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EFFECT OF FOUR WEEKS SMALL SIDED SOCCER GAMES ON AGILITY AND ACCELERATION SPEED OF JUNIOR SOCCER PLAYERS

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ABSTRACT

Aim of the study was to investigate the effect of four weeks small sided soccer games on agility and acceleration speed of junior soccer players. Total 40 (n=40) junior soccer players were selected as subjects from KVS, Churachandpur, Manipur, India and equally divided into two groups and four weeks small-sided games were provided to the experimental group, whereas control group did not receive any training. Pre test - Post test Random Design was used for this study. The dependent variables: Agility and Acceleration Speed were assessed by 4 x 10 mts Shuttle Run and 30 mts Sprint Test respectively. For normality of the data Shapiro-Wilk Test was applied. As Descriptive Statistics mean and standard deviation were calculated. Further, One-Way Analysis of Co-Variance (ANCOVA) was applied and the significance was set at 0.05 level. All statistical analyses were computed using IBM SPSS software; Version: 25. After statistical calculations it is found that there is significant effect

($p < 0.05$) of four weeks small-sided soccer games on agility ($p < 0.05$) and acceleration speed ($p < 0.05$) of junior soccer players.

Keywords: Small-sided games, Agility, Acceleration Speed, Soccer players

1. INTRODUCTION

The Soccer Game was an early football-management game, released by Wizard Games of Scotland in 1989. The player manages a football team in the English league. The team starts in the 4th division, although any team from [what were then] the top 4 division of England can be chosen. The player can alter a team's name before playing. The squad usually consisted of 11 players, but new players could be purchased. According to the help file, the database had 1270 players, and 100 each of treasurers, scouts, physiotherapists, managers and assistant managers. The action in the football matches was written out on the screen ("*The Soccer Game*," 2020). Football in most of the world is considered to be the world's most popular sport also known as soccer game. In this game there are two teams of eleven players. The object of the game is to get the soccer ball into the opposing team's goal. The key to soccer is that, with the exception of the goalie, players cannot touch the ball with their hands, they can only kick, knee, or head the ball to advance it or score a goal. Soccer is played at all levels throughout the world from small kids leagues to professional and international teams. Perhaps the most famous soccer tournament is the World Cup (*Soccer: Learn All about the Sport of Soccer*, n.d.), football | History, Rules, & Significant Players | Britannica n.d.).

Soccer is such a game which demands almost all physical fitness components like speed, strength, agility, coordination, endurance, balance, perception, reaction time, power, aerobic and anaerobic capacity too. Small sided games (SSGs) referred to as skill-based conditioning games or game-based training, are modified games played on reduced pitch areas, often using adapted rules and involving a smaller number of players than traditional football games. Small-sided games allow the integrated training of the technical and tactical

aspects fundamental to the development of young soccer players. The variability in movement during SSGs contributes to the development of a more generalized motor program to cope with a variety of similar but different situations. In addition, their structure and organization allow them to be used freely by any group of young people on any surface or space of play (e.g., street football), favouring the development of skills essential for long-term development. However, above all, they allow for engagement in activities deliberately designed to improve football performance. Evidence suggests that deliberate practice is more likely to lead to elite status when compared with more generic football-related activities and SSGs contribute to this specific area of talent development (Sarmiento et al. 2018, Ford, Hodges, and Williams 2009).

Reviewing the literature, the investigator thus has design the present study as: effect of four weeks small sided soccer games (SSSG) on agility and acceleration speed of junior soccer players.

1.1 PURPOSE OF THE STUDY

The purpose of the study was to investigate the effect of four weeks small sided soccer games (SSSG) on agility and acceleration speed of junior soccer players.

2. DESIGN OF THE STUDY

2.1 Selection of Subjects

For the purpose of the present study Pre test - Post test Random Design was used by which total 40 (n=40) junior soccer players were selected as subjects from KVS, Churachandpur, Manipur, India and equally divided into two groups, such as Experimental Group (EG) Control Group (CG). Four weeks small sided soccer games (SSSG) were given to the experimental group for five days per week.

2.2 Training Protocol

There were three parts of the training protocol: Warm-Up Part, Main Part and Cooling down Part. The control group did not receive

any training; this group was involved with only warming-up part. Details of training protocol has been given in table no. 01

Table:01

Training Protocol on Small Sided Games, Total Duration: 72 Minutes						
Warm-Up Part	Main Part, Duration: 50 Min.					Cooling Down Part
10 Min.	Week-1					12 Min.
	Day-1	Day-2	Day-3	Day-4	Day-5	
	1 v/s 1 (With Goalpost), Area: 5 x 5 Mts.	2 v/s 2 (With Goalpost), Passing & Supporting Area: 5 x 8 Mts.	3 v/s 3 (With Goalpost), Passing, Supporting & Defending Area: 8 x 8 Mts.	4 +1GK v/s 4 +1GK Passing, Supporting, Defending & Depth	Match Day (Small Sided)	
Warm-Up Part	Main Part, Duration: 50 Min.					Cooling Down Part
10 Min	Week-2					12 Min.
	Day-1	Day-2	Day-3	Day-4	Day-5	
	4 v/s 4 + 4 Supporter Outside the Square Area: 15 x 15 Mts.	4 v/s 4+1 Common (Common will play / Join the team who having the ball), Area: 16 x 16 Mts. .	3 v/s 1 (4 Markers will be placed in a square formation 3 players will play against 1 defender and attackers will help to each other in four markers), Area: 6 x 6 Mts.	4 v/s 4+2 Common (Box play = Ground will be divided into 6 boxes: 2+2+2, Middle 2 boxes for common players and only 2 defenders can go to the box), Area: 15 x 10 Mts.	Match Day (Small Sided)	
Warm-Up Part	Main Part, Duration: 50 Min.					Cooling Down Part
	Week-3					
	Day-1	Day-2	Day-3	Day-4	Day-5	
	5 v/s 5 (4	7 v/s 7	2+2+1	5 Defenders	Match	

10 Min	Goal Posts = 2 in each end line) Area: 25 x 20 Mts.	(Double rondo) Two circles will be made in which 5 players will stand outside the circle with two opponents inside the circle, Area: 5 mts radius 2 circles in 10 mts distance.	common v/s 2 (In a circle), Area: 5 mts radius circle	v/s 3+1 common (Common will only support attackers during counter attack in attacking third), Hi pressing by attackers Area: 30 x 25 Mts.	Day (Small Sided)	12 Min.
Warm-Up Part	Main Part, Duration: 50 Min.					Cooling Down Part
10 Min	Week-4					12 Min.
	Day-1	Day-2	Day-3	Day-4	Day-5	
	4 v/s 4 (Passing & Supporting = 2 squares will be made and 4,4 players will be divided into 2 squares, ball will be played in one square and only 2 v/s players can go to other square area) Area: 15 x 7 Mts.	7 v/s 7 (Player can't pass back to the same player with whom he got the ball), Area: 30 x 25	1 v/s 1 (Use only weak foot), Area: 5 x 5 mts.	4 = 1GK V/S 5 (Ball supply by coach to free player, quick marking by defenders if not than shooting by attackers) Area: 40 x 40 Mts.	Match Day (Small Sided)	

2.3 Assessments

For collecting data the selected dependent variable: agility and acceleration speed were assessed by 4 x 10 mts Shuttle Run and 30 mts Sprint Test respectively before and after the completion of four weeks Small sided soccer games. The unit of agility and acceleration speed was second.

2.4 Statistical Analysis

For normality of the data Shapiro-Wilk Test was applied. In Shapiro-Wilk Test P-value of Pre-Test and Post-Test Data of agility were 0.076 and 0.057 ($p > 0.05$), whereas in case of acceleration speed P-value of Pre-Test and Post-Test Data were 0.472 and 0.131. That's mean the data are approximately normal distribution. As Descriptive Statistics mean and standard deviation were calculated. Further, One-Way Analysis of Covariance (ANCOVA) was applied (Verma & Ghufraan, 2012); (Verma, 2009). The significance level was set at 0.05. Lastly, all statistical analyses were computed on IBM SPSS software; Version: 25 ("IBM SPSS Statistics 25 Free Download," 2017).

Table: 02

Normality Test of Data of Soccer Players Agility & Acceleration Speed			
Shapiro-Wilk Test			
		df	P-value (Sig.)
Agility	Pre-Test	40	0.076*
	Post-Test	40	0.057*
Acceleration Speed	Pre-Test	40	0.472*
	Post-Test	40	0.131*

***Not Significant at $p \leq 0.05$**

3. FINDINGS

Table: 03: Descriptive Statistics

Mean, SD and Standard Error of Experimental and Control Group in Pre-Post Test on Agility & Acceleration Speed of Soccer Players			
		Pre-Test	Post-Test

Variable	Group	N	Mean \pm SD	Mean \pm SD
Agility (Unit: Second)	Experimental	20	11.61 \pm 0.70	10.38 \pm 0.75
	Control	20	11.70 \pm 0.70	11.55 \pm 0.70
Acceleration Speed (Unit: Second)	Experimental	20	5.06 \pm 0.22	4.54 \pm 0.22
	Control	20	5.01 \pm 0.15	4.88 \pm 0.17

In the above table : 03 it has been found that means \pm standard deviations of experimental group and control group in pre test are 11.61 \pm 0.70 and 11.70 \pm 0.70 seconds on agility, whereas in case of post test it is 10.38 \pm 0.75 and 11.55 \pm 0.70 seconds respectively. Further, in case of acceleration speed means \pm standard deviations of experimental group and control group in pre test are 5.06 \pm 0.22 and 5.01 \pm 0.15 seconds, whereas in post test it is 4.54 \pm 0.22 and 4.88 \pm 0.17 seconds respectively.

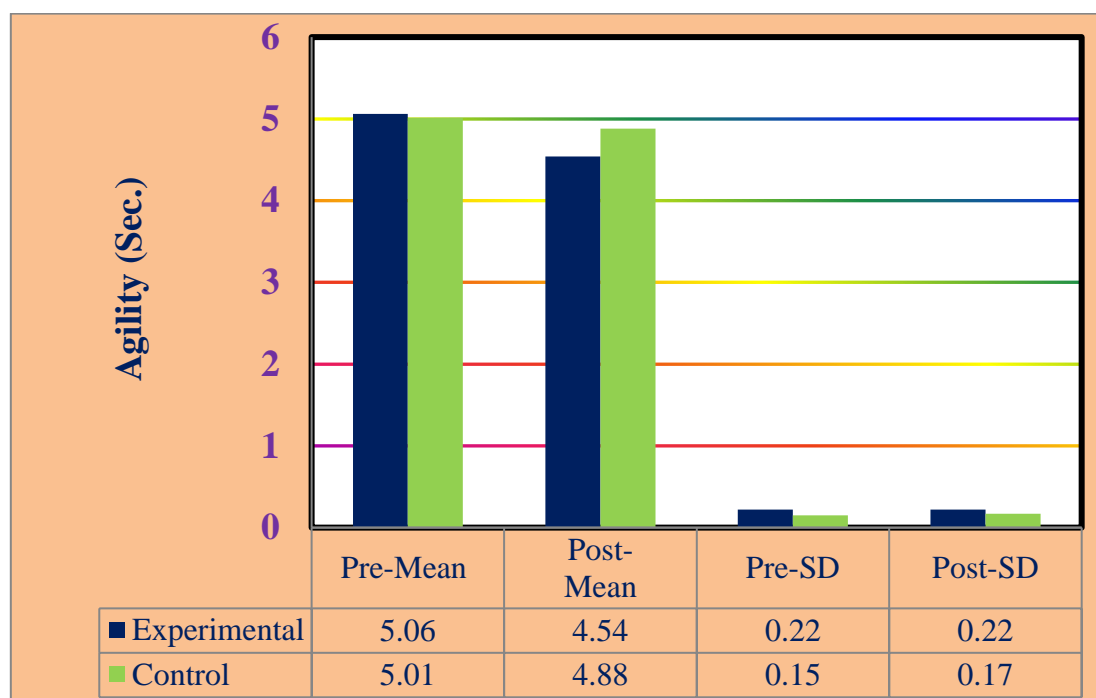


Figure: 01 Comparing Means & SD in Pre-Post Test of Experimental Group & Control Group in Respect of Agility of Soccer Players

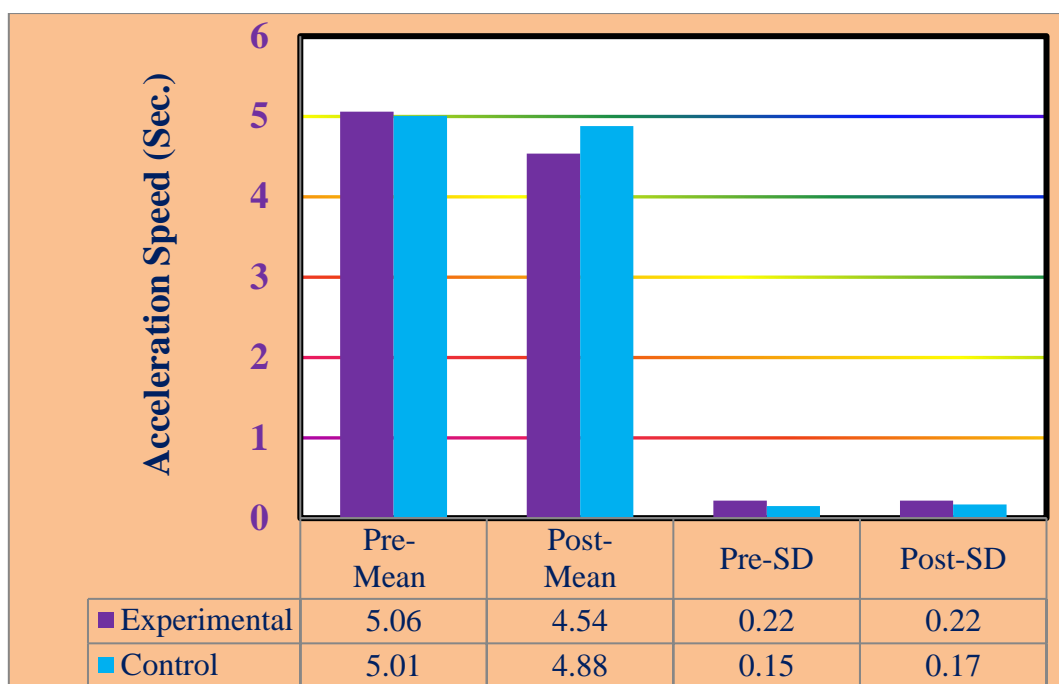


Figure: 02 Comparing Means & SD in Pre-Post Test of Experimental Group & Control Group in Respect of Acceleration Speed of Soccer Players

Table :04

One Way Analysis of Co-Variance (ANCOVA) Between Experimental Group & Control Group in Pre - Post Test on Agility of Soccer Players							
Variable			Sum of Squares	df	Mean Sum of Square	F- ratio	p-value (Sig.)
Agility Unit: Second	Pre-Test	B	.083	1	.083	.169	.683
		W	18.615	38	.490		
	Post-Test	B	13.773	1	13.773	26.353*	.000*
		W	19.860	38	.523		
	Adjusted Post-Test	B	12.447	1	12.447	35.522*	.000*
		W	12.965	37	.350		
*Significant at 0.05 level, $F_{0.05}(1, 38) = 4.10$, $F_{0.05}(1, 37) = 4.11$ or $p \leq 0.05$							

In the above table: 04 (ANCOVA) it is evident that ‘F’ value and ‘P’ value in pre-test are .169 and .683 respectively, where ‘P’ value (.683) is greater than 0.05 level of significance ($p > 0.05$). That’s mean there is no significant difference between experimental group and control group on agility in pre-test phase. On the other hand ‘F’ values and ‘P’ values in

post-test and adjusted post-test are 26.353, 35.522 and 0.000, 0.000 respectively, where ‘P’ values (0.000 & 0.000) are less than 0.05 level of significance ($p < 0.05$). That’s mean there is significant difference between experimental group and control group on agility in post-test and adjusted post-test phase respectively.

Table: 05

One Way Analysis of Co-Variance (ANCOVA) Between Experimental Group & Control Group in Pre - Post Test on Acceleration Speed of Soccer Players							
Variable			Sum of Squares	df	Mean Sum of Square	F- ratio	p-value (Sig.)
Acceleration Speed Unit: Second	Pre-Test	B	.022	1	.022	.599	.444
		W	1.387	38	.037		
	Post-Test	B	1.173	1	1.173	29.663*	.000*
		W	1.503	38	.040		
	Adjusted Post-Test	B	1.348	1	1.348	48.907*	.000*
		W	1.020	37	.028		
*Significant at 0.05 level, $F_{0.05}(1, 38) = 4.10$, $F_{0.05}(1, 37) = 4.11$ or $p \leq 0.05$							

In the above table : 05 (ANCOVA) it is shown that ‘F’ value and ‘P’ value in pre-test are .599 and .444 respectively, where ‘P’ value (.444) is greater than 0.05 level of significance ($p > 0.05$). That’s mean there is no significant difference between experimental group and control group on acceleration speed in pre-test phase. On the other hand ‘F’ value and ‘P’ value in post-test are 29.663 and .000, where ‘p’ value (.000) is less than 0.05 level of significance ($p < 0.05$). Whereas, ‘F’ value and ‘P’ in adjusted post-test are 48.907 and .000, where ‘P’ values (.000) is less than 0.05 level of significance ($p < 0.05$). That’s mean there is significant difference between experimental group and control group on acceleration speed in post-test and adjusted post-test phase respectively.

4. DISCUSSION OF FINDINGS

It has been evident that there is a statistically significant difference between experimental group and control group. We can more clearly say

that there is significant effect of four weeks small sided soccer games on agility and acceleration speed of junior soccer players. Behind significant effect the reason is nothing else, but it is the proper application of four weeks small sided soccer games on experimental group.

The purpose of the study was to experiment the effect of four weeks small sided soccer games on agility and acceleration speed of junior soccer players during various SSSG formats i.e. 1 vs 1, 2 vs 2, 3 vs 3, 4 vs 4, 5 vs 5 and 7 vs 7 and different small-sided dimensions of the field i.e. 5 x 5 mts, 5 x 8 mts, 6 x 6 mts, 8 x 8 mts, 15 x 15 mts, 16 x 16 mts, 15 x 10 mts, 25 x 20 mts, 30 x 25 mts, 40 x 40 mts etc. The investigator increased the players in the present study with the progression of small-sided games (Training). With the increased players, dimensions of the play-field also had been altered.

In small-sided soccer games (SSSG), one has to pass the ball again and again as the number of players is limited. As a result player's passing ability is developed and sometimes with that dribbling ability also developed which may be the reason behind the significant improvement of dribbling ability of soccer players. Many studies which directly or indirectly support the present studies like (Katis & Kellis, 2009), Los Arcos et al. 2015, G. Rajasekar et al. 2014, (Dellal et al., 2011), Owen et al. 2011 etc. The use of the SSGs as soccer training method has growth in the last years and the current review has outlined the intertwined relationship between several factors. Since, the coaches and trainers have to modulate accurately several of the factors addressed in this review in order to properly use the SSGs for the aforementioned aim. For what concern the SSG format (i.e., number of players) the current analysis provides doubt evidences, but most of the analysed studies found significant differences between the use of small-sided games and large-sided games format, respectively.

For that purpose the investigator altered the dimensions of the field only by increasing and decreasing the dimensions like 5 x 5 mts, 5 x 8 mts, 6 x 6 mts, 8 x 8 mts, 15 x 15 mts, 16 x 16 mts etc. and sometimes many circles of different radius were made for the purpose of passing, attacking

and defending the ball within the stipulated circles or rectangles or squares. Due to small-sided games, with altering the numbers of players one has to move quickly and take quick directions deliberately for changing the directions. For this reason a habit of taking and changing the direction quickly is developed within players. That's why in the present study the agility of junior soccer players has been significantly developed.

5. CONCLUSIONS

After discussion of findings it can be concluded that there is a significant positive effect of four weeks small-sided soccer games (SSSG) on agility and acceleration speed of junior soccer players.

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