

THE SPORT EDUCATION MODEL IN ELEMENTARY AND SECONDARY EDUCATION: A SYSTEMATIC REVIEW

O MODELO DE SPORT EDUCATION NA EDUCAÇÃO PRIMÁRIA E SECUNDÁRIA: REVISÃO SISTEMÁTICA

EL MODELO DE SPORT EDUCATION EN LA EDUCACIÓN PRIMARIA Y SECUNDARIA: REVISIÓN SISTEMÁTICA

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Keywords: Models, Educational, Physical Education and Training, Education, Primary and Secondary.

Abstract: This study is an updated review of the most recent implementations of the Sport Education Model (SEM) from 1st to 12th grades (ages 6-18), including the newest research trends for future studies. A systematic review conducted from 2013 to 2017 used the main reference databases and original articles including information about instances of SEM implementation in any school grade. Results showed that SEM implementation has expanded enormously over the last five years to include all learning domains: physical, social, cognitive, and affective. However, such implementation is not easy and it demands specific teacher training. SEM seems to be a proper pedagogical approach for sports practice while developing motor skills, tactical-technical knowledge, and values.

Palavras chave: Modelos educacionais, Educação Física e treinamento, Ensino fundamental e médio.

Resumo: Este estudo consistiu em oferecer uma revisão atualizada das implementações mais recentes do Modelo de Sport Education (SEM) do primeiro ao 12º ano (6-18 anos), incluindo as mais novas tendências de pesquisa para estudos futuros. Uma revisão sistemática de 2013 a 2017 foi realizada utilizando os bancos de dados de maior referência e os artigos originais que incluíam informações sobre as implementações do SEM em qualquer grau escolar. A implementação do SEM expandiu-se enormemente nos últimos cinco anos para incluir todos os diferentes domínios de aprendizagem: físico, social, cognitivo e afetivo. Entretanto, a implementação do SEM não é fácil e precisa de formação específica de professores. O SEM parece ser uma abordagem pedagógica adequada para praticar esporte, ao mesmo tempo em que desenvolve habilidades motoras, conhecimento técnico-tático e valores.

Palabras clave: Modelos Educativos, Educación Física y Entrenamiento, Educación Primaria y Secundaria.

Resumen: El objetivo del estudio fue ofrecer una revisión de las implementaciones más recientes del Modelo Sport Education (SEM), desde primero de Educación Primaria hasta segundo de Bachillerato (6-18 años), incluyendo las más nuevas tendencias de investigación para estudios futuros. Se realizó una revisión sistemática desde 2013 hasta 2017, usando las principales bases de datos y los artículos originales que incluían informaciones sobre las implementaciones del SEM en cualquier grado escolar. La implementación del SEM se ha expandido enormemente en los últimos cinco años para incluir a todos los dominios del aprendizaje: físico, social, cognitivo y afectivo. Sin embargo, dicha implementación no es fácil y requiere formación específica del profesorado. El SEM parece un abordaje pedagógico adecuado para practicar deporte, al mismo tiempo que desarrolla habilidades motoras, conocimiento técnico-tático y valores.

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1 INTRODUCTION

Sport Education is a pedagogical model (SEM) designed to provide authentic sport experiences in Physical Education (PE), and to develop competent, literate and enthusiastic sportspersons (SIEDENTOP; HASTIE; VAN DER MARS, 2011). It is probably one of the most widely implemented and researched instructional approach all over the world. The goal of the current article is to review the existing SEM scientific literature, building on previous reviews (ARAÚJO; MESQUITA; HASTIE, 2014; HASTIE; MARTÍNEZ; CALDERÓN, 2011; HASTIE; WALLHEAD, 2016; WALLHEAD; O'SULLIVAN, 2005). There has been an exponential increase around the world (mainly in Portugal or Spain) of SEM studies from 2013 to 2017, written in English, Spanish or Portuguese, many of them not collected in previous reviews.

Wallhead and O'Sullivan (2005) built their review around the development of the five main aims of PE (ALEXANDER; LUCKMAN, 2001): motor skill development, tactical knowledge and performance, fitness, social development and student attitudes and values. Hastie, Martínez and Calderón (2011) organized their review around the main aims of PE: fitness, skill development, game play, tactical awareness, personal/social development, and students' attitudes and values. Araújo, Mesquita and Hastie (2014) structured their review around four ideas: the effects of time on the students' learning outcomes, the control of the teaching-learning process, the dynamics of the peer-teaching tasks and the content selected. Finally, Hastie and Wallhead (2016) shaped their review around students' competence, literacy and enthusiastic participation.

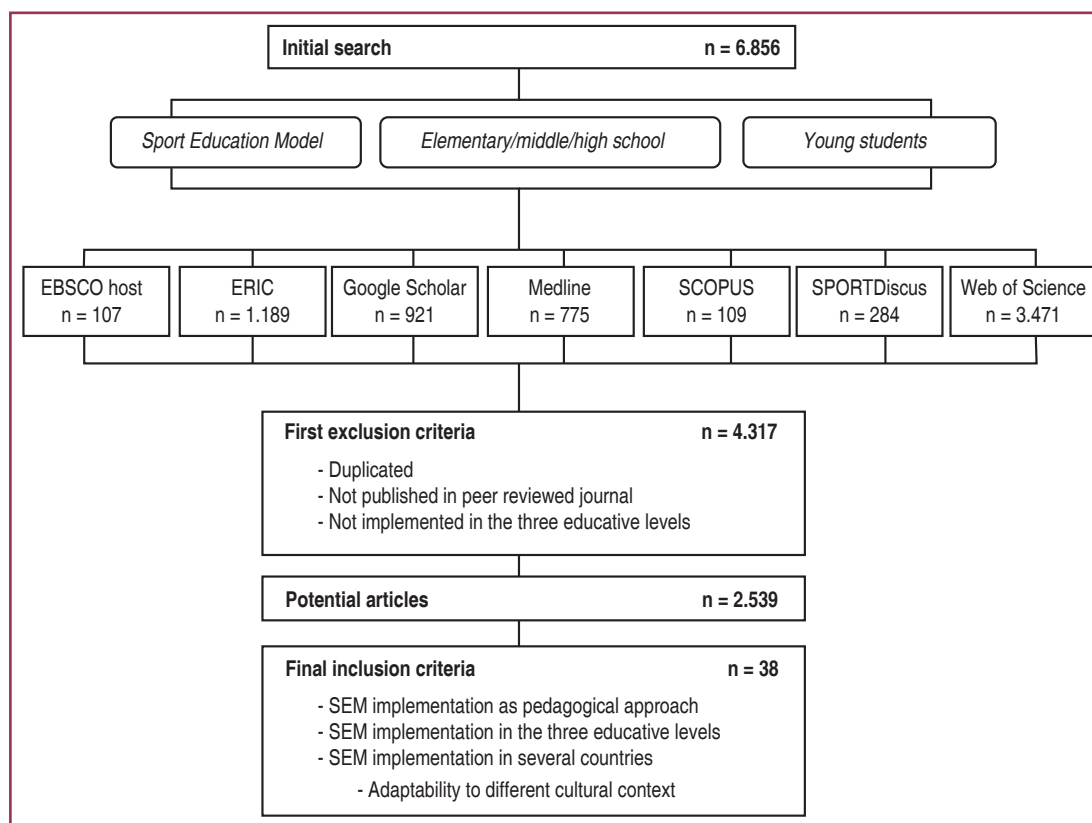
The present systematic review has been organized around SEM's impact on the four learning outcomes of PE: cognitive, social, affective and physical. These are considered legitimate learning outcomes of PE, and they should be addressed (KIRK, 2013). For all the above, the aim of this article was to provide an updated international systematic review on the SEM implementation from 1st to 12th grade (6-18 years; elementary, middle and high school) to find new trends of research.

2 METHOD

A systematic review has been conducted to summarize the available evidence around the SEM over the last five years. This type of review focus on the key elements of the specific studies that implemented the topic under review (SEM) to recap the existing information, and subsequently, analyse and compare the studies with similar ones (MANTEROLA *et al.*, 2013).

SEM literature produced from 2013 to 2017 was searched systematically using seven electronic databases: EBSCO host, ERIC, Google Scholar, Medline, SCOPUS, SPORTDiscus and Web of Science; which included journal papers found in scientific journals related to sports and education. The following descriptors were used: "Sport Education (Model)", "(elementary, middle and high) school" and "young students". Additionally, both English Boolean data type "and" and "or" were used.

Initially, as it is showed in Figure 1, 6.856 publications were found using the mentioned keywords at the databases cited above. 4.317 articles were excluded because: (I) they were duplicated; (II) they were not published in peer reviewed journals indexed in the Journal Citation Report (JCR) or the Scimago Journal Rank (SJR); and/or (III) they were not implemented in any school.

Figure 1 -The flow diagram of the systematic review process.

Source: prepared by authors.

Finally, 2.539 articles were considered potential studies, but only 38 were included according to the following criteria: (I) they implemented the SEM as a pedagogical approach; (II) they included information about SEM implementation in elementary (1st to 5th grade - 6 to 10 years), middle (6th to 8th grade - 11 to 13 years) and/or high school (9th to 12th grade - 14 to 18 years); and (III) they included information about the SEM in several countries to observe the adaptations performed in the model based on the cultural and geographical context.

The summary of the 38 articles selected (Table 1) includes: author (s) and year of publication; country, grade (s) and length (s); content (s) and analysis (conducted); purpose (s) of the study; results; and learning outcomes.

3 RESULTS AND DISCUSSION

The results have been discussed around the key elements used to categorize the articles included in this review (country; students' grade/length; sport/content; analysis) and SEM' impact on the learning outcomes of PE (personal/social development: social and affective outcomes; game performance/tactical knowledge: cognitive and physical outcomes). Table 1 summarizes the studies included in the review from the last five years (2013-2017).

3.1 Country

Results showed that most published research was conducted in the USA, Spain and Portugal. However, new countries have emerged in this research field. SEM, which originated in the USA and later moved to Australia and Europe (HASTIE; MARTÍNEZ; CALDERÓN,

2011; WALLHEAD; O'SULLIVAN, 2005), has expanded to countries such as Singapore (CHONG; PENNEY, 2013), Finland (ROMAR; SARÉN; HASTIE, 2016) and Brazil (GINCIENE; MATTHIESEN, 2017). This means that SEM can be implemented in many different educational contexts. However, some aspects of the model (i.e., number of sessions or roles performed by the students) had to be adapted to facilitate its implementation in different countries (GINCIENE; MATTHIESEN, 2017).

3.2 Students' grade/ length

Studies conducted in students of all elementary, middle and high school grades (1st-12th; 6-18 years) were observed: 26,32% were conducted in several grades, 28,95% in elementary schools (most at 4th-5th grade), 26,32% in middle schools (most at 6th grade), 26,32% in high schools (most at 10th grade), and 18,42% at various educational levels. Results showed that SEM implementation was larger in elementary school (4th-5th grade), followed by 10th grade of high school.

Previous reviews (HASTIE; MARTÍNEZ; CALDERÓN, 2011; ARAÚJO; MESQUITA; HASTIE, 2014) identified middle school and 6th grade as the most frequent years, followed by high school, but only two studies (QUILL; CLARKE, 2005; CALDERÓN; HASTIE; MARTÍNEZ, 2010) focused on the early grades (earlier than 4th grade). Over the last 4 years, there has been a shift in SEM implementation and assessment to elementary school. These years are considered a sensitive period in the individuals' development and game learning has been recommended (EVANGELIO *et al.*, 2016).

The present review has showed that the SEM can be implemented in early grades in Spain and the USA (earlier than 5th grade) (GUTIÉRREZ *et al.*, 2014; LAYNE; HASTIE, 2014a; CALDERÓN *et al.*, 2016; MARTÍNEZ; MÉNDEZ-GIMÉNEZ; VALVERDE, 2016). However, SEM implemented in very young students required greater teacher preparation (LAYNE; HASTIE, 2014a). Regarding the length of the studies, the majority lasted from 10 to 15 lessons (47,36%), followed by interventions from 16 to 20 lessons (42,10%). 12-lessons length was the most popular intervention framework (21,05%). Finally, one implementation was conducted in only four lessons, other in six lessons, and two different studies were conducted in 20-25 and 28 lessons each.

Table 1 - Summary of studies on SEM in the last five years (2013-2017).

Author (s) (Year)	Country/ grade (s)/ length	Content (s)/ Analysis (type)	Purpose (s)	Results	Learning Outcome (s)
Araújo <i>et al.</i> (2013)	Portugal 7 th grade 20 lessons	Volleyball Qualitative	Assess the evolution of content knowledge from the teacher to student-coaches in a hybrid SEM-SGA season.	There was an evolution on the student-coaches to recognise the task but they misunderstood the aims of the tasks.	Cognitive
Calderón, Martínez and Hastie (2013)	Spain 5 th grade 28 lessons	Basketball, hockey Qualitative	Compare SEM and Direct Instruction (DI) on students' learning, implication and motivation during implementations.	Students preferred SEM because they became more enthusiastic and participative. They improved their sport knowledge, decision-making and skills with both models.	Cognitive and physical

Table 1 continued...

Authors (Year)	Country/grade(s)/length	Content (s)/ Analysis (type)	Purpose (s)	Results	Learning Outcome (s)
Calderón, Martínez and Martínez (2013)	Spain 10 th grade 15 lessons	Badminton Qualitative and quantitative	Evaluate the effect of the physical skill perception on the students' attitudes.	Students and teacher detected improvement in physical skill perceptions related to their implication in the game and their responsibility, specially, in high-skilled students.	Social
Chong and Penney (2013)	Singapore Primary School 15 lessons	Ultimate Qualitative and quantitative	Assess pupils' ability to control failures in PE, and the development of social and emotional skills.	Positive social and emotional learning to copy with failure in PE.	Affective
Fernández-Río, Méndez-Giménez and Méndez-Alonso (2013)	Spain 8 th -12 th grades 12 lessons	Ultimate Quantitative	Determine effects of three instructional models (DI, SEM and SEM-self-made material) on students' physical self-concept.	SEM with self-made materials increased significantly students' physical self-concept.	Affective
García-López and Gutiérrez (2013)	Spain 5 th , 6 th , 8 th grade 18 lessons	Handball Quantitative	Assess the effects of a SEM season on students' empathy and assertiveness.	Increased students' empathy and aggressiveness. Decreased assertiveness and passivity.	Affective
Gutiérrez <i>et al.</i> (2013)	Spain 5 th -11 th grade Different lengths	Handball, basketball, badminton, dances. Qualitative and quantitative	Evaluate students' perceptions on a SEM season.	Students perceived more learning when they had more playing time and games. They were more enthusiastic through affiliation, festivity and the final event. Higher level of improvement in girls.	Physical
Hastie <i>et al.</i> (2013)	Portugal 10 th grade 10 lessons	Track and field Qualitative and quantitative	Compare the effects between DI and SEM on skill and technical performance, and in content knowledge.	Both instructional models had improvements in technique and skill execution, with better results for SEM. In content knowledge, only SEM had improvements.	Cognitive and physical
Hastie, Farias and Gutiérrez (2013)	USA, Spain, Portugal 5 th -6 th grade 18-20 lessons	Handball Qualitative	Assess students and teachers' reactions and perceptions on a SEM season.	SEM provided opportunities to develop international relations and increased students' motivation.	Social
Layne and Hastie (2013)	USA 4 th grade 13 lessons	Swirl ball Quantitative	Evaluate students' ability to work independently and organize different tasks related to the SEM.	Students were able to work independently of the teacher and achieve the aims. They performed instructional tasks and managerial successfully.	Cognitive
Gutiérrez <i>et al.</i> (2014)	Spain 2 nd grade 10 lessons	Dodgeball Qualitative and quantitative	Assess students and teachers' perceptions on the SEM.	Students learned SEM features and phases. It demanded greater implication from the teachers, specially, at the beginning of the season.	Cognitive

Table 1 continued...

Authors (Year)	Country/ grade (s)/ length	Content (s)/ Analysis (type)	Purpose (s)	Results	Learning Outcome (s)
Hastie <i>et al.</i> (2014)	USA 10 th grade 12 lessons	Handball Qualitative and quantitative	Develop a SEM season designed to create a mastery-involving class climate and assess students' perceptions of the importance of this motivational climate.	Students showed a consistent perception of a mastery climate. Teacher used performance-based task structures and competition to get a mastery climate based on recognition and evaluation.	Cognitive
Layne and Hastie (2014a)	USA 2 nd grade 12 lessons	Throwing, and kicking at targets Qualitative	Examine students, teachers and non-participants' perceptions of a SEM season.	SEM could be applied in lower levels of primary and can help improve students' learning. It is required more teacher preparation at the season start and at the beginning of SEM phases.	Cognitive
Layne and Hastie (2014b)	USA 4 th grade 13 lessons	Swirl ball Qualitative and quantitative	Assess students' ability to improve game play capabilities.	Students improved game performance: the length of the season provided the framework for students to improve skill competency.	Physical
Cuevas, García-López and Contreras (2015)	Spain 10 th grade 19 lessons	Volleyball Quantitative	Evaluate students' basic psychological needs.	Students significantly improved competence.	Affective
Farias, Mesquita and Hastie (2015)	Portugal 5 th grade 17 lessons	Soccer Qualitative and quantitative	Examine students' understanding and game performance in a hybrid SEM-IGCM program.	Positive impact on students' game performance and understanding.	Cognitive and physical
Mahedero <i>et al.</i> (2015)	Spain 8 th grade 12 lessons	Mini- volleyball Qualitative and quantitative	Examine performance outcomes and game knowledge.	Medium skill level students had bigger improvements than high and low skilled students in game play, skill execution and knowledge.	Cognitive and physical
Méndez-Giménez, Fernández-Río and Méndez-Alonso (2015)	Spain 7 th -12 th grades 12 lessons	Ultimate Quantitative	Compare the effects of DI, SEM and SEM with self-made materials on students' sportsmanship, friendship, basic psychological needs and achievement goals.	Significant improvements in sportsmanship, basic psychological needs, friendship goals and performance-avoidance goals with SEM and SEM with self-made materials.	Social and affective
Pereira <i>et al.</i> (2015)	Portugal 6 th grade 20 lessons	Track and field Qualitative and quantitative	Compare students' technical performance improvements in SEM and DI.	Boys and girls of all skill levels improved in all events with SEM, but only high-level males improved with DI for the approach features.	Physical
Calderón <i>et al.</i> (2016)	Spain 3 rd - 6 th grade 10 lessons	Handball, pichi Qualitative and quantitative	Assess the effects of team-teaching (co-teaching) to create effective learning backgrounds using the SEM.	Teamwork and autonomy promoted effective teacher-student communication. Increased positive social climate. Co-assessment was another important factor.	Social

Table 1 continued...

Authors (Year)	Country/grade (s)/length	Content (s)/Analysis (type)	Purpose (s)	Results	Learning Outcome (s)
Cuevas, García-López and Serra-Olivares (2016)	Spain 10 th grade 19 lessons	Volleyball Quantitative	Assess the impact of SEM on motivational regulation, basic psychological needs, satisfaction-enjoyment, boredom and intention to be physically active.	Positive and significant impact on students' intrinsic motivation. Small improvements were guessed for satisfaction-enjoyment, self-determination, identified regulation, and competence.	Affective
Martínez, Méndez-Giménez and Valverde (2016)	Spain 3 rd -4 th grade 10 lessons	Pichi, ultimate, indiana Qualitative and quantitative	Examine the effects of the SEM on the classroom's social climate, perceived competence and intention to be physically active.	Group cohesion encouraged fair play and motivation. Role-playing as a tool to learn the game. Significant impacts: social climate perception and intention to be physically active.	Social and affective
Méndez-Giménez, Martínez and Valverde (2016)	Spain 3 rd -4 th grade 20 lessons	Ultimate, indiana Qualitative	Compare teacher and students' assessment procedures between a SEM/SEM-self-made materials approach.	A preference for self-made materials was observed, and a rise in physical activity practise. Pupils indicated that self-made materials could improve their skills.	Affective and physical
Menéndez-Santurio and Fernández-Río (2016a)	Spain 10 th grade 16 lessons	Kickboxing Qualitative and quantitative	Introduce educational kickboxing through a hybrid SEM-TPSR season.	Kickboxing is an adequate content for PE; the hybridization helped develop a student-centred context.	Cognitive
Menéndez-Santurio and Fernández-Río (2016b)	Spain 12 th grade 16 lessons	Kickboxing Quantitative	Evaluate the effects of a hybrid SEM-TPSR season on students' friendship goals, responsibility, basic psychological needs and violence.	The hybridization had significant positive improvements in the relatedness, students' violence, social responsibility and competence.	Social and affective
Pereira <i>et al.</i> (2016)	Portugal 6 th grade 20 lessons	Track and field Qualitative and quantitative	Contrast the effects of SEM and DI on students' content knowledge, considering their sex and skill level.	Improvements: movement patterns, task organization and teacher' feedback in DI; affective and cognitive implication, autonomy in the task transitions and taking decisions in SEM.	Affective
Romar, Sarén, and Hastie (2016)	Finland 6 th grade 11 lessons	Soccer Qualitative and quantitative	Examine students, coaches and parents' perceptions and experiences on the SEM.	Students enjoyed roles and tasks in a student-centred context. There was a positive teams' atmosphere.	Social
Wahl-Alexander, Sinenikov and Curtner-Smith (2016)	USA 8 th grade 18-21 lessons	Different team sports Qualitative	Examine the participation in a significant number of SEM seasons over a period of five years.	The students' prolonged participation in SEM seasons developed roles, fair play and SEM goals: enthusiastic, competent and literate pupils.	Social and cognitive
Araújo <i>et al.</i> (2017)	Portugal 7 th -9 th grade Three seasons (20-25 lessons)	Volleyball Qualitative	Examine the evolution of students and coaches' Pedagogical Content Knowledge (PCK) with a SEM-SGA hybridization.	Interventions were effective in developing student-coaches' PCK, allowing a more complete transfer of the responsibility to the students.	Cognitive and social

Table 1 continued...

Authors (Year)	Country/ grade (s)/ length	Content (s)/ Analysis (type)	Purpose (s)	Results	Learning Outcome (s)
Fernández-Río, Méndez-Giménez and Méndez-Alonso (2017)	Spain 8 th -11 th grades 12 lessons	Ultimate Quantitative	Compare the effects of two instructional approaches (SEM and DI), on students' psychological response.	SEM significantly improved intrinsic motivation, social responsibility, cooperative learning, boredom, autonomy, relationship and competence.	Social
Fernández-Río and Menéndez-Santurio (2017)	Spain 9 th grade 16 lessons	Kickboxing Qualitative	Assess students and teachers' perceptions of a hybrid SEM-TPSR season.	Students develop enjoyment cooperation, responsibility, and increase their learning for the autonomy and roles.	Social
Ginciene and Matthiesen (2017)	Brasil 6 th grade 6 lessons	Track and field Qualitative	Examine the effects of SEM with track and field teaching, in the Brazilian educative context.	SEM was an effective tool to develop the three dimensions of PE contents: conceptual, procedural and attitudinal.	Cognitive and affective
Gil-Arias et al. (2017)	Spain 12 th grade 16 lessons	Volleyball, ultimate Quantitative	Investigate the effect a hybrid TGfU-SEMunit vs. DI, on pupils' motivation to engage in PE.	Students' autonomy, competence and enjoyment raised when they were taught using the hybrid model.	Social
Hastie, Ward and Brock (2017)	USA 4 th grade 4 lessons	Mini-handball Qualitative and quantitative	Assess whether using rated competition can rise students' opportunities for game involvement and success rates.	Regarding efficiency and success, high-skilled players showed advantages against low-skilled players. Girls had less involvement than boys.	Physical
Méndez-Giménez and Martínez (2017)	Spain 6 th grade 12 lessons	Mime Qualitative and quantitative	Assess students' perceptions.	Students' increased their competence and sport culture and highly valued the model's main features.	Cognitive
Méndez-Giménez, Martínez and Valverde (2017)	Spain 6 th grade 12 lessons	Mime Qualitative and quantitative	Examine the effects on students' emotional intelligence and motivational mediators.	Students' increased attention, clarity and repair (emotional intelligence), and autonomy competence and relatedness (basic psychological needs).	Cognitive
Menéndez-Santurio and Fernández-Río (2017)	Spain 12 th grade 16 lessons	Kickboxing Qualitative	Explore the impact of the combination of SEM-TPSR for learners with disabilities.	SE-TPSR promotes educative inclusion (increases learning enjoyment and membership): students' role, cooperation, transference and friendship.	Social
Ward et al. (2017)	USA 5 th grade 20 lessons	Cross-fit Quantitative	Assess if SEM provides levels of physical activity and increase their fitness knowledge and attainment.	Significant improvements in knowledge and fitness tests. 54.5% of the lesson were at moderate-to-vigorous physical activity level.	Cognitive and physical

Source: the authors.

3.3 Sport/content

Results showed that 78,95% of studies included just one content/sport, while 21,05% used several sports. In accordance with previous reviews (HASTIE; MARTÍNEZ; CALDERÓN, 2011; ARAÚJO; MESQUITA; HASTIE, 2014), the present one showed a predominance of invasion games, probably because affiliation is an essential feature of SEM (SIEDENTOP; HASTIE; VAN DER MARS, 2011), including newly researched sports such as handball (GARCÍA-LÓPEZ; GUTIÉRREZ, 2013) or mini-handball (HASTIE; WARD; BROCK, 2017). However, an increase has been observed in the following sport categories: divided-court games such as *indiacá* (MÉNDEZ-GIMÉNEZ; MARTÍNEZ; VALVERDE, 2016) and badminton (CALDERÓN; MARTÍNEZ; MARTÍNEZ, 2013; GUTIÉRREZ *et al.*, 2013); striking and fielding games such as modified baseball or “Pichi” (CALDERÓN *et al.*, 2016; MARTÍNEZ; MÉNDEZ-GIMÉNEZ; VALVERDE, 2016); throwing and kicking at a target (LAYNE; HASTIE, 2014a); and moving-target games such as dodgeball (GUTIÉRREZ *et al.*, 2014). Other sports/activities such as track and field (GINCIENE; MATTHIESEN, 2017; HASTIE *et al.*, 2013) showed a very low number of studies in previous reviews.

Finally, the inclusion of dance (GUTIÉRREZ *et al.*, 2013), combat sports (MENÉNDEZ-SANTURIO; FERNÁNDEZ-RÍO, 2016a; 2016b), mime (MÉNDEZ-GIMÉNEZ; MARTÍNEZ, 2017) and cross-fit (WARD *et al.*, 2017) constitutes an innovation in SEM research. Self-made materials were also a new element. Studies conducted with this type of resources showed that it increases students’ participation and skills (MÉNDEZ-GIMÉNEZ; MARTÍNEZ; VALVERDE, 2016), self-concept (FERNÁNDEZ-RÍO; MÉNDEZ-GIMÉNEZ; MÉNDEZ-ALONSO, 2013) and basic psychological needs (MÉNDEZ-GIMÉNEZ; FERNÁNDEZ-RÍO; MÉNDEZ-ALONSO, 2015).

3.4 Analysis (type)

The majority of the studies used a mixed methods research methodology (47,36%), followed by quantitative or qualitative methods alone (26,31% each one). Among the quantitative methods used to assess the SEM impact on the students there were performance tasks, tests or questionnaires such as the “Basic Psychological Needs in Exercise Scale” (VLACHOPOULOS; MICHAILIDOU, 2006) used by Gil-Arias *et al.* (2017), or the “Sport Education benchmark observation instrument” (SINELNIKOV, 2009) used by Romar, Sarén and Hastie (2016). Among the qualitative methods used, there were interviews (ARAÚJO *et al.*, 2017), discussion groups (GUTIÉRREZ *et al.*, 2013) or drawings (MÉNDEZ-GIMÉNEZ; MARTÍNEZ, 2017).

3.5 Personal/social development: social and affective learning outcomes

Results of the present review have showed the SEM’ impact on social and affective learning outcomes, which connect with students’ personal and social development (i.e., responsibility, social relationships, emotional learning, basic psychological needs, physical self-concept). Social learning outcomes were assessed in 21,05% of the studies, while affective learning outcomes in 18,42%. Previous reviews indicated that SEM implementation can fulfil students’ basic psychological needs: autonomy, competence and relatedness (MACPHAIL; KINCHIN, 2004), and new studies included in the present review supported this

idea (FERNÁNDEZ-RÍO; MÉNDEZ-GIMÉNEZ; MÉNDEZ-ALONSO, 2017; MAHEDERO *et al.*, 2015), including hybridizations between the SEM and Teaching for Personal and Social Responsibility (TPSR) (MENÉNDEZ-SANTURIO; FERNÁNDEZ-RÍO; 2016b).

The development of students' social skills (MÉNDEZ-GIMÉNEZ; FERNÁNDEZ-RÍO; MÉNDEZ-ALONSO, 2015) and intrinsic motivation (CUEVAS; GARCÍA-LÓPEZ; SERRA-OLIVARES, 2016; FERNÁNDEZ-RÍO; MÉNDEZ-GIMÉNEZ; MÉNDEZ-ALONSO, 2017) were also observed. Team affiliation has been considered a fundamental element in these improvements (PILL, 2008), because it can help promote positive communication, assertiveness, cooperation, empathy, autonomy and relationship among students (GARCÍA-LÓPEZ *et al.*, 2012; GARCÍA-LÓPEZ; GUTIÉRREZ, 2013; MARTÍNEZ; MÉNDEZ-GIMÉNEZ; VALVERDE, 2016; ROMAR; SARÉN; HASTIE, 2016). The feeling of belonging to a team, as well as the cohesion that it creates, can also help improve students' fair play, motivation and enthusiasm (GARCÍA-LÓPEZ *et al.*, 2012; WAHL-ALEXANDER; SINELNIKOV; CURTNER-SMITH, 2016).

Previous and current reviews showed that the SEM developed students' enjoyment and satisfaction, which favoured PE practise (MACPHAIL *et al.*, 2008; KINCHIN; MACPHAIL; NI CHRÓINÍN, 2012; CUEVAS; GARCÍA-LÓPEZ; SERRA-OLIVARES, 2016) this is very important in amotivated students (PERLMAN, 2012). Moreover, responsibility fostered by the model's roles (i.e., coach, captain, referee or judge) seemed to influence students' intrinsic motivation (MARTÍNEZ; MÉNDEZ-GIMÉNEZ; VALVERDE, 2016; ROMAR; SARÉN; HASTIE, 2016) through an increase in their self-determined competence (CUEVAS; GARCÍA-LÓPEZ; SERRA-OLIVARES, 2016; MENÉNDEZ-SANTURIO; FERNÁNDEZ-RÍO, 2016). Furthermore, students' responsibility increased when the SEM was hybridized with TPSR (MENÉNDEZ-SANTURIO; FERNÁNDEZ-RÍO, 2016b).

Finally, SEM not only increased students' positive personal and social values (i.e., assertiveness, cooperation or empathy) (GARCÍA-LÓPEZ; GUTIÉRREZ, 2013; MARTÍNEZ; MÉNDEZ-GIMÉNEZ; VALVERDE, 2016; ROMAR; SARÉN; HASTIE, 2016), but it also increased aggressiveness when the implementation was conducted using invasion games (GARCÍA-LÓPEZ; GUTIÉRREZ, 2013), specifically with some roles performed by the students (i.e., coach or technical director). On the other hand, the SEM can also help reduce negative behaviours such as students' attitudes towards violence and aggressiveness (MENÉNDEZ-SANTURIO; FERNÁNDEZ-RÍO, 2016b) when it is hybridized with TPSR and implemented using combat sports. Students' physical self-concept (FERNÁNDEZ-RÍO; MÉNDEZ-GIMÉNEZ; MÉNDEZ-ALONSO, 2013), intention to be physically active (MARTÍNEZ; MÉNDEZ-GIMÉNEZ; VALVERDE, 2016) and emotional intelligence (MÉNDEZ-GIMÉNEZ; MARTÍNEZ; VALVERDE, 2017) were novel research areas not included in previous reviews.

3.6 Game performance/tactical knowledge: cognitive and physical learning outcomes

Cognitive and physical learning outcomes of PE are connected to game performance and tactical knowledge. Cognitive learning was the outcome most frequently assessed (39, 47%), while physical learning was assessed in fewer studies (13,16%). Previous and current reviews showed that the SEM favoured students' game performance and tactical knowledge through an increase in their competence (PRITCHARD *et al.*, 2008; HASTIE; SINELNIKOV; GUARINO, 2009; CALDERÓN; MARTÍNEZ; HASTIE, 2013); specially, when SEM was

hybridized with other models such as Teaching Games for Understanding (TGfU) (HASTIE; CURTNER-SMITH, 2006), or the Invasion Games Competence Model (IGCM) (FARIAS; MESQUITA; HASTIE, 2015). However, such a complex framework can also cause negative outcomes in the students' understanding of tactical principles (GUTIÉRREZ *et al.*, 2014).

Some studies highlighted that SEM can increase students' skill level, perceived competence and tactical knowledge (PRITCHARD *et al.*, 2008; PEREIRA *et al.*, 2015), as well as their participation and enthusiasm (CALDERÓN; MARTÍNEZ; MARTÍNEZ, 2013) more than other instructional framework such as DI. Nonetheless, some studies showed similar improvements in sports learning in both structures (HASTIE *et al.*, 2013; PEREIRA *et al.*, 2016). When considering students' skill level and the effects of the SEM in their improvements, research has been inconclusive: (1) less-participant students increased motivation and inclusion (PILL, 2008; PERLMAN, 2012); (2) medium-level students had bigger improvements (MAHEDERO *et al.*, 2015); and (3) boys and girls of all skill levels improved (PEREIRA *et al.*, 2015). In all cases, high skill level or leader students seemed to play a very important role to help other students (HASTIE; CURTNER-SMITH, 2006; CALDERÓN; MARTÍNEZ; MARTÍNEZ, 2013).

Regarding gender, studies included in previous reviews showed that girls obtained higher levels of success, emphasizing the length of the seasons as an essential factor in these results (CARLSON 1995). In accordance with this finding, more recent research emphasised the improvements in skill execution and tactical decisions in girls (MESQUITA; FARIAS; HASTIE, 2012). Nevertheless, other studies found better results in skill development and tactical knowledge in boys (HASTIE; SINELNIKOV; GUARINO, 2009). Furthermore, girls showed more commitment with the roles (GARCÍA-LÓPEZ *et al.*, 2012) and developed higher levels of responsibility and autonomy (FERNÁNDEZ-RÍO; MENÉNDEZ-SANTURIO, 2017). Finally, other studies showed less participation opportunities for boys (GUTIÉRREZ *et al.*, 2013; HASTIE; WARD; BROCK, 2017). Again, results are contradictory and inconclusive.

4 CONCLUSIONS

The present review of the SEM literature from 2013 to 2017 showed that its implementation has expanded over the last five years to include all school grade levels and all continents to assess its impact in the four learning outcomes of PE (physical, social, cognitive and affective), and to join forces with other pedagogical frameworks to maximize their effects. SEM implementations have showed positive impacts on participants' learning (game performance and tactical-technical knowledge) regardless of their skill level and gender, in their social skills and values (empathy, assertiveness or fair play), and in their enthusiasm, enjoyment and preference for practising sports with this model. SEM also helped fulfil students' basic psychological needs, developing more competence, autonomy and relatedness. Finally, it is necessary to examine the possibilities of the SEM with other pedagogical models because it is a new trend of research.

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