

ANALYSIS OF SPEED WITH RESPECT TO DIFFERENT PLAYING POSITIONS AMONG SUB JUNIOR AND JUNIOR FOOTBALL PLAYERS

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Abstract

The purpose of the study was to find out the variation in speed with respect to different playing positions among sub junior and junior football players. To achieve the purpose of the study, the playing positions in football were differentiated as offensive, midfield and defensive positions. In each of the above positions 150 players were selected from various clubs of Cuddalore, Villupuram and Kallakuruchi district. Thus there were 450 players in the sub junior category and 450 players in the junior category comprised of a total of 900 football players. The age of the subjects ranged between 12 and 19 years. To assess the speed fifty meter run test was conducted and recorded in seconds. The collected data were statistically analyzed by 2 x 3 factorial ANOVA of independent groups. Whenever the obtained 'F' ratio value was significant, the simple effect test was applied followed by Scheffee'S post hoc test wherever required. The results of the study showed that the junior offensive players were significantly better in speed as compared to sub junior football players. The sub junior offensive players have shown significantly better speed as compared sub junior midfield. Similarly junior offensive players speed was better than junior midfield and defensive players.

. KEY WORDS: Speed, Sub Junior, Junior Offensive, Midfield, Defensive, Football Players

Introduction

Soccer is a game which is played within its rules by a certain number of players in a limited area using all parts of the body except for the hands and the result is determined by the number of goals scored or conceded (**Goral & Goral, 2015**). Soccer is seen as the most popular sport in the world. It is a complex sports discipline in which aerobic and anaerobic energy systems are used and factors such as overall endurance and coordination affect performance (**Sever, 2013**). In addition, soccer is a sport which embodies physical performance characteristics such as agility, speed, power and strength, and is influenced by all these parameters (**Hazir et al., 2010**).

Bangsbo (1994) found that players sprint between 10-15 m frequently during a match. Around 96% of sprints are less than 30 m, with an average duration of less than 6 seconds and an occurrence of every 90 seconds on average (**Bangsbo, 1994**). Other authors have reported that almost half of the total sprints are less than 10 m (**Mirkov et al., 2008; Stolen et al., 2009**) and typically commence when the player is already in motion; therefore, maximal velocity is achievable in a reduced period of time and distance compared with sprints from a static start (**Little & Williams, 2005; Sayers et al., 2008**). This suggests the necessity to develop speed following a flying or rolling start.

Although there is growing consensus that the components that comprise speed performance are trainable, it is less clear what the optimal approach to training might be (**Gamble, 2012**). What is known is that speed consists of a multitude of factors and that it requires dedicated training. To develop soccer specific speed, it is necessary to incorporate perception-action coupling and this account for the development of perceptual and decisionmaking aspects that identifies the trainable determinants of speed performance as neuromuscular skill and coordination, postural control and stability, strength qualities, mechanical, and morphological qualities of locomotors muscles, and stretch-shortening cycle.

Sprint training generally aims to improve skills such as straight sprint acceleration which does not involve change of direction, achieving maximal speed and maintaining speed. It was found that straight sprint training does not have a significant effect on high-speed running performance involving change of direction, and that specific agility training does not improve straight sprint performance (**Young et al., 2001**). For this reason, the level of significance

between straight sprint and agility (running speed with change of direction) is not as high as expected (**Hazir et al., 2010**).

Soccer is a team sport that depends heavily on aerobic endurance and short-term, high intensity intermittent activities (**Rampinini et al., 2009; Bangsbo et al., 2006; Rienzi et al., 2000**), needing high levels of performance, combined with high levels of technical and tactical skills, and particular physical and physiological characteristics (**Kalapocharakos et al., 2006**). As in other team sports, soccer also involves different playing positions with different physical requirements (**Mohr et al., 2003**). In order to compete at an elite level, soccer players are expected to possess morphological and physiological characteristics that are applicable both for the sport of soccer and specifically to their playing position.

Generally football players are divided into four categories regarding playing position. They are goalkeepers, defenders, midfielders and attackers, and each has its own characteristics. Attackers appear to be the fastest players in the team. The greatest overall distances appear to be covered by midfield players who act as links between defense and attack (**Rienzi et al., 2000**). In a football game defenders perform more backward movement than attackers. Furthermore, different football related activities (tackling, heading and passing) provide an extra physiological stress to the player (**Bangsbo, 1994**) with different playing positions having to perform specific activities. Positional differences have been the subject of interest of sport scientists for years (**Al-Hazzaa et al., 2001**). The physical fitness of a player however can be a decisive determinant of success during competition (**Sporis et al., 2007**). Thus the present study was undertaken to analysis of speed with respect to different playing positions among sub junior and junior football players.

Methodology

The purpose of this study was to find out the significant difference in speed between sub-juniors and juniors offensive, midfield and defensive football players.. To achieve the purpose of the study nine hundred 900 football players were selected from various football clubs of Cuddalore, Villupuram and Kallakurichi district, Tamil Nadu and India' The clubs that were selected for the study have been conducting tournaments in the game of football for both sub-juniors and juniors players.

The 900 players comprised of 450 sub-juniors and 450 juniors which encompass 150 players from offensive, mid field and defensive playing positions. All the players were in the age category between 12 to 19 years.

The data collected on speed by conducting 50 meter dash for offensive, midfield and defensive sub-junior and junior football players were statistically analyzed by using 2 x 3 factorial ANOVA (categories x playing positions) Whenever, the obtained 'F' ratio value for interaction effect was found to be significant, the simple effect test was applied and follow up test. In all cases, the .05 level of confidence was fixed to test the level of significance which was considered as appropriate.

Result of study

Table – 1.1

**MEAN AND STANDARD DEVIATION OF SPEED AMONG CATEGORIES
(SUB-JUNIOR & JUNIOR) AND DIFFERENT PLAYING POSITIONS (OFFENSIVE,
MIDFIELD, DEFENSIVE FOOTBALL PLAYERS)**

Categories / Positions		Offensive	Midfield	Defensive	Combined
Sub-Junior	Mean	7.49	7.89	8.17	7.85
	SD	0.54	0.45	0.69	
Junior	Mean	7.05	7.22	7.36	7.21
	SD	0.54	0.45	0.54	
Combined	Mean	7.27	7.56	7.76	7.53

Table – 1.1 indicated that the mean and standard deviation of speed of offensive sub juniors and offensive juniors were 7.49 ± 0.54 and 7.05 ± 0.54 with a combined mean value of 7.27. The midfield sub juniors and midfield juniors mean and standard deviation values on speed were 7.89 ± 0.45 and 7.22 ± 0.45 with a combined mean value of 7.56. The defensive sub-juniors and defensive juniors mean and standard deviation values on speed were 8.17 ± 0.69 and 7.36 ± 0.54 with combined mean value of 7.76. The combined mean value on speed of sub junior offensive, midfield and defensive football players was 7.85. The combined mean value on speed of junior offensive, midfield and defensive football players was 7.21.

Table –1.2

**TWO FACTOR ANOVA FOR SPEED OF CATEGORIES (SUB JUNIOR & JUNIOR) AND
DIFFERENT PLAYING POSITIONS (OFFENSIVE, MIDFIELD AND DEFENSIVE
FOOTBALL PLAYERS)**

Source of Variance	Sum of squares	Df	Mean squares	'F' ratio
Factor A (Categories)	93.89	1	92.89	311.47*
Factor B (Playing Positions)	36.89	2	18.44	61.85*
Factor A & B (Interaction)	5.17	2	2.56	8.61*
Residual	266.63	894	0.298	

**Significant at .05 level of confidence.*

(The required table value for significant at .05 level of confidence with df of 1 to 894 and 2 to 894 are 3.84 & 3.00 respectively).

Table –1.2 showed that the obtained 'F' ratio value on speed was 311.47 for factor-A irrespective of different categories namely sub-junior and junior football players which was greater than the table value of 3.84 with df 1 and 894 required for significance at .05 level of confidence. The result showed that there was significant difference on speed among sub junior and juniors irrespective of different playing positions of football players on speed.

The obtained 'F' ratio on speed was 61.85 for factor-B of different playing positions namely offensive, midfield and defensive football players irrespective of categories sub junior and junior football players which were greater than the table value of 3.00 with df 2 and 894 required for significance at .05 level of confidence. The results showed that there was significant difference on speed among three different playing positions such as offensive, midfield and defensive football players irrespective of categories namely sub junior and junior.

The obtained 'F' ratio on speed was 8.61 for the interaction [A×B factor - (categories× different playing positions) and it was also greater than the table value of 3.00 with df 2 and 894 required for significance at .05 level of confidence. Since, the obtained 'F' ratio for the interaction effect was found to be significant, the simple effect test was applied as a follow up test and it is presented in table – 1.3.

Table– 1.3

SIMPLE EFFECT FOR CATEGORIES (SUB JUNIOR & JUNIOR) AND DIFFERENT PLAYING POSITIONS (OFFENSIVE, MIDFIELD AND DEFENSIVE FOOTBALL PLAYERS) ON SPEED

Source of variance	SJ	J	Sum of squares	Df	Mean Squares	F- ratio
Categories and Offensive	7.49	7.05	14.52	1	14.52	48.72*
Categories and Midfield	7.89	7.22	33.66	1	33.66	112.97*
Categories and Defensive	8.17	7.36	49.20	1	49.20	165.12*
Error			266.71	894	0.298	

**Significant at .05 level of confidence.*

(The table value required for significance at .05 level of confidence with df 1 and 894 was 3.84 respectively).

Table – 1.3 showed that the obtained ‘F’ ratio on speed between sub junior and junior players of offensive, midfield and defensive football players were 48.72, 112.97 and 165.12 respectively. The results showed that there was significant difference on speed between sub junior and junior of offensive, midfield and defensive football players, since the obtained ‘F’ ratio values is greater than the table value of 3.84 with df 1 and 894 required for significant at .05 level of confidence.

Table–1.4

SIMPLE EFFECT SCORES FOR DIFFERENT PLAYING POSITIONS (OFFENSIVE, MIDFIELD AND DEFENSIVE FOOTBALL PLAYERS) OF CATEGORIES FOR (SUB JUNIOR & JUNIOR) ON SPEED

Source of Variance	Mean			Sum of Squares	Df	Mean Squares	F-ratio
	Offensive	Midfield	Defensive				
Positions and Sub Junior	7.49	7.89	8.17	35.04	2	17.52	58.79*
Positions and Junior	7.05	7.22	7.36	7.23	2	3.61	12.13*
Error				266.71	894	0.298	

** Significant at .05 level of confidence.*

The table value required for significance at .05 level of confidence with df 2 and 894 were 3.00 respectively.

Table – 1.4 revealed that the obtained 'F' ratio on speed was 58.79 for players under the playing positions sub junior of offensive, midfield and defensive football players and it was higher than the table value of 3.00 for significance at .05 level of confidence for df 2 and 894. The results showed that there was significant difference on speed among the players of offensive, midfield and defensive football players sub junior. Similarly, the obtained 'F' ratio on speed was 12.13 among the players under the three playing positions junior of offensive, midfield and defensive it was higher than the table value of 3.00 for df 2 and 894, required for significance at .05 level of confidence. The results showed that there was significant difference among junior football players of three different playing positions of offensive, midfield and defensive.

To find out the significant difference among the paired mean differences, Scheffe's test was applied and the results are presented in table – 1.5.

Table–1.5

SCHEFFE'S TEST FOR THE DIFFERENCE ON MEAN VALUES OF SPEED AMONG CATEGORIES (SUB JUNIOR AND JUNIOR) DIFFERENT PLAYING POSITIONS (OFFENSIVE, MIDFIELD AND DEFENSIVE FOOTBALL PLAYERS)

Categories	Different Playing Positions				
	Offensive	Midfield	Defensive	MD	C.I
Sub Junior	7.49	7.89		0.40*	0.15
	7.49		8.17	0.68*	0.15
		7.89	8.17	0.28*	0.15
Junior	7.05	7.22		0.17*	0.15
	7.05		7.36	0.33*	0.15
		7.22	7.36	0.14	0.15

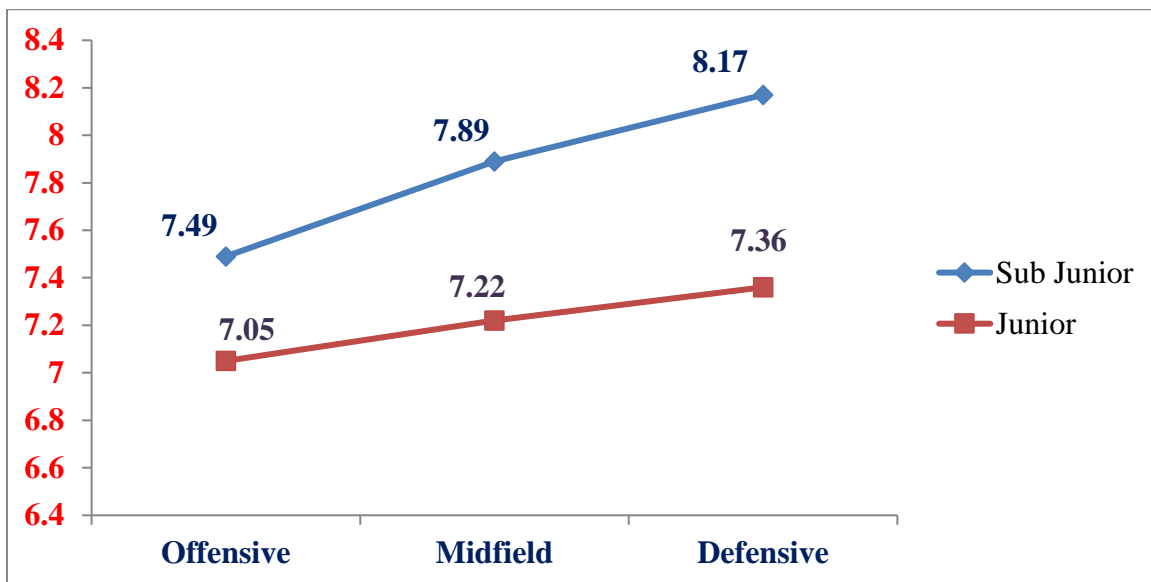
* Significant at .05 level of confidence

Table – 1.5 showed that the mean difference between sub junior offensive and sub junior midfield players, sub junior offensive and sub junior defensive players, sub junior midfield and sub junior defensive players were 0.40, 0.68 and 0.28 respectively on speed of sub junior of different playing positions which are greater than the confidence interval value of 0.15 at .05 level of confidence. Junior offensive and junior midfield players, junior offensive and junior defensive players, junior midfield and junior defensive players were 0.17, 0.33 and 0.14 respectively on speed of junior of different playing positions which are greater than the confidence interval value of 0.15 at .05 level of confidence.

The results of the study showed that the junior players had significant difference on speed as compared to sub junior players. The sub junior offensive players had significantly better in speed as compared to sub junior midfield and defensive players. The result also revealed that the difference in speed is significantly more for sub junior offensive players as compared to sub junior midfield players. Similarly, junior offensive players had significantly better in speed as compared to the junior midfield and defensive players. Whereas the speed there was no significant difference between junior midfield and junior defensive players. The data on speed was graphically represented in figure –1.A

Figure – 1.A

GRAPHICAL REPRESENTATION OF MEAN VALUE ON SPEED BETWEEN SUB JUNIOR AND JUNIOR FOOTBALL PLAYERS OF DIFFERENT PLAYING POSITIONS OF (OFFENSIVE, MIDFIELD AND DEFENSIVE FOOTBALL PLAYERS)



Discussion of study

The results of the study showed that the junior players had significant difference on speed when compared to sub junior players. The sub junior offensive players had significantly better results in speed when compared to sub junior midfield and defensive players. The results also revealed that the difference in speed is significantly more for sub junior offensive players as compared to sub junior midfielder players. Similarly, junior offensive players had significantly

better results in speed as compared to the junior midfielder and defensive players. Whereas was no significant difference between junior midfield and junior defensive players. There are many studies in support of findings of the present study. Speed and agility are integral aspects of almost every defensive and offensive maneuvers performed by soccer players in practices sessions and games [Slimani et al., 2016]. For instance, speed was found to be affected by the competitive level and age of soccer players. Particularly, maximum speed on the bicycle ergometer and 10 m sprint performance were higher in elite young soccer players than in sub-elite and recreational young soccer players [Gissis et al., 2006]. In le Gall et al., [2010], significant differences in 40-m sprint time ($d = 0.50$) in international versus amateur soccer players, and in sprint time over distances of 10-m ($d = 0.50$) and 20-m ($d = 0.47$) in professional versus amateur goalkeepers, were observed. In accordance with the previous findings, it has been reported that the main physical difference between elite and amateur soccer players is their sprinting speed and agility performance [Kaplan et al., 2009]. For instance, the elite players recorded better performance times over the 15-, 25-, and 30-m sprint distances and the agility than sub-elite players [Reilly et al., 2000]. Furthermore, Rebelo et al. [2013] showed that elite goalkeepers tended to present better sprint and agility performances than non-elite goalkeepers. In contrast, in speeds over 30 m, no significant difference between elite, second division, and amateur players was observed, contrary to the previous study and the data reported for French players [Cometti et al., 2001]. This contradiction could be due to the age differences between soccer players; however, differences that distinguish elite vs. amateur and sub-elite players would probably become more apparent in early adolescence [Gonaus and Muller, 2012] and later stages of development respectively. Accordingly, another study showed that sprint tests differed significantly among competitive levels within each age group, with better 30 m sprint performance in elite players than in sub-elite and non-elite players; however, group differences were most apparent in U-13 and U-14 players [Vaeyens et al., 2006].

Indeed, sprint performance is differed between playing positions, with higher 5, 10, 20, and 30-m sprint performances recorded in attackers (or forwards) than defenders and goalkeepers, and lower sprint performance (for the above-mentioned distances) in goalkeepers than in other positions (defenders, attackers, midfielders) [Tasmektepligil et al., 2016]. Other studies showed that the best performance in the 20 m sprint time in U-13 elite midfielders [Ben Brahim et al., 2013] and amateur defenders [Tasmektepligil et al., 2016] was comparable with

other positions. In contrast, other investigations found no difference in running speed and agility performances between soccer players according to their playing positions [Wong et al., 2009]. In a study by Taskin [2008], there was a similarity among goalkeeper, defenders, midfielders, and forwards in terms of 30-m sprint ability. This contradiction could be explained by the observation that U-13 midfielders have greater abilities of sprint performance than other playing positions, but when they are approaching the professional level and the age of 17-19 years, positional differences occur, where elite forwards become the fastest sprinters, as they cover the greatest distance at high speed during games.

Conclusion

The present study results show comparing the two groups in speed of junior offensive, midfield and defensive football players were better than sub junior offensive, midfield and defensive football players. In junior, the speed of offensive players was better than midfield and defensive players. In sub junior, the speed of offensive players was better than midfield and defensive players.

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