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Superstitious behavior: The invincible and invisible phenomenon in female basketball sports

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Abstract

The present study was aimed to identify the role of Superstitious Behavior in performance of basketball players. For this purpose of selection of the subjects around N=250 Female Basketball Players of 20-30 years of age group were chosen to act as subjects. The entire group of players were further sliced into three groups which include (N¹= 50 International Basketball Players; N²= 100 Senior National level Basketball Players and N³= 100 All India Inter-university level Basketball Players). The major aim of this sampling technique was to formulate the objectives of the study. One Way Analysis of Variance (ANOVA) were employed to compare the three groups of Basketball Players. Where 'F' values were found significant, Scheffe Post-hoc test were applied to find out the direction and degree of difference. For testing the hypotheses, the level of significance was set at 0.05. In a nutshell it can be said that from the findings that significant differences were found among Female International Basketball Players, Senior National Basketball Players and All India Interuniversity Basketball Players on the sub-variables; Fetish, Preparation, Team Ritual, Coach and Superstitious Behaviour (Total) ($p < 0.05$). However, no significant differences were found with regard to the sub-variables; Clothing & Appearance, Game/Competition and Prayer ($p > 0.05$).

Keywords: Superstitious behaviour, basketball players

Introduction

Humans seek explanations between cause and effect and have tendencies to acquire beliefs in something that cannot be scientifically proven. People tend to assume causation between behaviors and events that are not correlated, this was defined as superstitious behavior by B.F Skinner (1948). It is clear that superstitious behaviours are commonplace in sport, with many amateur and professional sportspeople engaging in a range of apparently bizarre behaviours that can range from wearing "lucky" items of clothing to engaging in specific rituals before competition (Bleak & Frederick, 1998) [3]. It has also been suggested that sportspeople may be more prone to developing these beliefs (Vyse, 1997) [35]. These practices may appear to be innocuous for the most part, but may be deleterious to an athlete on occasion, "I didn't tie my laces right and I didn't bounce the ball five times and I didn't bring my shower sandals to the court with me. I didn't have my extra dress. I just knew it was fate; it wasn't going to happen". (Serena Williams explaining her exit in the French Open (Syed, 2009) [32]. There are, however, very few studies which have attempted to study sporting superstitions in a laboratory setting, one of the reasons being that it is difficult to create representative designs in this area. Notable exceptions to this are studies by Van Raalte, Brewer, Nemeroff, and Linder (1991) [34], Wright and Erdal (2008) [40] and Damisch, Stoberock, and Mussweiler (2010) [10], who use a "lucky ball" procedure in a laboratory setting. In the study by Damisch *et al.* (2010) [10], participants performed better on a golf putting task when using a ball that was said to be lucky. They also considered superstitious beliefs in other situations; participants performed a motor-dexterity task better when the experimenter told the participant that they would keep their fingers crossed for them and had better memory when in the presence of a lucky charm. They suggested that in the presence of a lucky charm, a good luck superstition is activated, giving participants greater self-efficacy in mastering a task, leading to greater persistence and ultimately higher performance. However, the study does not shed light on how these superstitions might develop.

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Superstitious beliefs are an outcome of ignorance and lack of rational thinking, but then they are beliefs after all. Beliefs become notions, then it became opinions, and then they begin to prevail in society as well as sports world. Some top class athletes believe that their superstitions enhance their performance and alter the outcome of the competition, but in fact, practice and confidence is the key to success in athletics Mayberry, (2010). It is a common occurrence in the sports world for an athlete to engage in superstitious behaviors that may seem odd to others. Many sport psychologists view superstitions as nothing more than reactions that begin with conditioning and boosting a placebo effect (Roenigk, 2010) [26]. Wann et al. (2010) [36] describe superstitious behavior as an action or series of actions believed to lead to or cause a specified, generally desirable, outcome. Brooks (2009) [5] explains that people engage in superstitious behaviours when they feel as if they are losing control over their own lives and their brains are searching for order and structure. Past research has identified several factors related to the use of superstitious rituals and behaviours in sport, including type of sport (Ciborowski, 1997; Lee, 1964; Neil, 1982; Van Raalte, Brewer, Nemeroff, & Linder, 1991) [8, 17, 23, 34], type of superstition (Coffin, 1971; Gmelch, 2003; Gregory & Petrie, 1975) [9, 13, 15], age and number of years of participation on a team (Buhrmann & Zaugg, 1981; Neil *et al.*, 1981) [6, 22], difficulty of task and level of competition (Rudski & Edwards, 2007; Todd & Brown, 2003; Wright & Erdal, 2008) [28, 33, 40], participants' perceived loci of control (Matute, 1994; Schippers & Van Lange, 2006) [19, 29], participants' sense of pessimism (Rudski, 2004) [27], and participants' athletic identity, ego-involvement, and personality type (Brevers *et al.*, 2011; Neil *et al.*, 1981) [23]. In light of this, most athletes approach these opportunities as well prepared as possible, however there are still many factors that are outside the control of any athlete. Weather conditions, opposition, variable location and referees are examples of external uncontrollable factors that can leave even the most prepared of athletes lacking confidence in their performance abilities. It appears that often, somewhere in this gap between internal factors (such as preparation), and external factors, the use of superstitious ritual develops. This present study was conducted to determine the significant difference among role of superstitious behaviour in performance of basketball players.

Selection of Subjects

For this purpose of selection of the subjects around N=250 Female Basketball Players of 20-30 years of age group were chosen to acts as subjects. The entire group of players were further sliced into three group which include (N¹= 50 International Basketball Players; N²= 100 Senior National level Basketball Players and N³= 100 All India Inter-university level Basketball Players). The major aim of this sampling technique was to formulate the objectives of the study.

Selection of Variables

The availability of tools for investigation were given privacy and along with it the legitimate time was calculated which could be devoted for tests. The opinion of the experts was taken into consideration for the entire study. After due analysis of the criteria in mind following variables were selected for the present study.

Superstitious Behaviour

- Clothing and Appearance
- Fetish
- Preparation
- Game/Competition
- Team Ritual
- Prayer
- Coach

Selection of Tools

To measure the level of Superstitions Behaviors of the subjects, the superstitions beliefs and behaviour scale constructed by Bleak and Frederick (1998) [3]. was administered.

Statistical Technique Employed

One Way Analysis of Variance (ANOVA) were employed to compare the three groups of Basketball Players. Where 'F' values were found significant, Scheffe Post-hoc test were applied to find out the direction and degree of difference. For testing the hypotheses, the level of significance was set at 0.05.

Results

Table 1: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Clothing and Appearance

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	20.496	2	10.248	.211	.810
Within Groups	11980.560	247	48.504		
Total	12001.056	249			

*Significant at 0.05 F0.05 (2,247)

It became evident from table-1 given above that on the basis of One Way Analysis of Variance (ANOVA) among "Between Groups" and "Within groups" depicted the insignificant difference with regard to the sub-variable Clothing and Appearance among female basketball players

comprising of International Level, Senior National Level and All India Interuniversity Level Basketball Players since the P-value (Sig.) .810 was found greater than the 0.05 level of significance ($p>0.05$). But the F-value (.211) was found insignificant, therefore, Post-hoc test was not required.

Table 2: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Fetish

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	460.75	2	230.37	10.608*	.000
Within Groups	5364.00	247	21.71		
Total	5824.75	249			

*Significant at 0.05 F0.05 (2,247)

Considering the level of significance at 0.05 table-2 depicts the significant differences regarding the sub-variable Fetish among the basketball players of different levels like International Level, Senior National Level and All India Interuniversity Level Basketball Players. The P-value (Sig.) being .000 which was significant as it was less than 0.05

($p < 0.05$). As calculated F-value (**10.608***) was found to be significant, hence Scheffe’s Post-hoc test was applied to analyze the direction and significance of difference between paired means among basketball players of different levels mentioned above on the sub-variable Fetish. The outcomes of Scheffe’s Post-hoc test have been shown in table-3.

Table 3: Analysis of Scheffe’s Post-hoc test among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Fetish

Means		Mean Difference	P-value (Sig.)
International Level Basketball Players [15.30]	Senior National Level Basketball Players [11.63]	3.67*	.000
	All India Interuniversity Level Basketball Players [12.41]	2.89	.002
Senior National Level Basketball Players [11.63]	International Level Basketball Players [15.30]	3.67*	.000
	All India Interuniversity Level Basketball Players [12.41]	.78	.497
All India Interuniversity Level Basketball Players [12.41]	International Level Basketball Players [15.30]	2.89	.002
	Senior National Level Basketball Players [11.63]	.78	.497

Level of Significant at 0.05

- The mean difference between International Level Basketball Players and Senior National Level Basketball Players was 3.67. The International Level Basketball Players showed significantly better Fetish than the Senior National Level Basketball Players as the P-value (Sig.) .000.
- The table also specified the mean difference between International Level Basketball Players and All India Interuniversity Level Basketball Players was 2.89 and corresponding P-value (Sig.) .002 which established that International Level Basketball Players showed significantly better Fetish than in their counterpart All India Interuniversity Level Basketball Players.
- Finally it was observed from the above table (table-3) that the mean difference between Senior National Level Basketball Players and All India Interuniversity Level Basketball Players was .78 and the P-value (Sig.) being .497 proving that the All India Interuniversity Level Basketball Players had exhibited better Fetish than their counterpart Senior National Level Basketball Players although not very significantly.

Table 4: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Preparation

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	152.280	2	76.140	4.569*	.011
Within Groups	4115.820	247	16.663		
Total	4268.100	249			

*Significant at 0.05 F0.05 (2,247)

Considering the level of significance at 0.05 table-4 depicts the significant differences regarding the sub-variable Preparation among the basketball players of different levels like International Level, Senior National Level and All India Interuniversity Level Basketball Players. The P-value (Sig.) being .011 which was significant as it was less than 0.05 ($p < 0.05$). As calculated F-value (4.569*) was found to be

significant, hence Scheffe’s Post-hoc test was applied to analyze the direction and significance of difference between paired means among basketball players of different levels mentioned above on the sub-variable Preparation. The outcomes of Scheffe’s Post-hoc test have been shown in table-5.

Table 5: Analysis of Scheffe’s Post-hoc test among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Preparation

Means		Mean Difference	P-value(Sig.)
International Level Basketball Players [16.02]	Senior National Level Basketball Players [14.10]	1.92*	.026
	All India Interuniversity Level Basketball Players [14.04]	1.98*	.021
Senior National Level Basketball Players [14.10]	International Level Basketball Players [16.02]	1.92*	.026
	All India Interuniversity Level Basketball Players [14.04]	.06	.995
All India Interuniversity Level Basketball Players [14.04]	International Level Basketball Players [16.02]	1.98*	.021
	Senior National Level Basketball Players [14.10]	.06	.995

Level of Significant at 0.05

- The mean difference between International Level Basketball Players and Senior National Level Basketball Players was 1.92. The International Level Basketball Players showed significantly better Preparation than the Senior National Level Basketball Players as the P-value (Sig.) .026.
- The table also specified the mean difference between International Level Basketball Players and All India Interuniversity Level Basketball Players was 1.98 and corresponding P-value (Sig.) .021 which established that International Level Basketball Players showed

- significantly better Preparation than in their counterpart All India Interuniversity Level Basketball Players.
- Finally it was observed from the above table (table-5) that the mean difference between Senior National Level Basketball Players and All India Interuniversity Level Basketball Players was .06 and the P-value (Sig.) being .995 proving that the Senior National Level Basketball Players had exhibited better Preparation than their counterpart All India Interuniversity Level Basketball Players although not very significantly.

Table 6: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Game/Competition

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	27.444	2	13.722	1.01	.364
Within Groups	3340.880	247	13.526		
Total	3368.324	249			

*Significant at 0.05 F0.05 (2,247)

It became evident from table-6 given above that on the basis of One Way Analysis of Variance (ANOVA) among “Between Groups” and “Within groups” depicted the insignificant difference with regard to the sub-variable Game/Competition among female basketball players

comprising of International Level, Senior National Level and All India Interuniversity Level Basketball Players since the P-value (Sig.) .364 was found greater than the 0.05 level of significance ($p > 0.05$). But the F-value (1.01) was found insignificant, therefore, Post-hoc test was not required.

Table 7: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Team Ritual

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	185.16	2	92.58	5.832*	.003
Within Groups	3920.87	247	15.87		
Total	4106.03	249			

*Significant at 0.05 F0.05 (2,247)

Considering the level of significance at 0.05 table-7 depicts the significant differences regarding the sub-variable Team Ritual among the basketball players of different levels like International Level, Senior National Level and All India Interuniversity Level Basketball Players. The P-value (Sig.) being .003 which was significant as it was less than 0.05 ($p < 0.05$). As calculated F-value (5.832*) was found to be

significant, hence Scheffe’s Post-hoc test was applied to analyze the direction and significance of difference between paired means among basketball players of different levels mentioned above on the sub-variable Team Ritual. The outcomes of Scheffe’s Post-hoc test have been shown in table-8.

Table 8: Analysis of Scheffe’s Post-hoc test among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Team Ritual

Means		Mean Difference	P-value (Sig.)
International Level Basketball Players [13.56]	Senior National Level Basketball Players [12.67]	.89	.437
	All India Interuniversity Level Basketball Players [11.34]	2.22*	.006
Senior National Level Basketball Players [12.67]	International Level Basketball Players [13.56]	.89	.437
	All India Interuniversity Level Basketball Players [11.34]	1.33	.064
All India Interuniversity Level Basketball Players [11.34]	International Level Basketball Players [13.56]	2.22*	.006
	Senior National Level Basketball Players [12.67]	1.33	.064

Level of Significant at 0.05

- The mean difference between International Level Basketball Players and Senior National Level Basketball Players was .89. The P-value (Sig.) .437 showed that the International Level Basketball Players had exhibited better Team Ritual than their counterpart Senior National Level Basketball Players although not very significantly.
- The table also specified the mean difference between International Level Basketball Players and All India Interuniversity Level Basketball Players was 2.22 and corresponding P-value (Sig.) .006 which established that International Level Basketball Players showed

- significantly better Team Ritual than in their counterpart All India Interuniversity Level Basketball Players.
- Finally it was observed from the above table (table-8) that the mean difference between Senior National Level Basketball Players and All India Interuniversity Level Basketball Players was 1.33 and the P-value (Sig.) being .064 proving that the Senior National Level Basketball Players had exhibited better Team Ritual than their counterpart All India Interuniversity Level Basketball Players although not very significantly.

Table 9: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Prayer

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	28.07	2	14.03	.387	.679
Within Groups	8946.33	247	36.22		
Total	8974.40	249			

*Significant at 0.05 F0.05 (2,247)

It became evident from table-9 given above that on the basis of One Way Analysis of Variance (ANOVA) among “Between Groups” and “Within groups” depicted the insignificant difference with regard to the sub-variable Prayer among female basketball players comprising of International

Level, Senior National Level and All India Interuniversity Level Basketball Players since the P-value (Sig.) .679 was found greater than the 0.05 level of significance ($p > 0.05$). But the F-value (.387) was found insignificant, therefore, Post-hoc test was not required.

Table 10: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Coach

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	80.28	2	40.14	4.047*	.019
Within Groups	2449.72	247	9.91		
Total	2530.00	249			

*Significant at 0.05 F0.05 (2,247)

Considering the level of significance at 0.05 table-10 depicts the significant differences regarding the sub-variable Coach among the basketball players of different levels like International Level, Senior National Level and All India Interuniversity Level Basketball Players. The P-value (Sig.) being .019 which was significant as it was less than 0.05

($p < 0.05$). As calculated F-value (4.047*) was found to be significant, hence Scheffe’s Post-hoc test was applied to analyze the direction and significance of difference between paired means among basketball players of different levels mentioned above on the sub-variable Coach. The outcomes of Scheffe’s Post-hoc test have been shown in table-11.

Table 11: Analysis of Scheffe’s Post-hoc test among Female Basketball Players with Regard to Superstitious Behaviour on the Sub-variable Coach

Means		Mean Difference	P-value (Sig.)
International Level Basketball Players [6.88]	Senior National Level Basketball Players [7.66]	.78	.361
	All India Interuniversity Level Basketball Players [8.40]	1.52*	.022
Senior National Level Basketball Players [7.66]	International Level Basketball Players [6.88]	.78	.361
	All India Interuniversity Level Basketball Players [8.40]	.74	.253
All India Interuniversity Level Basketball Players [8.40]	International Level Basketball Players [6.88]	1.52*	.022
	Senior National Level Basketball Players [7.66]	.74	.253

Level of Significant at 0.05

- The mean difference between International Level Basketball Players and Senior National Level Basketball Players was .78 and the P-value (Sig.) being .361 proving that the Senior National Level Basketball Players had exhibited better Coach than their counterpart International Level Basketball Players although not very significantly.
- The table also specified the mean difference between International Level Basketball Players and All India Interuniversity Level Basketball Players was 1.52 and corresponding P-value (Sig.) .022 which established that All India Interuniversity Level Basketball Players

- showed significantly better Coach than in their counterpart International Level Basketball Players.
- Finally it was observed from the above table (table-11) that the mean difference between Senior National Level Basketball Players and All India Interuniversity Level Basketball Players was .74 and the P-value (Sig.) being .253 proving that the All India Interuniversity Level Basketball Players had exhibited better Coach than their counterpart Senior National Level Basketball Players although not very significantly.

Table 12: One Way Analysis of Variance (ANOVA) results among Female Basketball Players with Regard to Variable Superstitious Behaviour (Total)

Source of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-Value	P-Value (Sig.)
Between Groups	1799.25	2	899.62	3.282*	.039
Within Groups	67703.42	247	274.10		
Total	69502.67	249			

*Significant at 0.05 F0.05 (2,247)

Considering the level of significance at 0.05 table-12 depicts the significant differences regarding the variable Superstitious Behaviour (Total) among the basketball players of different levels like International Level, Senior National Level and All

India Interuniversity Level Basketball Players. The P-value (Sig.) being .039 which was significant as it was less than 0.05 ($p < 0.05$). As calculated F-value (3.282*) was found to be significant, hence Scheffe’s Post-hoc test was applied to

analyze the direction and significance of difference between paired means among basketball players of different levels mentioned above on the variable Superstitious Behaviour

(Total). The outcomes of Scheffe's Post-hoc test have been shown in table-13.

Table 13: Analysis of Scheffe's Post-hoc test among Female Basketball Players with Regard to the Variable Superstitious Behaviour (Total)

Means		Mean Difference	P-value (Sig.)
International Level Basketball Players [103.14]	Senior National Level Basketball Players [95.88]	7.26*	.042
	All India Interuniversity Level Basketball Players [97.46]	5.68	.143
Senior National Level Basketball Players [95.88]	International Level Basketball Players [103.14]	7.26*	.042
	All India Interuniversity Level Basketball Players [97.46]	1.58	.797
All India Interuniversity Level Basketball Players [97.46]	International Level Basketball Players [103.14]	5.68	.143
	Senior National Level Basketball Players [95.88]	1.58	.797

Level of Significant at 0.05

- The mean difference between International Level Basketball Players and Senior National Level Basketball Players was 7.26. The International Level Basketball Players showed significantly better Superstitious Behaviour (Total) than their counterpart Senior National Level Basketball Players as the P-value (Sig.) .042.
- The table also specified the mean difference between International Level Basketball Players and All India Interuniversity Level Basketball Players was 5.68. The P-value (Sig.) .143 showed that the International Level Basketball Players had exhibited better Superstitious Behaviour (Total) than their counterpart All India Interuniversity Level Basketball Players although not very significantly.
- Finally it was observed from the above table (table-13) that the mean difference between Senior National Level Basketball Players and All India Interuniversity Level Basketball Players was 1.58 and the P-value (Sig.) being .797 proving that the All India Interuniversity Level Basketball Players had exhibited better Superstitious Behaviour (Total) than their counterpart Senior National Level Basketball Players although not very significantly.

Practical Application

The study will be considerably helpful to comprehend the Superstitions Behavior in Basketball Performance. The sports psychologists and coaches working with these areas will drive benefit from the findings of the present research and they can integrate the Superstitions Behavior variables in their training schedule from the very initial stages.

Conclusions of the Study

Summarizing from the above findings we can say that significant differences were observed from Female International Basketball Players, Senior National Basketball Players and All India Interuniversity Basketball Players on the sub-variables; Fetish, Preparation, Team Ritual, Coach and Superstitious Behaviour (Total). However no significant differences were found with regard to the sub-variables; Clothing & Appearance, Game/Competition and Prayer.

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