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ARTICLE

Physical Education for a Sustainable Future: Merging Promotion of Health Through Physical Literacy With Global Environmental Responsibility

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Abstract
This article examines how redefining health through the perspectives of One Health, EcoHealth and Planetary Health can enrich Physical Education (PE) by advancing both health and environmental sustainability. While PE and health education are often treated as separate subjects, most PE curricula worldwide emphasise the promotion of an active lifestyle as a key component of health education through PE. This promotion of an active lifestyle is central to the concept of physical literacy (PL), which is a fundamental aspect of quality PE according to UNESCO (2015). This article focuses on how PE, contributing to health education through the promotion of PL, can evolve to incorporate sustainability goals through the recent new definitions of approaches to health. One Health approach underscores the interconnections between human, animal and environmental health, expanding PL to address zoonotic diseases and ecological impacts. EcoHealth highlights the sustainability of ecosystems, promoting PE activities that (re)connect humans with the more-than-human worlds without causing environmental harm. Planetary Health takes a global perspective, encouraging sustainable physical activities that reduce ecological footprints, such as cycling and walking. By integrating these holistic frameworks, PE can nurture not only individual health outcomes but also environmental stewardship and global health awareness. This shift seeks to educate individuals about their PL, but also their responsibility in preserving ecosystems and the planet, fostering a more sustainable and environmentally aware generation through PE.

Keywords: Physical education; sustainability; holistic health; education for sustainable development

Introduction

The question of the sustainability of our Western lifestyles occupies a central place in the concerns of developed and developing societies. This worry, present in the scientific sphere for two centuries, probably finds its origins as early as 1824 with the identification of the greenhouse effect by Joseph Fourier, and was highlighted in 1896 when Svante Arrhenius underscored its potential influence on human societies. Since the Bruntland Report in 1972, responses to the impact of our lifestyles on socio-ecological systems have become more refined (IPCC, 2021), without, however, changing the trajectory of developed countries, which continue to increase their consumption of natural resources while degrading the biosphere (Wiedmann et al., 2020). According to MacKinnon (2021), we have entered an era of infinite consumption that destroys ecological balances at a frantic pace. These societal changes have led to the emergence of two closely related concepts to describe the era we have entered: the Anthropocene and the Capitalocene.

Anthropocene and Capitalocene: Concepts to describe our era and modify our educational practices

Introduced by Crutzen and Stoermer (2000), the Anthropocene describes a new geological epoch characterised by the profound transformations of Earth's systems resulting from human activity. This term reflects major environmental changes, such as global warming, pollution, deforestation and biodiversity loss, which jeopardise the stability of ecosystems and the survival of countless species, including humans. The concept of the Capitalocene reframes this era as being primarily shaped by the ecological impacts of capitalism. For Malm (2016), the current ecological crisis arises more from the ways capitalism drives human activity than from human activity itself. Consequently, according to this perspective, we do not inhabit the Anthropocene, or "the age of humans," but rather Capitalocene, "the age of capital."

An anthropocentric education perpetuating the Capitalocene?

Descola (2005) and White (1967) highlight a critical ethical issue: the worldview in many developed countries promotes what they describe as a trajectory toward long-term collective self-destruction. This worldview, rooted in monotheistic traditions, positions humans as distinct and superior to nature, fostering a fundamental separation between humans and their environment. This human-nature dichotomy, reinforced by hierarchical thinking, has morally justified the exploitation of natural resources in the pursuit of individual and societal well-being. Consequently, environmental destruction is often seen as an acceptable trade-off for growth and progress, reflecting an ontology that prioritises human dominance over ecological harmony. Western education plays a key role in perpetuating the Capitalocene (Webster, 2021). Indeed, Western educational systems tend to value and promote paradigms and practices aligned with capitalist values, such as competitiveness, economic growth and consumption (Klees, 2017). This educational orientation, prioritising skills and knowledge oriented towards individual success and economic performance, can neglect the importance of ecological interdependence and sustainability (Seatter & Ceulemans, 2017).

Eco-literacy and education for sustainable development

In response to environmental changes induced by human activities, different approaches have been developed. Among these are eco-literacy and Education for Sustainable Development (ESD). Eco-literacy (McBride et al., 2013) aims to equip individuals with an understanding of the natural world and the impact of human actions on the environment, fostering the ability to make informed decisions regarding environmental issues in the service of sustainability. ESD offers a more comprehensive approach, incorporating elements of eco-literacy and integrating social and economic dimensions, to prepare individuals with the knowledge, skills and attitudes necessary for sustainable living. This approach aligns with international efforts, as outlined in the 2030 Sustainable Development Goals (SDGs), which emphasise the importance of sustainability knowledge in education for development and sustainable lifestyles. The SDGs have been expanded into the "wedding cake" model to illustrate the interconnections between environmental, social and economic goals (Stockholm Resilience Center, 2016). This model places the environmental dimension as the foundation, followed by social goals, emphasising that achieving sustainability requires prioritising ecological health and social well-being.

Orr (1992) highlights the need for an educational system that fosters the creation of sustainable human communities, calling for a fundamental reconstruction of current approaches. This vision, rooted in the concept of sustainable development, gained momentum in the mid-1980s, especially with the formation of the World Commission on Environment and Development (WCED) in 1983. The WCED report ("Our Common Future") defined sustainable development as meeting present needs without compromising the ability of future generations to meet theirs. Chapter 36 of

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Agenda 21 promotes ESD, a direction later embraced by UNESCO. According to UNESCO (2005), ESD should not be seen as a separate subject but integrated into all disciplines, addressing environmental sustainability alongside social equity and economic viability. While eco-literacy (Bissinger & Bogner, 2018), focusing on environmental knowledge and behaviour, is vital, a broader understanding that includes the social and economic aspects of sustainability is necessary to prepare students for creating resilient and equitable communities.

However, ESD has faced substantial critique for reinforcing power imbalances by prioritising economic concerns over social and environmental pillars. Kopnina and Meijers (2014) argue that the pluralistic approaches within ESD often sustain dominant political ideologies, limiting the inclusion of critical environmental ethics and ecocentric perspectives. Similarly, Kopnina (2018) highlights how ESD's anthropocentric framing departs from the goals of environmental education, as outlined in the Belgrade Charter, by overemphasising human welfare and resource distribution while sidelining ecological imperatives. Ideland and Malmberg (2014) further critique ESD for embedding neoliberal ideologies in teaching materials, constructing "eco-certified children" as rational, responsible individuals tasked with addressing global environmental issues through economically driven solutions. These critiques underline the necessity of rethinking ESD's framework to achieve a more equitable balance between its pillars, fostering genuine environmental stewardship alongside social justice.

Bearing in mind these criticisms, each subject should explore ways to foster a holistic ESD approach that integrates all dimensions. Despite the recognised need for age-appropriate curricula, few authors have offered concrete proposals to address this gap. Baena-Morales et al. (2023) stands out as a pivotal contributor, offering a detailed and innovative illustration of specific curricula tailored to various educational stages. Her work provides a practical framework for integrating ESD principles in a way that aligns with children's cognitive and emotional development, thereby addressing a critical shortfall in the existing literature and practice. Baena-Morales et al. (2023) therefore proposed the following curriculum segmentation:

Early Childhood (3–5 years): At this stage, when children begin to understand the world around them, it is essential to introduce sustainability in a simple, engaging way. Activities like connecting with nature, participating in collabourative tasks, and learning about shared responsibilities can help foster early social and environmental awareness. Children can be involved in activities that promote care for their surroundings, such as group play that encourages sharing and fairness, helping them understand the importance of respecting others and the environment.

Childhood (6–11 years): As children grow, they can begin to learn about the broader social and economic impacts of their actions, such as the interdependence of communities and ecosystems. They can engage in projects that connect biodiversity conservation with the well-being of human communities, emphasising how responsible actions benefit both people and the planet. Introducing critical thinking through sustainability challenges encourages a deeper understanding of fairness and equity in resource use.

Adolescence (12–18 years): At this stage, students can dive into the social and economic aspects of sustainability, such as analysing how global challenges like climate change affect communities differently. They can engage in problem-solving projects, such as studying the impacts of sustainable consumption and ethical decision-making, fostering critical thinking and collaboration.

University: At this level, students should engage with the complexities of sustainability through interdisciplinary studies. They can explore how national and international policies address social, environmental and economic challenges, and apply critical thinking to develop innovative solutions. Projects can focus on real-world sustainability challenges, with a strong emphasis on research, decision-making and the interconnections between social justice, economic development and environmental sustainability.

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Evolving physical education: Aligning health, physical literacy and environmental responsibility

The elements proposed by Baena-Morales et al. (2023), as well as the strategy adopted to promote ESD, encourage various disciplines to reflect on their contributions to eco-literacy. PE should not be excluded from this reflection, as it holds significant potential to foster sustainability. However, contradictions within the traditional PE model require clarification. When PE emphasises its sporting dimension, it often focuses on competition, individual performance and technological assistance, promoting values of competitiveness and consumption (Aggerholm et al., 2018). This performance-driven approach risks fostering behaviours disconnected from sustainability principles, instead perpetuating thought patterns and actions aligned with the Capitalocene, which exacerbate ecological problems rooted in the current economic system.

Criticism of the emphasis on sports within school PE is not new, with many advocating for a shift toward broader objectives. UNESCO (2015) de-emphasises a purely sports-focused approach, instead highlighting PE's role in health education and its prioritisation of physical activity within the framework of "quality physical education." Central to this vision is the concept of Physical Literacy (PL), which Whitehead (2013, p. 29) describes as "a disposition to capitalize on our human embodied capability, wherein the individual has: the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits/activities throughout the life course."

The relationship between PE and health education varies across global contexts, shaped by differences in curricular structures and cultural priorities. While PE remains distinct from health education, it complements it by fostering physical activity and lifelong engagement in healthy behaviours. This is particularly evident in PE's universal goal of promoting physical, mental and social well-being. PL, despite ongoing debate, offers a practical framework for achieving this goal by equipping individuals with the tools to embrace and sustain active lifestyles and, therefore, contribute positively to health (Cairney, Dudley, Kwan, Bulten & Kriellaars 2019).

UNESCO (2015) underscores the importance of PL as a pillar of quality PE, emphasising its potential to inspire motivation and collabouration, enhance motor skills and build knowledge of physical activity. These outcomes encourage pro-social attitudes and lifelong participation in physical pursuits, contributing to broader health education goals. By developing PL, PE may indirectly addresses global health priorities, such as the prevention of non-communicable diseases (WHO, 2022), through the promotion of sustainable active lifestyles. However, the concept of health in this context warrants further exploration to fully articulate its multidimensional implications.

A definition of health that perpetuates the Capitalocene?

PE is recognised internationally as contributing to health through the promotion of physical activity (Cairney et al., 2019; Unesco, 2015). However, the concept of health to which it contributes is primarily based on the 1946 WHO definition: "a state of complete physical, mental and social well-being, and not merely the absence of disease" (Potdevin, Porrovecchio, Dieu, Racodon & Schnitzler, 2017). One of PE's overarching goals is to promote active lifestyles to counter the growing epidemic of sedentary behaviour, a scourge increasingly affecting humanity (Guthold et al., 2018). In this sense, it fully aligns with this definition of health. Creating enabling environments and adopting inclusive pedagogies to promote PL now seem essential to addressing this issue, defining the contours of quality PE (UNESCO, 2015). However, this approach remains largely anthropocentric, neglecting the environmental impact of physical activities. While the promotion of physical activity serves the noble cause of combating non-communicable diseases and is expected to save an estimated $47.6 billion globally each year (Santos et al., 2023), there is still an ethical responsibility to consider sustainability alongside health outcomes.

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As PE is expected, through the promotion of active lifestyle, to contribute to health education, a shift towards broader definitions of health – ones that encompass not only individual well-being but also the health of the global environment – could significantly reshape both the objectives and practices of PE. Yet, this issue remains largely unaddressed by key stakeholders, including legislators, teachers and researchers.

Towards new health models?

By focusing exclusively on human well-being and health without integrating environmental awareness, an educational approach based on the 1946 WHO definition of health promotes a mode of thinking where human needs predominate, regardless of their impact on the biosphere (Schramme, 2023). This lack of consideration for the interdependence between humans and their environment can indirectly encourage consumerist behaviours and lifestyles, characteristic of the Capitalocene, where, through ESD, consumption and economic growth are often prioritised over ecological sustainability. By failing to address environmental issues in health and citizenship education, individuals are prepared for a world where the separation between humans and their environment is maintained, justifying the exploitation of the environment without granting it intrinsic value (Kopnina, 2015).

Changing the educational paradigm then requires adopting a global educational approach that values and highlights the interconnection between human health, social well-being and ecosystem integrity to promote sustainable and environmentally respectful lifestyles. This awareness of the interdependence between the flourishing of our societies and the natural environment has prompted scientists and philosophers to rethink the concept of health, framing it within a broader ecosystem perspective.

According to Lerner and Berg (2017), three holistic approaches stand out: One Health, EcoHealth and Planetary Health. While each has its specifics, all insist that the anthropocentric version of human health defined by the WHO cannot be considered outside a healthy, sustainable society. This sustainability relies on planetary boundaries of a physical nature, as defined by Rockström et al. (2009). These nine boundaries can be summarised as follows: (1) climate change, (2) biosphere integrity, (3) biogeochemical flows, (4) land-system change, (5) freshwater use, (6) ocean acidification, (7) atmospheric aerosol loading, (8) stratospheric ozone depletion and (9) chemical pollution. None of these boundaries should be crossed to ensure that socio-ecosystems can thrive. The concept of health is, therefore, intrinsically linked to sustainability and cannot be considered solely from a human perspective. Ecosystem health becomes the foundation upon which other dimensions of health (social, professional, mental, physical, etc.) depend. Its interactions with the health of human societies and individuals are central to the objectives of health education.

Health, physical education and physical literacy

Potdevin et al. (2017) highlight that the biomedical definition of health, as outlined by the WHO (1946), remains dominant in both practices and official texts guiding the discipline, suggesting that ecosystem-based health approaches have not significantly influenced the education system or PE. However, aspects of the Ottawa Charter (WHO, 1986), which define health as "a resource for everyday life" and a fundamental right enabling individuals to achieve their personal goals (European Union, 2000), have also been incorporated. These two definitions represent a very narrow view of health, making no consideration of ecosystem health. However, one might argue that the field of PE is already broad enough to account for human health and should then focus on the challenge of developing active lifestyles through the promotion of PL. It could then claim to contribute to some sustainable development goals, but only those concerning social and economic spheres, leaving aside the environmental sphere. This is indeed the conclusion reached by the

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experts of the Kazan Action Plan (UNESCO, 2017), which does not assign any environmental objective to PE.

UNESCO (2005), however, proposes an alternative approach to Education for Sustainable Development (ESD), emphasising the crucial role of school systems in taking responsibility for integrating ESD principles. Central to this proposal is an educational model rooted in transdisciplinarity, which seeks to transcend traditional disciplinary boundaries by fostering the creation of new knowledge through the interaction and integration of initially separate disciplines. This model encourages students to engage with complex, real-world problems – such as sustainability challenges – by drawing on diverse perspectives and methodologies, enabling them to develop holistic and innovative solutions. Such an approach not only promotes critical thinking and collabouration but also aligns with the goals of equipping learners with the skills needed to address interconnected social, environmental and economic issues.

The definition of health varies significantly depending on the elements it considers. In the following sections of this article, we will present different models of holistic health (One Health, EcoHealth and Planetary Health), then analyse the consequences of integrating these models on the objectives and practices of PE. If implemented, these considerations are likely to radically change the discipline and are, in many respects, uncomfortable. "Education is the most powerful weapon which you can use to change the world," wrote Nelson Mandela (23 june 1990, speech, Madison Park High School, Boston). The question of its ethics, its content and its methods in the service of the collective good thus becomes crucial. Given the environmental challenges, it seems essential for PE to seek to reinvent itself to adapt to emerging challenges. It is time for PE to take its place in addressing the challenges associated with promoting sustainable lifestyles, a necessary condition for advancing planetary, societal and human health

Holistic approaches to health: Integrating ecosystem health into One Health, EcoHealth and Planetary Health

Three approaches — One Health, EcoHealth, and Planetary Health — adopt a holistic perspective, allowing for the redefinition of the concept of health by integrating the importance of ecosystem health.

Gibbs (2014) defines the One Health approach as a method to improve health and well-being by preventing risks and mitigating the effects of crises that arise at the interface between humans, animals, and their various environments. While this definition aligns with the pre-1946 biomedical conception of health, characterised by the "absence of disease" (Potdevin et al., 2017), it also appears highly anthropocentric in its objectives. Additionally, it is prone to adopting a universal perspective which, if left unchecked, could perpetuate colonial paradigms and marginalise diverse ways of knowing and being. However, the One Health approach emphasises a "whole society" perspective, where health sciences and associated disciplines work collabouratively and across borders to improve health at an optimal level.

The EcoHealth approach (Waltner-Toews, 2009) emphasises the interconnectedness of human, animal and ecosystem health, highlighting the inseparable links between species and their environments. It is grounded in the principle that health and well-being are unsustainable in environments that are resource-depleted, polluted, or socially unstable. By integrating environmental sustainability and socioeconomic stability into its framework, EcoHealth seeks to promote a holistic understanding of health across all species and their habitats. EcoHealth also recognises the intrinsic value of ecosystems, focusing on biodiversity and emphasising all living creatures, suggesting that parasites, unicellular organisms and even viruses have value and should be protected. Waltner-Toews (2009) proposes that EcoHealth aims to "promote sustainable human and animal health and well-being through healthier ecosystems" [p. 519]. In this respect, the knowledge and ways of life of Indigenous peoples, situated and sustainable, are often

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highlighted as a source of inspiration. Indigenous peoples indeed have a deep knowledge and intimate understanding of their natural environment, acquired over generations. This wisdom, which encompasses sustainable resource management practices and a balanced relationship with nature, is increasingly recognised as essential to biodiversity conservation and combating climate change (Mistry et al., 2016). For example, Cotter (2023) highlights that, in New Zealand, indigenous knowledge systems like *Te Maramataka, Atua Matua* and *Tiwaiwaka* illustrate how physical activity (PA) can be seamlessly woven into daily life, fostering well-being through cultural and environmental connections. Te Maramataka aligns activities such as gardening, fishing and walking with natural rhythms, promoting both health and environmental stewardship (kaitiakitanga). The Atua Matua framework emphasises spiritual and environmental cues, connecting physical activities like hill climbing to ancestral narratives and the land, creating a holistic and inclusive model of PL. Tiwaiwaka exemplifies the integration of physical, mental and spiritual resilience through activities such as walking, dancing and communal practices like kapa haka, highlighting the deep interconnection between personal health, community ties and hauora (well-being). These frameworks often embed PA into daily life and cultural practices in ways that are inherently meaningful, enjoyable and connected to the natural environment.

The concept of Planetary Health, like One Health, emphasises the interdependence of human, animal and environmental health, highlighting the extensive degradation of our planet due to human progress. However, it is broader in scope, as it does not focus solely on zoonotic diseases. Its definition, "the health of human civilization and the state of the natural systems on which it depends" (Whitmee et al., 2015, p. 1978), aligns more broadly with the sustainable development goals outlined in the Paris Agreement (UNFCCC, 2015) Planetary Health seeks to balance human needs with environmental preservation by promoting multidisciplinary, intersectoral collaboration to shift mindsets and behaviours at all levels, from global to local. Unlike EcoHealth, which emphasises ecological integrity, Planetary Health prioritises human well-being while integrating Indigenous knowledge with modern science to foster sustainable lifestyles. Planetary health approach underscores the importance of modern education and scientific advancements in addressing global environmental challenges and maintaining a balance between human civilisation and the natural systems that sustain it.

Among the three approaches – One Health, EcoHealth and Planetary Health – Lerner and Berg (2017) consider that Planetary Health stands out in its way of considering the place of humans, animals and ecosystems (Table 1). This approach, distinctly anthropocentric, focuses primarily on human health in a sustainable world, with the imperative of respecting the nine planetary boundaries (Rockström et al., 2009). Conversely, One Health and EcoHealth adopt a more ecocentric stance, putting humans and animals on equal footing. One Health mainly deals with animal and human health, while EcoHealth focuses on the relationship between ecosystems and health. One Health attributes health to individuals, while EcoHealth considers it at the level of systems and processes. Thus, Planetary Health is akin to the concept of Global Health, which aims to achieve health for all through a broad, collaborative and transnational approach. This "health for all" concerns only humans but is broader than the definition of health promoted since 1946 by the World Health Organisation.

For Lerner and Berg (2017), these three approaches raise philosophical questions: can a process or an ecosystem possess health in the same way as an individual? Or does the concept of health become metaphorical in these broader contexts, as Charron (2012) suggests? Charron argues that while health is traditionally applied to individuals, its application to ecosystems or processes often takes on a metaphorical dimension, emphasising concepts such as balance, resilience, or functionality rather than the well-being of a single entity. However, if the human body is conceptualised as an ecosystem, one could argue that individual human health might be analogous to the health of a global ecosystem. Resolving how these different levels of health relate to one another, and determining their relative importance, is crucial for effectively integrating these

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Table 1. Synthetic overview of the differences between One Health, EcoHealth and Planetary Health definitions

One Health	EcoHealth	Planetary Health
Interdisciplinary approach	Interdisciplinary approach	Focus on the health of human civilisation and natural systems
Focus on the health of animals and ecosystems, humans	Focus on ecosystem health	Emphasis on reversing environmental degradation
Emphasis on intersectoral and cross-border collabouration	Sustainability and environmental stewardship	Balancing human needs with Earth's preservation
Prevention and control of zoonotic diseases	Community involvement and empowerment	Multidisciplinary, intersectoral, and cross-border approach
	Social and economic justice granting ecosystems legal personality	

approaches. Table 1 provides a synthetic overview of the differences between these health definitions.

- One Health focuses on the interconnection between human, animal and environmental health, emphasising collabourative intersectoral efforts to prevent and control diseases, particularly zoonotic diseases.
- EcoHealth highlights the importance of ecosystem health and its impact on human and animal health. It advocates for sustainability, community empowerment and addresses social and economic inequalities.
- Planetary Health focuses on the health of human civilisation and questions what state of health should be reserved for natural systems to ensure the flourishing of these societies. It emphasises reversing environmental degradation and balancing human development with Earth's preservation, requiring a broad and multidisciplinary approach.

These differences in ontological and practical positioning – particularly regarding ecocentrism versus anthropocentrism – shape their respective educational philosophies, implementations and focuses. For instance, One Health primarily adopts an anthropocentric viewpoint, emphasising the prevention and management of zoonotic diseases through the interconnected health of humans, animals and their shared environment, with growing acknowledgment of environmental contributions. In contrast, Planetary Health bridges ecocentric and anthropocentric perspectives, focusing on sustainable development, equity and the interdependence of human well-being and Earth's systems, especially in the context of climate change and resource use. EcoHealth, on the other hand, embraces a strongly ecocentric view, advocating for the intrinsic value and protection of whole ecosystems as a prerequisite for ensuring health. These foundational differences influence how each framework is taught, applied and prioritised in educational and practical settings. The table 2 proposes to compare the pedagogical implications of One Health, EcoHealth and Planetary Health in relation to education for sustainability:

- **One Health** involves education that recognises the interconnection between human, animal and environmental health, and the need for interdisciplinary collabouration to address public health issues.
- **EcoHealth** focuses on the importance of ecosystems for health and promotes sustainable practices and community engagement while integrating socio-economic aspects into health education. It encourages the principle of social justice, which proposes granting ecosystems legal personality capable of defending their rights in court.

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Table 2. Comparison of the pedagogical implications of One Health, EcoHealth and Planetary Health in health education

One Health	EcoHealth	Planetary Health
Education on the interdependence of human, animal, and environmental health	Raising awareness of the impact of ecosystem health on human and animal health	Emphasis on human health in the context of natural systems
Training on the prevention and control of diseases transmissible between animals and humans	Encouragement of sustainable practices and environmental preservation	Education on the effects of environmental degradation on human health
Interdisciplinary collabouration in learning and research	Promotion of community engagement in health issues	Raising awareness of the balance between human needs and Earth's preservation
A comprehensive approach to public health including animal health	Integration of socio-economic issues in health education	Multidisciplinary approach to understanding planetary boundaries, identifying tipping points, and limiting human actions to respect these nine planetary boundaries
	Education based on the principle of social justice, granting ecosystems legal personality	

- **Planetary Health** emphasises human health within the framework of natural systems, educating about the impact of environmental degradation and the need to balance human needs with Earth's preservation, using a multidisciplinary approach to influence behaviours and mindsets. It stresses the importance of confining human action within the nine planetary boundaries to ensure planetary sustainability, a condition for the flourishing of human civilisations.

These considerations allow us to specifically question the role of PE in education for sustainability. This has been structured around two main issues: one related to promoting culture for all through physical and sports activities, and the second through promoting health education via physical and sports activities. In this regard, UNESCO (2015) highlights the importance of developing PL as an essential vector for health education through movement.

Influence of health definitions on the role of physical literacy in education

These different conceptions of health are likely to reorient the objective of promoting PL

Physical Literacy for One Health

Adapted to One Health, the development of PL would be through approaches emphasising the interconnection between human, animal and environmental health. This shift in perspective would involve actions such as:

1. Awareness of Zoonotic Diseases: Education on the importance of safe interactions with animals during physical activities, especially in areas at risk of disease transmission.
2. Ecosystem Health: Participation in physical activities that do not harm local ecosystems and understanding the impact of human activities on wildlife and their habitats. Practices such as spelunking and climbing should be conducted with precautions to avoid disturbing wildlife and prevent zoonotic transmission.

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3. Collabourative Activities: Organisation of physical activities bringing together professionals in human, animal and environmental health, fostering interdisciplinary understanding and cooperation.
4. Health and Hygiene: Emphasis on the importance of hygiene and disease prevention in physical activities, particularly those involving interaction with animals or taking place in natural settings.
5. Physical Activity in Diverse Environments: Encouragement to engage in respectful physical activities in various environments, promoting a deep understanding of different ecosystems and the health of the organisms living in them.

In the context of PE for primary school children, role-playing games could, for example, allow them to step into the shoes of wildlife (local or otherwise), adapting their movements to explore the animals' constraints and needs, while raising awareness that wild animals should not be treated the same as domesticated ones.

Physical literacy for EcoHealth

In the context of EcoHealth, developing PL focuses not only on the importance of ecosystem protection as a foundation for physical practices that positively impact social and individual health, but also on fostering empathy and bodily awareness. This approach would involve:

1. Nature-Based Outdoor Activities: Emphasising outdoor sports and recreational activities that foster connections with nature, while promoting appreciation, understanding and protection of regional ecosystems in a respectful context
2. Sustainability Awareness: Education on the sustainability of physical activities. Understanding the potential ecological footprint of practices and sports equipment. Using physical activity to serve ecosystem protection.
3. Community Engagement: Encouragement of community-based physical activities aimed at protecting ecosystems, including environmental education and responsible management, fostering a sense of responsibility towards local ecosystems.
4. Biodiversity and Conservation: Highlighting the importance of biodiversity in maintaining healthy ecosystems and how physical activities can support conservation efforts.
5. Developing empathy with the natural environment through embodiment: Integration of lessons providing sensitive connection to nature.
6. Interdisciplinary Learning: Collabouration with experts in environmental sciences, ecology, public health and PE to create programmes and educational activities linking environmental, community and physical health.
7. Health in the Context of Ecosystems: Understanding how ecosystem health directly affects human health, for example, the role of clean air and water and diverse natural environments in promoting physical well-being.

For example, promoting the *Slow Sport* movement in PE can exemplify how PL aligns with EcoHealth by encouraging embodiment in nature-based activities like hiking and mindful walking that fosters connections with the environment. It emphasises low-impact activities that minimise ecological footprints while engaging students in community-based environmental protection efforts. The movement integrates lessons on biodiversity, conservation and eco-friendly choices, offering a holistic approach to fostering PL for sustainability through interdisciplinary learning.

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Physical literacy for planetary health

In this context, the development of PL would manifest through the promotion of sustainable activities and lifestyles beneficial for personal health. Key aspects would include:

1. Active Transportation: Encouragement of walking, cycling and other forms of physical movement that reduce carbon emissions and promote environmental sustainability.
2. Outdoor Physical Activities: Emphasis on outdoor sports and recreational activities that foster a connection with nature and appreciation of the environment in a respectful context.
3. Sustainable Sports Practices: Promotion of the use of sustainable materials and practices in sports and physical activities to minimise ecological footprints.
4. Environmental Education and Impact Awareness: Integrating lessons on the environmental impact of different physical activities and sustainability into physical activity programmes, raising awareness of the concept of planetary boundaries, and encouraging eco-friendly choices that benefit both personal health and the environment.
5. Lifestyle Choices: Encouragement of lifestyles that are both physically active and environmentally conscious, such as consuming less and choosing eco-friendly products.

Schnitzler et al. (2021) implemented a year-long programme in which children from deprived areas learned mountain biking skills and engaged in nature-related activities. This programme aligns with the principles of *PL for Planetary Health* by promoting active transportation, outdoor physical activities and fostering a deeper connection with nature. Through cycling, the children not only developed physical skills but also contributed to environmental sustainability by reducing carbon emissions. The programme also provided an opportunity to integrate environmental education, raising awareness of the ecological impact of physical activities. By encouraging active and eco-friendly lifestyles, the programme supports both personal health and environmental stewardship, illustrating how PL can be developed in ways that benefit both individuals and the planet.

The development of children's PL could promote these three health approaches, despite variations. However, a focus centred on Planetary Health would emphasise environmentally sustainable physical activities, One Health on the development of activities considering both human and animal health in relation to ecosystems, and EcoHealth on physical activities connecting individuals to their ecosystems, with an emphasis on environmental sustainability and education.

Considering these elements, the impact of adopting different health conceptions (One Health, EcoHealth, Planetary Health) on the development of the four dimensions of PL is also likely to vary, as shown in Table 3:

Each health approach influences the development of PL dimensions differently:

- One Health emphasises the interdependence between human, animal and environmental health, fostering a complex understanding and intersectoral cooperation.
- EcoHealth focuses on the importance of adopting an ecocentric stance, necessary for the preservation of the biosphere, and enabling humans to fit within it. This approach encourages engagement with nature and the community, particularly drawing on the knowledge of Indigenous peoples.
- Planetary Health considers health in a global context, advocates for a vision of sustainability stemming from the Paris Agreement (2015), highlighting the importance of sustainable practices and awareness of environmental impacts, blending traditional and modern knowledge.

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Table 3. Impact of adopting different health conceptions on the development of the four dimensions of physical literacy

Dimension	One Health	EcoHealth	Planetary Health
Physical	Development of attitudes to prevent disease transmission between animals and humans.	Contemplative outdoor activities that enhance physical abilities and connection with nature.	Promote sustainable physical practices with limited environmental impact.
Psychological	Awareness of the importance of physical activity in natural environments that respect wildlife, avoiding anthropomorphism.	Connection with nature to improve mental well-being and resilience. Promotion of ecocentrism.	Awareness of the psychological impacts of climate change and environmental degradation on the sustainability of human societies.
Social	Intersectoral collabouration and communication for human and animal health.	Community engagement aimed at preserving environments based on traditional human knowledge.	Promotion of social interactions based on an active lifestyle while limiting environmental impacts.
Cognitive	Understanding the complexity of interactions between human, animal, and environmental health.	Education considering the maintenance of biodiversity and protection of ecosystems as necessary conditions for human health.	Knowledge of the nine planetary boundaries and the global implications of lifestyle choices on the biosphere and human health. Knowledge of sustainable development goals.

What are the tasks for the future of physical education?

In this article, we aimed to demonstrate that, while it is not absolutely necessary to change the definition of quality PE, changing the reference framework of the health concept can significantly reorient its objectives and practices. Rather than adhering to a single model, it is important to recognise that various approaches can complement one another, offering a broader spectrum of possibilities for enhancing PE. If this project is accepted, a series of complementary strategic actions or tasks could be necessary to renew practices in PE through the promotion of PL, without the need to restrict ourselves to just one framework.

First Task: Which Definition of Health to Adopt, Depending on the Context?

The first essential step is to inform the community of experts and PE professionals about health models such as One Health, EcoHealth and Planetary Health, emphasising their implications in the field of PE. It is important to question which model is most appropriate according to the different living contexts of the target populations, considering the specificities of each situation. These specificities may lead to a reorientation of local priorities and favour one conception over another. Context plays a critical role in deciding which health model to adopt, as local conditions and priorities vary significantly across regions. For example, the recent context of the COVID-19 pandemic tipped the balance in favour of the One Health concept in many parts of the world. This was due to its focus on zoonotic disease management and its ability to address the interconnectedness of human, animal and environmental health – a key factor in understanding and mitigating the spread of the SARS-CoV-2 virus. However, it is important to recognise that the pandemic affected different regions and communities differently. For instance, some countries prioritised human healthcare infrastructure, while others focused on wildlife trade regulations or environmental interventions, reflecting their unique challenges and resources. Similarly, EcoHealth might be favoured in contexts where ecosystem degradation is a critical concern. For instance, regions facing deforestation, biodiversity loss, or pollution may adopt EcoHealth principles to protect the integrity of ecosystems as a foundational approach to health. A case in point is the Amazon basin, where preserving ecosystem health directly impacts the well-being of local communities and wildlife. On the other hand, Planetary Health is often emphasised in contexts addressing global sustainability and equity challenges. For example, small island nations

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threatened by rising sea levels and climate change may adopt Planetary Health to integrate human health with broader sustainability goals, ensuring that policies consider both immediate health needs and long-term planetary resilience. Thus, while One Health gained prominence during COVID-19, the choice of a health model depends heavily on the local and global context, with each model offering specific strengths tailored to distinct challenges.

Second Task: Understanding that ESD requires a clear understanding of the environmental, social and economical challenges that are at stake.

Environmentally, PE can promote activities that foster a connection with nature while teaching students about the ecological footprint of physical activities and encouraging low-impact practices. Socially, PE can address issues of inequality and inclusion by ensuring equal access to physical activities for all students, regardless of socioeconomic, but also ethno-ancestral, religious and linguistic backgrounds and by fostering teamwork, collabouration and respect for diversity. Economically, PE can emphasise sustainability through the responsible use of resources, such as using sustainable or second-hand equipment, while also educating students on the long-term economic benefits of an active lifestyle in reducing healthcare costs.

Third Task: Which Educational Practices to Promote?

The development of intervention studies and field research is necessary to identify "best practices," i.e., those effective in achieving the set of objectives, and analyse their effects. These studies will provide valuable data for improving pedagogical approaches in PE. Additionally, the development of tools to analyse the effects of interventions will allow for more precise evaluations oriented towards specific results.

Fourth Task: How to Promote and Integrate These Approaches into the Educational Field?

It is also important to develop strategies to promote this new vision of PE among decision-makers, relying, for example, on the existence of international standards such as those established in Kazan. These strategies could aim to change the perception and implementation of quality PE and can guide practices locally. Moreover, training for current and future professionals in the field of PE should be developed to ensure the effective integration of these new approaches. These training programmes might be essential to ensure a deep understanding and proper application of health principles in PE. Finally, developing quality labels for PE programmes and practices may help establish recognised standards and encourage the adoption of sustainable and effective practices. These labels could serve as references for schools, institutions and individuals, ensuring that PE practices align with global and environmental health objectives.

Conclusion

This critical analysis aimed to examine the need to re-evaluate educational priorities from the perspective of PE in the context of the Capitalocene. While the challenges posed by this new era may be described as pernicious, it is important to recognise that even the modest contribution of PE can have significant effects. Our study highlighted the tangible potential of PE in promoting health through the development of PL, provided that the very definition of health is re-evaluated and allows for an expansion of the dominant biomedical vision towards a more holistic dimension. Thus, considering ecosystem health as the foundation for human health development opens up new perspectives, not only for the definition of PE but also for the development of new practical approaches to PE. We are confident that this holistic foundation, on which PL rests, could enable PE to integrate these challenges comprehensively without compromising its core values.

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