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## ORIGINAL

### EFFECT OF REDUCED GAMES ON FOOTBALL PLAYERS

### EFFECTO DE LOS JUEGOS REDUCIDOS SOBRE JUGADORAS DE FÚTBOL

**Pérez, S.<sup>1</sup>; Rodríguez, A.<sup>2</sup>; Sánchez, A.<sup>3</sup>; De Mena, J.M.<sup>4</sup>; Fuentes, J.M.<sup>5</sup>; Castaño, R.<sup>6</sup> y Martín, N.<sup>7</sup>**

<sup>1</sup> PhD in Education Science. Professor of the Degree of Physical Activity and Sports Sciences. Pontifical University of Salamanca. Spain. [sperezmu@upsa.es](mailto:sperezmu@upsa.es).

<sup>2</sup> Bachelor's Degree in Education Science. Professor of the Degree of Physical Activity and Sports Sciences. Pontifical University of Salamanca. Spain. [arodriguezca@upsa.es](mailto:arodriguezca@upsa.es).

<sup>3</sup> PhD in Education Science. Professor of the Degree of Physical Activity and Sports Sciences. Pontifical University of Salamanca. Spain. [asanchezmu01@upsa.es](mailto:asanchezmu01@upsa.es).

<sup>4</sup> PhD in Education Science. Professor of the Degree of Physical Activity and Sports Sciences. Pontifical University of Salamanca. Spain. [jmenara@upsa.es](mailto:jmenara@upsa.es).

<sup>5</sup> PhD in Psychology. Professor of the Degree of Physical Activity and Sports Sciences. Pontifical University of Salamanca. Spain. [jmfuentesbf@upsa.es](mailto:jmfuentesbf@upsa.es).

<sup>6</sup> PhD in Education Science. Professor of the Degree of Physical Activity and Sports Sciences. Pontifical University of Salamanca. Spain. [rcastanoca@upsa.es](mailto:rcastanoca@upsa.es).

<sup>7</sup> Bachelor's Degree in Primary Education: Area of Concentration – Physical Education. Pontifical University of Salamanca. Spain. [noefrancos@hotmail.com](mailto:noefrancos@hotmail.com).

**Spanish-English translator:** Víctor Gutiérrez Martínez, Idiomas León, [victor@idiomasleon.es](mailto:victor@idiomasleon.es)

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## ABSTRACT

The objective has been to analyse how reduced games or SSGs affect physical, technical and changes of direction (CODA) in female football under-12 players. 12 female football players participated. They conducted 14 training sessions based on reduced football games. The sample has normal values in the Saphiro-Wilk test, and in the Student's t test it shows that there are statistically very significant differences ( $p \leq 0.00$ ) in all the analysed physical variables, less in the case of the explosive force. In the technique variables we show that there are significant differences in all variables analysed ( $p \leq 0.00$ ). Finally, there are positive and statistically significant correlations between the different variables analysed. In this way, we can consider reduced games are a suitable and very advantageous method for training in the initial stages or training in football players.

**KEYWORDS:** football learning; Small-sided games; physical-fitness; technique; Women.

## RESUMEN

El objetivo ha sido analizar cómo influyen los juegos reducidos o SSGs sobre la condición física, técnica y los cambios de dirección (CODA) en jugadoras alevines de fútbol femenino. Participan 12 jugadoras de fútbol femenino. Realizaron 14 sesiones de entrenamiento basado en juegos reducidos de fútbol. La muestra presenta valores normales en la prueba de Saphiro-Wilk, además, en la prueba de t de Student muestra que existen diferencias estadísticamente muy significativas ( $p \leq 0,00$ ) en todas las variables físicas analizadas, menos en el caso de la fuerza explosiva. En las variables de técnica nos muestra que existen diferencias significativas en todas las variables analizadas ( $p \leq 0,00$ ). Por último existen correlaciones positivas y estadísticamente significativas entre las distintas variables analizadas. De esta forma podemos considerar los juegos reducidos son un método adecuado y muy ventajoso para el entrenamiento en las etapas iniciales o de formación en jugadoras de fútbol.

**PALABRAS CLAVE:** Fútbol base; juegos reducidos; preparación física; Técnica; Mujer.

## 1. INTRODUCTION

Football was born as a game in different areas and places. Its evolution over the centuries has turned it into the "king of sports" (Vitoria, 2005). Of course, in Spain it is the most practiced sport, standing out above the others (Pérez, Sánchez and Urchaga, 2015). This applies to men's football, and not to women's football which does not have the same impact. The data show that the number of player's licenses is considerably lower for women, 29,807, than for men, 684,320 (RFEF, 2015). Football is the king of sports par excellence, but it is not so for the women who practice it.

In recent years, studies on football performance have increased, leaving aside young players (González-Villoria, García-López & Contreras-Jordán, 2015). However, more research is needed regarding the initiation and training in the different categories (González-Villoria, et al., 2015). Nor are there many studies that focus on studying women who play football. There are studies that focus on the perceived exertion of inactive female players (Martínez, et al., 2015), on the quantification of movements in children's seven-a-side football (Barbero-Álvarez, Barbero-Álvarez, Gómez & Castagna, 2009), on the flexibility in under-19 football players (Del Rio, Flores, Bautista, Barajas, Tamara & Gómez, 2015) and indoor football (Ayala, De Baranda, Cejudo & De Ste, 2010), on the analysis of cohesion in under-16 football players (González, Sánchez, Amado, Pulido, López, & Leo, 2013), and the most specific one by Nevado-Garrosa and Suárez-Arrones (2015) on under-13 female players. However, they all exclusively measure the physical effects.

Reduced games or small-sided games (SSGs) (Rampinini et al., 2007) fall within the scope of modern teaching models. They take into account their specificity (Dellal, Drust & Lago-Penas, 2012) and internal logic (Hernández, 1994), leaving the traditional models behind (Robles, Giménez & Abad, 2011). The reduced games (JR) are playful and sport motor situations (Parlebas, 2001) which include most of the factors that intervene in the real game in an adaptable way (Wein, 1995). The SSGs are games that simulate the sport totally or partially, and are a proper method for the improvement of the performance of the players (Katis & Kellis, 2009), and therefore, we would be speaking of the same term. The space and the rules are adapted to the smaller number of players (Little, 2009). These adaptations are enough to reproduce situations that occur in matches (Owen, Twist & Ford, 2004) as well as they serve to train for the unpredictable and the demands of football (Cristian, Riller, René, Denise, Milton & Alcides, 2015; -Garrosa & Suárez-Arrones, 2015). In addition, they are suitable and very popular regardless of the age and level of the players (Hill-Haas, Dawson, Impellizzeri & Coutts, 2011), being especially necessary in the training stages (Casamichana, San Román, Calleja & Castellano, 2015). We are, therefore, before a type of tasks that capture the complexity and specificity of football, where players can improve all the elements involved in their performance (Dellal, Hill-Haas, Lago-Peñas & Chamari, 2011). As a consequence of the foregoing, they have become a way of usual training at all levels (Owen, Wong, Paul & Dellal, 2012).

There is a variety of studies focused on SSGs that analyse the quantification of the internal training load and of the physical condition (Casamichana, Castellano, González-Morán, García-Cueto & García-López, 2011, Dellal, et al., 2011, Hill-Haas, et al., 2011, Kelly & Drust 2009, Little & Williams, 2006, Martone, et al., 2017, Owen, et al., 2012), the technical aspects (Pérez, Sánchez, Sánchez & Yagüe, 2012; , Yagüe, Fernández & Petisco, 2014; Soto & Pérez, 2014a), the tactical aspects such as playing time, possession and duration of the plays (Soto & Pérez, 2014b) and other studies regarding the manipulation of elements inherent to the game such as: number of players, space, presence of goalkeepers, players positions, distribution of equipment and rules (Abrantes, Nunes, Maças, Leite & Sampaio, 2012, Castellano,

Casamichana & Dellal, 2013, Fradua, Zubillaga, Caro, Fernández-García, Ruiz-Ruiz & Tenga, 2013; Gonçalves, Figueira, Maças & Sampaio, 2014).

Before concluding, just one final note. The changes of direction (CODA) are one of the determining parameters of the performance in football players (Bangsbo, Mohr & Krustrup, 2006, Pardeiro & Yanci, 2017, Santiago, Granados, Quintela & Yanci, 2015) and in any other sport (Yanci, Castillo, Vizcay, Pitillas & Iturricastillo, 2016), although not exclusively, since aerobic endurance, strength and speed are also necessary (Yanci, García, Castillo & Rivero, 2014). However, the research in this field focuses on the phases of the sport performance and on male population. In this respect, there are few works on the effect of reduced games (SSGs) on the CODA, but one of them would be the study made by Yanci, Reina, Los Arcos y Cámara (2013), which studies the effect of contextual interference on the improvement of the CODA in a sample of underage people and comparing both boys and girls in the Year 2 of primary school (first year in Spain).

Summarizing, there are studies in young male players, as indicated above, however in the case of women these types of studies are scarce, nor are there studies that analyse the changes of direction (CODA) in these phases. Therefore, the purpose of this study is to analyse how the reduced games or SSGs influence the physical condition, technique and changes of direction (CODA) in under-12 female football players.

## 2 MATERIALS AND METHODS

### 2.1 METHODOLOGY

The research which is carried out is experimental and quantitative and is made through a field study with a pre-test, an intervention and a final post-test, to verify the effect of the intervention on the physical condition. Cook and Reichardt (1986) and Pita and Pértegas (2002) indicate that it is a quantitative research methodology, since observable, measurable and quantifiable data are collected and numerical results are offered.

### 2.2 SAMPLE

The sample consists of 12 under-12 female players with a high level of expertise (table 1), with an average age of 11.50 ( $\pm 0.511$  years), with a weight of 43.25 ( $\pm 8.001$  kg.) and an average height of 150.5 cm ( $\pm 10,475$ ). All of them belong to the Women's Football Club of Salamanca that competes in the Under-12 category playing against the rest of the teams made up with children. It is the only team that is exclusively composed of female players, therefore the sample represents 85.71% of the population under study.

**Table 1.** Main characteristics of the sample participating in the study

N	Age ( $\bar{x}$ )	Age ( $S\bar{x}$ )	Weight ( $\bar{x}$ )	Weight ( $S\bar{x}$ )	Height ( $\bar{x}$ )	Height ( $S\bar{x}$ )
12	11,50 años	0,511	43,25 Kg	8,001	150,50 cm	10,475

## 2.3 MATERIAL

The experimental part has been developed in the club facilities in all areas: field material, training field and changing rooms. All measurements were made in the usual training field.

The physical - technical tests carried out were the following:

- Jump with both feet together: The female players were placed at the starting point, and without a race or previous movements, they had to jump forward to reach the greatest distance possible, falling with both feet in the same place (Amaya®, accuracy 2 mm).
- Course Navette or Beep test (aerobic endurance): The female players run uninterruptedly the distance of 20 m. stepping on the marked line, following the acoustic signals amplified with speakers (Sony ENG203® speakers) from a computer (Acer® TravelMate 5720). The number of levels they manage to complete is recorded.
- Speed without ball in 20 m.: The female players start at the starting point and run 20 meters at the maximum possible speed. The same test is carried out while they handle the ball in order to measure their technique.
- Speed without ball in 10 m. with change of direction (CODA): The female players leave the starting position and run, first, 5 m. but halfway they make a 90° turn. The same test is carried out while handling the ball in order to measure the technique.
- Change of Direction Ability Test (CODA): for this purpose, the Modified Agility Test (MAT) is used. The female players run a total of 20 m. They leave the initial position with no previous movement, run for 5m. up to the middle and turn 90° to the left, they run again other 2.5 m., turn 180° and run 5m., then, they turn again 180° to the middle and they turn once more 90° and go back to the beginning. They basically perform the run in the shape of a "T". They perform it in a free-form run, an action similar to that one performed by the players in the field (Yanci, et al, 2014). The same test is carried out while they handle the ball in order to measure the specific dribble.

## 2.4 PROCEDURE

The data were collected in the facilities of the sports club, upon request and authorization of the parents, coaches and technical managers of the sports club. They were allowed to miss only once, as in similar studies (Sánchez, et al., 2014). The measures of the game space used for a 3 vs. 3 was of 30x20 m. and for a 4 vs. 4 was of 36x24 m, according to other researches (Kelly & Drust, 2009, Soto & Pérez, 2014b). A total of 14 training sessions were carried out based on the SSGs (40 minutes of intervention) and the technical and physical

condition variables were analysed, with a duration of 90 m. per training session. All of them play a competition match per week, usually on Saturdays.

The objectives and contents of the sessions are distributed as follows: the first six sessions were played without goalkeepers or goals with the smallest space, which was 30x20m. The next six sessions were studied with small goals and the last two sessions were analysed with goalkeepers and large goals, all of them with a space of 36x24m. Thus, the progression made is from possession games, followed by games of possession, moving forward and scoring in small goals and finally, the games of possession, moving forward and scoring in big goals. In all the sessions, the technical contents inherent to the attacking combination game model were worked on: control, passing, handling, dribbling and shooting, mainly and tactically: acting as supports, losing one's marker, acting as permanent support and running into free spaces. There are no limitations on the players' touches and they played according to the football rules, except for the implementation of the offside and for the fact that it is allowed to throw-in from the touchline with the foot in order to speed up the game since they always have balls around the field.

Before the intervention, specific physical and technical condition tests were performed and measured by the same evaluator. All the measurements followed the same process, the traditional warm-up exercises for 15 m. and at the end, the tests were carried out. To achieve high reliability and avoid errors in the measurements they were taught in the previous training the correct execution and they were allowed to practice it. The Declaration of Helsinki was respected to the letter.

## 2.5 STATISTICAL ANALYSIS

For the statistical processing of data, the statistical programme SPSS Statistics 20.0 was used. The statistical descriptions were calculated (mean and standard deviation). The normality of the sample was verified with Saphiro-Wilk. The effects of the training programme were analysed by comparing the data obtained in the pre-test and the post-test through the Student's t test for related samples. The differences between the results are considered significant if  $p \leq 0.05$  or very significant if  $p \leq 0.00$ . Finally, the bivariate correlations were analysed.

## 3 RESULTS

The purpose of the study was to analyse how the reduced games or SSGs influence the physical condition, technique and changes of direction (CODA) in female under-12 football players, with a training programme of 14 sessions. After the intervention, the female players presented better average values of physical condition (table 2). They improve in all aspects analysed: leg strength, aerobic endurance, speed with change of direction and in CODA. However, they do not improve in speed without the ball. In the explosive force, the improvement is of more than 2 cm. on average, in the case of the Course Navette or Beep Test, the improvement is of one level, in the case of the speed

without ball with turn, it results that they reduce the time between 0.03 and 0.02 sec., and finally in CODA, the improvement is marginal.

**Table 2.** Average results of the pretest and post-test physical condition.

	Pretest	Post-test
Jump with both feet together	167.42	169.83
Course Navette or Beep test	6.75	7.58
Speed for a distance of 10 m. with a 90° turn to the right	2.64	2.32
Speed for a distance of 10 m. with a 90° turn to the left	2.53	2.33
Speed for a distance of 20 m.	3.53	3.83
CODA (MAT)	7.33	7.24

Regarding the technical results, all the results improve (table 3). Especially relevant is the improvement they have had when handling the ball in a distance of 10 m. In particular, the right turn improves substantially more than the left turn, right 0.07 and left 0.04 sec, respectively. The results when handling the ball in a straight line also improve (0.02 sec.), although the improvement is lower than the one made in the 10 m. run, and finally, the dribble was also improved - CODA (0.65 sec.).

**Table 3.** Average results of pretest and post-test technique.

	Pretest	Post-test
Ball handling for a distance of 10 m. with a 90° turn to the right	3.84	3.11
Ball handling for a distance of 10 m. with a 90° turn to the left	3.5	3.15
Ball handling for a distance of 20 m.	4.28	4.10
Dribble - CODA (MAT) with ball.	10.15	9.50

There are statistically very significant differences ( $p \leq 0.00$ ) in all the analysed variables, except for the explosive force when jumping with both feet together, where there are no significant differences after the intervention performed (table 4), although it does present better results.

**Table 4.** Significant differences: Physical condition.

	Pretest	Post-test	Sig.
Jump with both feet together	167.42	169.83	0.183
Course Navette or Beep Test	6.75	7.58	0.000**
Speed for a distance of 10 m. to the right without ball	2.64	2.32	0.00**
Speed for a distance of 10 m. to the left without ball	2.53	2.33	0.008**
Speed for a distance of 20 m. without ball	3.53	3.83	0.000**
CODA without ball	7.33	7.24	0.002**

\*  $p \leq 0.05$  / \*\*  $p \leq 0.00$

Regarding the technique, there are significant differences in all the variables analysed (table 5). On the other hand, in the case of the handling the ball for a distance of 20 m. in a straight line, the difference is significant, while in the other analysed variables the differences are very significant ( $p \leq 0.00$ ).

**Table 5.** Significant differences: Technique.

	Pretest	Post-test	Sig.
Ball handling for 10 m. with 90° turn to the right	3.84	3.11	0.004**
Ball handling for 10 m. with 90° turn to the left	3.5	3.15	0.000**
Ball handling for 20 m.	4.28	4.10	0.024*
Dribble - CODA (MAT) with ball.	10.15	9.50	0.007**

\*  $p \leq 0.05$  / \*\*  $p \leq 0.00$

Regarding the different correlations made (table 6), the results are as follows:

- The jump strength correlates positively, and exclusively with the strength of the post-test jump. Likewise, the aerobic endurance (Course Navette or Beep test) only has positive effects when both of them do, i.e. improving one of them results in an improvement of the other.
- The speed for a distance of 10 m. with a 90° turn to the right correlates positively with the CODA without the ball in both tests.
- The post-test Speed for a distance of 10 m. with a 90° turn to the left without ball correlates positively with the Post-test Speed for a distance of 20 m. without ball and a highly significant correlation with the improvement of the dribble - CODA with ball.
- The Speed for a distance of 20 m. without the ball correlates very significantly with the ball handling for a distance of 20 m. in both tests.
- The post-test speed for a distance of 20 m. without ball correlates positively with the post-test speed for a distance of 10 m. without ball with a 90° turn.
- The Changes of direction (CODA) correlates very significantly with the speed for a distance of 10 m. with a 90° turn to the right and with the post-test CODA, without ball in all cases.
- The post-test changes of direction (CODA) correlates very significantly with the Speed for a distance of 10 m. with a turn to the right without the ball and with the pretest CODA without the ball. It is also significantly related to the speed for a distance of 10 m. with a right turn without ball.
- The ball handling for a distance of 10 m. with a right turn correlates very significantly with the handling for a distance of 20 m.
- The post-test ball handling for a distance of 10 m. with a 90° turn to the right correlates significantly with the dribble improvement - CODA with ball.



- Post-test Ball handling for a 10 m. distance with a 90° turn to the right correlates significantly with the dribble- CODA with ball.
- The Ball handling for a 10 m. distance with a 90° turn to the left correlates significantly with the ball handling for a 10 m. distance with a turn to the right during the post-test. It also correlates significantly with the post-test ball handling for a 20 m. distance and with the dribble - CODA with ball. On the other hand, it has a very significant correlation with the post-test ball handling for a distance of 20 m.
- The post-test ball handling for a distance of 10 m. with a 90° turn to the left presents a positive correlation with the post-test ball handling for a distance of 10 m. with a turn to the left. Likewise, it has a positive correlation with the post-test dribble – CODA with ball. However, it has a very significant correlation with the post-test ball handling for a distance of 20 m.
- The ball handling for a distance of 20 m. correlates significantly with the ball handling for a distance of 10 m. with a left turn and with the post-test dribble- CODA with ball. In spite of the foregoing, it correlates very significantly with the ball handling for a distance of 10 m. with a turn to the right, with the speed without ball for a distance of 20 m. and with the post-test ball handling for a distance of 20 m.
- The post-test ball handling for a distance of 20 m. is significantly related to the post-test dribble - CODA, and it is very significant with the pretest and post-test ball handling for a distance of 10 m. with a left turn, the speed for a distance of 20 m. without ball and with the ball handling for a distance of 20 m.
- Finally, the post-test dribble - CODA with ball correlates very significantly with the speed for a distance of 10 m. with a left turn, while it is significantly related to the ball handling for a distance of 10 m. with a post-test turn to the right and with a pretest turn to the left. It is also significantly related to the pretest and post-test ball handling for a distance of 20 m. and with the dribble - CODA.

**Table 6.** Correlations by factors.

		Pearson correlation	Sig. (bilateral)
Jump with both feet together	Post-test Jump with both feet tog.	0.951**	0,000
Course Navette or Beep Test	Post-test Course Navette or Beep T	0.959**	0,000
Speed for a distance of 10 m. with a 90° turn to the right without ball	CODA without ball	0.777**	0,003
	Post-test CODA without ball	0.727**	0,007
Post-test Speed for a distance of 10 m. with a 90° turn to the left without ball	Post-test Speed for a distance of 20 m. without ball	0.662*	0,019
	Post-test Regate - CODA (MAT) con balón	0.711**	0,010
	Ball handling for 20 m.	0.881**	0,000

Speed for a distance of 20 m. without ball	Post-test ball handling for 20 m.	0.809**	0,001
Post-test Speed for a distance of 20 m. without ball	Post-test Speed for a distance of 10 m. with a 90° turn to the left without ball	0.662*	0,019
CODA without ball	Speed for a distance of 10 m. with a 90° turn to the right without ball	0.777**	0,003
	Post-test CODA without ball	0.973**	0,000
Post-test CODA without ball	Post-test Speed for a distance of 10 m. with a 90° turn to the right without ball	0.727**	0,007
	Speed for a distance of 10 m. with a 90° turn to the right without ball	0.616*	0,033
	CODA without ball	0.973**	0,000
Ball handling for a distance of 10 m. with a 90° turn to the right	Ball handling for 20 m.	0.752**	0,005
Post-test ball handling for a distance of 10 m. with a 90° to the right	Post-test Dribble – CODA (MAT) with ball	0.646*	0,023
Ball handling for a distance of 10 m. with a 90° turn to the left	Post-test Ball handling for a distance of 10 m. with a 90° turn to the left	0.693*	0,012
	Ball handling for 20 m.	0.644*	0,024
	Post-test Ball handling for a distance of 20 m.	0.792**	0,002
	Post-test Dribble – CODA (MAT) with ball	0.669*	0,017
Post-test Ball handling for a distance of 10 m. with a 90° turn to the left	Post-test Ball handling for a distance of 10 m. with a 90° turn to the right	0.686*	0,014
	Ball handling for a distance of 10 m. with a 90° turn to the left	0.693*	0,012
	Post-test Ball handling for a distance of 20 m.	0.708**	0,010
	Post-test Dribble – CODA (MAT) with ball	0.695*	0,012
Ball handling for a distance of 20 m.	Ball handling for a distance of 10 m. with a 90° to the right	0.752**	0,005
	Ball handling for a distance of 10 m. with a 90° to the left	0.644*	0,024
	Speed for a distance of 20 m. without ball	0.881**	0,000
	Post-test Ball handling for a distance of 20 m.	0.855**	0,000
	Post-test Dribble – CODA (MAT) with ball	0.602*	0,038
Post-test ball handling for a distance of 20 m.	Ball handling for a distance of 10 m. with a 90° turn to the left	0.792**	0,002
	Post-test Ball handling for 10 m. with a 90° turn to the left	0.708**	0,010
	Speed for a distance of 20 m. without ball	0.809**	0,001
	Ball handling for a distance of 20 m.	0.855**	0,000
	Post-test Dribble - CODA (MAT) with ball	0.630*	0,028
Post-test Dribble - CODA (MAT) with ball	Post-test Speed for a distance of 10 m. to the left without ball	0.711**	0,010
	Post-test Ball handling for a distance of 10 m. with a 90° turn to the right	0.646*	0,023
	Ball handling for a distance of 10 m. with a 90° turn to the left	0.669*	0,017
	Post-test Ball handling for a distance of 10 m. with a 90° turn to the left	0.695*	0,012

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Ball handling for a distance of 20 m.	0.602*	0.038
Post-test Ball handling for a distance of 20 m.	0.630*	0.028
Dribble - CODA (MAT) with ball	0.696*	0.012

\*\* *The correlation is significant at the 0.01 level (bilateral).*

\* *The correlation is significant at the 0.05 level (bilateral).*

#### 4 DISCUSIÓN

The purpose of the research is to analyse the effects of specific reduced games in football on the physical and technical condition of a sample of female football players, using a training programme with 14 sessions with tasks played in situations of three versus three and four versus four.

The results show that there is an improvement of all the variables analysed, except for the speed in a distance of 20 m. without the ball. Therefore, leg strength, aerobic endurance, agility and speed with changes of direction with and without the ball are generally improved. These data match those concluded by Sánchez et al. (2014), but for the male population. Therefore, the same effect occurs in aerobic endurance, agility and speed regardless the genre of the subjects with this age. It also matches the studies of Craig et al. (2014) and Halouani, Chtourou, Dellal, Chaouachi and Chamari (2014) regarding the improvement of aerobic endurance. However, they do not match the results of Sánchez, et al. (2014) in the strength legs since in our study they present improvement in the average values. Nevertheless, we agree with the study carried out by Sánchez et al. (2014) regarding the significant differences after the intervention and in this regard, there is indeed a coincidence in aerobic endurance and agility (CODA).

Regarding the technical variables in this study, they coincide with those performed with men analysed by Pérez, et al (2012), Sánchez et al. (2014) and Soto and Pérez (2014b) in the improving of ball handling and dribbling. Not only due to its improvement in the average values but also for the existence of significant differences.

As in other studies, the use of SSGs is suitable, useful, effective and contextualized to the reality of the game and competition (Craig, Andrew, Nicholas & Taisuke, 2014, Halouani et al., 2014, Pérez, et al., 2012; Sánchez, et al., 2016; Wein, 1995), being an alternative to a more traditional and committed training where the training is separated from the reality of the game without taking it into account (Casamichana et al., 2015; Rampinini, et al., 2007; Sánchez, et al., 2016), and of course, being this alternative transferable to the specific competition situations (Casamichana et al., 2015).

Once again, the data coincide with those expressed by Febré, et al. (2015), Katis and Kellis (2009) and Sánchez et al., (2014) where the purpose of the training programmes with young people must be aimed at improving the technical and physical condition in the population of prepubescent women. Likewise, they match the studies of Craig et al. (2014) and Sánchez, et al. (2014) when they point out the importance of this type of trainings which are

suitable for young athletes since most of the scientific publications focus on the adult population. They can help prepare players with better thinking and decision-making skills in different situations (Cristian, et al., 2015, Martínez, et al., 2015, Young & Rogers, 2104).

This work is not related to the results obtained by Castillo, Fernández, Cinchilla and Álvarez (2012) which show a correlation between the strength of vertical jump and the CODA, aspect that in our study does not have that correlation as in the study of Pardeiro and Yanci (2017), although it is true that their research focuses on professional and semi-professional players respectively, and in our case, we focus on players in training and with different strength physical levels, since they have not yet developed their full strength. In the same way, it is related to the objective results in the study by Yanci et al (2013) and Yanci, et al. (2014), because the speed over short spaces is related to the agility of MAT or CODA, as well as to the study by Arin, Jansson and Skarphagen (2012) that show a significant correlation with values of similar significance, between the speed for a distance of 10. and 20 m. with the CODA test, although, of course, the samples are totally different. Finally, it is related to the study made by Yanci, et al. (2016) in a similar sample of age, but in a completely different sport: athletics. Finally, it is related to the study carried out by Young and Rogers (2014), when they both determine that reduced games improve the performance of agility.

Our study is related to the data obtained by Yanci et al (2013), in which the high variability produces improvements in changes of direction (CODA) and in the linear speed, as it also happens in our case since it significantly improves the changes of direction and the linear speed with the application of the training programme based on SSGs.

It is not possible to relate the research carried out with other researches that focus on a population subject of a similar study, and which shows that the improvement of speed and ball handling for a distance of 10 m. with a 90° turn is significantly related to the improvement of changes in direction - CODA with and without the ball, being these key aspects in the game of football as indicated by several studies (Bangsbo, et al., 2006; Yanci, et al. , 2014).

Finally, it would be very interesting to carry out more studies where these results are analysed in comparison with different categories of exclusively women's football, and of course, it would be striking to compare them to the male population, both with training programmes based on SSGs and with other types of training programmes.

## 5 CONCLUSIONS

The results obtained show that the physical condition, the technique and the CODA of the female football players have been improved through a training programme in SSGs. The aerobic endurance, the speed, the agility, the technique of ball handling and the changes of direction (CODA) are all improved within a specific training environment, being all of them the conditions and

qualities necessary to play football. However, the explosive force is not improved significantly in a sample of prepubescent female football players.

The improvement of the linear speed, the speed and the ball handling with changes of direction improve quite a lot the changes of direction - CODA and the dribble- CODA, both specific aspects and highly related to the performance in football. Therefore, the training of these aspects is highly recommended in these ages to provoke a better current and future performance in football.

Consequently, the implementation of a training programme composed of 14 sessions in which football reduced games or SSGs are included, can be used with young female players in order to improve some physical qualities, the changes of direction - CODA and their own specific technical aspects of football, such as ball handling and dribbling. Being the acquired learning transferable to real situations of the game. Thus, we can consider that they are an appropriate and very advantageous method for training in the initial stages or for training in female football players.

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