were found insignificant among all omnivorous combative players.

It is concluded that results revealed significant differences among male basketball players from Indian institutes of science education and research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram on the sub-parameters; motivational specific, motivational general-arousal, motivational general-mastery and parameter sport imagery (Total). While comparing the mean values of all the groups, it was observed that male basketball players from IISER Kolkata players had exhibited significantly better on the above said sub-parameters. However no significant differences have been observed on the sub-parameters; cognitive general and cognitive specific among male basketball players from Indian Institutes of Science Education and Research i.e. IISER Mohali, IISER Pune, IISER Bhopal, IISER Kolkata and IISER Thiruvananthapuram.

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Conflict of Interest

The authors have not declared any conflicts of interest.

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