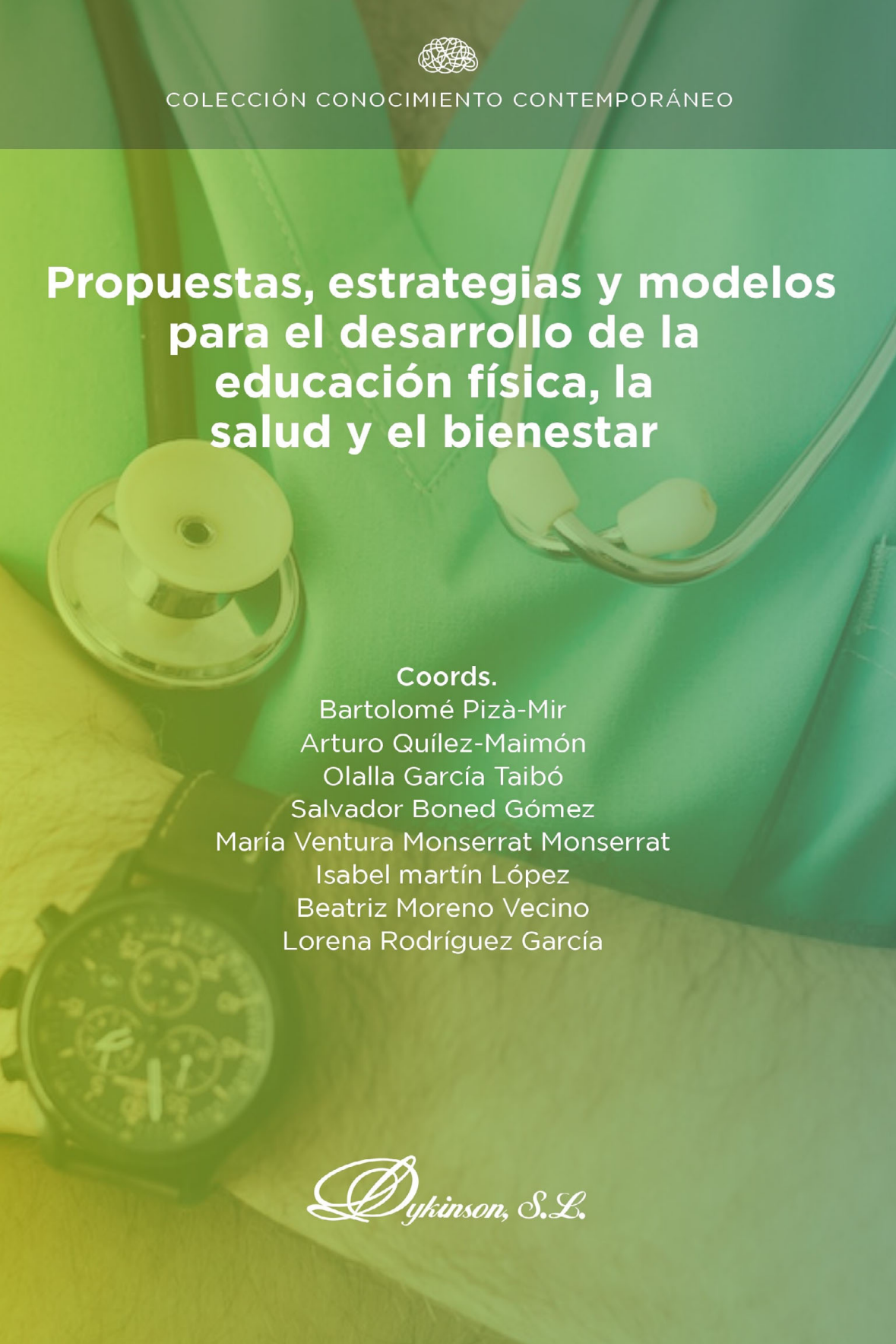

COLECCIÓN CONOCIMIENTO CONTEMPORÁNEO

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Coords.

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SALUD Y BIENESTAR

SEEKING THE DEVELOPMENT OF THE ENVIRONMENTAL DIMENSION THROUGH PHYSICAL EDUCATION. PRACTICAL PROPOSALS FROM THE PERSPECTIVE OF SUSTAINABLE DEVELOPMENT

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1. INTRODUCTION. IT'S IN OUR DNA TO DEFEND THE ENVIRONMENT

Over recent decades, the scientific community has conclusively documented the drastic transformations that human activity has inflicted on the global environment (Romanello et al., 2022). These alterations, ranging from carbon dioxide-induced global warming to biodiversity loss due to habitat degradation, pose a significant threat to the planet's ecological stability and, therefore, to human well-being and survival (Fernández, 2013; IPCC, 2021). Research in fields such as climatology, ecology, and oceanography has provided alarming data on the magnitude and speed of these changes (Sachs et al., 2017). The increasing frequency and intensity of extreme weather events, ocean acidification, and rapid glacier decline are just some of the tangible manifestations of an unprecedented environmental crisis (Jeffry et al., 2021). Therefore, combatting this crisis has long demanded a multidisciplinary and coordinated response addressing both the underlying causes and the emerging symptoms of this global disturbance (United Nations, 1992).

However, beyond technological and political solutions, it is crucial to address a fundamental but often overlooked dimension: human awareness and behavior. Anthropocentrism, understood as the belief that humanity is at the universe's center and that all other entities and phenomena exist primarily for its benefit, has been identified by various studies as a conceptual root underpinning many contemporary unsustainable practices (Lewis & Maslin, 2015). In this context, the significance of education and experiential training emerges as essential tools to reshape our relationship with the environment (UNESCO, 2017). Education not only conveys knowledge but also shapes values, attitudes, and behaviors. Herein lies the central proposal of this work: the potential intersection of physical exercise, physical education, and environmental awareness. Although at first glance these areas may seem disconnected from the environmental realm, deeper analysis reveals significant opportunities to integrate ecological principles into the practice and teaching of physical exercise. When appropriately contextualized, these activities can serve as experiential bridges connecting individuals directly and tangibly to their surroundings, facilitating the internalization of environmental concepts and values (Baena-Morales & González-Víllora, 2022). This approach offers not only an innovative means to address environmental awareness within physical education but also aligns with several Sustainable Development Goals (SDGs) proposed by the United Nations (United Nations, 2015). Therefore, this work will explore the validity, applicability, and potential impact of this proposal within the broader context of global efforts to address the current environmental crisis.

Firstly, it's essential to clarify that when discussing sustainable development, we refer to a multidimensional term. The environmental dimension, although pivotal, is just one facet of the triptych that composes sustainable development (The Brundtland Commission, 1987; Washington, 2015). Alongside it exist the social and economic dimensions, both equally crucial to achieving a lasting equilibrium in our relationship with the planet. While the environmental dimension focuses on protecting and preserving our natural resources and biodiversity, the social aspect centers on ensuring human needs, such as health,

education, and justice, are met equitably. Concurrently, the economic dimension aims to ensure productive activities are viable in the long run and that the benefits generated are fairly distributed. This three-dimensional framework guides us towards a future where present and future generations can harmoniously coexist with the environment (Purvis et al., 2019). Centered solely on the environmental perspective, humanity's relationship with the environment has seen significant changes throughout history. From an evolutionary standpoint, early humans lived in close symbiosis with nature, relying directly on it for survival. However, with the advent of agriculture and subsequent industrialization, this relationship began to take on a more dominant and exploitative character (Mohammadi et al., 2015). Ancient civilizations, from Mesopotamia to the Mayans, displayed profound respect and admiration for nature's forces. The sun, moon, rivers, and mountains were often deified and worshipped. These cultures inherently understood the natural balance and the need to live in harmony with their environment (Barrera-Bassols & Toledo, 2005). Centuries later, during the Industrial Revolution, a turning point emerged. With the introduction of machinery and advanced techniques, production and consumption surged. Cities grew, and vast land expanses were transformed to meet a growing population's demands. Nature began to be seen more as a resource to exploit than an entity with which to coexist. Air and rivers became polluted, and vast forested areas were cleared, leading to ecological consequences still resonating today (Cheng et al., 2021).

By the 20th century, an awakening of ecological consciousness ensued, as the detrimental effects of unchecked industrialization became evident. The scientific community started documenting and warning about phenomena like global warming, biodiversity loss, and soil degradation. This period also witnessed the emergence of environmentalist movements, organizations, and activists advocating for environmental protection (Sessions, 1987). The 1960s and 1970s, in particular, saw a surge in ecological consciousness, marked by the celebration of the first Earth Day in 1970 and influential works such as Rachel Carson's "Silent Spring" (Carson, 1996). Today, we find ourselves in a quest for balance, where environmental awareness has evolved from mere

conservation towards a more holistic sustainable development approach (Olsson et al., 2016). The consequences of climate change, soil degradation, and biodiversity loss are no longer abstract phenomena but tangible realities affecting millions (Romanello et al., 2022). International agreements, like the Paris Agreement, reflect a global commitment to address these challenges (Falkner, 2016).

Thus, the evolution of environmental consciousness stands as testimony to the adaptive and reflective nature of humanity. However, at this pivotal juncture in our trajectory, there is a burgeoning understanding that our future hinges on our ability to coexist and collaborate with the natural world. Environmental consciousness is not solely the result of the accumulation of scientific data and facts; at its core, it also entails a profound shift in human perceptions, attitudes, and values towards the environment. This transformation, while rooted in scientific principles, is heavily influenced by both individual and collective psychology, as well as sociocultural constructs. Thus, we can intuit the notable significance of education in this respect (UNESCO, 2017).

From a psychological standpoint, humans possess an innate proclivity towards nature, a phenomenon termed "biophilia." E.O. Wilson, the biologist who popularized this term, posits that evolution has shaped our psyche to harbor affinity for the natural world, owing to our history as beings intrinsically linked with nature (Barbiero & Berto, 2021). Nature experiences, such as walking through a forest or hearing bird songs, have measurable impacts on our mental health (Hansen et al., 2017). Such experiences can alleviate stress, enhance concentration, and foster a sense of well-being. Moreover, perceiving the beauty and awe of the natural world can trigger profound emotional responses that bolster our connection and concern for the environment (Rajoo et al., 2020). Throughout history, different cultures have crafted varied narratives and symbolisms surrounding nature. While some cultures have developed cosmologies that view nature as sacred and worthy of reverence, others have embraced more utilitarian perspectives, seeing the environment primarily as a resource. These cultural constructs play a pivotal role in how communities interact with their surroundings. For instance, in many indigenous cultures, the land is not merely seen as a material

asset but as a living entity deserving respect and protection. These beliefs, entrenched in traditions and rituals, directly influence conservation practices and sustainable resource usage (Welch et al., 2021).

Nevertheless, it is imperative to begin early. We must consider that humans are socialized into values, beliefs, and attitudes through education and social interactions. Educational curricula that incorporate environmental education not only impart knowledge but should also cultivate pro-environmental values and attitudes (Evans et al., 2017). Socialization in settings where sustainability is cherished can positively influence the formation of environmental consciousness. Therefore, at its core, environmental awareness is an amalgamation of psychological, cultural, and social influences (Baena-Morales & Fröberg, 2023). To nurture and strengthen it, it's essential to acknowledge and address this intricate and multifaceted interaction, recognizing that each individual and community has its unique relationship with the natural world, based on a rich tapestry of experiences, beliefs, and values. It is here, at this juncture, that we frame the analysis of this work, exploring the value of Education and specifically a unique subject like Physical Education in the development of environmental consciousness.

The global environmental crisis demands multifaceted solutions, and in this context, education emerges as a pivotal tool for fostering a deeper environmental consciousness (Rieckmann et al., 2017). Education not only imparts knowledge but also shapes attitudes, skills, and values, positioning itself as a catalyst for change. The United Nations Sustainable Development Goals (SDGs), with their 169 specific targets, underscore the quintessential role of education in several of its objectives. Let's examine how education aligns with these goals and how it can drive a more deeply rooted environmental consciousness.

Target 4.7 emphasizes: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development." Within this target, it's paramount to incorporate

environmental consciousness in educational curricula. This implies integrating the study of ecosystems, biodiversity, and sustainable practices in teaching from primary to tertiary education. Here, Target 6.b underscores: "Support and strengthen the participation of local communities in improving water and sanitation management." Education plays a crucial role in understanding the importance of water in ecosystems and human life. Through education, we can teach future generations to value and safeguard our water resources, understanding the nexus between consumption, water conservation, and ecological health. Within this goal, Target 13.3 stipulates: "Enhance education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning." Education is a primary means to inform and raise awareness about the causes and consequences of climate change, encouraging the adoption of more sustainable and conscious behaviors. It might also be pertinent to discuss SDG 15 Life on Land, where Target 15.3 aspires to: "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods, and strive to achieve a land degradation-neutral world." Education is an indispensable tool for teaching about the importance of soil conservation, reforestation techniques, and sustainable farming practices. Clearly, these are merely superficial examples of how education can enhance environmental awareness, but education is not merely a knowledge transfer process; it's a transformative tool capable of shaping individuals' consciousness and attitudes toward their environment. The SDGs and their specific targets provide a lucid and tangible framework to integrate environmental consciousness into global educational systems. As we strive to meet these ambitious goals, it's essential to recognize and leverage the power of education to catalyze change, instill sustainable values, and promote a greener and fairer future for all. It is from this standpoint that we will focus on the role of Physical Education.

2. PHYSICAL EDUCATION IN PROMOTING ENVIRONMENTAL AWARENESS: PRACTICAL STRATEGIES AND LINKS TO THE SDGS

Physical Education has the potential not only to strengthen the body and mind but also to cultivate environmental awareness in students (Lynch, 2019). Outdoor activities and interaction with the environment provide unique opportunities to learn about the environment in practical and meaningful ways (Santos-Pastor et al., 2022). Let us explore how this awareness can be integrated into the PE curriculum, with practical and theoretical examples, and how it relates to the goals of the SDGs.

2.1. ECOLOGICAL EXCURSIONS IN NATURE

Ecological excursions in nature, integrated within the context of Physical Education, offer a unique fusion of physical activity and environmental learning. These outdoor ventures, whether to forests, mountains, wetlands, or coasts, enable students to immerse themselves in natural settings, reinforcing their physical and emotional connection to the environment. By walking along natural trails, students not only benefit from exercise and fresh air but also gain direct exposure to biodiversity, learning in situ about local flora and fauna, ecosystems, and their delicate balance. Supplementary activities, such as species identification, bird watching, or even collaborative waste collection, can instill values of respect, conservation, and environmental responsibility. These tangible and experiential encounters have the power to elicit a profound appreciation and understanding of nature, rendering ecological excursions an invaluable pedagogical tool for molding robust and enduring environmental consciousness in the youth. SDG Linkage: This activity correlates with SDG 15 (Life on Land) and its goal of conserving terrestrial ecosystems and their biodiversity.

2.2. SUSTAINABILITY-ORIENTED SPORTS

The creation or adaptation of traditional games requiring the use of recycled or reusable materials, such as using sand-filled plastic bottles as cones or old clothes to make balls. Sports oriented towards

sustainability aim to harmonize physical activity with environmental responsibility, focusing not just on individual well-being but also on planetary welfare. These sportive modalities incorporate ecological principles in their practices, emphasizing material reuse, diminishing environmental impact, and fostering ecological awareness among participants. A prime example of this trend is "plogging", merging jogging with waste collection. Equipped with gloves and bags, runners collect trash on their route, converting their daily exercise into an environmental mission. This initiative, originating from Sweden, has gained global traction, showcasing how traditional sports can adapt and evolve to address the pressing environmental needs of our era. These practices underscore the notion that physical activity can be a potent platform for advocating change, uniting communities around shared objectives of health and sustainability. SDG Linkage: Directly associated with SDG 12 (Responsible Consumption and Production) by promoting material reuse and waste reduction.

2.3. ROLE-PLAYING GAMES AND SIMULATIONS

A game could be devised where students assume roles of different stakeholders in an environmental issue, like climate change. They could research and debate solutions from their roles, amalgamating physical and cognitive learning. Role-playing games and simulations within the realm of environmental education emerge as exceptionally effective pedagogical tools to foster a deep understanding of contemporary environmental challenges. By adopting varied roles, be it as stakeholders, conservation bodies, businesses, or politicians, students can delve into intricate socio-environmental dynamics, analyzing and discussing solutions from multiple viewpoints. These activities, merging cognitive and practical learning, offer a safe environment for experimentation, decision-making, and observing the repercussions of these decisions in simulated settings. Immersing in these roles, students not only gain a nuanced comprehension of human interactions with the environment but also hone critical skills in thinking, negotiation, and decision-making. This active and immersive methodology facilitates profound reflection on individual and collective responsibilities in the face of the

environmental crisis, promoting meaningful and lasting learning. SDG Linkage: Aligns with SDG 13 (Climate Action), fostering awareness and action against climate change.

2.4. CREATION OF GREEN SPACES

Students could engage in tree planting or establishing gardens within the school environment. While partaking in physical activity, they learn about the significance of vegetation and biodiversity. The establishment of green spaces in the educational context stands as a strategic initiative to meld physical education practices with environmental sensitization. Engaging students in activities like tree planting, formation of school gardens, or setting up community gardens, not only encourages active participation in physically demanding tasks but also imparts the importance of regeneration and conservation of natural spaces. These projects, besides enhancing and ameliorating air quality in school and community settings, serve as live laboratories where youth learn about botany, ecology, and sustainability. The tangible transformation of a space, from a barren plot to a verdant oasis, reinforces the concept of responsibility and environmental stewardship, showcasing to students the direct and positive impact of their actions on the environment, and fostering a harmonious and respectful relationship with nature. SDG Linkage: Associated with SDG 15 and the goal to combat desertification and encourage biodiversity.

2.5. PHYSICAL EDUCATION AND SUSTAINABLE MOBILITY

Encourage students to commute to school by bicycle or walking. A "Car-Free Day" could be organized, promoting the use of non-motorized means of transportation. Integrating sustainable mobility into physical education represents a contemporary approach to concurrently address physical well-being promotion and environmental impact reduction. By urging students to embrace active transport modes, like walking, cycling, or skating, a daily exercise routine is encouraged while minimizing reliance on motorized vehicles, thus curbing greenhouse gas emissions and enhancing urban air quality. These practices, apart from bolstering cardiovascular health and improving physical

capability, also inculcate in the youth values pertinent to sustainability and environmental care. By weaving activities and lessons on sustainable mobility into physical education curricula, future generations are prepared to confront the challenges of burgeoning cities, fostering healthy and sustainable lifestyles that benefit both the individual and the planet. SDG Linkage: This approach aligns with SDG 11 (Sustainable Cities and Communities) and the promotion of sustainable transport systems.

2.6. THEORETICAL STUDY OF SPORTS ANS THE ENVIRONMENT

The theoretical study of the intersection between sports and the environment offers crucial insight into how sports practice impacts and is influenced by natural ecosystems. By analyzing topics such as resource use in the production of sports equipment, the ecological footprint of major sporting events, or the adaptability of sports to climate changes, students are faced with a critical reflection on sustainability within the sports realm. This academic perspective, framed within physical education curriculums, provides an opportunity for young people to understand the interconnected nature of sport and the environment. Moreover, by incorporating case studies, research, and debates, a critical awareness of how sports practices can be adapted or reformed to be more respectful of the environment is promoted, thus fostering a sports culture that aligns with the principles of sustainability and ecological responsibility. Students can investigate the environmental impact of different sports, such as golf, which uses large amounts of water and can affect local ecosystems, and propose sustainable alternatives. Link to SDGs: Related to SDG 12, promoting understanding and action towards more responsible production and consumption.

2.7. AQUATIC ACTIVITIES AND EDUCATION ON WATER RESOURCES

During swimming classes or activities in lakes or rivers, students can learn about water conservation, the importance of keeping water bodies clean, and aquatic ecosystems. Implementing aquatic activities in an educational setting opens a unique window for raising awareness about the importance and management of water resources. By immersing

students in activities like swimming, diving, or canoeing, they are not only introduced to disciplines that promote coordination, endurance, and physical skills but also given the chance to directly connect with the vital resource that is water. This hands-on experience can be enriched with lessons about the global scarcity of freshwater, the water cycle, and the need for conservation and responsible use of these resources. By experiencing first-hand the beauty and serenity of aquatic environments, students can develop a deeper and personal appreciation of water's value, better understanding its essential role in life and the pressing need to protect it. In this way, physical education becomes a vehicle for conveying not only sports skills but also knowledge and values related to water sustainability. Link to SDGs: Directly related to SDG 6 (Clean Water and Sanitation) promoting the conservation and sustainable use of water resources.

2.8. YOGA, MINDFULNESS, AND CONNECTION WITH NATURE

Practicing yoga or meditation outdoors allows students to connect with their surroundings, fostering a deeper and more conscious relationship with nature. Yoga and mindfulness practices, beyond their known benefits for the mind and body, serve as essential bridges to strengthen the individual's connection with nature. Through postures, breathing techniques, and meditation, practitioners are guided towards a state of full awareness, where the perception of the environment and the recognition of oneself in relation to the universe are intensified. Conducting these practices outdoors, whether in forests, beaches, or parks, amplifies this connection, allowing the individual to feel the Earth's energy, the whisper of the wind, or the rhythm of the waves. This integration with natural elements fosters a deep appreciation and respect for the environment, as by connecting with oneself, the interdependence with the ecological environment is recognized. In this way, yoga and mindfulness, when practiced in harmony with nature, become powerful tools to cultivate environmental awareness rooted in the recognition of the union between humans and the vast fabric of life. Link to SDGs: Although indirectly, these practices can promote peace, justice, and strong institutions, in line with SDG 16.

As observed, Physical Education, traditionally focused on the development of motor skills and health promotion, has the potential to play a crucial role in shaping environmentally conscious citizens. By combining theory and practice and aligning with the SDGs, PE can be a powerful tool to address the environmental challenges of the 21st century, instilling in young people values and practices that endure in their adult lives.

3. PHYSICAL EDUCATION: PROMOTING ENVIRONMENTAL AWARENESS THROUGH SUSTAINABLE COMPETENCIES

Given the urgent need to address the complex environmental, social, and economic issues facing our planet, education emerges as a key pillar to foster change towards a more sustainable future. In this context, UNESCO has played a leading role in promoting Education for Sustainable Development (ESD). Aiming to provide clear guidance and reference for educators and institutions, UNESCO developed the "Competencies for Sustainable Development", a set of skills, attitudes, and values essential to be cultivated in individuals so that they can actively and effectively contribute to the construction of sustainable societies (Rieckmann, 2018). This reference serves as a fundamental framework to integrate sustainability into various educational areas, including physical education (Baena-Morales et al., 2023).

Physical education has evolved beyond its traditional focus on mere physical performance, adopting a crucial role in the comprehensive training of individuals aware of current environmental challenges. Through practical and theoretical activities, PE can cultivate essential competencies that lead to greater environmental awareness and a commitment to sustainability. Regarding Systems Thinking, PE can address this concept by exploring how our actions in a sport or activity can affect the environment. For instance, a simple walk in the woods can become a lesson on the interconnection between species, the importance of keeping trails clean, and how deforestation affects local and global ecosystems. Related to anticipatory competencies: PE can teach students to

foresee the environmental impacts of their actions. For example, planning an outdoor sports day might include a discussion on how to choose locations with minimal environmental impact or how to properly collect and recycle waste generated during the event. In summary, the normative competency could be addressed through the choice of sustainable sports materials, such as balls made from recycled materials or ethically manufactured sports clothing, allowing students to reflect on how their consumption decisions can affect the environment and society. On the other hand, strategic competency, if organizing a "green" sports event, such as a marathon, promoting the use of public transportation or bicycles to get to the location, distributing water in reusable containers, and promoting sustainable eating habits, is a practical example of how PE can instill sustainability-focused planning. Related to the collaboration competency, developing a project in which students work together to create a school garden or sustainable play space can teach them the importance of teamwork, empathy, and mutual commitment to an environmentally responsible goal. Critical thinking could be addressed through class debates on the ecological footprint of major sporting events or the impact of sports tourism in natural areas, students can develop a critical attitude towards established practices and seek more sustainable alternatives. Improving self-awareness, through reflection activities after a yoga or meditation session in nature, students can connect with their surroundings, reflecting on their place in the world and their responsibility towards it. Finally, integrated problem-solving might be enhanced perhaps by designing campaigns to promote ecological sports in the community or creating solutions to reduce waste at sports events; students put into practice various competencies to address real sustainability issues. Therefore, PE, by merging physical movement with environmental awareness, not only shapes healthy bodies but also conscious minds. By integrating these competencies into its curriculum, PE positions itself as a fundamental tool in building a more sustainable and conscious future.

4. CONCLUSION

In the intricate fabric of challenges faced by contemporary society, the environmental crisis and the urgency of sustainable development stand out as central elements on the global agenda. Against this backdrop, there emerges a pressing need to redefine and redirect educational strategies, expanding their reach to cultivate a global citizenship that is aware of and committed to sustainability. Physical education, in this context, is no exception. UNESCO, with its establishment of the "Competencies for Sustainable Development", has provided a clear structure reflecting the interconnection between education and sustainable development. These competencies are not just a set of skills, attitudes, and values; they represent the roadmap for educational institutions, teachers, and students to actively engage in building a future more respectful and harmonious with our planet. Through the exploration of different modes and practices within physical education, we've seen how it's possible and essential to integrate environmental awareness into the curriculum. From ecological excursions highlighting the beauty and fragility of nature to innovative sports like plogging, which combines physical activity with environmental responsibility, physical education becomes fertile ground for sowing the seeds of transformative change. The theoretical study of the relationship between sports and the environment, the inclusion of role-playing and simulations, and the promotion of sustainable mobility, among others, are tangible examples of how physical education can be a vehicle for awareness and action. Also, by creating green spaces in educational institutions or adopting practices of yoga and mindfulness, a deeper and more respectful connection with nature is promoted, fostering self-awareness and reflection. However, it is important to emphasize that beyond the incorporation of these activities and practices, what is essential is the focus and intention behind them. UNESCO's competencies, from systems thinking to integrated problem-solving, are not just boxes to check on an educational checklist. They represent a call to action, a genuine commitment to building a world where human well-being harmonizes with the health of the planet. In conclusion, it's vital to recognize that, while physical education plays a crucial role, the task of cultivating environmental

awareness and promoting sustainable development is shared. It requires the collaboration and commitment of all sectors of society, from educators to policymakers, media, and businesses. Physical education, with its potential to merge movement, reflection, and action, can be a guiding light on this journey, showing that every step, every jump, and every gesture counts in building a sustainable future. With a clear vision, commitment, and collaboration, we can transform physical education into a powerful tool for change, fostering more conscious, active, and responsible future generations for our planet.

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