

# PODIUM

Journal of Science and Technology in Physical Culture

EDITORIAL LIBERCIENCIA

Volume 18  
Issue 3

2023

University of Pinar del Río "Hermanos Saíz Montes de Oca"







*Translated from the original in spanish*

*Original article*

## ***Physical Education from Education for Sustainable Development***

*La Educación Física desde la Educación para el Desarrollo Sostenible*

*Educação Física desde a Educação para o Desenvolvimento Sustentável*

Zulmi Consuelo Tenorio Polo<sup>1\*</sup>  , Vilma María Pérez Viñas<sup>2</sup>  ,  
Carmen de las Nieves Ramos García<sup>2</sup>  , Antonio García García<sup>2</sup> 

<sup>1</sup>NGO Capirona Research and Development. Peru.

<sup>2</sup>University of Pinar del Río "Hermandos Saíz Montes de Oca", Pinar del Río.

\*Corresponding author [carmen.ramos@upr.edu.cu](mailto:carmen.ramos@upr.edu.cu)

**Received:** 06/22/2023.

**Approved:** 07/18/2023

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### **ABSTRACT**

Physical Education is present in the curricula of educational systems in almost all countries and brings recognized benefits to the comprehensive education of students, since in current visions it is at the service of human development; however, the predominant teaching-learning approaches ignore the fundamental postulates of Education for Sustainable Development and emphasize only the environmental dimension. Hence, this article aimed



to make an approach to the relationship between Physical Education and Education for Sustainable Development, from the different trends, the contributions to the Sustainable Development Goals and the competency link between both. Documentary analysis was applied, in particular content analysis, in order to form the internal structure of the information from inference, based on non-quantifiable data and complementary methods were used such as analysis, synthesis, deduction-induction, historical analysis logic and comparative education. Among the results obtained were the determination of a new trend in Physical Education, associated with Education for Sustainable Development, the legal framework that bases the relationship between both areas was identified, the conceptions of Physical Education were determined, from Education for Sustainable Development and specific, potentially pedagogical goals of the Sustainable Development Goals were found that link the competencies between them.

**Keywords:** competencies, physical education, education for sustainable development, trends.

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## **RESUMEN**

La Educación Física está presente en los currículos de los sistemas educativos en casi todos los países y reporta reconocidos beneficios a la educación integral de los estudiantes, pues en las visiones actuales está al servicio del desarrollo humano; sin embargo, los enfoques de enseñanza-aprendizaje predominantes obvian los postulados fundamentales de la Educación para el Desarrollo Sostenible y enfatizan solo en la dimensión ambiental. De ahí que este artículo tuvo como objetivo realizar una aproximación a la relación entre la Educación Física y la Educación para el Desarrollo Sostenible, desde las diferentes tendencias, las aportaciones a los Objetivos de Desarrollo Sostenible y el vínculo competencial entre ambas. Se empleó el análisis documental, en particular el análisis de contenido, en función de conformar la estructura interna de la información desde la inferencia, a partir de datos no cuantificables y se emplearon métodos complementarios como el análisis, la síntesis, deducción-inducción, el análisis histórico lógico y la educación comparada. Entre los resultados obtenidos estuvieron la determinación de una nueva



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tendencia de la Educación Física, asociada a la Educación para el Desarrollo Sostenible, se identificó el marco legal que fundamenta la relación entre ambas áreas, se determinaron las concepciones de la Educación Física, desde la Educación para el Desarrollo Sostenible y se encontraron metas específicas, potencialmente pedagógicas de los Objetivos de Desarrollo Sostenible que vinculan las competencias entre ellas.

**Palabras clave:** competencias, educación física, educación para el desarrollo sostenible, tendencias.

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## RESUMO

A Educação Física está presente nos currículos dos sistemas educacionais de quase todos os países e traz benefícios reconhecidos à formação integral dos alunos, pois nas visões atuais está a serviço do desenvolvimento humano; Contudo, as abordagens de ensino-aprendizagem predominantes ignoram os postulados fundamentais da Educação para o Desenvolvimento Sustentável e enfatizam apenas a dimensão ambiental. Assim, este artigo teve como objetivo fazer uma abordagem sobre a relação entre Educação Física e Educação para o Desenvolvimento Sustentável, a partir das diferentes tendências, das contribuições para os Objetivos de Desenvolvimento Sustentável e do vínculo de competências entre ambas. Utilizou-se a análise documental, em especial a análise de conteúdo, para formar a estrutura interna das informações oriundas da inferência, com base em dados não quantificáveis, e foram utilizados métodos complementares como análise, síntese, dedução-indução, análise histórica lógica e comparativa. Educação. Entre os resultados obtidos estiveram a determinação de uma nova tendência na Educação Física, associada à Educação para o Desenvolvimento Sustentável, foi identificado o quadro legal que fundamenta a relação entre ambas as áreas, foram determinadas as concepções de Educação Física, desde a Educação para o Desenvolvimento Sustentável e específicas, foram encontradas metas potencialmente pedagógicas dos Objetivos de Desenvolvimento Sustentável que vinculam as competências entre eles.



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**Palavras-chave:** competências, educação física, educação para o desenvolvimento sustentável, tendências.

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## INTRODUCTION

Physical Education (PE) is a subject present in most of the curricula of the educational systems of almost all countries. The benefits they bring to the comprehensive education of students have been widely addressed (Baena, *et al.*, 2021; Fröberg and Lundvall, 2021; Tito, 2018 and Zagalaz *et al.*, 2001).

The International Charter proclaimed by UNESCO (2015) places PE, physical activity and sport at the service of human development. Here is a meeting point between PE and Education for Sustainable Development (ESD), since there can be no human development for present and future generations without practices that guarantee sustainability.

However, the predominant approaches in the teaching-learning process (PEA in Spanish) of PE ignore the fundamental postulates of ESD. The most addressed dimension is the environmental one, which has consequently given rise to curricular environmentalization, manifested in the treatment of environmental education in PE and Physical Culture (Gómez, *et al.*, 2023; Millán, *et al.*, 2021; Negrín, *et al.*, 2019; Tejada, *et al.*, 2021). Likewise, the ESD competencies have not been sufficiently treated in PE classes, in this regard emphasized the Peruvian Tito (2018), but only in citizen competencies.

Given this overview, this article aims to make an approach to the relationship between PE and ESD, from different trends, the contributions to the Sustainable Development Goals and the link between the competencies of both areas.

## MATERIALS AND METHODS

To determine the trends of the PEA of the PE, the contribution to the Sustainable Development Goals and the link between the competencies of the PE and the ESD, documentary analysis was used, in particular content analysis, in order to form the internal



structure of information from inference, based on non-quantifiable data. In addition, complementary methods were used such as analysis, synthesis, deduction-induction, logical historical analysis and comparative education that allowed, from the application of the descriptive analysis approach, to assume as investigative tasks:

- Identify as data the texts related to the PEA of the PE, the ESD and the relationship between the two.
- Determine as units of analysis:
  - Written texts related to PE, the PEA of PE, trends and key competencies in this area.
  - Written texts related to ESD, the dimensions and competencies for sustainable development, the most influential approaches and the relationship with PE.
- Determine as a context unit:
  - Texts by authors and legal regulations referring to PE and ESD.

## **RESULTS AND DISCUSSION**

### *On the trends in the teaching-learning process of Physical Education*

It was found that the most accepted and replicated at the international level, referring to the nomenclature and the PEA of the PE, were the following:

Vázquez (1989, p. 64) refers to the trends based on precedents from the 18th and 19th centuries, which are assumed by Zagalaz (2001) as:

1. Physical-sports education: the acrobatic body.
2. Psychomotor education: the thinking body.
3. Body expression: the communicating body.



In their analysis, Zagalaz et al. (2001) place these trends in a first stage of development, in which they include a fourth trend identified by Parlebás (1974) as:

#### 4. Sociomotor skills.

In the second stage, these researchers locate the most present currents, from the following assumptions:

Physical education can modify the motor behavior and behavior of the individual, that is, his personality and create better life habits and complete his relationship process, so it has a broad framework of action in all areas of man's life. (p. 287)

1. Central European current: composed of the Austrian School Gymnastics, the Association of Graduates in Physical Education of the Catholic University of Leuven and the German School. From this current, the so-called traditional teaching model is derived, which is made up of gymnastics, games and includes sports such as athletics, swimming and basketball as means of PE.
2. Basic motor skills current: this is a current originated in the United States, essentially made up of four approaches: the perceptual-motor approach, the neurological organization approach, the dynamic approach, and the cognitive models that link intellectual functions and academic operations with the movement. This trend gave rise in the seventies and eighties to the integrative and behavioral models, with strong influence in Spain, according to Zagalaz *et al.* (2001).
3. Psychomotor current: corresponds to that mentioned by Vázquez (1989) Psychomotor education: the thinking body, from which the psychomotor model is derived.
4. PE current for students with special educational needs: this current has great influence on working with students with specific needs, which is why "(...) it is worked with Adapted Physical Education Didactics" (Zagalaz, *et al.*, 1989, p. 269). Adapted physical activity includes not only PE with this special teaching, but also sport, recreation, dance, creative arts, nutrition, medicine and rehabilitation; it has



great impact at an international level and, from a social point of view, various authors agree that the Paralympics and other parasports events are a reflection of its relevance and pertinence. This current is nourished by the social, pedagogical, didactic, legal, among others, and inclusive postulates and positions.

5. Current of expression and communication: corresponds to the trend of Vázquez (1989) referring to bodily expression: the communicating body. It is produced through the rhythmic model that includes rhythmic gymnastics, aerobics, jazz gymnastics, popular and ballroom dances. In Cuba it has a great socio-community impact in massive socio-motor events such as dances and physical exercises, among which Cubaila can be mentioned.
6. Multisport current: from a sporting point of view, it is originated in England. According to Parbelás (1974), it assumes three categories in multi-sport teaching, individual sports, sports with an opponent (with or without contact) and team sports. In Europe this current reflects political and economic pollution and also violence. In the opinion of Zagalaz et al. (2001) in this trend, "(...) behavioral, analytical, repetitive, directive teaching methods, focused on the subject and on the teachers and not on the students" (p. 270) are emphasized. Furthermore, there are sexist, discriminatory and exclusive behaviors that until today predominate in various contexts that include elite sport at an international level. In opposition to these precepts, the humanist model emerges, still in popularity, which exalts sport as an educational means to form solidarity values such as camaraderie and cooperation, with an important pedagogical basis in peace education.
7. Alternative current: it arises from certain sporting practices, mainly in the United States, particularly on the west coast, in the state of California as a response to tradition and in line with postmodernism. Among the activities called adventure, risky or extreme sports are aerobics, physical fitness, the body building and rowing, among many others. More related to the Californian coasts are mainly the mountain bike, surfing, skateboarding, rafting, bungee jumping and paragliding. With a





constructivist basis, this current emphasizes the values of postmodernity, respect for female equality, ecological awareness, complexity, uncertainty and risk.

8. Current of activities in nature: also with a constructivist basis, it is developed through constructivist and cultural models, with greater force at the end of the 20th century, with the influence of ecological approaches. Among the most common activities are hiking, camping, golf, swimming, skiing, canoeing, climbing, paragliding, orienteering and survival. Here it is appreciated the need for environmental education that allows the confluence of man and nature, in an informed and culturally appropriate way.
9. Current of physical activity and health: increasingly influential, it deals with the emergence of the practice of physical activities as a habit for a healthy life in the current general context influenced by stress, lifestyles that are not always healthy and aging population, among other elements. In general, it requires greater methodological contributions, contextualized, pending the results and the process in general. It is based on maintenance and reactivation models (Zagalaz *et al.*, 2001).
10. Current of physical activity in older people: like the previous one, it arises from the need to pay attention to an increasingly larger population sector, given the increase in life expectancy and the consequent aging of the population. Its objective is to improve the quality of life, from physical activities adapted to the people and the environments in which they operate, in order to avoid the appearance of diseases at an age whose cycle is increasingly lengthening, and along with this, it is required greater attention and physical education, for a healthy and harmonious old age (Idem).
11. Current of physical activity and tourism: it is a recent current, which is based on the cultural educational model (Idem). It arises as a result of socioeconomic development and is based on the assumption that sport is part of culture; to learn about some cultural aspects, physical activities are carried out, such as cycling, hiking and walking, among others.



The introduction of these activities in the school curriculum, due to its interdisciplinary and innovative nature, according to Zagalaz *et al.* (2001) enable the development of social, sociomotor and cognitive skills. The cultural educational model also emerges from this trend.

12. Current of body worship: this current originates in Europe, in the understanding of the concept of the body; although its antecedents are located in the Middle Ages, ancient Greece and other ancestral cultures. According to Zagalaz *et al.* (2001) the EF has defended the budget of a healthy mind in a healthy body, understood in the contemporary world in terms of the development of motor skills, the improvement of health, physical condition, recreation and socialization. It is based on the maintenance educational model.
13. Current of PE in transversality: PE has a transversal nature in the school curriculum in all educational subsystems. In this way, it intervenes in the development of knowledge, skills and values, physical development, health care, satisfactory emotional relationships, attitudes of collaboration and consensus, and group and community social construction. This current is very in harmony with ESD, health education, peace education, among other transversal axes.

The analysis of what refers to the current of PE in transversality and of the most current and relevant trends in education, in general and of PE, in particular, offers sufficient elements to propose the trend or current of PE for ESD, based on the educational model of sustainability and curricular sustainability that goes beyond the environmentalization of the curriculum, since it is not about introducing environmental content into teaching, but rather guaranteeing training at all levels, of students and can establish relationships between environmental, social, economic and cultural aspects to make informed, sustainable and socially responsible decisions.

This current is justified by the changes that have occurred in the PEA of PE and the research results that address PE from the ESD that have been found in Baena *et al.* (2023), Baena *et al.* (2021), Baena and González (2022), Brandt *et al.* (2019), Fröberg and Lundvall (2021), Negrín *et al.* (2019), Tejeda *et al.* (2021) and Tito (2018), among others.



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*About Physical Education and Sports from Education for Sustainable Development*

In this regard, references were found that we will present in sections a and b.

a) About the legal framework of the FE from the EDS:

Numerous references have been found, among the most relevant:

- Transforming our world: 2030 Agenda for Sustainable Development, Resolution adopted by the General Assembly on September 25, 2015 (United Nations, 2015).
- The 2030 Agenda and the Sustainable Development Goals: an opportunity for Latin America and the Caribbean (United Nations, 2018).
- International Charter of physical education, physical activity and sport (UNESCO, 2015).
- Learning to transform the world: key competencies in Education for Sustainable Development. In Issues and trends in education for sustainable development (Rieckmann, 2018).
- The science of sustainability.

This legal framework offers a generalizing and contextualized vision of educational paths. The science Sustainability arises to understand the increasingly complex system made up of human societies and the natural systems with which they interact and of which they are a part, to make possible the systemic treatment, without reductionism or forgetfulness, of problems that arise. they enhance each other.

This global treatment of the interactions between society and natural systems imposes three fundamental characteristics on the science of sustainability: interdisciplinary, transdisciplinary and with a global perspective (both global and local), according to Gil and Vilches (2014).



The process of curricular sustainability requires a reorganization of the curriculum. It involves working to promote the development of generic sustainability competencies, through new forms of knowledge construction and the development of procedures, from a more holistic and integrative vision of doing in the methodology and evaluation of PE. ESD or education for sustainability shares the features of any quality educational experience and incorporates into the PEA of the PE the values of sustainable development:

- It is action oriented. Consciousness alone does not produce changes. Beyond raising awareness, ESD must promote commitment.
- Assumes participation in decision-making, including those related to the environment and the way of learning.
- Adopts an interdisciplinary and holistic approach.
- It uses multiple channels and didactic resources to jointly build knowledge, which goes beyond the simple transmission of knowledge.
- It is based on values, so that these are made explicit, discussed and can be selected in accordance with sustainable development.
- Develops critical thinking, faces dilemmas and is able to find solutions to problems.
- It is significant for the learner and the community, by integrating didactic experiences into personal and professional life.
- It considers both the local and global scales when approaching development problems.

These budgets are in line with the articles emanating from the International Charter of PE, physical activity and sport (UNESCO, 2015):

Article 1. The practice of physical education, physical activity and sport is a fundamental right for everyone.



Article 2. Physical education, physical activity and sport can bring a wide range of benefits to individuals, communities and society in general.

Article 3. All stakeholders must participate in creating a strategic vision that determines policy options and priorities.

Article 4. Physical education, physical activity and sport programs must encourage lifelong participation.

Article 5. All interested parties must ensure that their activities are economically, socially and environmentally sustainable.

Article 6. Research, empirical data and evaluation are essential components for the development of physical education, physical activity and sport.

Article 7. Teaching, training and administration activities related to physical education, physical activity and sports must be entrusted to qualified personnel.

Article 8. It is essential that physical education, physical activity and sports have adequate spaces, facilities and equipment.

Article 9. Security and risk management are necessary conditions for a quality offer.

Article 10. The protection and promotion of the integrity and ethical values of physical education, physical activity and sport must be a permanent concern for everyone.

Article 11. Physical education, physical activity and sport can play an important role in achieving the goals related to development, peace and post-conflict or disaster situations.

Article 12. International cooperation is a prerequisite for increasing the scope and effects of physical education, physical activity and sport.

More recently, the results presented in the report *Sport as a tool for sustainable development. Conceptual introduction and review of experiences. PART 1*, from the Ibero-American General Secretariat (2019, p. 17) confirm the impact of PE on the following social aspects:



- Improve physical and mental health and well-being and encourage healthy behavior change.
- Promotes education and skills for better youth employability to achieve greater access and completion of education, development of skills and creation of employment avenues.
- Promotes gender equality, empowerment and safety of women and girls.
- Promotes the social integration of people living in marginalized contexts and rural areas.
- Enhances inclusion and social capital by creating communities that embrace ethnic, cultural and physical differences.
- It supports the creation of peaceful and cohesive societies when resolving conflicts, promotes the construction of community peace and creates safe spaces to reduce crime and delinquency.

b) About the conceptions of PE from ESD:

In Latin America, research was found that, although they consider the current educational context based on the Sustainable Development Goals, they do not assume them in the PEA. In Peru, Freundt and Guerrero (2021) recognize that there is little "(...) research on physical education and its relationship with comprehensive development and student learning in the Peruvian context" (s/p); For his part, Tito (2018) states that:

Developing citizenship skills from the Physical Education class implies completely detaching oneself from traditional educational schemes, and generating a new vision of teaching-learning, allowing students to participate in their teacher training. Teacher-student relationships must be characterized by dialogue and not imposition; Teachers must be able to recognize the abilities and limitations that their students have, in order to achieve significant learning. (s/p)



The analysis of these results allowed to appreciate the predominance of traditionalist positions focused on the teacher as the main protagonist of the PEA of the PE, a rigid curricular design, as well as a limited influence of the students and the socio-community context in which they interact.

It was also found that, in Cuba, the most used approach is the environmentalist one, derived from the curricular environmentalization that focuses on the inclusion of environmental education in the PEA of PE, Sports and Physical Culture, as reflect the research of Negrín et al. (2019), Millán et al. (2021), Tejada et al. (2021) and Gómez et al. (2023), among others.

However, in Europe PE is emphasized through ESD, see Baena et al. (2023), Baena and González (2022), Brandt et al. (2019) and Fröberg and Lundvall (2021), among the most relevant.

Below are the most significant findings:

- In relation to the terminology used in ESD, the most frequent terms are sustainability, sustainable development, ESD, Sustainable Development Goals and Agenda 2030, which according to Baena et al. (2023) "(...) they are not synonyms nor can they be used as such" (p.3).
- PE teachers do not have a clear conception of the concept of ESD and Sustainable Development Goals, they emphasize only the environmental aspect and ignore the other dimensions (Baena, *et al.*, 2023). This position is shared by Brandt et al. (2019) when stating that it is a problem of the educational community in general.

In search of achieving the necessary terminological coherence, Baena et al. (2023) propose a definition of PE for ESD as learning experiences and situations focused on the use of PE to contribute to the human capacity to be sustainable, related to each other and to the development of an effective and sustainable environment from the economic, social and environmental dimension.



Regarding this definition, it can be said that the economic, social and environmental dimensions are the most internationally recognized, in addition, the main cores referring to learning experiences and situations are shared, based on sustainability from PE; which advocates constructive social relations. The direct contribution of FBs to the Sustainable Development Goals, according to Baena et al. (2021) is that a direct relationship is established between the pedagogical potential of both.

Specific, potentially pedagogical, goals of the Sustainable Development Goals from Physical Education, grouped by dimensions of sustainable development

Goals related to the social dimension:

3.4 Reduce premature mortality and promote mental health and well-being.

3.5 Reduce substance abuse.

3.6 Reduce by half the number of deaths and injuries from traffic accidents worldwide.

3.7 Guarantee universal access to sexual and reproductive health services.

4.1 Guarantee that all boys and girls complete primary and secondary education, which must be free, equitable and of good quality.

4.5 Reduce gender disparities in education and equality of vulnerable people.

4. to Improve school facilities.

5.1 Eliminate discrimination against all women and girls.

5.2 Elimination of all forms of violence against all women and girls in public and private spheres.

5.5 Increase the participation of women and equal opportunities.

16.7 Guarantee inclusive, participatory and representative decisions that respond to needs.

Goals related to the economic dimension:





4.4 Improve skills for access to employment, decent work and entrepreneurship.

5. c Promote gender equality and the empowerment of women and girls.

8.3 Develop entrepreneurship, creativity and innovation, and promote the formalization and growth of companies.

8.9 Promote sustainable tourism that creates jobs and promotes local culture and products.

10.2 Promote the social, economic and political inclusion of all people.

10.3 Guarantee equal opportunities and reduce inequality of results.

Goals related to the environmental dimension:

4.7 Improve knowledge to promote sustainable development (e.g., sustainable lifestyles).

12.1 Encourage sustainable consumption and production.

12.2 Manage natural resources in a sustainable and efficient manner.

12.5 Significantly reduce waste generation.

12.8 Ensure information and knowledge relevant to sustainable development.

13.1 Strengthen adaptive capacity to climate-related risks and natural disasters in all countries.

13.3 Improve education, awareness and human and institutional capacity for climate change mitigation, adaptation and early warning.

The identification of these goals of the Sustainable Development Goals in connection with PE, offers a vision that goes beyond the traditional curriculum, by considering the training of students in a sustainable social environment.

The relationship between the specific competencies of PE and the competencies for ESD is based on the eight competencies for sustainable development proposed by Rieckmann (2018):



Systems thinking competency: recognize and understand relationships, to analyze complex systems, think about how systems are integrated within different domains and scales, and deal with uncertainty.

Anticipation competency: understanding and evaluating multiple future scenarios - the possible, the probable and the desirable - to create one's own visions of the future, apply the precautionary principle, evaluate the consequences of actions and deal with risks and changes.

Normative competence: understand and reflect on the norms and values that underlie our actions and negotiate the values, principles, objectives and goals of sustainability in a context of conflicts of interest and mutual concessions, uncertain knowledge and contradictions.

Strategic competence: Collectively develop and implement innovative actions that promote sustainability locally and beyond.

Collaborative competence: learning from others, to understand and respect the needs, perspectives and actions of others (empathy), understanding, identifying with and being sensitive to others (empathic leadership), addressing group conflicts and facilitating collaborative and participatory problem solving.

Critical thinking competence: question norms, practices and opinions, to reflect on one's own values, perceptions and actions and adopt one's own position, in the discourse of sustainability.

Self-awareness competence: the ability to reflect on one's role in the local community and in global society, to constantly evaluate and encourage one's own actions, and to deal with personal feelings and desires.

Integrated problem-solving competency: Apply different problem-solving frameworks to complex sustainability problems and devise equitable solution options that foster sustainable development and integrate the aforementioned competencies.



In the content analysis carried out, it was found that Baena *et al.* (2023) established a link between ESD competencies and specific PE competencies. Figure 1 presents these relationships, which appear pertinent, relevant and novel. It is not presented here as a regulation to follow, but as a guiding basis for didactic approaches in the area of EF, from sustainable pedagogical models.

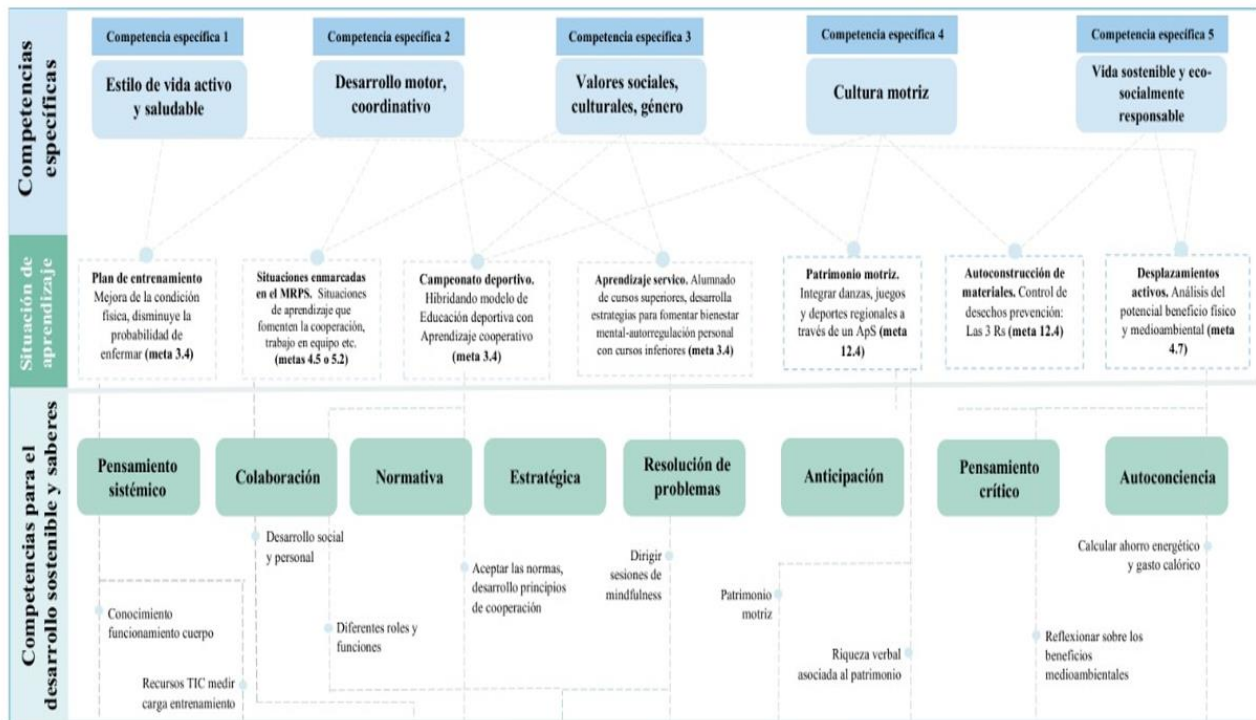


Fig. 1. - Relationship between the specific competencies of Physical Education and the competencies for sustainable development

Source: Adapted from Baena et al. (2023)

These findings allow to approach the curricular design of the EE and the PEA, properly speaking, from precepts far from the traditional models that still persist. It is not about imposing decontextualized ways of teaching and learning and it is not ignored that changes are difficult to accept; however, potential has been found in the positive perceptions of PE teachers that favor sustainable development and the fulfillment of the objectives and goals of sustainable development and the importance and relevance of PE to respond to social demands, as expressed by Baena. *et al.* (2023):



PE teachers positively value the need to integrate the work of the SDGs in their sessions, but they have difficulties in truly putting it into practice. With the ultimate goal of facilitating this work, it is suggested to prioritize pedagogical models that have demonstrated their effectiveness in PE (service learning, self-construction of materials, personal and social responsibility model, cooperative learning, sports education, among others) and contextualize them in situations of learning that contribute to the achievement of specific SDG goals. (p. 11)

## CONCLUSIONS

By way of conclusions, this article addressed the importance and benefits of PE, the most influential trends were identified and a new trend or current was determined: PE for ESD, the legal framework that bases the relationship between both was identified. areas, the conceptions of PE were determined, from the ESD and specific, potentially pedagogical goals of the Sustainable Development Goals were found that link the competencies between them.

With the findings presented, a reference framework is established that surpasses the predominant environmental approaches, in relation to ESD for the PEA of the EF.

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***Conflict of interests:***

The authors declare not to have any interest conflicts.

***Authors' contribution:***

The authors have participated in the writing of the work and analysis of the documents



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