

Otero, F.M.; Carmona, J.; Albornoz, M.; Calvo, A. y Díaz, J.A. (2014) Metodología de enseñanza de los deportes de invasión en primaria / Teacher's methodology of invasion games in primary school. Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte vol. 14 (53) pp. 69-87.  
[Http://cdeporte.rediris.es/revista/revista53/artintervencion439.htm](http://cdeporte.rediris.es/revista/revista53/artintervencion439.htm)

## ORIGINAL

### TEACHER'S METHODOLOGY OF INVASION GAMES IN PRIMARY SCHOOL

### METODOLOGÍA DE ENSEÑANZA DE LOS DEPORTES DE INVASIÓN EN PRIMARIA

Otero, F.M.<sup>1</sup>; Carmona, J.<sup>2</sup>; Albornoz, M.<sup>3</sup>; Calvo, A.<sup>4</sup> & Díaz, J.A.<sup>5</sup>

<sup>1</sup> Doctorate from the Universidad Pablo de Olavide. Professor in the Sports and IT Department of the Universidad Pablo de Olavide, Spain. fmotero@upo.es; fernando.otero.tic@gmail.com.

<sup>2</sup> Doctorate from the Universidad de Sevilla. Professor in the Faculty of Educational Science of the Universidad de Huelva, Spain. carmona@uhu.es.

<sup>3</sup> Doctorate from the Universidad de Sevilla. Professor in the Physiotherapy Department of the Universidad de Sevilla, Spain. malbornoz@us.es.

<sup>4</sup> Doctorate from the Universidad Pablo de Olavide. Professor in the Sports and IT Department of the Universidad Pablo de Olavide, Spain. acallu@upo.es.

<sup>5</sup> Doctorate from the Universidad de Cádiz. Professor in the Physiotherapy Department of the Universidad de Sevilla, Spain. jdm@us.es.

**Spanish-English translator:** Morote Traducciones marketing@morote.net

**Código UNESCO / UNESCO code:** 5803 Pedagogía (preparación y trabajo de los profesores) / Pedagogy (Teacher training and employment) 5801.07 Métodos Pedagógicos / Educational methods.

**Clasificación del Consejo de Europa / European Council Classification:** 5. Didáctica y metodología / 5. Teaching and methodology.

**Recibido** 9 de octubre de 2011 **Received** October 9, 2011

**Aceptado** 3 de julio de 2013 **Accepted** July 3, 2013

## **ABSTRACT**

The aim of this study was to analyze teaching methodology in invasion games in Primary Education. For this purpose, a questionnaire with the following parameters was drawn up and validated: Quantification of the programs involving invasion games and disciplines taught, horizontal or vertical methodologies, learning situations and learning situations and methodological approaches used. The questionnaire was answered by 151 physical education teachers in Seville. The results show that teachers devote a large proportion of their teaching programs to invasion games. Basketball, football and handball are the most taught. A vertical approach is generally applied by physical education teachers. Learning situations of numerical equality are the most used for the teaching of invasion games. Finally, the methodological approaches of the teachers are focused on active learning.

**KEYWORDS:** Physical Education, methodology, invasion games, Primary school

## RESUMEN

El objetivo de estudio fue analizar la metodología de enseñanza de los deportes de invasión en Educación Primaria. Para ello, se validó y diseñó un cuestionario con las siguientes dimensiones: cuantificación de la programación sobre deportes invasión y disciplinas impartidas, metodología horizontal o vertical, situaciones de aprendizaje utilizadas y creencias metodológicas. El cuestionario fue respondido por 151 maestros de Educación Física de Sevilla. Los resultados reflejan que los maestros dedican una gran cantidad de su programación a los deportes de invasión. Baloncesto, fútbol y balonmano son las disciplinas más impartidas. Los maestros de Educación Física utilizan mayormente una metodología vertical. Las situaciones de aprendizaje de igualdad numérica son las más utilizadas para enseñar deportes invasión. Por último, las creencias metodológicas de los maestros se orientan hacia un aprendizaje activo.

**PALABRAS CLAVE:** Educación Física, metodología, deportes de invasión, Primaria, cooperación oposición

## INTRODUCTION

Within all the different types of sports, the aim of this study is to analyze the methodology used by Primary school teachers to teach so-called invasion games (Memmert & Harvey, 2010; Méndez, 1999; Oslin, Mitchell & Griffin; Rivadeneyra & Sicilia, 2004), also known as cooperative team games and shared space games (Hernández, Castro, Cruz, Gil, Guerra, & Quiroga, 2000). In this regard, we consider invasion games to mean those cooperative team situations where the aim is to place the mobile in a space and/or avoid it in a shared space.

This group of games provides one of the ways of understanding sport in society, which is why it is important to analyze how they are taught in a school context. Different sociology studies have confirmed that invasion games enjoy a higher standing in Spanish society within the wide variety of sports available (C.I.S. and C.S.D, 2010; García, 2006). More specifically, other studies have found the same trend in university students of Sports Science, a high percentage of whom preferred these disciplines to other sporting activities (García & Ruiz, 2005; Martínez & Pino, 2004).

Analysis of the scientific literature reflects the fact that invasion games receive the bulk of attention in Physical Education in schools. In the case of the pupils, the studies by Gutiérrez, Pilsa, and Torres (2007) and Pinto (2007) in different school environments concluded that they were pupils' favorite content in Physical Education. Identical trends in pupils' preferences were found in other school contexts such as in the United States and England (Hill & Cleven, 2006; Shropshire & Carroll, 1998).

In the case of Physical Education teachers, several studies concluded that they allocate the highest percentage of their teaching loads to this content in secondary education, however no studies were found that investigate the level of popularity of these sports for Physical Education teachers in primary schools (Ureña, Alarcón, & Ureña, 2009; Robles, 2009; Zabala, Viciano & Lozano, 2002).

The proven social and educational popularity of invasion games leads us to investigate how these disciplines are taught in school contexts. Different studies have examined this issue by comparing the effects of two methodologies (traditional and active) to teaching invasion sports in school. The majority came to the conclusion that there are no significant differences between the two methodologies in aspects relating to technical skills. However, active methodologies obtain better results in the variables relating to understanding the game, such as making decisions and declarative knowledge (Almaguer, 2004; Allison & Thorpe, 1997; García & Ruiz, 2003; Méndez, 1999).

While there is an abundance of studies comparing the effects that the two methodologies have on learning in these disciplines, we did not find any studies that analyze how Physical Education teachers in Spain teach this type of sport. The research found on teachers' intervention in primary education does not refer to invasion games, as is the case in the studies by Manzano, Cañadas, Delgado, Gutiérrez, Sáenz, Sicilia, and Varela (2003) and Tejada (2007) which deal with general methodological and assessment issues in the area of Physical Education but without focusing on this content that is so popular among teachers and pupils alike. Additionally, studies that do examine teachers' intervention in invasion games in a school context were conducted on the secondary education stage as is the case with the studies by Robles (2009) and Ureña et al. (2009).

The scarcity of research analyzing how sports are taught in primary school contrasts with the fact that the specialist literature unanimously concurs that the ideal age to introduce children to sports is between 6 and 8 years, i.e. within the primary education stage (Antón, 1990; Blázquez & Amador, 1999; Giménez, 2000; Velázquez, 2003).

The situation described summarizes some sporting disciplines of major social importance and that enjoy a high level of popularity among both pupils and teachers in Physical Education, with numerous research studies on teaching methodologies but no studies that analyze how these sports are taught at a crucial stage of introduction to sports: primary education.

Moreover, and given the comprehensive nature of the stage and the educational possibilities of invasion games, ascertaining if active or traditional learning predominates is an aspect very much required in order to determine how these disciplines are taught. In the first methodology it is seen "*not as a sum of techniques, but rather a system of relationships between the different*

*elements of the game*”; on the contrary, the traditional model is characterized by little concern for the pupils and seeks fast learning results based on the teaching of technique (Blázquez & Amador 1999). In designing the questionnaire for this study, these models correspond to the items relating to the inquiry technique and direct instruction.

Another aspect to analyze concerning the teaching methodology used for invasion games is the selection of either a vertical or horizontal approach. On the one hand, the vertical methodology aims to provide functional, single-sport teaching and does not seek “mechanisms of understating the game” (Hernández et al., 2000). It is not the most suitable model in the context of this study or for the sport objective. As other authors have already noted, this methodology is better suited to individual sports (Robles 2009; Valero & Conde, 2003) and to teaching context geared towards sports specialization. Nevertheless, a vertical, single-sport model that focuses learning on the game itself and understanding the game can be taken into consideration, as detailed by González, Gil, Contreras, y Pastor (2008). From another perspective, the horizontal or cross-disciplinary model (Bengué, 2005) is based on simultaneous initiation to several sporting disciplines. This model seeks to form comprehension processes in the pupils in such a way that they understand the functional logic of the game and their “theoretical” knowledge and understanding (space-time, width/depth ratios) improve their performance.

Therefore, the aim of this study is, using as a starting point the wide body of knowledge on teacher intervention in invasion games created by the various research projects, to discover the teaching methodology used for cooperative team sports in primary school. The aim of the research can be broken down into the following operational objectives:

1. To quantify the part of the program devoted to teaching invasion games in primary school through the number of teaching units and total sessions taught.
2. To discover which sporting disciplines teachers include in their Physical Education teaching units in primary school.
3. To define whether or not the methodological design of the teaching units on invasion games combines several sporting disciplines (integrated model) or separates them by teaching them in different teaching units (independent or vertical model).
4. To determine the learning situations that primary school Physical Education teachers use to teach invasion games.
5. To identify two opposing teaching methodologies (traditional and active) in teachers’ methodological assumptions for teaching invasion games.

In order to fulfill the objectives listed above, we used a highly-structured questionnaire as a data collection tool. The dimensions and variables that formed the questionnaire were as follows: amount (sessions and teaching units) and variety of program (sporting disciplines); methodology used (vertical or horizontal); learning situations and methodological assumptions (active or traditional).

## **METHOD**

With regard to the research design, we are dealing with a social study that is quantitative in nature as it uses a highly-structured questionnaire as a data collection tool, and also cross-disciplinary, as this collection took place at a single time milestone. The design is completely identical or identical in parts to the studies conducted with Physical Education teachers by Manzano et al. (2003), Robles (2009), Sicilia, Delgado, Sáenz-López, Varela, Cañadas and Gutiérrez (2006) and Tejada (2007).

### **Participants**

Our contact with Physical Education teachers was facilitated by the Seville Province Department of Education which provided the details of the 388 public primary education centers in Seville and its province. We received a response from 151 Physical Education teachers (75.5% men and 24.5% women with an average age of  $35 \pm 6.38$ ). Of these 151 teachers, 88.7% hold specific academic training in the area with 11.3% of teachers working without this specialization. This percentage is higher than the one obtained (44.6%) by Tejada (2007) for the amount of teachers in Huelva with the Physical Education specialization. 3.4 years is the average number of years of teaching experience, concentrated in a range from 0-10 years (93.4%). Permanence in this specialized area is short as there are virtually no teachers with more than 15 years' experience. Tejada (2007) obtained identical data.

Following the basic method of sending and service by post used in a similar study (Tejada, 2007), an explanatory letter describing the aims of the research and the web address where the questionnaire could be found was sent to the 388 centers.

The research focuses on all the primary education centers in Seville and its province. The questionnaire participants were recruited in the three circulations described in the following section.

### **Procedure**

On 19 February 2010, 388 letters were sent to all the centers. Only 88 centers had completed the questionnaire after one week. The second circulation was initiated on 10 March sending an e-mail to the centers' official e-mail addresses with the same letter text and a total of 125 centers responded.

In the last circulation, the centers that had not yet answered were contacted by telephone bringing the final number of centers that completed the questionnaire to 151 (38.91% of the total population). In light of the difficulty of finding out how many teachers are in each school, the center and not the teacher was considered as a unit, as was the case with the sampling of a study conducted by Sicilia et. al (2006) for Physical Education teachers and secondary school teachers in this field throughout the entire Autonomous Community of Andalucía.

## **Tool**

The questionnaire stands as a very appropriate tool given that it can collect a multitude of data in a short time. In compiling the questionnaire, we referred to literature specifically concerning questionnaire design and similar studies (Cuéllar, Delgado & Delgado, 2004; Esnaola, Ruiz, Zulaika, Rodríguez & Goñi, 2003; Vegas, 2007) First of all, before drafting the questions, you must “Specify the main objective” (Esnaola et al. 2003).

Next, as has been done in other studies that use questionnaires (Cuéllar, 2004; Esnaola et al., 2003) you must analyze the content to be measured; in our case, the teaching methodology used for invasion games in primary school. Our analysis of the literature does not remain in a statement of intent but rather every objective had a specific literature review using a methodology similar to that employed by Vegas (2007) in designing his questionnaires. Lastly, we proceeded to write and select the category of the questions and then conducted a subsequent validation in order to confirm that the items actually measured what the initial objectives proposed using a procedure similar to the validation carried out by Hernández (2002). We identified four essential phases in the questionnaire’s design.

Firstly, validating the content. According to Hernández, Fernández & Baptista (2007) expert opinion prior to implementing the tool is the procedure to apply for content validity in which we ascertain the extent to which the measurement represents what is being measured. In our case, we intended to analyze the teaching methodology used for team sports in primary school. General objectives were established in this regard. The objectives were circulated among a group of six experts from various university departments of Physical Activity and Sport Science. In the end, five dimensions and variables formed the questionnaire: amount of program time (sessions and teaching units), variety of sports (sporting disciplines); methodology used (vertical or horizontal); learning situations and methodological assumptions (active or traditional).

Secondly, analysis of the content to be assessed. Every objective had its own specific literature review. Some share sources given their affinity.

Thirdly, writing the questions. In relation to writing the questions or items of each objective, we established a premise: facilitate the teacher providing an

honest response regarding their work and avoiding - insofar as possible - he or she answering 'what they believe should be done or believed' to the detriment of what they really do or believe, as happens in many studies of this kind. In order to avoid this mistake, the in-depth analysis of the literature enabled us to examine the conceptual dimensions of the objectives we wanted to measure (Esnaola et al. 2003) and break them down into very specific characteristics that allow us to assess the constructs in an operational manner without needing to compromise the teacher by another educational option. To this end we broke down all the possible learning situations (basic, equal number, higher number and real game). The items and their corresponding objectives were reviewed by the expert group following the procedure proposed by Hernández et al. (2007) and in the same terms in studies similar to our research (Hernández, 2002; Robles. 2009).

Lastly, selecting the format: sensitivity of the scale. A Likert scale was used for those questions that were neither dichotomous nor numeric (such as the methodological assumptions dimension). The sensitivity of the scale, understood to mean the quality of the measurement that enables us to differentiate all the subject's possible answers (Dugas, 2004), has been handled with the utmost care. In this regard, numerous studies have used scales that do not discriminate in the sense of differentiating, designing one, two or three possible answers; in the same way humans' capacity to discriminate is limited and it would seem that including more than seven options does not have a positive effect on reliability (Esnaola et al. 2003). With these premises, our Likert-style questionnaire presents four options for the extent of agreement, thereby eliminating the central trend of usual response in scales with an uneven number of options.

### **Statistical analysis**

Once the data had been collected, we proceeded to analyze them using the SPSS v.15 statistical software package. A descriptive analysis was performed using the arithmetic mean and the exploration of percentages and frequencies for the amount and variety, methodology and learning situation dimensions. In the case of the methodological assumptions dimension, and if there are two educational models for teaching invasion games, we apply an exploratory factor analysis using the method of extracting principal components and varimax rotation, with the aim of detecting two homogeneous groups of items: one group referring to traditional teaching and another to active learning.

Factor analysis has already been applied in similar studies to ours (Vera & Moreno, 2007). Prior to defining the two groups, we confirmed that both the communality and the Kaiser-Meyer-Olkin (KMO) sampling adequacy measure were adequate. The results of the KMO test were .574. In addition, Barlett's test of sphericity yielded significant results with  $p < .001$ .

The factor analysis checked that questions 2 and 5 referring to traditional teaching (.808 and .855) and questions 3, 4 and 6 on an active learning model for invasion games (.731, .802, .658) could be grouped together under different components. Once the two educational models had been confirmed, the internal consistency of the questions on both models was calculated. Cronbach's alpha is .571 for the traditional teaching methodology after eliminating question 1, whose factor analysis results prevented it from forming part of any theoretical model. For the questions concerning the teaching methodology based on pupil participation, Cronbach's alpha is .607, which confirms the internal consistency of both measures despite the reduced number of items.

## RESULTS

The results obtained were analyzed based on the five dimensions mentioned above: amount of program time (sessions and teaching units), variety of sports (sporting disciplines taught), methodology used (vertical or horizontal), learning situations (basic, higher number, equal number and real game) and the methodological assumptions of Physical Educations teachers concerning how to teach invasion games.

### Amount

Two indicators were used in the questionnaire to measure the amount of program time: number of teaching units and sessions taught on invasion games. In the case of the 'teaching units' variable, the results obtained show that Physical Education teachers in Seville devote an average of 3.68 teaching units per year to invasion games, a high number within the range proposed by the questionnaire (min. 1, max. 5 units). For the 'number of sessions' variable, the average value was 25.52 (min. 5, max. 75 sessions).

An examination of the results explains the above-mentioned mean values. In the case of the 'number of teaching units' amount indicator, the highest percentage of teachers focused on invasion games for 4 teaching units (32.5%). In second place, 29.8% devoted 5 teaching units to teaching these sporting disciplines (See table 1).

**Table 1.** Frequency and percentage of the number of units on invasion games.

No. units	Frequency	Percentage
1	10	6.6
2	17	11.3
3	30	19.9
4	49	32.5
5	45	29.8
TOTAL	151	100

To analyze the amount of program time devoted to invasion games through the 'number of sessions' variable, the data were grouped into four categories given the high range: two central intervals of 15 teaching units and two extreme categories. The results show that the 'Sufficient' sessions category (between 16 and 30 sessions) represents 53.6% of the entire sample. In second place, 'Quite a lot' of sessions (31-45) represent 24.5% of the sample. Lastly, the extreme values of 'Few' sessions (less than 15) and 'Many' sessions represent the lowest percentages (See Table 2).

**Table 2.** Number of sessions teachers devote to invasion games.

No. of sessions	Frequency	Percentage
Few (Less than 15)	28	18.5
Sufficient (16-30)	81	53.5
Quite a lot (31-45 sessions)	37	24.5
Many (Over 45)	5	3.3
TOTAL	151	100

## Variety

In the case of the 'variety' of program time variable, the results of the descriptive analysis show that basketball (M=1.95) gets the highest mean of inclusion in teacher's programs ahead of football (M=1.81), handball (M=1.78) and the 'Other sports' option (M=1.75). The means for hockey (M=1.60) and, to a greater degree, rugby (M=1.69) show less inclusion in the program for teaching the group of cooperative team and shared space games.

A more detailed descriptive analysis through frequencies and percentages explains the measurements obtained (See Table 3). Almost all the teachers (95.4%) include basketball in their program. Football achieves similar

percentages with 81.5% with handball and the 'Other sports' option obtaining noteworthy results of 78.1% and 74.8% respectively. Less popular sports in the programs are hockey (60.3%) and rugby with a very low percentage (18.5%).

**Table 3.** Frequency and percentages of the invasion game disciplines taught by teachers

Discipline	Frequency	Percentage
Basketball	144	95.4
Football	123	81.5
Handball	118	78.1
Other sports	113	74.8
Hockey	91	60.3
Rugby	28	18.5

### Methodology used

In order to measure this dimension, in the questionnaire teachers were asked to respond to the 'Type of methodological design' variable by choosing one of two options: (a) integrated model, in which several invasion games are taught in the same learning unit, and (b) independent model, in which each sport is taught in a separate unit. The results obtained show that teachers, to a large extent, teach those sports that share the invasion game structure in separate or independent learning units.

Performing a data exploration (See Table 4) confirms the results of the predominance of an independent approach, also known as a vertical methodology (Hernández et al. 2000; González, et al., 2008). Almost 70% of the sample (68.2%) opts for the vertical methodology to teaching invasion games, i.e. in separate units, and only 31.8% combine several cooperative team games in the same learning unit.

**Table 4.** Percentages and frequencies of the type of methodological design used by teachers.

Methodology	Frequency	Percentage
Integrated	48	31.8
Independent	103	68.2
TOTAL	151	100

### Learning situations

Analysis of the arithmetic means of the learning situations shows intensive use of the majority of situations with values close to three on the four-point scale. Ranking the learning situations by order shows that situations of equal numbers are the most widely-used for teaching invasion games (M=2.97), basic situations (1x0, 1x1, 2x0) come in second place (M=2.90), followed by real game situations (M=2.86). Lastly, the least used with an arithmetic mean (M=2.41) clearly below the previous situations are the higher number situations described as 2x1, 3x2, 3x1, 1x1+1, 2x2+1 y 3x3+1 (See Table 5).

**Table 5.** Descriptive analysis of the situations used to teach invasion games.

Learning situations	M	DT	Min.	Max.
Equal number situations (2Vs2, 3Vs3, 4Vs4)	2.97	.565	1	4
Basic situations (1Vs0, 2Vs0, 1Vs1)	2.90	.650	1	4
Real game situations (5Vs5, 6Vs6, 7Vs7, 8Vs8 or more)	2.86	.639	1	4
Higher number situations (2Vs1, 3Vs2, 3Vs1, 1Vs1+1, 2Vs2+1, 3Vs3+1)	2.41	.656	1	4

### Methodological assumptions

Once the items had been grouped into two variables through the factor analysis described in the statistical analysis sub-section, we proceeded to produce a descriptive analysis of these variables. The results obtained reflect the fact that the methodological assumptions for teaching invasion games lean towards an active learning model (M=3.11, M=3.17, M=3.28) owing to the higher value of the means than those obtained for the questions grouped under the traditional model (M=2.19, M=2.51).

**Table 6.** Items corresponding to the methodological assumptions variable in teaching invasion games.

QUESTIONS	M	DT	Min.	Max.
✓ The strategy in analytical practice is well suited to teaching cooperative games in primary school	2.19	.746	1	4
✓ Direct instruction is well suited to teaching cooperative games in primary school	2.51	.672	1	4
<i>Traditional teaching of invasion games</i>				
✓ Inquiry is well suited to teaching cooperative games in primary school	3.11	.591	1	4
✓ Strategy in overall practice is well suited to teaching cooperative games in primary school	3.17	.619	1	4
✓ Comprehension of principles common to the cooperative games is one of the most important aspects in teaching cooperative games	3.28	.593	1	4
<i>Active learning of invasion games</i>				

### DISCUSSION

Numerous studies have conducted research into the effects of using different methodologies to teaching invasion games in a school context (Almaguer,

2004; Allison & Thorpe, 1997; García & Ruiz, 2003; Méndez, 1999). Nevertheless, the research found on teacher analysis did not focus on this content (Manzano et al. 2003 and Tejada 2007) or did so at the secondary school stage (Robles, 2009; Ureña et al. 2009). In this regard, the specialist literature agrees in confirming primary school age as the most appropriate age for initiation to sports (Antón, 1990; Blázquez & Amador, 1999; Giménez, 2000; Velázquez, 2003). Therefore, the aim of this study was to analyze how Physical Education teachers teach this type of sport that enjoys such a level of popularity in society (García, 2006; C.I.S. & C.S.D, 2010), among pupils (Gutiérrez et al. 2007; Pinto, 2007) and the teachers in this field (Ureña et al. 2009; Robles, 2009; Zabala et al. 2002).

In the case of the dimension of the questionnaire referring to the amount of program time allocated to this group of sports, the results obtained in both the 'number of teaching units' and 'number of sessions' variables indicate that Physical Education teachers devote a large part of their program time to teaching invasion games. The results of the 'sessions' variable (an average of 25.52 sessions per year) enable us to conclude that a teacher allocates approximately 40% of the program to the type of content discussed herein. In this regard, the approximate number of annual sessions in a Physical Education teacher's academic year (counting two sessions per week) is 60 sessions. This is a high percentage if we consider that this type of content does not represent this proportion in the official curriculum, as there is a multitude of content (individual sporting disciplines, split court games, popular games, health, body structure, posture balance) that need to be given time in an annual program.

Despite the scarcity of data and studies on the teaching load devoted to invasion games in primary school in Spain (Manzano et al. 2003; Sicilia et al. 2006; Tejada, 2007), analysis of the literature enables us to extract some data which incidentally confirm the predominance of these sports. Thus, for example, Pinto's study (2007) highlights football as the sport most mentioned in 32 educational centers in the province of Ciudad Real. On an international level, the work of Shropshire & Carroll (1998) and Hill & Cleven (2006) indicate that this is also the preferred group of sports in countries like England and the United States. In the case of Shropshire & Carroll (1998), 924 English primary school Physical Education students chose team sports as their favorite. In the United States, 801 school children stated a preference for this group of sports according to Hill & Cleven's research (2006).

Although there is a different curriculum for the secondary school stage, it is worth noting the coincidence of the teaching load devoted to invasion games in the results obtained in the field of Physical Education in Spain. Robles' study (2009), conducted on secondary school teachers found that all those surveyed allocate a large percentage of their program time to invasion games and this group of sports are the most popular in their programs (ahead of individual sports, adversarial sports or collective split court games). The results by category coincide with our research as basketball obtained the highest percentage, followed by handball and football. Similar results were obtained in

research conducted in Spain by different authors (Gutiérrez et al. 2007; Ureña et al. 2009; Zabala et al. 2002) on the secondary school stage.

Analysis of the dimension aimed at discovering if teachers used an independent or horizontal methodology show that teachers clearly lean towards the former. Although there is an abundant amount of scientific literature that compares the benefits of both methodologies to invasion games, the studies reviewed and mentioned above on teacher analysis, do not investigate whether teachers in the field of Physical Education teach sports in an independent or horizontal manner. In this regard, various authors have supported indications that a horizontal methodology is capable of transferring learning between sports with an identical formal structure: invasion games in our case. If pupils are able to understand the internal logic of a sport through the comprehensive teaching proposed by different authors, then they will be able to transfer these principles or tactical aims to other sports with the same structure (Bengué, 2005, Duga, 2004; Lagardera & Lavega, 2003). These indications have already been confirmed as scientific evidence in recent empirical studies that have demonstrated that such transfers occur in invasion games (Memmert & Harvey 2010; Ramírez, 2009; Yañez & Castejón 2011).

In the case of the learning situations used for teaching invasion games, the physical education teachers questioned as part of our study use the following situations listed by order of importance: equal number, basic, real game and higher number situations. The literature review specifically concerning learning situations does not coincide with the results obtained. In this regard, according to the recommendations put forward by various authors specializing in how several types of invasion games (handball, basketball, football and other non-federation forms) are taught, we can deduce the following order: firstly, so-called basic situations (1x0, 1x1, 2x0), followed by higher number situations (with the presence of wild-card or neutral players), equal number situations and, lastly, real game situations (Antón, 1990; Ardá & Casal, 2003; Bengué 2005; Fradua & Moreno del Castillo, 2001; Guerra, 2001; Pintor & Cárdenas, 2001; Sicilia & Rivadaneira, 2004) .

However, the results obtained in our study shift basic situations back to second place despite the fact that these are well-suited to the technical and perceptive abilities of pupils in a school context. Less consistent will previous authors is teachers' low utilization of higher number situations, In this regard, higher number situations take on a very important role following the logical scheme for teaching, firstly, higher number situations, then equal number and, lastly, lower number situations (Sans & Frattarola, 1993) as guarantees of a manner of teaching invasion games that is adapted to pupils' abilities, and active above all with the use of the wild-card or neutral role as an educational resource to prioritize teaching offence before defense. This adjustment facilitates attacking play, increasing the ball holder's number of passing lines (Pintor and Cárdenas 2001). Lastly, and instead of real game situations, equal number situations are required owing to their similarity to competition provided that their perceptive or decision-making complexity is not advanced for primary school students' level

of motor skills (2x2 or 3x3) and is adapted to pupils' abilities (Sicilia & Rivadaneyra, 2004; Wein, 1995).

Lastly, the results of the dimension relating to methodological assumptions show that Physical Education teachers' assumptions lean towards active learning of invasion games to the detriment of traditional teaching. The validity of these data has been stressed in the sense that there is a need to detail the bias contained in observational studies that use questionnaires as a data collection tool: the possibility that those surveyed, on occasion, do not answer what they really do if they do not believe that it is what should be done. In this regard, the qualitative reflection carried out in the study of Manzano et al. (2003) which combined questionnaires and interviews, found that among the responses provided by Physical Education teachers, the assertion that sometimes they answered that they used active methods when in reality many used direct commands. In our study we assess teachers' methodological assumptions on teaching invasion games, not how they perform their teaching work and we interpreted it from this perspective.

In qualitative terms, the results obtained in our study contrast with the work of Manzano et al. (2003) which found greater use of traditional models (understood as the direct instruction technique) than active models (understood as inquiry). The authors justify these results by pointing out that it could be drawn from the study, conducted on primary and secondary school teachers and without specifically referring to team sports but rather to the general Physical Education curriculum, that teachers lean more towards inquiry in primary school and towards direction-based models in secondary. Other studies conducted specifically study teacher intervention on cooperative team sports in a school context (Robles, 2009; Ureña et al. 2009).

Although Robles (2009) diversified the subject matter of his study to all the sports on the curriculum, not only invasion games, we extracted data based on the approach: the strategy in the global practice and inquiry-based styles such as problem solving are the most widely used by the teachers in the population studied. Concerning the strategy in practice, it found that Physical education teachers in secondary school used global situations to teach team sports without excluding split court games (global  $M=4.56$ , analytical  $M=2.59$ , mixed  $M=3.72$ ). In the same way, the calculation of the results of all the teaching styles that form part of inquiry-based learning was greater than traditional styles for teaching team sports. We insisted on calibrating the consistency and relative validity of the observational studies in order to determine methodology trends, as in the same study a high percentage of the teachers surveyed responded that they used analytical tasks to teach technique in the various sports (Robles, 2009).

In their study in teacher intervention on team sports (including split court games) in the Murcia region, Ureña et al. (2009) conclude in the same terms as the previous study as the strategy most widely used in practice is the global

strategy (they did not distinguish between different categories at the time of measurement) to the detriment of the analytical strategy.

## CONCLUSIONS

We can conclude that this study reflects the importance Physical Education teachers in Seville assign to invasion games in their programs. As the age of primary school children is highly important time for sports learning, it would seem advisable to supplement the evidence provided based on this study with other studies that launch and conduct in-depth examinations on research topics concerning two very valuable work dimensions: the learning situations and the use of a vertical or horizontal approach.

Our study appears to confirm that the selection of learning situations (in excess of equal numbers) and the independent methodology are unsuitable as they does not fulfill the curriculum nor the transfers of the functional logic that can be made use of in these sports.

As educational implications, and in light of the fact that teaching practices do not meet the recommendations set forth in the specialist literature, it appears appropriate to use direct observation tools and determine the initial training levels of teachers in the field on both variables which would lead us to more in-depth knowledge regarding how these sports are taught.

## REFERENCES

- Almaguer, R. F. (2004). *Estudio comparado entre dos metodologías de enseñanza: Una aplicación en la iniciación al balonmano*. Tesis Doctoral no publicada. Universidad de Las Palmas de Gran Canaria. Departamento de Educación Físico Deportiva. Las Palmas.
- Allison, S., & Thorpe, R. (1997). A comparison of the effectiveness of two methodologies to teaching games within physical education. A skills methodology versus a games for understanding approach. *British Journal of Physical Education*, 28(3), 9-13.
- Antón, J. L. (1990). *Balonmano. Fundamentos y etapas de aprendizaje*. Madrid: Gymnos.
- Ardá, A., & Casal, C. A. (2003). *Fútbol: Metodología de la enseñanza del fútbol* (1st ed.) Barcelona: Paidotribo.
- Bengué, L. (2005). *Fundamentos transversales para la enseñanza de los deportes de equipo* (1st ed.) Barcelona: INDE Publicaciones.
- Blázquez, D., & Amador, F. (1999). *La iniciación deportiva y el deporte escolar* (1st ed.) Barcelona: Inde, 1999.
- C.I.S. & C.S.D. (2010). *Encuesta sobre los hábitos deportivos en España 2010*. Madrid: C.S.D.
- Cuéllar, M. J., Delgado, M., & Delgado, M. A. (2004). Construcción y validación de un instrumento para la evaluación de aspectos conceptuales en danza. *Tándem*, n. 14, 93-105.

- Dugas, E. (2004). Lógica de situaciones motrices y transferencia de aprendizajes en la educación física y los deportes. EN Lavega, P y Lagardera Otero, F. (Eds.) *La ciencia de la acción motriz* (1st ed., pp. 181-201) Universitat de Lleida.
- Esnaola, I., Ruiz de Auza, S., Isasti, L. M., Rodríguez, A., & Goñi, A. (2003). Autoconcepto físico y desarrollo personal: Perspectivas de investigación. *Revista de Psicodidáctica*, (15), 7-64.
- Fradua, L., & Moreno del Castillo, R. (2001). La iniciación al fútbol en el medio escolar. EN F. Ruiz, A. García y A. J. Casimiro (Eds.), *La iniciación deportiva basada en los deportes colectivos. Nuevas tendencias metodológicas* (2001<sup>a</sup> ed., pp. 145-178). Madrid: Gymnos.
- García, M. (2006). Veinticinco años de análisis del comportamiento deportivo de la población española (1980-2005). *Revista Internacional de Sociología*, (44), 15-38.
- García, J. A., & Ruiz, L. M. (2003). Análisis comparativo de dos modelos de intervención en el aprendizaje del balonmano. *Revista de Psicología del Deporte*, 12(1), 55-66.
- García, M. E., & Ruiz, F. (2005). Modalidades de práctica de actividades físico-deportivas de tiempo libre. *Tándem: Didáctica de la Educación Física*, (17), 79-94.
- Giménez, J. (2000). *Fundamentos básicos de la iniciación deportiva en la escuela* (1st ed.) Sevilla: Wanceulen Editorial Deportiva.
- González, S., Gil, P., Contreras, O. R., & Pastor, J. C. (2008). Propuestas de formación permanente del profesorado de educación física sobre deportes de invasión. *Perfiles Educativos*, 30(121), 97-124.
- Guerra, A. (2001). *La enseñanza del hockey en la iniciación* (1st ed.) Málaga: Centro de Ediciones de la Diputación de Málaga.
- Gutiérrez, M., Pilsa, C., & Torres, E. (2007). Perfil de la educación física y sus profesores desde el punto de vista de los alumnos. *Revista Internacional de Ciencias del Deporte: International Journal of Sport Science*, 3(8), 39-52.
- Hernández, J. L. (2002). Diseño y validación de un instrumento para el análisis del proceso de comunicación docente en torno a las tareas de enseñanza en la educación física. *Tándem*, (9), 91-107.
- Hernández, J., Castro, U., Cruz, H., Gil, G., Guerra, B., Quiroga, M., & Rodríguez, J. (2000). *La iniciación a los deportes desde su estructura y dinámica. Aplicación a la educación física escolar y al entrenamiento deportivo*. Zaragoza: Inde.
- Hernández, R., Fernández, C., & Baptista, P. (2007). *Fundamentos de metodología de la investigación* Madrid: McGraw-Hill, Interamericana de España.
- Hill, G. M., & Cleven, B. (2006). A comparison of students' choices of 9th grade physical education activities by ethnicity. *High School Journal*, 89(2), 16-23.
- Lagardera, F., y Lavega, P. (2003). *Introducción a la praxiología motriz*. Barcelona: Inde.
- Manzano, J.I; Cañadas, M.; Delgado, M.A.; Gutiérrez, M., Sáenz, P.; Sicilia, A. & Varela, J. I. (2003). *Currículo, deporte y actividad física en la edad escolar*. Málaga: IAD.

- Martínez, A. & Pino, M. J. (2004). Experiencias deportivas, actitudes y expectativas ante las actividades rítmico-expresivas del estudiante de ciencias de la actividad física y del deporte. *Revista de Educación Física: Renovar la Teoría y Práctica*, (93), 5-14.
- Memmert, D., & Harvey, S. (2010). Identification of non-specific tactical tasks in invasion games. *Physical Education y Sport Pedagogy*, 15(3), 287-305.
- Méndez, A. (1999). *Análisis comparativo de las técnicas de enseñanza en la iniciación a dos deportes de invasión: el floorball patines y el baloncesto*. Tesis Doctoral no publicada. Universidad de Granada. Departamento de Educación Físico Deportiva.
- Oslin, J.L., Mitchell, S.A., & Griffin, L.L. (1998). The game performance assessment instrument (GPAI): Development and preliminary validation. *Journal of Teaching in Physical Education*, 17(2), 231-243.
- Pinto, A. (2007). *Tendencias lúdicas y deportivas de los niños y niñas de primaria: Un estudio en la provincia de Ciudad Real*. Departamento de Educación Física. Nuevas perspectivas. Universidad de Castilla-La Mancha.
- Pintor, D., & Cárdenas, D. (2001). La iniciación al baloncesto en el medio escolar. In F. Ruiz Juan, A. García López y A. J. Casimiro Andújar (Eds.), *La iniciación deportiva basada en los deportes colectivos. Nuevas tendencias metodológicas* (2001<sup>a</sup> ed., pp. 105-144). Madrid: Gymnos.
- Ramírez, A. A. (2009). *El efecto positivo de la transferencia en el aprendizaje de habilidades específicas del balonmano sobre las habilidades del baloncesto durante la clase de educación física*. Departamento de Educación Físico y Deportiva. Universidad de Granada.
- Rivadeneira, M. L., & Sicilia, A. (2004). *La percepción espacio-temporal y la iniciación a los deportes de equipo en Primaria: Unidades didácticas para primaria* (1st ed.) Barcelona: INDE Publicaciones.
- Robles, J. (2009). *Tratamiento del deporte dentro del área de educación física durante la etapa de Educación Secundaria Obligatoria en la provincia de Huelva*. Tesis Doctoral no publicada. Universidad de Huelva. Departamento de Expresión Corporal.
- Sans, A., & Frattarola, C. (1993). *Entrenamiento en el fútbol base: Programa de aplicación técnica (1er nivel)* (1st ed.). Barcelona: Paidotribo.
- Shropshire, J., & Carroll, B. (1998). Final year primary school children's physical activity levels and choices. *European Journal of Physical Education*, 3(2), 156-166.
- Sicilia, A., Delgado, M. A., Sáenz-López, P., Manzano, J. I., Varela, R., Cañadas, J. F., & Gutiérrez, M. (2006). La evaluación de aprendizajes en educación física. Diferencias en función del nivel educativo. *Motricidad: Revista de Ciencias de la Actividad Física y del Deporte*, (17), 71-95.
- Tejada, J. (2007). *La evaluación en educación física en Huelva y su provincia*. Universidad de Huelva. Departamento de Expresión Corporal.
- Ureña, N., Alarcón, F., y Ureña, F. (2009). La realidad de los deportes colectivos en la enseñanza secundaria: Cómo planifican e intervienen los profesores de murcia. *Retos: Nuevas Tendencias En Educación Física, Deporte y Recreación*, (16), 9-15.

- Valero, A., & Conde, J. L. (2003). *La iniciación al atletismo a través de los juegos. El enfoque ludotécnico en el aprendizaje de las disciplinas atléticas*. Málaga: Aljibe.
- Vegas, G. (2007). *Metodología de enseñanza basada en la implicación cognitiva del jugador de fútbol base. Tesis Doctoral no publicada*. Departamento de Educación Físico Deportiva. Universidad de Granada.
- Velázquez, R. (2003). Sobre la edad apropiada para el comienzo de la práctica deportiva. *Lecturas: Educación Física y Deportes*, (57) www.efdeportes, Consultado el 12/1/2010.
- Vera, J. A., & Moreno, J. A. (2007). El pensamiento del profesorado en educación física ante la cesión de responsabilidad en la evaluación del alumnado. *Revista de Currículum y Formación del Profesorado*, 11(2), 2-15.
- Wein, H. (1995). *El fútbol a la medida del niño*. Madrid: Real Federación Española de Fútbol.
- Yáñez, J., & Castejón, F. J. (2011). La utilización de la transferencia para el aprendizaje de la táctica colectiva deportiva en educación secundaria. *Infancia y Aprendizaje*, 34(1), 95-107.
- Zabala, M., Viciano, J., & Lozano, L. (2002). La planificación de los deportes en la educación física en la E.S.O. *Lecturas: Educación Física y Deportes*, 48, Consultado el 12/1/2010.

**Referencias totales / Total references:** 45 (100%)

**Referencias propias de la revista / Journal's own references:** 0 (0%)