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Agility of netball players pertaining to different playing positions and levels

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Abstract
The study was conducted by taking three objectives. First was to compare Agility among Different Playing Positions i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.) in Netball. Second was to compare Agility among three Different Levels (District, State and National) of Netball Players. Third was to find out the interactions of Different Playing Positions and Different Levels in relation to Agility of Netball Players. The study was conducted by taking Agility as a variable. Seven Playing Positions of Netball Players were selected i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.). The subjects for this study were selected from Different Levels i.e. District, State and National. A total of 210 Netball Players were selected from Different Levels and Different Playing Position i. e., 30 Players from each Playing Position and 70 Players from each Level. The age of the subjects was ranging from 17 to 28 years. To compare Agility among different Playing positions i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.) in Netball, to compare Agility among three different levels (District, State and National) of Netball players, to find out the interactions of different playing positions and different levels in relation to Agility of Netball Players, two way Analysis of variance (Two way ANOVA) was used. The level of significance was set at .05. In case of seven playing positions significant difference was found between two playing positions [Center (C.) and Goal Defence (G. D.)]. In case of Levels 07% variance in agility was explained by playing positions. In case of levels, significant difference was found among different levels (District & State; State & National). In case of Levels 12% variance in agility was explained by levels. Interactional effect was found between Playing positions and Levels. In case of interaction effect, 10% variance of interaction was found due to playing positions and levels.

Keywords: Agility, playing positions, Goal Shooter, Goal Keeper

1. Introduction
There are different variables and characteristics which are responsible to excel in sports and games. Various studies have been conducted to identify these factors. All the factors are related to a particular sport as well as to a particular playing position.

Now a day's speed, agility and quickness have become essential and popular way to train the players of any game/sports. There is a need to realize that speed, agility and quickness covers the complete spectrum of the training (Brown L. E., & Ferrigno, V. A., 2005) [2].

Agility is the ability of any individual to change body positions quickly. Every sports and games require quick change in body positions for any move. In netball also there is a great significance of this ability. This ability may vary at different playing positions and at different levels. So, investigators decided to conduct this study by taking different playing positions and levels in relation to agility.

2. Objectives of the study
Three objectives were formulated. First was to compare Agilityamong Different Playing Positions i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.) in Netball. Second was to compare Agility among three Different Levels (District, State and National) of Netball Players. Third was to find out the interactions of Different Playing Positions and Different Levels in relation to Agility of Netball Players.

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3. Methodology

3.1 Variables: The study was conducted by taking Agility as a dependent variable.

3.2 Playing Positions: Seven Playing Positions of Netball Players were selected i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.).

3.3 Hypothesis: It was hypothesized that (1) there shall not be any significant difference among Different Playing Positions i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.) in Netball in relation to Agility of Netball Players, (2) there shall not be any significant difference among three Different Levels (District, State and National) in relation to Agility of Netball Players, (3) there shall not be any significant interactions of Different Playing Positions and Different Levels in relation to Agility of Netball Players.

3.4 Subjects: The subjects for this study were selected from Different Levels i.e. District, State and National. A total of 210 Netball Players were selected from Different Levels and Different Playing Position i. e., 30 Players from each Playing Position and 70 Players from each Level. The age of the subjects was ranging from 17 to 28 years.

3.5 Statistical Analysis
To compare Agility among different Playing positions i. e. Goal Shooter (G. S.), Goal Attack (G. A.), Wing Attack (W. A.), Centre (C.), Wing Defence (W. D.), Goal Defence (G. D.) and Goal Keeper (G. K.) in Netball, to compare Agility among three different levels (District, State and National) of Netball players, to find out the interactions of different playing positions and different levels in relation to Agility of Netball Players, To Analysis (two way ANOVA) of variance was used. The level of significance was set at .05.

3.6 Findings

Table 1: Two-Way Analysis of Variance (Two way ANOVA) to compare Agility in different Playing positions of Netball at different Levels and Interaction between playing positions and levels

Source of Variance	Sum of Squares	Degree of Freedom	Mean Square	F-Value	Significance Value	Partial Eta Squared
Playing Positions (Seven)	34.518	6	5.753	2.653	. 017	.078
Levels (three)	55.677	2	27.839	12.840	.000	.120
Playing Positions * Levels	48.253	12	4.021	1.855	.042	.105
Error	409.776	189	2.168			

Table-1 reveals the result related to comparison of agility in different playing positions, levels and interactions. In case of seven playing positions significant difference was found between two playing positions [Center (C.) and Goal Defence (G. D.)]. since F-value of 2.653 (p>.05) was found significant at .05 level. In case of Levels, partial eta squared was found .078 that shows that 07% variance in agility was explained by playing positions. In case of levels, significant difference was found among different levels (District, State & National), since in this table F-value of 12.84 was found significant

(p>.05) at .05 level of significance. In case of Levels, partial eta squared was found .120 that shows that 12% variance in agility was explained by levels. Interactional effect was found between Playing positions and Levels, since F-value of 1.855 was found significant (p>.05). In case of interaction effect, partial eta squared was found .105 that shows that 10% variance of interaction between playing positions and levels. Since significant difference was found among different Playing Positions and Levels of Netball players, Sidak post-hoc test was applied to compare paired means.

Table 2: Sidak post-hoc test to compare paired means of seven different Playing Positions of Netball players in Agility

(X) Playing Positions	(Y) Playing Positions	Mean Difference (X-Y)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a] Lower Bound	95% Confidence Interval for Difference[a] Upper Bound
Goal Shooter	Goal Attack	.326	.380	1.000	-.842	1.494
	Wing Attack	-.148	.380	1.000	-1.316	1.020
	Center	.918	.380	.298	-.250	2.086
	Wing Defence	.470	.380	.994	-.698	1.638
	Goal Defence	-.413	.380	.999	-1.581	.755
	Goal Keeper	.083	.380	1.000	-1.085	1.251
Goal Attack	Wing Attack	-.474	.380	.994	-1.642	.694
	Center	.592	.380	.934	-.576	1.760
	Wing Defence	.144	.380	1.000	-1.024	1.312
	Goal Defence	-.739	.380	.685	-1.907	.429
	Goal Keeper	-.243	.380	1.000	-1.411	.925
Wing Attack	Center	1.066	.380	.111	-.102	2.234
	Wing Defence	.618	.380	.904	-.550	1.786
	Goal Defence	-.264	.380	1.000	-1.432	.904
	Goal Keeper	.232	.380	1.000	-.936	1.400
Center	Wing Defence	-.448	.380	.997	-1.616	.720
	Goal Defence	-1.331[*]	.380	.012	-2.499	-.163
	Goal Keeper	-.835	.380	.465	-2.003	.333
Wing Defence	Goal Defence	-.882	.380	.365	-2.050	.286
	Goal Keeper	-.386	.380	1.000	-1.554	.782
Goal Defence	Goal Keeper	.496	.380	.989	-.672	1.664
Based on estimated marginal means						
a. Adjustment for multiple comparisons: Sidak.						
*. The mean difference is significant at the .05 level.						

Table-2 shows the results related to paired means of seven different Playing positions of Netball players in Agility. Significant difference found between Center and Goal Defence (MD= 1.331, p=0.012).
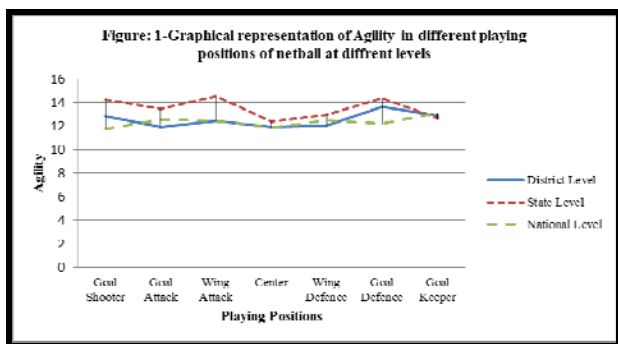
On the other hand insignificant difference found between the paired means of remaining playing positions of Netball players in Agility.

Table 3: Sidak post-hoc test to compare paired means of three different Levels of Netball players in Agility

(X) Different Levels	(Y) Different Levels	Difference Between paired means (X-Y)	Standard Error of Mean	Significance Value	95 percent Confidence Interval for paired mean Difference	
					Lower Bound	Upper Bound
District	State	-.995*	.249	.000	-1.594	-.395
	National	.174	.249	.863	-.425	.774
National	State	1.169*	.249	.000	.569	1.769
*Indicates that mean difference is significant at the .05 level of significance.						

Table- 3 shows the results related to paired means of three different levels of Netball players in Agility. Significant difference was found between District level & State level players; State level & National level players. No significant difference was found between District level and National level players.

Figure: 1-Graphical representation of Agility in different playing positions of netball at diffrent levels

4. Conclusions
1. In case of seven playing positions significant difference was found between two playing positions [Center (C.) and Goal Defence (G. D.)].
2. In case of Levels 07% variance in agility was explained by playing positions.
3. In case of levels, significant difference was found among different levels (District & State; State & National).
4. In case of Levels 12% variance in agility was explained by levels.
5. Interactional effect was found between Playing positions and Levels.
6. In case of interaction effect, 10% variance of interaction was found due to playing positions and levels.

5. Discussion of Findings
A study was conducted by Singh, P., & Choudhary, R. (2015) [10] on netball players by taking Quickness as a variable. The study was conducted on different playing positions. Significant difference was found among Netball players in quickness pertaining the different playing positions. Results of the study revealed that significant difference exist between Goal Shooter (G. S.) and Goal Keeper (G. K.); Centre (C.) and Goal Keeper (G. K.). Except these two paired mean differences, no significant difference was found between the remaining paired means. In the present study, also significant difference was found among all selected playing positions in relation to agility. This justify that playing positions have impact on quickness and also on agility. A study was conducted by Delextrat, A., & Cohen, D. (2009) [5] on women basketball players by taking strength, power, speed and agility. Study also suggested that specific fitness training should be undertaken according to different playing positions. Singh, P. (2015) [11] conducted a study to compare speed and agility between basketball and netball players. No significant difference was found between speed of basketball and netball players. Datt, V., & Mane, M. (2013) [4] conducted a study to compare speed strength and agility between basketball and volleyball players. No significant difference was found between basketball and a volleyball player in relation to agility. Akilan, N., & Shah, M. S. (2014) [1] conducted a study to compare speed and agility between handball and volleyball players. No significant difference was found between the agility of handball and volleyball players. Karthikeyan, P. (2014) [8] conducted a study to compare physical fitness among basketball, volleyball and handball players. Significant difference was found between volleyball and volleyball players; volleyball and handball players. But no significant difference was found between basketball and volleyball players in agility. Present study partially supports the above mentioned studies. Results of the present study clearly revealed that playing positions have impact on agility and also on different levels have impact on agility. Interactional impact was found on agility of netball players.

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