



Opinion

Redefining Education in Sports Sciences: A Theoretical Study for Integrating Competency-Based Learning for Sustainable Employment in Spain

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Abstract: In the Spanish context, Sports Sciences education is evolving to emphasize competency-based learning, crucial for adapting to the dynamic global landscape and labor market. This opinion article highlights the shift towards integrating generic and specific competencies, essential for automation and artificial intelligence, aligning with Sustainable Development Goal (SDG) 8's focus on sustainable economic growth and employment. Despite the recognized importance of these competencies for economic sustainability and job readiness, the literature on this framework, particularly within the context of physical activity and Sports Sciences in Spain, remains underexplored. This paper is structured to first address the current state of the problem, followed by a conceptualization of competencies, including types of competencies. It then analyzes professional competencies within the realm of Physical Activity and Sports Sciences in Spain, moving towards the implementation and evaluation of these competencies in the classroom setting. By bridging the gap between educational outcomes and market demands, this work calls for ongoing research and pedagogical innovation to equip future professionals with the necessary skills for success. This approach not only prepares students for the future labor market but also contributes to the broader economic and sustainable development goals envisioned by SDG 8.

Keywords: curriculum development; skills training; professional competencies; sports education; sustainability in education



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1. Introduction

Universities aim to stimulate student employability as one of their primary objectives. To this end, they seek to adequately prepare students for contemporary society, which is grounded in knowledge and career projection (Almedina and Rodríguez 2019). One of the methods through which universities can assist students in achieving professional success is by offering a solid educational foundation. This foundation is based on the development of generic and cross-curricular competencies applicable across any study plan or curriculum (Le Boterf 2000). In this regard, the introduction of new degree programs within the university community necessitates that students acquire a set of competencies throughout their education. These competencies enable the attainment of the necessary knowledge; attitudes; and personal, professional, and methodological skills required for each profession (Pazo and Tejada 2012). Authors such as Hinojosa Torres et al. (2020) indicate that the acquisition of competences is not favored by the traditional educational

model applied up to now, which focuses more on disciplinary contents, since both the students and the working environment no longer require training that is excessively centered on these contents, and the inclusion of training and development of competences should be valued (Villarroel and Bruna 2014). Specifically, in the field of Physical Education and teaching, professional competencies and soft skills have become key elements for the success and effectiveness of future professionals (Sánchez Mirón and Boronat Mundina 2013). Therefore, the training of students in the Sciences of Physical Activity and Sport requires a comprehensive approach that encompasses both theoretical and practical aspects, as well as the development of essential professional skills and competencies. According to Anderson et al. (2022), academic training in the Sciences of Physical Activity and Sport extends beyond acquiring technical skills and basic knowledge. The professional competencies required by a student of the Sciences of Physical Activity and Sport are based on multidisciplinary knowledge and specific skills necessary for working in this field. These competencies range from cognitive and technical skills to interpersonal and ethical skills. To ensure that students are well prepared and that they can excel in this field, it is crucial to identify and thoroughly understand these professional competencies. In this field, institutions working with professionals from the world of Physical Education and Sport Sciences perceive that generic competences are an important aspect of their training. These competences are essential for their professional preparation, leading to the development of different studies linking Physical Education, Sport Sciences and generic competences (Schlesinger et al. 2016; Tsitskari et al. 2017). In support of this perspective, there are several studies that highlight that generic competences in the professional field of Physical Education and Sport Sciences are crucial for the adequate performance of their job (Altaweel and AlJa'afreh 2017; Schlesinger et al. 2016; Pazo and Tejada 2012).

Therefore, the purpose of this study is to conduct an in-depth examination of the essential professional competencies that students of the Sciences of Physical Activity and Sport should acquire during their academic training. The Sciences of Physical Activity and Sport degree in Spain consists of 240 credits that can be earned across four years. There is not a common framework in Spain; thus, the subjects of this degree differ between universities. This investigation aims to address the issue of the imbalance between the skills demanded in the workplace and student training, endeavoring to bridge the gap between higher education and the professional world through the application and development of these demanded competencies in the classroom. The intention is to explore existing studies regarding professional competencies and their formation in the classroom, as well as to define their conceptualization and some existing typologies applied in the field of the Sciences of Physical Activity and Sport. In order to translate the study into practical application, the discussion will include various strategies for implementing professional competency work in the classroom. Furthermore, it will propose evaluation systems applicable to higher education students. This approach not only highlights academic and theoretical perspectives but also emphasizes the practical implications and applications of such competencies in real-world settings. By delineating the conceptual framework and typologies of professional competencies, the study seeks to provide a comprehensive understanding that encompasses both the essence and the application of these skills. Moreover, the exploration of implementation strategies and evaluation systems is pivotal in ensuring that the acquisition of professional competencies is effectively integrated into academic curricula. This integration is crucial for preparing students not just for the immediate needs of their professional careers but also for their long-term development and adaptability in the ever-evolving landscape of the Physical Activity and sports sector. Thus, the study aspires to contribute to the enhancement of educational practices, ensuring that they are closely aligned with the dynamic requirements of the labor market and the professional domain at large.

2. Current State of the Issue

In recent years, the information and knowledge sector has undergone significant acceleration through the automation and robotization of multiple tasks, paving a new path for labor changes (Schwartz et al. 2019). Furthermore, since 2020, following the COVID-19 pandemic, this process of automation and the use of tools in jobs has accelerated. Data from the World Economic Forum (2020) indicate that by 2025, automation will have eliminated 85 million jobs worldwide, but it will also create 97 million new jobs resulting from machine–human collaboration. Along the same lines, it is stated that 65% of children entering school today will have jobs that do not yet exist, requiring skills that are not currently developed within the educational system (Higgins 2013). These facts pose a significant challenge to educational institutions. On one hand, there is the task of developing the skills required to perform these new jobs (World Economic Forum 2020) at both school and university levels. There is a societal challenge to continue investing in retraining individuals who are already part of the workforce (Blázquez et al. 2022).

Based on these assertions, questions arise, such as what will be the careers of the future, what technical skills will be necessary to meet the job market's demand, and are we educating the new generations to meet this challenge? (Bosch et al. 2023). In this case, it is the responsibility of higher education teachers to reflect and research which new technical skills are necessary for workers to remain viable in the job market and for the integration of future generations into it. However, once the market has been analyzed and evaluated, new solutions applicable to the world of academic and professional training should be sought in response to a changing job market that demands new skills constantly (Bosch et al. 2023). In the field of teaching, it has been noted that, despite the validity of generic competences, in current practice, there are gaps and deficiencies in the academic training of Physical Education teachers and Sports Science graduates (Hortigüela Alcalá et al. 2015; Pugh and Lozano-Rodríguez 2019). On the one hand, it has been detected that there are imbalances and mismatches between the educational programs regarding what the labor market demands and what university education considers as requirements from the institutional point of view as an “actual demand” (Pugh and Lozano-Rodríguez 2019) of the labor market, with a lack of assertiveness and continuing to promote the transmission of knowledge from a traditional methodology (Villarroel and Bruna 2014).

A report by the Harvard Business Review highlights that companies are experiencing a problem in talent acquisition as automation processes and digital transformation are advancing at an extremely accelerated pace. It is stated that demands for digital skills that cannot be met emerge daily because they have not yet been learned (Fuller et al. 2020). In this vein, some researchers (Villarroel and Bruna 2014; Álvarez-Iguain and Torres-Belma 2021; Ortega Sánchez and Gómez Trigueros 2018), have underlined the need to strengthen the connection between higher education organizations that develop professionals in Physical Education and Sport Sciences and people who work in the sector.

3. Conceptualizing Competencies

Generic competences can be understood as those that favor an individual's optimal performance both internally and externally when interacting with others (Baker et al. 2017). They encourage the demonstration of social skills, the application of values, knowledge, and specific personality qualities (Higgins 2013; Beneitone et al. n.d.). There are studies that indicate that these competences are fundamental for correct development in society and are highly recommendable for good performance in a work environment in which there is a demand for learning and adaptation to circumstances that link it to lifelong learning (Gómez-Ortiz et al. 2017). According to Arbi et al. (2017), competencies are skills and abilities that allow an individual to perform desirably within the internal and external limitations of an organization in the exercise of their role and work tasks. Associated competencies with job performance at a high or influential level, demonstrating that the individual possesses characteristics for higher performance and high levels of effectiveness. Thus, competencies are considered an essential tool that helps to improve the efficiency

of human resources, maximizing the performance of those who have developed them by aligning their behaviors with the objectives they pursue (Kim et al. 2019). [Tobías Sider et al. \(2019\)](#) proposed the concept of “competency,” the ability to apply knowledge, skills, professional characteristics, experience, and motivation to perform a type of work or task uniquely and efficiently. Additionally, they added that the essence of a competency is not the key issue today, but rather, knowing which competencies are essential in each field ([Duclos Bastías et al. 2023](#)). In an attempt to determine a specific conceptualization of the workplace and after verifying that there are various and disparate viewpoints, we find some definitions that come close to a specific definition of professional competencies ([Molina-García et al. 2023](#); [Noriega et al. 2022](#)).

- A competency is a learned ability to carry out a task, duty, or role appropriately. Competencies have two distinct elements: they are related to specific work in a particular context and integrate different types of knowledge, skills, and attitudes. They are acquired through learning-by-doing. Unlike knowledge, skills, and attitudes, they cannot be evaluated independently. It is also necessary to distinguish competencies from personality traits, which are the more stable characteristics of the individual ([Roe 2002](#)).
- They represent a dynamic combination of attributes in relation to knowledge and its application, as well as to attitudes and responsibilities, describing the learning outcomes of a particular program or how students will be able to develop at the end of the educational process ([Beneitone et al. n.d.](#)).
- A competency is the ability to respond to complex demands and carry out various tasks appropriately. Competencies involve a combination of practical skills, knowledge, motivation, ethical values, attitudes, emotions, and other social and behavioral components that are mobilized together to achieve effective action ([UE 2001](#)).

These perspectives highlight the multifaceted nature of competencies, emphasizing their role in bridging the gap between educational outcomes and the demands of the modern workplace. As the labor market evolves, the alignment of educational programs with these competencies becomes increasingly critical, ensuring that graduates are equipped with the necessary skills, knowledge, and attitudes to navigate and succeed in their professional and personal lives. [Le Boterf \(2000\)](#) emphasizes that competency is not a conglomerate of fragmented knowledge, nor is it composed of slices of know-how. Instead, it is a combinatorial set that is not transmitted; the core of competency lies within the learner, who constructs competency from a sequence of learning activities that mobilize multiple specialized knowledges. For [Le Boterf](#), a competent teacher is one who knows how to build competent knowledge to manage increasingly complex professional situations. In this regard, the proposal for professional competencies highlights more active roles for both students and teachers. It challenges educational systematization through objectives, its fragmentation, and its limited scope in meaningful learning ([Molina-García et al. 2023](#)). This perspective suggests a shift towards a more holistic and integrated approach to education and professional development. Competencies, according to [Le Boterf \(2000\)](#), are developed through a dynamic process of engagement with learning activities that require the application of specialized knowledge in various real-world contexts. This approach advocates for educational practices that foster critical thinking, problem solving, and the ability to adapt to new situations rather than merely acquiring a set of disconnected facts or skills. Furthermore, the emphasis on active participation by students and teachers alike calls for a transformation in the traditional roles within the educational process. It suggests we are moving away from a teacher-centered model, where knowledge is transferred from teacher to student, to a more collaborative and interactive model. In this model, learning is co-constructed through engagement with complex situations that reflect the realities of professional practice. The implication of this shift is profound, suggesting that educational institutions should prioritize the development of learning environments that facilitate the construction of competencies. This involves creating opportunities for experiential learning, critical reflection, and the application of knowledge in practical settings. Ultimately, the goal is to prepare individuals not just for the challenges they will face in their professional

careers but also for lifelong learning and adaptation in an ever-changing world. In this vein, the World Economic Forum developed a study in which it identified the 10 top skills that, based on current developments and the speed of change in traditional industry, every future worker should have (see Table 1)

Table 1. Top 10 skills of 2025: World Economic Forum.

Top 10 Skills of 2025	
1	Analytical thinking and innovation;
2	Active learning and learning strategies;
3	Complex problem solving;
4	Critical thinking and analysis;
5	Creativity, originality, and initiative;
6	Leadership and social influence;
7	Technology use, monitoring, and control;
8	Technology design and programming;
9	Resilience, stress tolerance, and flexibility;
10	Reasoning, problem solving, and ideation.

Source: Own elaboration based on (World Economic Forum 2020).

4. Types of Competencies

Beyond its conceptualization, the term “competencies” encompasses a wide variety of meanings and approaches. Regarding the typologies or structure in which competencies are organized, several models and currents can be found. On the one hand, there are the “European Tuning” (Antunes 2012) and “Tuning Latin America” (Serrano Rodríguez et al. 2020; Beneitone et al. n.d.). These projects conducted studies among graduates, professionals, and academics, asking for their opinions on the level of competency development acquired during university studies and its importance for their training. Thirty generic competencies were selected and classified into three categories—instrumental, interpersonal, and systemic—enabling university graduates to achieve higher levels of employability. The tasks of communicating with others both orally and in writing and the use of ICT or proficiency in a second language refer to the work of instrumental competences, as they require a combination of cognitive and manual skills.

Interpersonal competencies enable the expression of emotions and feelings, the development of critical and social skills, the acquisition of social and ethical commitment, and the development of skills related to teamwork (Serrano Rodríguez et al. 2020). Systemic competencies involve skills such as understanding, sensitivity, and knowledge, which comprise a whole and relate abilities like adaptability and creativity, among others (Amor Almedina and Rodríguez 2018; Beneitone et al. n.d.). Within competencies, we can distinguish specific professional competencies, which can be defined as the attitudes developed by integrating knowledge, procedures, skills, and behaviors according to the functions inherent to the professional activity being carried out, which will be specific, technically related, and unique to each profession (Tobías Sider et al. 2019). In the educational curriculum, based on the Royal Decree 1393/2007 of October 29, which established the organization of official university education for the Degree in Sciences of Physical Activity and Sport, the Agreement of the Council of Universities of 17 September 2018, provides recommendations for the proposal of Verification Reports by universities based on the Spanish Framework of Qualifications for Higher Education (MECES) for the official Sciences of Physical Activity and Sport degree. The report indicates that it should facilitate the identification of a profession that will provide access to employment, and in no case may it lead to confusion about its professional effects. “To this end, the competencies that students must acquire are specified, organized into seven areas composed of several competencies that must be observable and evaluable through the corresponding set of learning outcomes (LOs), declarative knowledge, skills or performances in the professional function, and the methodological and emotional attitude in the occupation, with the relevance corresponding to the problem solving in each field

and context of sports professionals, which will have to be verified by each student". The areas of competency for the Sciences of Physical Activity and Sport degree are as follows:

AC_1 Educational intervention.

AC_2 Prevention, adaptation, and improvement in physical sport performance and health through physical conditioning and exercise.

AC_3 Promotion of healthy and autonomous habits through Physical Activity and sport.

AC_4 Intervention through the manifestations of human movement.

AC_5 Planning, evaluation, and the management/organization of resources and Physical Activity and sport.

AC_6 Methods and scientific evidence in practice.

AC_7 Performance, deontology, and professional practice in the context of interventions.

Within the development, application, and learning outcomes of these competencies, the acquisition of skills such as critical thinking, decision-making, evaluation and synthesis capacity, communication, teamwork, problem solving, interpersonal skills, creativity, leadership, and more are reflected. These are identified as professional competencies and listed in the White Paper for the Sciences of Physical Activity and Sport degree (ANECA 2005). The emphasis on such a diverse range of competencies underscores the holistic approach to education in the field of Physical Activity and Sports Sciences. It highlights the necessity for graduates not only to possess specialized knowledge and technical skills pertinent to their field but also to develop a broad set of soft skills that are increasingly being recognized as vital for success in the professional world. The inclusion of these competencies in the curriculum aims to prepare students for the complex and multifaceted challenges they will face in their careers, equipping them with the ability to adapt and thrive in diverse settings (see Table 2). Critical thinking and decision-making competencies enable students to analyze information, assess situations from multiple perspectives, and make informed choices, essential for leadership roles and when navigating the ethical and strategic dilemmas they may encounter in their professional lives. The capacity for evaluation and synthesis helps students to integrate diverse pieces of information, derive meaningful insights, and apply knowledge in practical contexts, enhancing their ability to contribute to advancements in their field. Communication and teamwork competencies are crucial for effective collaboration within and across disciplines, facilitating the exchange of ideas, fostering positive relationships, and enhancing the impact of collective efforts. Problem-solving skills, combined with creativity and innovation, empower students to address challenges creatively and devise effective solutions, while leadership competencies prepare them to inspire and guide others towards achieving shared goals. The integration of these competencies into the educational framework of Sciences of Physical Activity and Sport reflects an understanding of the dynamic nature of the professional environment and the need for graduates who are versatile, resilient, and capable of contributing meaningfully to their communities and broader society. The results from the studies conducted between 2015 and 2021 by Ojeda-Nahuelcura et al. (2023) confirm that generic instrumental competencies, such as those related to the use of information and communication technology (ICT) and English, are the least valued competencies and the ones in which students feel least competent. González and Wagenaar (Beneitone et al. n.d.) and Cabrera Ramos et al. (2019) corroborated this.

Table 2. Competencies most relevant to the areas of competency for the Sciences of Physical Activity and Sport degree.

Areas of Competency for the Sciences of Physical Activity and Sport Degree	Most Relevant Competencies
AC_1	Problem solving; decision-making; creativity; ethical commitment; respect for diversity; social skills and communication skills; interpersonal and social skills; autonomous learning
AC_2	Problem solving; ICT competencies; social skills and communication skills; critical reasoning; respect for diversity

Table 2. Cont.

Areas of Competency for the Sciences of Physical Activity and Sport Degree	Most Relevant Competencies
AC_3	Problem solving; ICT competencies; leadership; social skills and communication skills; autonomous learning; adaptation to new situations; ethical commitment; respect for diversity
AC_4	Problem solving; ethical commitment; respect for diversity; curiosity; critical thinking; autonomous learning
AC_5	Problem solving; teamwork; entrepreneurial skills and thinking, ICT competencies; decision-making; management skills; leadership; adaptation to new situations; social skills and communication skills; critical reasoning; respect for diversity
AC_6	Problem solving; teamwork; management of a second language; ethical commitment; curiosity; critical reasoning; ICT competencies; autonomous learning
AC_7	Problem solving; respect for diversity; adaptation to new situations; decision-making; ICT competencies; social skills; creativity

Note: AC_1 Educational intervention; AC_2 Prevention, adaptation, and improvement in physical sport performance and health through physical conditioning and exercise; AC_3 Promotion of healthy and autonomous habits through Physical Activity and sport.; AC_4 Intervention through the manifestations of human movement.; AC_5 Planning, evaluation, and management/organization of resources and Physical Activity and sport; AC_6 Methods and scientific evidence in practice; AC_7 Performance, deontology, and professional practice in the context of interventions.

5. Analysis of Professional Competencies in the Field of Physical Activity and Sports Sciences within the Spanish Framework

Although they are similar concepts, it is essential to clarify the distinction between competence and competencies when talking about professionals in any sector. On the one hand, competence, being competent, is the ability to carry out tasks and initiatives efficiently and effectively (Almedina and Rodríguez 2019; Anderson et al. 2022). On the other hand, competencies have a broader meaning and refer to the whole set of knowledge, attributes, and attitudes that an employee must possess to be able to contribute to the achievement of the objectives set by the entity in which he or she performs his or her professional work (Anderson et al. 2022; Baker et al. 2017). In short, the internalization of certain competencies is what will give an employee the ability to be competent, i.e., to perform his or her work optimally, thus increasing his or her value within the organization (Fahrner and Schüttoff 2020).

According to Ojeda-Nahuelcura et al. (2023), the majority of research on generic competencies among Physical Education teachers and professionals in the Sciences of Physical Activity and Sport has been conducted in Europe, particularly in Spain (25%), the United Kingdom (12.5%), Greece (12.5%), and Germany (12.5%). No publications related to the competencies studied were found to emanate from South America. It is apparent that most of the research on the topic is quantitative (75%), with a minority of studies employing a qualitative or mixed design (quantitative and qualitative data). It is also important to note the difficulty in finding studies related to topics that involve an intervention process due to the challenge of implementing it and its difficult integration into the curriculum, which is crucial in the training programs of future educators. Some studies on the influence of competences on their teaching and development in the field of Physical Education and Sport Sciences support that the competence of interpersonal relations is one of the most important competences for a good professional performance (Ojeda-Nahuelcura et al. 2023).

An analysis conducted between 2015 and 2021 showed that the competencies most valued in the study of Physical Activity and Sports Sciences are teamwork, problem solving, ethical commitment, interpersonal skills, and autonomous learning. In this context, Huaiquilaf-Jorquera et al. (n.d.) affirm that “teamwork” is the key for workers to communicate well in any organization. Aparicio-Herguedas et al. (2021) confirm the great value and

weight that this competence has in the field of Physical Education but also points out that the curriculum of this field does not detail the method or way to carry out the work of this competence so that the student acquires it in a correct or sufficiently broken-down way.

Rodríguez-Gómez et al. (2017) and Gruzdev et al. (2018) also point out that workers in the sports field must work on developing an intellectually broad attitude and favor a predisposition for exploration and learning in order to favor decision-making and problem solving.

According to Tsitskari et al. (2017), the “problem-solving” competency is highly valued by both students and employers, and practicing Physical Education professionals affirm that they are now more aware of what is required in their work, knowing how to encourage collaborative consensual and co-responsible problem solving (Aparicio-Herguedas et al. 2021). Although scarce, there are also some recent studies, both qualitative and quantitative ones, that involved an intervention phase on the professional competencies of graduates of the Sciences of Physical Activity and Sport degree. The qualitative work of Dinning (2017) carried out on graduates of Physical Activity and Sports Sciences who evaluated the perspective of their classmates highlighted that experts give greater value to entrepreneurship competencies and management skills. Likewise, the great importance of having problem-solving skills, as well as the ability to communicate both orally and in writing, was indicated. Also, although with less emphasis, it was recommended to work on creativity, listening skills, and planning, with these being outlined as important aspects to develop.

Through a quantitative study, Castejón et al. (2018) analyzed the detection of the development of generic and specific competencies during the initial training of Physical Education teachers, the relationship between them, and the frequency of use of different assessment instruments. The findings indicated a possible relationship between variables and a high use of assessment instruments, highlighting a discrepancy between teachers and graduates. It was noted that tests do not relate to competency acquisition in this research. Regarding the most developed generic competencies among graduates according to dimension, interpersonal competencies were first, followed by systemic and, finally, instrumental competencies. In particular, competencies such as the ability to adapt to new situations, critical reasoning, and ethical commitment were the most valued (interpersonal). Conversely, oral and written communication skills regarding one’s native language and knowledge of a foreign language were the least valued (instrumental). On the other hand, Almedina and Rodríguez (2019), through a quantitative study, evaluated the level of development of generic educational competencies in teachers, students, and graduates based on teacher training (specifically the training of Physical Education teachers), primary education regarding Physical Education, and the Sciences of Physical Activity and Sport degree. In line with previously published results, the main findings indicated that foreign language proficiency and technological competence were perceived as the least developed competencies, whereas interpersonal competencies were the most valued by graduates. Tul et al. (2019), in a quantitative study, tried to measure the self-perception that Physical Education teachers had regarding the professional skills they needed for their professional work. The results showed that the competencies perceived as most developed were an ethical and professional attitude, capacity for social skills, and teamwork. Otherwise, the competencies perceived as less developed were working in international contexts, mastery of a second language, research skills, and the use of ICT. Along the same lines, Fahrner and Schüttoff (2020), in a study on the importance of specific and generic competencies in the sports field, pointed out social competence and self-competence as key competencies for success in any work environment.

Regarding methodological competence, problem solving was highly valued, and digital competence and entrepreneurial thinking were considered highly important. Referring to competencies considered less developed but highly important in most of the reviewed literature, competencies such as the knowledge of a second language (English) and the use of ICT are instrumental (Gobbi et al. 2005; Beneitone et al. n.d.). In this area, Cabrera Ramos

et al. (2019), highlight that some obstacles that do not favor the implementation of ICT in the field of sport are evident, and this could be one of the reasons why teachers fear losing control or their professional identity due to the minimization of physical contact and, thus, the reduction in in-person practices. Along the same lines, other works indicate that instrumental competences are not given the value they should, even when attempts have been made to promote their importance and weight by sports organizations (Fahrner and Schüttoff 2020). These findings confirm those of previous research which shows that, largely, teachers have not mastered the use of these types of tools (Padilla Beltrán et al. 2014).

It is worth noting that these results were found prior to the COVID-19 pandemic, which forced all sectors to enhance professional development with digital tools, in contrast to the described professional identity and in line with the deficiencies detected in the use and handling of digital tools and ICT in the sports field. Consequently, a study conducted in Spain during 2021, after the COVID-19 pandemic, detected several gaps between what companies need and the skills recent graduates actually possess. According to the survey, this mismatch is largely due to the accelerated implementation of artificial intelligence and job automation (Sato et al. 2021). Although this study does not refer to any specific degree or labor sector, 75% of the surveyed companies reported difficulties in filling job positions because candidates lacked the required skills. Moreover, 76% indicated a mismatch between their needs and the training provided to the new generations in vocational training centers. Specifically, the areas where this gap was most evident were in knowledge of artificial intelligence (94%), Big Data (85%), and digital marketing (82%). The surveyed companies stated that, by 2025, the most important skills for them will be knowledge of Big Data management, digital marketing, environmental regulation, artificial intelligence, and robotics. In the field of Physical Activity and Sports Sciences, Sato et al. (2021), in a mixed work that was both qualitative and quantitative, tried to detect the minimum competencies required for good professional development, starting with the views of specialists in organizations in the sports field. The main findings show that the ability to involve others, curiosity, ethics, and respect for diversity are important competencies that should be possessed by graduates.

Competencies such as solidarity and the use of information and communication technology (ICT) showed significant differences in their valuation before and after the pandemic, indicating a greater appreciation for these competencies after the COVID-19 era. Blázquez et al. (2022) concluded that training gaps are indeed occurring regularly in the area of technology, which, paradoxically, is where more skills are being demanded. Recent studies by Molina-García et al. (2023) evaluated the professional competencies gained in the 4 years of the Sciences of Physical Activity and Sport (SPAS) degree through 13 of the 22 competencies selected as most demanded for graduates of the SPAS degree to have (ANECA 2005). These 13 competencies were decision-making, organizational and planning capacity, oral and written communication, social skills/interpersonal relationships, motivation for quality, analysis and synthesis capacity, problem solving, leadership, work in international contexts, adaptation to new situations, initiative and entrepreneurial spirit, information management capacity, and teamwork. The results indicated that the SPAS degree develops students' professional competencies from the beginning to the end of the degree, with some exceptions, such as oral and written communication, social skills, work context, and teamwork. It is recommended to focus on improving skills such as organizational and planning capacity, decision-making, and adaptation to new situations. To promote the development of these and other variables, due to the positive impact of work experience on the development of professional competencies, it is recommended to introduce more hours of work placements throughout the SPAS degree. Considering these results and current demands, a logical proposal would be to orient vocational training towards these types of competencies. However, given the dynamism of digitalization and its environment, a fixed strategy would not be sufficient, as many skills currently considered necessary could become obsolete in a matter of years due to rapid technological changes (Fuller et al. 2020). Under this premise, *Forbes* magazine has stated that current generations

of graduates entering the professional world should forget the concept of having a job for life and that those currently studying should question whether the skills they are learning at this moment will be relevant when they graduate regardless of whether this learning is in the area of technology or another area (Griffin 2016). Table 3 presents the most valued competencies of Physical Activity and Sports Sciences professionals:

Table 3. Most valued competencies of Physical Activity and Sports Sciences professionals.

Competencies	Authors
Teamwork	(Huaiquilaf-Jorquera et al. n.d.; Aparicio-Herguedas et al. 2021; Tsitskari et al. 2017; ANECA 2005)
Problem solving	(Rodríguez-Gómez et al. 2017; Aparicio-Herguedas et al. 2021; Gruzdev et al. 2018; Fahrner and Schüttoff 2020; ANECA 2005; World Economic Forum 2020)
Entrepreneurial skills and thinking	(Dinning 2017; Fahrner and Schüttoff 2020)
ICT competencies	(González and Wagenaar (Beneitone et al. n.d.); Gobbi et al. 2005; Fahrner and Schüttoff 2020; Blázquez et al. 2022; Fuller et al. 2020; Ojeda-Nahuelcura et al. 2023; World Economic Forum 2020; Cabrera Ramos et al. 2019)
Decision-making	(Rodríguez-Gómez et al. 2017; Gruzdev et al. 2018; Molina-García et al. 2023; ANECA 2005)
Ethical commitment	(Castejón et al. 2018; Sato et al. 2021)
Social and communication skills	(Almedina and Rodríguez 2019; Fahrner and Schüttoff 2020; ANECA 2005)
Autonomous learning	(Ojeda-Nahuelcura et al. 2023)
Creativity	(Dinning 2017; ANECA 2005; World Economic Forum 2020)
Management skills	(Dinning 2017)
Adaptation to new situations	(Molina-García et al. 2023; World Economic Forum 2020)
Critical thinking	(Castejón et al. 2018; ANECA 2005; World Economic Forum 2020)
Curiosity	(Sato et al. 2021)
Management of a second language	(Beneitone et al. n.d.; Gobbi et al. 2005)
Respect for diversity	(Sato et al. 2021)
Leadership	(ANECA 2005; World Economic Forum 2020)

Source: Own elaboration.

Graduates of Physical Activity and Sport Sciences can work in sports management, sports coaching, education, or health coaching (Bernal-García et al. 2018). For sports graduates venturing into the role of sports managers, the acquisition of leadership and management skills is essential (Fahrner and Schüttoff 2020; Case and Branch 2003; Horch and Schütte 2003; Joaquim et al. 2011). These competencies serve as the bedrock for effectively guiding individuals towards achieving shared organizational objectives. Moreover, critical thinking emerges as a cornerstone for the decision-making process, enabling managers to adeptly navigate evolving circumstances and steer the organization towards its intended trajectory. Proficiency in problem solving (Case and Branch 2003; Horch and Schütte 2003) further equips sports managers with the ability to strategically address organizational changes, ensuring adaptability and resilience in the face of dynamic environments.

By honing these competencies, sports managers can proficiently analyze information, evaluate situations from various angles, and make well-founded decisions, fostering a culture of informed decision-making within the organization. Additionally, entrepreneurial skills (Ratten and Jones 2020; Molina-García et al. 2023) and adeptness in leveraging information and communication technology (ICT) (López-Carril et al. 2020; Case and Branch 2003; Molina-García et al. 2023) emerge as pivotal assets, enabling sports managers to differentiate themselves and gain competitive edges. Such competencies empower them to tackle challenges innovatively and devise impactful solutions, thus driving organizational success.

Furthermore, fluency in a second language can significantly broaden the horizons of sports managers, unlocking international opportunities in contexts such as sporting events and international federations. This linguistic proficiency facilitates effective communication and collaboration on a global scale, enhancing the manager's ability to navigate diverse cultural landscapes and expand their organization's reach.

Finally, interpersonal skills, teamwork (Fahrner and Schüttoff 2020; Horch and Schütte 2003; Joaquim et al. 2011), and ethical commitment emerge as paramount attributes, as sports managers frequently collaborate with diverse individuals and navigate complex ethical considerations. Cultivating strong interpersonal relationships fosters a supportive and cohesive team environment, while ethical commitment ensures integrity and accountability in all organizational endeavors. Together, these competencies equip sports managers with the multifaceted skillset necessary to thrive in the dynamic and multifaceted field of sports management. According to Horch and Schütte (2003), sports management is becoming increasingly distinct from coaching and teaching, requiring managers to possess an in-depth knowledge of their specific sports and immerse themselves in the associated cultures. While familiarity with the sport and its culture remains essential for sports managers, expertise in Physical Education and Sport Science is typically not a prerequisite.

For sports graduates venturing into the role of Physical Education professors, cultivating leadership skills and sound decision-making abilities is paramount for effectively managing groups of students (Gallardo 2006; Tul et al. 2019). It is very important to manage and motivate groups of students, especially those who are less motivated to practice Physical Activity and sport. Equally crucial are interpersonal and social skills, enabling professors to engage with students respectfully while fostering an inclusive environment that celebrates diversity and upholds ethical standards (Coates 2012; Harrison et al. 2010; Moynihan et al. 2015), especially given their interaction with teenagers.

Creativity and ICT competencies (Mehmet Ali Ceyhan 2022; Gallardo 2006) play a vital role in developing diverse and engaging activities for class sessions, enriching the learning experience for students. These competencies help Physical Education teachers to innovate in their class sessions. Communications skills are also important (Tul et al. 2015; Gallardo 2006; Tul et al. 2019; Moynihan et al. 2015); they are indispensable for Physical Education teachers as they enable effective instruction, motivation, relationship-building, conflict resolution, and collaboration and the promotion of health and safety in educational settings. Additionally, proficiency in a second language (Kovač et al. 2008; Gallardo 2006), preferably at least at a B1 level, is essential for aspiring Physical Education professors. This linguistic proficiency not only facilitates communication but also broadens opportunities, particularly in multicultural educational settings. Moreover, possessing a higher-level proficiency in languages such as English (B2 or C1) can significantly expand their prospects, opening doors to a wider array of high schools and enhancing their professional versatility.

For sports graduates embarking on careers as sport coaches or trainers, a diverse set of competencies is crucial for them to excel in their roles. First and foremost, leadership skills (Hall et al. 2019; Vella et al. 2010) are vital for coaches to effectively guide and inspire their athletes towards achieving their full potential. A coach's ability to lead not only impacts the team's performance but also fosters a culture of trust, motivation, and accountability among athletes.

Also, interpersonal and social skills play a pivotal role in establishing positive relationships with athletes and fostering effective communication within the team (Potrac et al.

2002, 2016). Building rapport and understanding individual athlete's needs and motivations are essential for creating a supportive and cohesive team environment. Teamwork is not only important within the athlete group but also extends to collaboration with other staff members such as assistant coaches, fitness trainers, and medical professionals (Hall et al. 2019; Potrac et al. 2016). The interdisciplinary nature of coaching necessitates effective teamwork to ensure holistic support for athletes' physical and mental well-being.

Moreover, proficiency in a second language opens doors to international opportunities, allowing coaches to work with athletes from diverse backgrounds or pursue roles in global sporting organizations. Cultural competency and language skills facilitate effective communication and understanding across borders, enhancing the coach's ability to connect with athletes and colleagues worldwide. Problem-solving and decision-making skills (Hall et al. 2019) are indispensable for coaches to navigate the dynamic and often unpredictable nature of sports environments. Coaching has been depicted as an inherently negotiated and debated endeavor (Potrac et al. 2002). From devising strategic game plans to addressing challenges during training sessions, coaches must make informed decisions under pressure to optimize athlete performance and success. In this vein, Potrac et al. (2000) have advocated for the notion that student coaches ought to be developed as intellectuals, possessing the abilities of critical thinking and reflection and being adept at synthesizing theory with practical application, thereby fostering a continuous learning process throughout their professional careers. Ethical commitment is paramount in coaching, as coaches serve as role models and mentors to their athletes. Upholding ethical principles ensures fairness, integrity, and respect within the coaching relationship, promoting positive athlete development both on and off the field.

Furthermore, creativity is quite important, as it helps one to stay abreast of the latest trends and advancements in the sports industry and design better training sessions. Vallée and Bloom (2005) associated the coach's utilization of creativity with crafting engaging training sessions that both challenge and intellectually stimulate athletes. In addition, competence in information and communication technology (ICT) related to fitness apparel and training techniques is important (Mischenko et al. 2021; Liebermann et al. 2005). Leveraging technological tools and platforms enables coaches to access valuable resources, analyze performance data, and tailor training programs to meet the evolving needs of their athletes.

Finally, for sports graduates choosing to pursue careers as sports health educators, a range of competencies is essential to effectively support individuals in improving their health and well-being. Respect for diversity and ethical commitment are paramount in this role, given the diverse range of individuals seeking guidance to enhance their health. Sports health educators must approach each individual using leadership skills (Barry et al. 2012) with sensitivity, recognizing and respecting their unique backgrounds, cultures, and needs. Upholding ethical standards ensures that all interactions and interventions are characterized by integrity and fairness.

Additionally, interpersonal and social skills are foundational for building trusting and supportive relationships with patients (Glaveli et al. 2023; Ku and Hsieh 2020). Effective communication and empathy (Chang and Kim 2003; Chiu et al. 2010; Griban et al. 2022; Barry et al. 2012) are key in understanding patients' concerns and motivations, fostering collaboration in developing personalized health plans. Furthermore, proficiency in information and communication technology (ICT) is crucial for sports health educators to monitor patients' progress and track improvements accurately. Utilizing digital tools and platforms allows for efficient data collection and analysis, enabling educators to tailor interventions and provide timely feedback to patients.

Finally, strong decision-making skills are necessary for sports health educators to assess individual needs, evaluate treatment options, and make informed recommendations. Autonomous learning (Barry et al. 2012; Ku and Hsieh 2020) is also important, as the field of sports health is constantly evolving with new research and advancements. Educators

must proactively seek out continuing education opportunities to stay updated on the latest evidence-based practices and interventions.

6. Implementation and Evaluation of Professional Competencies in the Classroom

If a competency-based learning model is to be implemented, it is important that organizations reformulate their method of implementing competency-based learning (Hortigüela Alcalá et al. 2015). This process entails using active methodologies and reviewing and adapting the assessment approaches applied (Ruiz Morales et al. 2017). In this sense, the effort and interest in applying this model should be aimed at both teachers and students in the educational process.

In most cases, the way in which organizations apply the techniques for evaluating and assessing competences (Pugh and Lozano-Rodríguez 2019) is not the most appropriate. Based on this problem, some alternatives in terms of teaching and development have been established, but these must be linked to a good assessment that specifically measures the development of both generic and specific competences (Villarroel and Bruna 2014; Potrac et al. 2016).

Therefore, it is essential for assessments to effectively reflect competency acquisition and not solely focus on the memorization of knowledge (Sonlleve Velasco et al. 2019). There are studies that affirm that in order to promote and work on generic competences in class, it is key to be able to use pedagogical techniques linked to practice, including working on real projects in collaboration with companies or people from outside the university (Dinning 2017); strengthening and participating in volunteering (Sato et al. 2021); encouraging student participation in extracurricular activities (Sato et al. 2021); tutored learning projects (Castejón et al. 2018; Dinning 2017); early practical experiences (Dinning 2017); the use of portfolios (Castejón et al. 2018); the consolidation and establishment of professional relations with former graduates (Sato et al. 2021); adopting a personal growth approach and using observation diaries; and using case studies (Dinning 2017). Other works (Villarroel and Bruna 2014; Álvarez-Iguain and Torres-Belma 2021; Ortega Sánchez and Gómez Trigueros 2018) propose forming educational alliances related to practical experiences to better satisfy the requirements for access to a job in any sector related to Physical Activity, such as schools, fitness centers, or sports facilities.

In this vein, a study carried out in this environment and directly linked to Physical Education advises directing the training given towards situations more typical of current life so that they can be applied as realistically as possible. This procedure will allow students to apply the knowledge and skills learned in Physical Education to their everyday practice both throughout the learning process and after their degree has been completed (Calatayud Salom 2019).

Recent research regarding the Sciences of Physical Activity and Sport degree by Molina-García et al. (2023) determined that students in their final years and those who have had some work experience during their academic training score higher in the perception of the development of their professional competencies due to their greater experience both outside and within the university. Generally, these practices are not considered as some of the most important when it comes to being prepared for the current job market. However, there are now more and more initiatives and projects aimed at creating an international cooperative framework through the creation of spaces in which students can work in an interdisciplinary and transcultural way. In attempt to explore this dyad, Baker et al. (2017) looked at graduates and employers in different countries, seeking to collaboratively develop learning experiences for undergraduates with the aim of improving graduates' acquisition of generic competences.

In the same vein, a current proposal is for employers and alumni to jointly participate in developing a Physical Education curriculum. What is being proposed is trying to give visibility to the importance of contextualizing the work of the competencies necessary for graduates by those who provide their training at the university (Álvarez-Iguain and Torres-Belma 2021). By proposing implementation strategies and models, the aim is to

introduce an approach to their acquisition that favors the relationship between universities and companies, promotes implementation responsibility, and tries to reduce the imbalance between the employer's expectations and the training of the sports professional (Hinojosa Torres et al. 2020).

The idea of a shared assessment in which students participate individually and collaboratively, based on a system of evaluation criteria previously agreed upon among classroom educational agents, would be much more advisable with the competency-based training model (Tul et al. 2019). In this area, it would be interesting and highly relevant to introduce practical experiences for the student, as well as the use of appropriate techniques that guarantee, to a greater extent, the development of generic competencies (Ortega Sánchez and Gómez Trigueros 2018; Huaiquilaf-Jorquera et al. n.d.), taking into account that they must be accompanied by a training and planning program, as well as a correct evaluation in line with the method applied and specialized in the Sports Science sector. In this sense, some work tools include class diaries, portfolios, self-assessments, and case studies, among other (Pugh and Lozano-Rodríguez 2019).

7. Discussion

Uncertain realities demand a greater emphasis on transferable skills. Therefore, to prepare Sports Sciences graduates for a dynamic and constantly changing future, educators cannot focus solely on the development of specific technical knowledge and skills, and students cannot afford to miss opportunities to learn and continuously develop skills throughout their lives (Mateo Diaz et al. 2019). These changing realities and market demands, to some extent, urge education to help individuals adapt and better understand ever-changing situations (Amadio et al. 2016). An important contextual element to understand why individuals need skills to navigate unpredictability and increasingly complex realities is the need to respond to the challenges of automation and artificial intelligence. These technologies bring not only a different way of working but also a different way of living and interacting socially. The findings compiled in this work could be practically relevant for guiding higher education institutions responsible for training new professionals in the field of sports and Physical Education in the proposal to redefine, at curricular level, its training plans, teaching-learning strategies, and assessment methods. Through this analysis, an effort has been made to provide a comprehensive view of the essential professional competencies for students of the Sciences of Physical Activity and Sport, thus contributing to their academic training and preparation for the challenging and diversified labor environment in this field.

The acquisition and development of professional competencies in the Sciences of Physical Activity and Sport are crucial for preparing highly skilled and ethical professionals for a constantly changing labor market. Through a well-structured educational approach focused on competency development, students can acquire crucial skills for long-term success, provided they are aware of the dynamism and evolution this entails and its link with the labor world, assuming it depends on the current demand in their sector. There is a clear positive correlation between competency and job performance, highlighting the need to measure and assess these competencies objectively to verify job performance, improve training processes, and apply them to selection processes to increase their success (Duclos Bastías et al. 2023). In this sense, there is an opportunity to establish an efficient and strong connection between training and the working society, the market, and job performance.

8. Conclusions

It is essential to promote studies that help the academic world to understand the repercussions of knowing the perceptions of sports graduates and sports employers on the value of generic competences in professional performance. Continuing research into determining the level of attainment and evolution of professional competences that a graduate possesses is key to being able to adjust the methodological approaches to be

applied to bring about change and improve teaching in this area. This would be applicable to the sports science sector and others, as these competences transverse many areas of life.

Specifically for sports graduates, the importance of competencies like teamwork, critical thinking, decision-making, entrepreneurial skills, and ICT competencies has been underscored. However, there is a pressing need to enhance the ICT competencies of future sports graduates, given their self-perceived deficiencies in this area, especially considering the increasing integration of new technologies in the sports industry.

Moreover, while certain competencies may be universally important for all sports graduates regardless of their chosen professional field—be it sports management, sports coaching, education, or health coaching—it is essential to recognize that the relative importance of these competencies may vary depending on the specific career path. For instance, while leadership and management skills may be crucial for those pursuing sports management roles, practical coaching experience and communication skills might take precedence for aspiring coaches.

The methodologies employed at the university level play a pivotal role in fostering these competencies and preparing sports science graduates to successfully navigate the sports sector. By integrating hands-on experiences, real-world simulations, and interdisciplinary approaches into the curriculum, universities can better equip students with the practical skills and knowledge needed to excel in their chosen careers within the sports industry. Additionally, providing opportunities for internships, mentorships, and industry partnerships can further enhance students' readiness for the professional landscape they will encounter upon graduation. Overall, a holistic and tailored approach to education is key to ensuring that sports graduates are well prepared and equipped to make meaningful contributions to the dynamic and evolving field of sports.

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