

Physical Literacy in the Context of Climate Change: Is There a Need for Further Refinement of the Concept?

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Abstract

The concept of physical literacy (PL) has witnessed enormous popularity in recent years and has undergone substantial theoretical evolution during the last two decades. However, the research field pertaining to PL has not yet initiated discussions around the challenges of climate change and the alignment with conceptualizations of planetary health. Therefore, we argue that the consideration of an “ecological domain” for individual physical activity, in the form of ecological awareness, would further evolve the concept. We illustrate how to potentially integrate adjustments within the most frequent PL definitions of the field (e.g., those in Australia, Canada, England, Ireland, USA, or by the International Physical Literacy Association) without questioning the entire integrity of these elaborate conceptualizations. An ecological domain of PL would not only interact with the postulated physical, cognitive, psychological/affective, and social domains of PL, but also have important implications for the (re-)design of interventions and practices in physical activity contexts. We call the scientific community, both on national and international scales, to intensify the discussions and initiate a research agenda involving an “ecological domain” of PL.

Introduction

The modern era yields noticeable changes in terms of the planetary climate and research has uncovered details about its complex mechanisms. Currently, policies in place to curb global warming would result in a temperature rise of 2.8 degrees Celsius by the end of the century, with devastating consequences for humanity.¹ Models have drawn clear meteorological predictions for the future of our planet, which jeopardize the integrity of human life and the environment in the long term.^{2,3} Combined, these scenarios challenge the individual-centred biopsychosocial understanding of health (see planetary health approaches^{4,5}) and call for political action across different sectors.

In recent years, research on physical activity (PA) and sport has more strongly dealt with questions of climate change.^{6,7} For instance, articles were published on its effects on individual PA behaviour^{8,9} and active travel has been discussed as a strategy to simultaneously promote individual and planetary health.¹⁰⁻¹² Scholars have also calculated the carbon footprint of professional athletes,¹³ fans,¹⁴ and sport tourists.¹⁵ In summary, the reciprocal relationships between PA and climate are complex, and have culminated in a recent framework of mechanisms.⁶ Concurrently, the authors of this framework stated that all stakeholders must “work to actively reduce the carbon footprint associated with physical activity practices”.⁶

One holistic concept that has significantly influenced research and policy within physical education, sport, and PA over the last two decades, is physical literacy (PL).¹⁶⁻¹⁹ The concept bundles different person-related (i.e., physical, cognitive, psychological/affective, social) requirements for physically active lifestyles throughout the life course²⁰ and has been prominently included into the Global Action Plan of Physical Activity 2018-2030 as well as UNESCO’s Quality Physical Education guidelines for policymakers.^{21,22} Scholars have invested extensive efforts in discussing the nature of the concept,²³⁻²⁵ also resulting in consensus processes and country-specific definitions (for a selection, see Table 1).^{18,23} Although the PL concept has substantially evolved since the first elaborate conceptualization undertaken by Whitehead,²⁶ the discussions around PL have been absent of the corresponding ecological challenges. One explanation could be that the popularity of PL is largely grounded in the consideration of basic human philosophical assumptions (see monism/embodiment, phenomenology, existentialism) deliberately placing the individual at the centre of scientific investigation.²⁶⁻²⁹ At first

glance, the consideration of ecological factors may appear as paradigmatically conflicting with this person-centeredness.

(Table 1)

Conceptual extension?

We argue that the inclusion of ecological aspects does not erode (or trigger “uncouplings”³⁰ from) the original philosophical assumptions of PL, as an individual’s consideration of the ecological consequences of PA does not implicate environmental determinism. Rather, an extension of PL through *ecological awareness* emphasizes that individuals should anticipate the consequences of their behaviour for both individual integrity and planetary health. In line with the call that relevant “physical activity and sport definitions could be revised by including a climate change perspective”,⁶ Table 1 illustrates how an “ecological domain” could complement existing, prominent definitions of PL without fundamentally challenging other core assumptions and components of the concept. The conceptual extension may propel the *physically literate* individuals toward the following critical questions (examples) relevant to their lifestyle:

- (a) Are you aware that taking a bike instead of a car (given available infrastructure) has the potential to benefit both you and the environment?¹¹
- (b) Even if we have the means, is it necessary to undertake long-distance flights to go heli-skiing or complete a marathon on the other side of the globe?^{31,32}
- (c) Are you aware of the ecological footprint of your sport clothes and shoes?³³
- (d) How can I access places for PA that are better tempered and offer an interesting scenery (e.g., urban gardening)?³⁴
- (e) How do I adjust my physical activities given the excessive heat and air pollution outside?^{8,35}

Such questions demonstrate that an individual who performs physical activities in an ecologically friendly manner requires specific cognitive skills (e.g., knowledge and understanding about the bidirectional impact of PA and the ecosystem), motivational capabilities (e.g., the willingness to only invest resources for PA that is ecologically friendly), physical competences (e.g., enhanced endurance capacities to move to a different neighbourhood or tolerate longer distances via bike), and social skills

(e.g., motivating also other individuals to choose ecologically friendly PA options). In total, the reconceptualizations would further enhance the complexity of the PL domains and add further interdependencies between the domains. From a practical perspective, PA programs would have to be arranged or enriched with respect to their ability to empower individuals toward an ecologically responsible active lifestyle. In this regard, (physical) education for sustainable development or for planetary health³⁶⁻³⁹ as well as climate change education already address ecological topics and may offer inspiring material how on to foster implementation into practice.⁴⁰⁻⁴²

Discussion

With this contribution, we aim to raise collective reflections about the relevance of ecological awareness in the context of PL by calling national and international societies who have made contributions to the PL field (from physical education and sport to PA and health) to lead open discussions about the potential benefits of such considerations. One of the benefits is that “win-win options” for individual PA and planetary health are emphasized,⁴³ and that the field follows the call that all professional sectors are advised to make a contribution to sustainable life on the planet (see “environment in all policies” suggestion⁴⁴). Of course, an inclusion of ecological aspects further complicates individuals’ adequate execution of physically active lifestyles, being aware that global prevalences of physical inactivity are high even without such explicit claims toward the quality of PA.⁴⁵⁻⁴⁷ However, the pressure of the climate crisis is external “in nature” and such considerations would ensure that we as human species can be physically active in the future at all. For research, these ecological considerations would open new scholarly fields, including investigations of (a) “ecologically enriched” PL interventions (e.g., in communities or schools), (b) assessment developments on the “ecological domain”, (c) necessary philosophical underpinnings, (d) conceptual overlaps with environmental literacy, (e) specific PA experiences (e.g., perceived meaningfulness of positive affect) after such a conceptual extension, or (f) actual contributions to more sustainable behaviours and lifestyles.

Table 1. Overview of some existing physical literacy definitions and their potential enrichment through an ecological aspect.

Country	Current short definition	Potential definition extended by an ecological aspect
Australia	“Physical literacy [...] reflects ongoing changes integrating physical, psychological, social and cognitive capabilities. It is vital in helping us lead healthy and fulfilling lives through movement and physical activity. A physically literate person is able to draw on their integrated physical, psychological, social and cognitive capabilities to support health promoting and fulfilling movement and physical activity — relative to their situation and context — throughout the lifespan” ⁴⁸	Physical literacy [...] reflects ongoing changes integrating physical, psychological, social and cognitive capabilities. It is vital in helping us lead healthy and fulfilling lives through movement and physical activity. A physically literate person is able to draw on their integrated physical, psychological, social and cognitive capabilities to support health promoting and fulfilling movement and physical activity <i>in an ecologically responsible manner</i> — relative to their situation and context — throughout the lifespan
England	“Physical literacy is our relationship with movement and physical activity throughout life” ⁴⁹	Physical literacy is our relationship with <i>sustainable</i> movement and physical activity throughout life
International Physical Literacy Association (IPLA) and Canada	“Physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life” ^{50,51}	Physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for <i>pro-environmental</i> engagement in physical activities for life.
Ireland	“Physical literacy is the motivation, confidence, physical competence, knowledge and understanding that enables a person to value and participate in physical activity throughout life.” ⁵²	Physical literacy is the motivation, confidence, physical competence, knowledge and understanding that enables a person to value and participate in physical activity throughout life, <i>whilst avoiding undue harm for the ecosystem.</i>
United States of America	“Physical literacy is the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person” ⁵³	Physical literacy is the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person <i>without substantially affecting planetary health.</i>

Note: The addenda are marked in bold italics and deliberately included varying suggestions for phrasing. We recommend stakeholders of such definitions to detail the selection of terms in a separate explanation.

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