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Impact of generic or transversal competences on the performance of specialists in physical education and sports sciences: A systematic review

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ABSTRACT

The aim of this study was to analyse recent scientific production (period 2015–2021) on the impact of generic competences on the professional performance of specialists in Physical Education (PE) and Sport Sciences. Six databases were consulted following the international PRISMA statement (Moher et al., 2009). The searches yielded 588 results. However, only 12 articles meet the set inclusion criteria. The findings coincide in pointing out the relevance of generic competences in the training of professionals, especially those associated with interpersonal relationships. The competences which tend to be most highly valued in these studies are (a) teamwork; (b) problem solving; (c) ethical commitment; (d) interpersonal skills; and (e) autonomous learning. The studies seem to indicate that these generic competences are the most important ones in the professional performance of professionals on PE and sports sciences which should have been taken into consideration in the training programmes of new teachers.

1. Introduction

The implementation of competency models challenges higher education institutions to reformulate methodologies (Hortigüela-Alcalá et al., 2015), which has meant moving towards the implementation of active strategies and the redesign of assessment approaches (Ruiz et al., 2017). This implies that the actors in the educational process (teachers, students and managers) must work to promote the development of different generic (or transversal) and specific competences (Pérez, 2018; Ramírez-García et al., 2018).

Generic competences are understood as those that enable the comprehensive development of people, both in their intrapersonal dimension and in interaction with others (López, 2017), which implies an integrated practice of skills, personality traits, knowledge and acquired values (Delors, 1996; González & Wagennar, 2003). Some authors consider them to be fundamental for performing in any social environment or professional field (Delors, 1996; González & Wagennar, 2003; Gore, 2013; Le Boterf, 1994; Perrenaud, 2006) as they are competences linked to adaptation to environments and the willingness to learn throughout life (Ruiz et al., 2017).

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Based on the “European Tuning” (González & Wagennar, 2003) and “Tuning Latin America” projects (Serrano et al., 2018; Universidad deDeusto, 2007), generic competences are classified into three categories: (a) “**instrumental**”: they have a function as a means or tool to obtain a certain end. They involve a combination of manual skills and cognitive abilities that make professional competence possible, such as the use of ICT and oral and written communication (Macías-Catagua, 2018); (b) “**interpersonal**”: related to expressing one’s feelings towards third parties, critical and self-critical skills; social skills related to teamwork skills and acquiring social or ethical commitment (Serrano et al., 2018); and (c) “**systemic**”: they involve a combination of understanding, sensitivity and knowledge that allow the individual to see how the parts of a whole are related and grouped together, such as adaptability, creativity, among others (Amor & Serrano, 2018; Fraile-Aranda et al., 2018; González & Wagennar, 2003; Ruiz et al., 2017).

There are multiple authors who highlight the importance of generic competences for PE and sport science professionals, especially because they have proven to be fundamental for optimal performance in terms of work (Al-Tawel, 2017; Pazo & Tejada, 2012; Schlesinger et al., 2015). Similarly, generic competences are usually considered a relevant aspect by the institutions where professionals linked to PE and sport sciences work; therefore, they are fundamental competences during their initial training, thus generating the development of different studies linking PE, sport sciences and generic competences (Schlesinger et al., 2015; Tsitskari et al., 2017).

Considering the above background, the aim of this study is to systematically analyse recent scientific production (period 2015–2021) on the impact of generic competences on the professional performance of specialists in physical education and sports science.

2. Methodology

The systematic review followed the guidelines established in the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” (PRISMA) (Moher et al., 2009).

2.1. Sources of information

A search was carried out in the following databases: Web of Science (WOS), Scopus, EBSCO, ERIC, Dialnet and Scielo.

These databases were selected because both WOS and Scopus are repositories of relevance in all areas of knowledge; in the case of EBSCO, it is valued for its management system and access to multiple sub-databases specialized in various areas of knowledge; while ERIC is one of the main search databases in the field of education. Similarly, Dialnet is one of the largest bibliographic portals in the world, whose main purpose is to give visibility to scientific literature in Spanish; and Scielo is a database whose purpose is to spread the scientific production of Latin America, Spain, Portugal, the Caribbean and South Africa. Subsequently, a review was made of all the references present in the selected manuscripts, with the aim of detecting articles that met the inclusion criteria and could be part of the systematic review.

2.2. Search strategy

For the search process, keywords were used that have a specific relationship with the objective of the study. Keywords were used in two languages (English and Spanish) and the Boolean operator AND was used to combine the words (Table 1). In all searches, the filter related to “year” was used, which made it possible to define the articles published in the period determined for this systematic review.

The key words were first searched in English and then in Spanish. The searches were performed in the same order as shown in Table 1. Likewise, the order in which the databases were used for the search process was as follows: (a) WOS; (b) Scopus; (c) EBSCO; (d) ERIC, (e) Dialnet and (f) Scielo.

Table 1

Words used in search.

	Keywords in Spanish		Keywords in English
1	Competencias transversales (AND) educación física	1	Transversal competences (AND) physical education
2	Competencias genéricas (AND) educación física	2	Generic competences (AND) physical education
3	Competencias transversales (AND) Ciencias del Deporte	3	Transversal competences (AND) sport sciences
4	Competencias genéricas (AND) Ciencias del deporte	4	Generic competences (AND) sport sciences
5	Habilidades transversales (AND) Educación física	5	Transversal skills (AND) physical education
6	Habilidades genéricas (AND) Educación física	6	Generic skills (AND) physical education
7	Habilidades genéricas (AND) Ciencias del deporte	7	Generic skills (AND) sport sciences
8	Habilidades transversales (AND) Ciencias del deporte	8	Transversal skills (AND) sport sciences
9	Habilidades transversales (AND) Actividad física	9	Transversal skills (AND) Physical Activity
10	Habilidades genéricas (AND) Actividad física	10	Generic skills (AND) Physical Activity
11	Habilidades de empleabilidad (AND) Educación física	11	Employability skills (AND) Physical education
12	Habilidades de empleabilidad (AND) Ciencias del deporte	12	Employability skills (AND) sport sciences
13	Competencias genéricas (AND) Profesores	13	Generic competences (AND) teachers
14	Competencias Transversales (AND) Profesores	14	Transversal competences (AND) teachers
15	Competencias docentes (AND) Educación física	15	Teaching skills (AND) Physical education
16	Competencias docentes (AND) Ciencias del deporte	16	Teaching skills (AND) sport sciences

2.3. Selection process

Based on the search in the databases, all the obtained results were organized in a matrix elaborated in Microsoft Excel. All duplicate manuscripts were then eliminated, giving way to an exhaustive review according to inclusion criteria.

The selected articles met the following inclusion criteria:

- a) Time frame: articles published during the period 2015–2021.
- b) Document type: they had to be original scientific journal articles.
- c) Language: articles published in Spanish or English.
- d) Methodology presented by the article: Articles with qualitative, quantitative or mixed methodology were considered.
- e) Specific connection with the topic: The articles had to include the topics of “generic competencies”, “transversal competencies”, “physical education teachers” or “professionals graduated in sport sciences”. Furthermore, all manuscripts had to be focused on physical education teachers and/or sport science specialists who were practicing professionally at the time of participating in the study; in the case of research involving other actors (e.g. trainee teachers, university authorities, etc.) only results from graduates and employers were considered, discarding findings related to other agents. It is also important to point out that we only considered research where the participants were: a) PE teachers themselves or related professionals; b) employers from institutions related with PE and sport sciences, such as schools, gyms, sports clubs, among others and that provide relevant information about the performance of its professionals

From the searches carried out, we were able to identify 588 results (WOS: 153; Scopus: 79; Dialnet: 269; ERIC: 68; Scielo: 19; EBSCO: 0), 117 of which were eliminated as duplicates, leaving 471 available to continue in the review process.

Afterwards, 459 were discarded because they did not meet all the inclusion criteria. After the entire process, 12 manuscripts were included in this systematic review (see [Table 2](#)).

The entire process of identification, selection and inclusion of the manuscripts is summarized in the Flowchart ([Fig. 1](#)).

2.4. Data collection process

The research team reviewed the selected articles manually, without using tools or software that would allow the process to be automated.

2.5. Study and assessment of the risk of bias

To establish the quality of the publications forming part of the review study, the “Checklist for measuring the quality of studies” by [Hastie and Casey \(2014\)](#), also used for publications in Spanish by [Bores-García](#) and collaborators ([Bores-García et al., 2021](#)). This list allows us to obtain a quality score for each research study, based on the following criteria:

- a) Methodological quality: (Did the document report in detail the methodological process?): “0”: not reported, “1”: reported but imprecise (not completely), and “2”: exhaustive informed description.
- b) Number of participants: 1 = Between 1 and 50 participants; 2 = Between 51 and 100 participants; 3 = Between 101 and 500 participants; 4 = between 501 and 1000 participants; 5 = 1000 or more participants.

Table 2
Selected articles.

Authors	Title
Schlesinger et al. (2015)	The relationship between competencies acquired through Swiss academic sports science courses and the job requirements
Baker et al. (2017)	Sports graduate capabilities and competencies: a comparison of graduate and employer perceptions in six EU countries
Dinning (2017)	Preparing sport graduates for employment: satisfying employers expectations
Tsitskari et al. (2017)	Employers' expectations of the employability skills needed in the sport and recreation environment
Amor and Serrano (2018)	Análisis y evaluación de las competencias genéricas en la formación inicial del profesorado
Castejón et al. (2018)	Desarrollo de competencias docentes en la formación inicial del profesorado de educación física. Relación con los instrumentos de evaluación
Gutiérrez et al. (2018)	Percepciones de alumnos del grado en maestro en educación primaria con mención en educación física sobre la adquisición de competencias
Amor and Serrano (2018)	The generic competences in the initial teacher training. A comparative study among students, teachers and graduates of university education degree
Fahrner and Schüttoff (2019)	Analysing the context-specific relevance of competencies – sport management alumni perspectives
Keiper et al. (2019)	Employability skills a case study on a business-oriented sport management program
Tul et al. (2019)	The professional competences of physical education teachers from north-eastern Italy
Sato et al. (2021)	Graduate employability and higher education's contributions to human resource development in sport business before and after COVID-19

Table 3
Research quality scoring checklist.

Authors	Methodological quality	Number of Participants	Indexing	Total Score	Quality level
Keiper et al. (2019)	2	1	2	5	LQS
Sato et al. (2021)	2	1	3	6	MQS
Dinning (2017)	2	1	3	6	MQS
Castejón et al. (2018)	2	4	1	7	MQS
Gutiérrez et al. (2018)	2	4	1	7	MQS
Tul et al. (2019)	2	3	3	8	HQS
Fahrner and Schüttoff (2019)	2	3	3	8	HQS
Amor and Serrano (2019)	2	5	1	8	HQS
Tsitskari et al. (2017)	2	3	3	8	HQS
Amor and Serrano (2018)	2	5	3	10	HQS
Baker (2017)	2	5	3	10	HQS
Schlesinger et al. (2015)	2	5	3	10	HQS

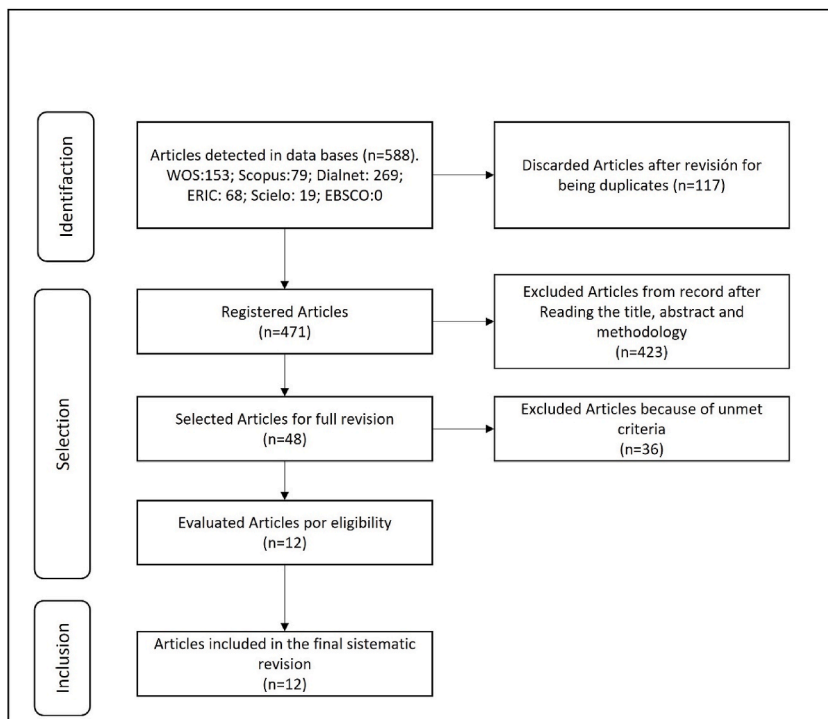


Fig. 1. Systematic review flowchart (based on PRISMA).

- c) Indexing: JCR/SJR inclusion (was the study published in a journal indexed in JCR or SJR?): “0”: not indexed, “1”: indexed in SJR, “2”: indexed in JCR; “3”: indexed in both.
- d) Quality level: HQS: high-quality study (above p50, MQS: moderate quality study (between p25-50); LQS: Low quality study (below p25).

2.6. Research quality

From the application of the “Checklist to measure the studies’ quality”, it was possible to determine that seven articles are classified as HQS: high-quality study (Amor & Serrano, 2018; Amor & Serrano, 2019; Baker et al., 2017; Fahrner & Schüttoff, 2019; Schlesinger et al., 2015; Tsitskari et al., 2017; Tul et al., 2019), 4 articles present a MQS: moderate quality study (Castejón et al., 2018; Dinning, 2017; Gutiérrez et al., 2018; Sato et al., 2021; Tsitskari et al., 2017) and one article is LQS: low quality study (Keiper et al., 2019).

3. Results

3.1. Characterization of publications

Fig. 2 shows that in the years 2018 and 2019 the largest number of publications related to the subject matter are registered. However, during the years 2015 and 2020 there are no publications related to the topic.

In Fig. 3 we can observe that the largest amount of research regarding generic competencies in PE teachers and Sport Science professionals has been carried out in Europe, mainly in Spain (25%), United Kingdom (12.5%), Greece (12.5%) and Germany (12.5%). It is relevant to mention that, in the case of South America, no research related to the subject matter in question is recorded.

3.2. Characteristics of the publications

The main characteristics of each article are presented below, considering their authors, objectives, methodological design and main findings (Table 4).

In addition to what is presented in Table 3, it can be mentioned that, of the 12 articles, three (25%) are written in Spanish (Amor & Serrano, 2019; Castejón et al., 2018; Gutiérrez et al., 2018) and ten (75%) in English (Amor & Serrano, 2018; Baker et al., 2017; Dinning, 2017; Fahrner & Schüttoff, 2019; Keiper et al., 2019; Sato et al., 2021; Schlesinger et al., 2015; Tsitskari et al., 2017; Tul et al., 2019).

When analyzing the articles according to the methodology used, 75% are quantitative research (Amor & Serrano, 2018; Amor & Serrano, 2019; Baker et al., 2017; Castejón et al., 2018; Fahrner & Schüttoff, 2019; Gutiérrez et al., 2018; Schlesinger et al., 2015; Tsitskari et al., 2017; Tul et al., 2019), 17% are qualitative research (Dinning, 2017; Keiper et al., 2019) and 8% use a mixed design (Sato et al., 2021) combining qualitative and quantitative data.

Out of the 12 studies, 58% have as participants professionals graduates of the analyzed degrees (Amor & Serrano, 2018; Amor & Serrano, 2019; Castejón et al., 2018; Fahrner & Schüttoff, 2019; Gutiérrez et al., 2018; Schlesinger et al., 2015; Tul et al., 2019), 33% are conducted with employers (Dinning, 2017; Keiper et al., 2019; Sato et al., 2021; Tsitskari et al., 2017); and 8% of the articles jointly involved alumni and employers (Baker et al., 2017).

It is worth mentioning that one manuscript describes a study international in nature (involving individuals from different countries), which includes graduates and employers from six European countries: the United Kingdom, Spain, Germany, Czech Republic, France, and Greece. The results point to the importance of strengthening the link between higher education institutions and the world of work to jointly develop learning experiences for university students regarding the acquisition of generic competencies (Baker et al., 2017).

In addition, the participation of men and women is explicit in six articles (Baker et al., 2017; Castejón et al., 2018; Gutiérrez et al., 2018; Keiper et al., 2019; Tsitskari et al., 2017; Tul et al., 2019) and in the other 6 articles the volume of men and/or women is not specified.

To conclude it is important to mention that none of the 12 analyzed articles presented intervention processes.

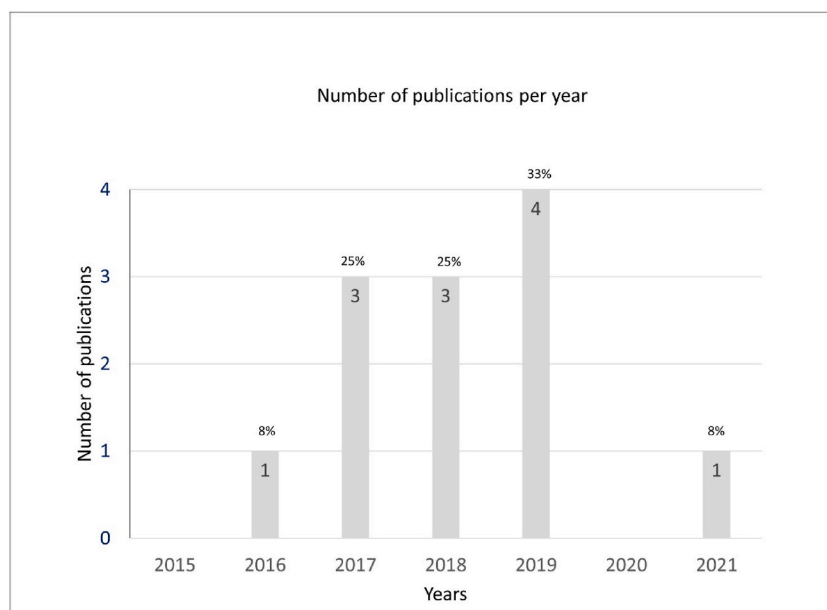


Fig. 2. Number of publications per year.

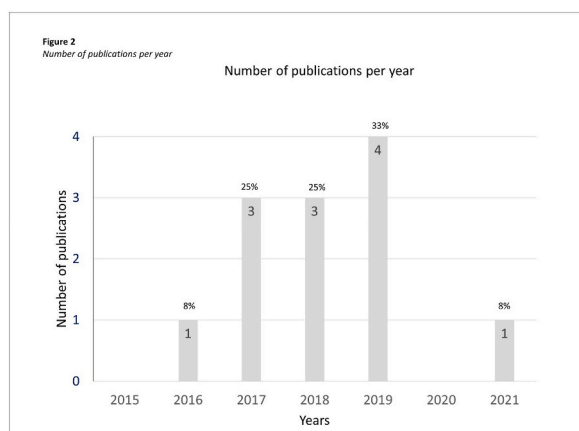


Fig. 3. Number of publications per continent.

3.3. Qualitative analysis of the publications

Fig. 4 presents a content analysis of the main findings in the reviewed articles. Based on the objective of the study and the review of the manuscripts themselves, the axial and open coding guidelines were established. The categories were then generated. ATLAS.ti V8.0 was used for this process.

A first level of analysis identifies that, generic interpersonal competencies are positively valued and instrumental competencies are negatively valued (Amor & Serrano, 2018; Amor & Serrano, 2019; Baker et al., 2017; Castejón et al., 2018; Tsitskari et al., 2017; Tul et al., 2019).

In addition, it is understood that the most valued competencies are (a) teamwork; (b) problem solving; (c) ethical commitment; (d) interpersonal skills and (e) autonomous learning (Amor & Serrano, 2018; Amor & Serrano, 2019; Castejón et al., 2018; Dinning, 2017; Fahrner & Schüttoff, 2019; Gutiérrez et al., 2018; Keiper et al., 2019; Sato et al., 2021; Schlesinger et al., 2015; Tsitskari et al., 2017; Tul et al., 2019) and the least valued competencies are (1) English and (2) ICT use (Amor & Serrano, 2018; Amor & Serrano, 2019; Castejón et al., 2018; Gutiérrez et al., 2018; Tul et al., 2019).

Regarding the above, some authors state that for the development of generic competencies, pedagogical strategies with other characteristics should be used, such as: (a) course projects in collaboration with external professionals using “real challenges” of the working world (Dinning, 2017); (b) strengthening and participation in volunteering (Sato et al., 2021); (c) promoting student participation in extracurricular activities (Sato et al., 2021); (d) mentored learning projects (Castejón et al., 2018; Dinning, 2017); (e) early internship experiences (Dinning, 2017); (f) use of portfolios (Castejón et al., 2018); (g) strengthening and generating links with alumni networks of the degrees themselves (Sato et al., 2021); (h) personal development planning and reflective journals and (i) use of case studies (Dinning, 2017).

4. Discussion

The articles analysed raise the relevance of generic competencies in the professional performance of PE teachers and sport science graduates regardless of the area of performance (Asún et al., 2020; Crespi & García-Ramos, 2021). This challenges higher education institutions to expand and/or strengthen the training of their students by incorporating generic competencies in their training itineraries (Hall et al., 2018; Villarroel & Bruna, 2014); since the productive environment and the students themselves demand teaching that is not excessively focused on disciplinary content (Villarroel & Bruna, 2014) and on traditional educational models that do not really favor the acquisition of competencies (Hall et al., 2018; Hinojosa et al., 2020).

However, and despite the relevance of generic competencies, it is evident that there are currently imbalances and deficiencies in university education PE teaching and sports sciences graduates, coinciding with what has been stated in other studies (Massaguer & Tejada, 2021; Pugh & Lozano, 2019), for example, the lack of coherence between degree programs and the requirements of the labour market (Crespi & García-Ramos, 2021), the lack of sympathy in higher education institutions regarding the nature and demands of the “real world” (Pugh & Lozano, 2019; Villarroel & Bruna, 2014), an overemphasis on traditional methods focused on the transmission of knowledge (Sonlleva Velasco et al., 2019; Villarroel & Bruna, 2014). In this sense, studies directly linked to PE mention that the training of PE professionals should move towards the applicability of these competences to real situations, allowing students to transfer the learning acquired in PE to their daily lives, during and after the training process (Calatayud, 2019; López-Pastor et al., 2016). That is, it is still important to master the specific competences of the professional fields linked to PE and sport, but it also seems very relevant to master some fundamental generic competences, such as: teamwork, problem solving, ethical commitment, interpersonal skills and autonomous learning.

Also, the use and focus of evaluative strategies used in higher education institutions do not coincide with competency-based training models (Pugh & Lozano, 2019); in this sense, we can find research that explains how alternative models of formative and

Table 4
Research characteristics y Main Findings.

Authors	Aim	Methodological design	Main findings
Schlesinger et al. (2015)	Analyze the relationship between competencies acquired through academic sport science courses and the requirements of relevant jobs in Switzerland.	Quantitative study. A total of 1054 graduates from different academic sports science programs at the eight Swiss universities participated. The study was conducted by means of a questionnaire. The respondents had to evaluate how important these competencies are with respect to their current job and to what extent they were taught during their university sports course, using a scale from 1 = "not at all" to 5 = "to a very high degree".	For graduates, the most important generic competencies are communication skills, followed in second place by planning and organizational skills, critical thinking and teamwork. For the graduates, the most developed skills are critical thinking, multidisciplinary thinking and use of scientific methods. The results reveal that sport science courses mainly transmit specialized knowledge and practical sport skills, as well as didactic and methodological competencies. However, generic competencies such as critical thinking and judgment, communication skills, and planning and organizational skills are promoted to a considerably lesser degree. However, when looking at the relevance of the competencies for the current occupation, they indicate that the latter are particularly important.
Baker et al. (2017)	To assess the perception of sports graduates and employers regarding the skills and competencies needed to improve the employability of sports science graduates	Quantitative study. A total of 1132 Sport Science graduates and 327 employers from the United Kingdom, Greece, France, Czech Republic, Germany and Spain were surveyed. The study was conducted through a questionnaire consisting of two parts: (a) sociodemographic data and (b) assessment of 20 specific and generic competencies related to their job performance, such as personal, interpersonal and cognitive skills.	Employers and graduates express the importance and possession of a series of skills and competencies, such as (a) analytical and conceptual thinking; (b) teamwork and collaboration; (c) problem solving; and (d) motivation towards professional tasks. The importance of interpersonal competencies for optimal professional performance is raised by graduates and employers. The authors argue that employers and higher education institutions must take responsibility for ensuring that work experience, job placement and volunteer opportunities are integrated into curricula and that they ensure the appropriateness of the purpose of what and how graduates' skills and competencies are assessed.
Dinning (2017)	To explore the competencies required by a sports science graduate from the perspective of employers.	Qualitative study. Two separate groups of participants were recruited, one group to develop the graduate skills model (participants) and a second group to provide evaluation and affirmation of the model (15 participants). The study was conducted through semi-structured interviews which lasted approx. 45 min. The interview period was two months.	The results suggest that employers value entrepreneurship and sports management skills. In addition, employers state that graduates should have, as a priority, the ability to solve problems, and oral and written communication. On a second level, they should develop creativity, listening skills, planning and prioritization.
Tsitskari et al. (2017)	To assess the perceptions of employers belonging to Greek institutions related to sport and recreation on the competencies required by their professionals.	Quantitative study. A total of 193 Greek employers from organizations operating in the sport and recreation sector participated. The study was conducted through a questionnaire that was divided into two parts: the first collected employers' demographic characteristics, education, sport sector and number of active employees. The second part included the adapted Survey of Employability Skills Needed in the Workforce.	The results revealed that, although employers rated generic competencies positively, they rated behavior and professional development and (inter)personal skills somewhat higher, while organization and time management, problem solving, communication skills and leadership followed closely behind.
Amor and Serrano (2018)	To evaluate the generic teaching competencies of students, teachers and postgraduates of the university degrees of Teaching (specialization in Physical Education), Primary Education (mention in Physical Education) and Physical Activity and Sports Sciences.	Quantitative study. A total of 1243 students, 351 teachers and 491 graduates from 23 Spanish universities participated. A structured questionnaire with a Likert-type scale was used. It was conducted online in order to increase the participation of participants, especially graduates. The study was conducted during the months of March and April of the 2014/2015 academic year.	For students, teachers and graduates, the most developed competency is teamwork, followed by autonomous learning. The least developed by the three groups is foreign language. The order of appreciation for students, professors and graduates of the dimensions of generic competencies is interpersonal, systemic and instrumental competencies.
Castejón et al. (2018).	To analyze the perception of the development of generic and specific	Quantitative study. A total of 308 university professors and 490 graduates from 20 teacher	The results of this research show that there is a high rating of the use of the different

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Table 4 (continued)

Authors	Aim	Methodological design	Main findings
	competencies and the use of different evaluation instruments during the initial training of Physical Education teachers and the possible relationship between these variables.	training centers in Spain participated. The study was carried out through a questionnaire with questions on the development of generic and specific competencies during this stage and the frequency of use of different evaluation instruments.	evaluation instruments studied, discordance in the perception of this use between teachers and graduates, and that exams are the instruments that are least related to the acquisition of the competencies established in this research. The generic competencies most developed by the graduates according to dimension are 1° Interpersonal, 2° Systemic, 3° Instrumental. Adaptation to new situations, critical reasoning and ethical commitment are the most valued. Oral and written communication in the native language and knowledge of a foreign language are the least valued.
Gutiérrez et al. (2018)	To know the perception of acquired competences of the students of the Degree in Primary Education with Major in Physical Education from different training centers of Spanish universities at the end of their studies.	Quantitative study. A total of 699 students in their final year of the Bachelor's Degree in Teaching with a Major in Physical Education from ten Spanish universities participated in this study. The participants in the study were: (a) students who entered the university through the baccalaureate; (b) graduates in physical activity and sports animation; (c) professionals who had another degree; and (d) professionals who were in the process of adapting to the degree. The study was carried out by means of a specific questionnaire called "Questionnaire on teaching competencies in the initial training of physical education teachers", which includes items related to general personal competencies, generic teaching competencies and specific competencies.	The students considered that their early teacher training had developed their general personal competencies, generic teaching competencies and specific physical education competencies in a similar way, somewhere between "moderately" and "very much". The most developed generic competencies are teamwork, interpersonal skills and autonomous learning. And the least developed are knowledge of a foreign language and computer skills related to the field of study.
Amor and Serrano (2019)	To assess the level of development of generic educational competencies in teachers, students and graduates of the following university degrees: teacher training (specialized in physical education), primary school education (with a major in physical education) and the degree in Physical Activity and Sport Sciences.	Quantitative study. A total of 1243 students, 491 graduates and 351 teachers belonging to university teacher training degrees participated. The study was carried out using the Teaching Competence Evaluation (TCE) scale, which allows to determine generic competences according to instrumental, systemic and interpersonal dimensions. The instrument was applied online to facilitate participation.	The obtained data from the group of students and the groups comprising graduates and teaching staff show that the handling of a foreign language and technological competence are perceived as less developed. In addition, the results show that interpersonal competencies are the most valued by the graduates.
Fahrner and Schüttoff (2019)	Understand the relevance of specific and generic competencies of physical education and sport science professionals in their occupational context.	Quantitative study. A total of 142 students from a bachelor's and master's degree program in sport management who have already entered professional life participated. The study was conducted through the application of an online questionnaire which incorporated questions related to specific and generic competencies in their occupational context.	The results show that indicators of self-competence, as well as social competence, are considered relevant for all occupational contexts. In terms of methodological competence, problem solving is assessed as highly relevant. In terms of sport management competence, digital competence followed by entrepreneurial thinking are assessed as important skills.
Keiper et al. (2019).	Identify the competencies that employers require from graduates in sport management programs.	Qualitative study. Eleven employers from different institutions related to professional sports, university, school, recreational sports, organization of sporting events, among others, participated. Data collection was carried out through three focus groups. Participants were asked eight predetermined questions about the curriculum, employability, skills gaps and training needs.	Personal skills were the most frequently mentioned skills among participants, and all three focus groups emphasized the importance of graduates needing people and teamwork skills. Other personal skills identified as important were: being confident, being empowered, taking initiative, having a strong work ethic, being punctual, and possessing problem-solving skills.
Tul et al. (2019)	To assess the self-perception regarding the professional competencies of Italian Physical Education teachers.	Quantitative study. A total of 484 Italian physical education teachers from the northeastern part of Italy were involved. The study was conducted through a self-administered Likert-type questionnaire consisting of three parts: (a) demographic aspects; (b) items related to generic	The results show that the most developed generic competencies in Italian Physical Education teachers are: (a) appreciation and respect for multiculturalism; (b) ethical and professionally correct attitude; (c) capacity for socially responsible behavior and teamwork. And the least developed generic competencies are: (a) work in an

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Table 4 (continued)

Authors	Aim	Methodological design	Main findings
Sato et al. (2021)	To identify the requirements for graduate employability and the contributions of higher education institutions from the perspective of experts in sports institutions.	Mixed study. Participants in Quantitative Phase 1: 10 experts in sports institutions, in Qualitative Phase: 14 experts in sports institutions and in Quantitative Phase 2: 24 experts in sports institutions. The study was conducted through a survey and an online questionnaire in the quantitative phase and focus groups were conducted in the qualitative phase.	international area; (b) communication in a foreign language; (c) research skills; and (d) use of ICT. The results of the study identified several hard and soft skills and the potential contributions of higher education. The generic competencies most valued before and after Covid are the ability to involve others, curiosity, ethics and respect for diversity. And the ones that show significant differences between Before and After are the competencies of solidarity and use of ICT, so they are the competencies that most increased their valuation.

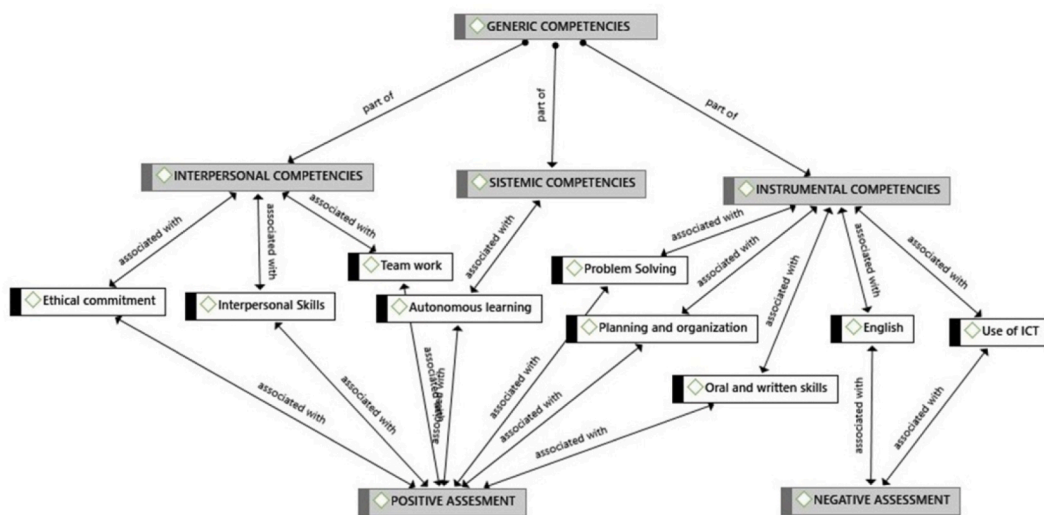


Fig. 4. Generic competencies.

shared assessment in the initial training of PE teachers would be much more coherent with the competency-based training model (Fraile-Aranda et al., 2018; Gallardo-Fuentes et al., 2017), therefore, it is necessary to incorporate teaching-learning practices and strategies that are more relevant for the acquisition and/or strengthening of generic competencies (Huaquilaf-Jorquera et al., 2021; Trigueros et al., 2018), as well as moving towards formative and shared assessment models relevant to PE and sports science, such as the use of portfolios, monthly physical activity record sheets, class diaries and self-assessment records, use of case studies, among others (Calatayud, 2019; Dinning, 2017; Pugh & Lozano, 2019).

In addition, multiple studies (Álvarez-Iguain & Torres-Belma, 2021; Trigueros et al., 2018; Villarroel & Bruna, 2014) agree on the need to strengthen the relationship between higher education institutions which train PE and sports sciences professionals, and employers in the area, generating formative alliances associated with practical experiences that allow a better response to the employability requirements necessary for the different performance areas such as schools, gyms, sports clubs, among others. The participation of employers and alumni in the development of a curriculum in PE or sports sciences is necessary for university professors to understand the contextualization of the competencies required from their graduates (Álvarez-Iguain & Torres-Belma, 2021; Massaguer & Tejada, 2021). These actions could develop a shared approach to the acquisition of generic and specific competencies required by PE and sport sciences professionals, thus helping to balance employer and alumni expectations and responsibilities (Hinojosa et al., 2020).

Five articles in the review suggest that interpersonal competencies are the most valued by all stakeholders. This coincides with the findings of Fraile-Aranda and Aparicio (2015), who state that these competencies are relevant, since they allow generating positive climates in education or sports organisations where mainly PE and sports sciences professionals operate.

In this same line of analysis, the generic competencies with the lowest valuation in the studies analyzed were the instrumental ones. This is a shared view by González and Wagennar (2003) and the University of Deusto (2007) in research related to the European and Latin American Tuning projects, respectively.

When performing a more specific analysis of the articles analyzed on which competencies are considered most relevant, different authors mention: (a) teamwork, understood as the capacity to integrate and collaborate actively in the achievement of common

objectives with other people, areas and organisations; (b) problem solving, defined as the ability to identify, analyse and define the significant elements that constitute a problem in order to solve it with the necessary judgement and in an effective manner; (c) ethical commitment, described as the positive inclination towards the moral good of oneself or others and to persevere in this moral good, and (d) autonomous learning, understood as educational self-management where the professional sets his or her goals, recognises his or her skills and previous knowledge and is able to evaluate his or her own learning process. Regarding teamwork competency, Huaiquilaf-Jorquera and collaborators (2021) state that its presence is essential for professionals to relate effectively both inside and outside institutions. The above is corroborated by Aparicio-Herguedas et al., 2021, who state the importance of this competence for PE professionals; however, they mention that PE curricula do not use a structured and sequenced training model that enables the acquisition or strengthening of the essential aspects of teamwork.

Another of the competencies positively valued is "problem solving" (Tsitskari et al., 2017). These results are in agreement with Rodriguez et al. (2018) and Gruzdev et al. (2018) who state that PE professionals must have an attitude of both intellectual openness and willingness to discover and apply new visions that rally them towards decision-making and problem solving. In this sense, practising PE professionals state that they are now more aware of the demands of the working environment to know how to work and solve problems in a collaborative, consensual, and co-responsible way (Aparicio-Herguedas et al., 2021).

On the other hand, the competencies that are considered less relevant are the handling of a second language and the use of ICT (although it should be noted that these are studies developed before the COVID-19 pandemic, a period in which technologies played a fundamental role) (González & Wagennar, 2003; Universidad deDeusto, 2007). In this sense, Cabrera and collaborators (Cabrera et al., 2019) state the existence of barriers that prevent the appropriation of ICT by PE professionals, one of the main explanations being the fear of losing professional identity (historically linked to physical activity and bodily practices), as well as the scarce technological adaptation to the demands of PE. The findings show that instrumental competencies continue to be undervalued despite the actions taken by institutions to reverse this perception (Rodríguez et al., 2018), which contradicts the perception of employers, who consider them important for the current requirements of the labor world. This coincides with previous research, where the weaknesses presented by teachers in the use of this type of tools and the training needs that this entails are manifested (Padilla-Beltrán et al., 2014).

5. Conclusions

All the studies show the relevance of generic competencies for good performance in the different areas of professional development associated with PE and Sports Sciences. Furthermore, most of the studies explicitly state that interpersonal generic competencies are the most valued by both graduates and employers in the field of PE and sports sciences (such as teamwork, ethical conduct, etc.); while instrumental generic competencies are the least valued (the use of ICT and English).

From this systematic review it can also be concluded that it is essential to carry out studies of different methodological nature (quantitative, qualitative, mixed) that allow us to know the perception of graduates and employers on the role of generic competencies in professional performance in PE and sports, as well as the level of acquisition or development that university graduates have according to their functions and tasks performed.

The findings of this systematic review may be relevant in practical terms to guide higher education institutions in charge of training new sports and PE professionals in the curricular redesign of their training itineraries, teaching-learning methodologies and evaluation strategies to be used.

An important limitation is that the sample of studies which met the criteria is too short and it would have been interesting to count with a greater number of articles to analyse.

In order to solve some of the limitations found, it could be interesting to carry out a new study, broadening the search languages and the period of years and, perhaps, slightly modify some of the selection criteria, so that a greater number of articles on the subject can be found.

A future line of research is to carry out studies on the generic competences and the post-pandemic return of PE teachers to face-to-face activities and to determine the differences and/or similarities of the pre-post pandemic findings between them.

Author statement

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