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How Is Physical Literacy Defined? A Contemporary Update

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Abstract

Physical literacy globally, continues to gain momentum, yet the definition and underlying concept of physical literacy remain contested in both research and practice. This lack of clarity has the potential to undermine the operationalization of physical literacy. This paper considers the various definitions of physical literacy that are currently adopted internationally. Physical literacy experts identified seven leading groups that have established physical literacy initiatives. Although each group is unified in using the term physical literacy, there are contrasting definitions and interpretations of the concept. Common themes were identified, including the: (a) influence of physical literacy philosophy, (b) core elements of physical literacy, (c) lifelong nature of physical literacy, and (d) the need to scientifically pursue a robust operationalization of the concept. We conclude by recommending that programmes relating to physical literacy should provide a definition, a clear philosophical approach, and transparency with how their actions align with this approach.

Keywords: definition, international, policy, practice

Over the past 20 years, the invigoration of research regarding physical activity and physical education has generated a greater understanding of both their importance, and how they should be promoted (Allan, Turnnidge, & Côté, 2017). “Physical literacy” has subsequently emerged as a concept that captures both the desire to participate in physical activity, as well as gaining meaningful, fulfilling experiences through doing so. The concept was initially proposed by Whitehead (2001, 2010), in response to concerns as to the direction of physical education and the alarming levels of physical inactivity across the lifecourse (Hallal et al., 2012). Physical literacy has been presented as a “longed for” approach, that values our physical existence (Lundvall, 2015, p. 116). Crucially, it redefines how physical activity is understood, and places importance on the holistic development of an individual’s physical potential (Whitehead, 2010). This approach appears to have wide appeal (Jurbala, 2015; Tremblay & Lloyd, 2010), with nations from across the world embracing physical literacy to better promote the health, productivity, and happiness of their citizens. The concept of physical literacy is, however, often interpreted differently between and within these countries (Edwards, Bryant, Keegan, Morgan, & Jones, 2017), leading to concerns that the concept is becoming lost, confusing, or that it is being implemented in ways that are inconsistent with its own core tenets (Jurbala, 2015). As such, researchers have endeavoured to elaborate on what the concept means and how it can be applied in practice. Nevertheless, research published on the concept of physical literacy has provided a diverse array of perspectives (Dudley, Cairney, Wainwright, Kriellaars, & Mitchell, 2017; Edwards et al., 2017), which will be further explored within this paper.

The Origins of Physical Literacy

According to Whitehead (2001), physical literacy is derived from the philosophical concepts of monism, phenomenology and existentialism. “Monism” is the belief that the mind and body are interdependent and indivisible (Whitehead, 2007). “Existentialism” proposes that every person is an individual as a result of their interactions (Whitehead, 2007). Similarly,

"phenomenology" proposes that individuals are formed through their experience of these interactions, and suggests that perception, through our embodied nature, forms unique perspectives in how individuals view the world (Whitehead, 2007). As such, under these assumptions, at the core of physical literacy, individuals will have: (a) a unique interpretation of the physical world, (b) embodiment within this world based on their own experiences and perceptions, and (c) their physical and mental being viewed as an indivisible, mutually enriching whole. It should be noted, however, that each of the philosophical concepts of monism, existentialism, and phenomenology were originally proposed as self-contained approaches to the philosophy-of-science, and not intended for mixing (Grix, 2002).

Whitehead's intention (cf. Whitehead, 2010), by invoking these stances, was to transform physical literacy into an inclusive and holistic concept, focussed on the individual-in-the-world, and her/his experiences. Whitehead (2010) argued that one cannot fully understand or appreciate the true nature of physical literacy without first grasping its philosophical concepts. Yet for many, the detailed and complex philosophical groundings of physical literacy present a barrier to clarity and understanding (Jurbala, 2015). For researchers seeking to explain the concept, there must be some understanding of the philosophical assumptions in order to validate predictions, and this should be articulated. Recent analysis in the related domain of sport and exercise psychology has suggested that the lack-of-willingness to discuss and consider philosophical underpinnings is the cause of many current discrepancies, disagreements, and plateaus in progress (Hassmén, Keegan, & Piggott, 2016).

A definition is, or should aim to be, inextricably linked to its underpinning philosophical assumptions (Dennett, 1995). Whitehead has been proactive in seeking to refine and improve the definition of physical literacy since she first proposed the concept in 1993 (Whitehead, 1993), often through consensus-seeking exercises within the International Physical Literacy Association (IPLA). For example, in 2010 physical literacy was defined as: "appropriate to each individual's

endowment, physical literacy can be described as the motivation, confidence, physical competence, knowledge, and understanding to maintain physical activity throughout the lifecourse" (Whitehead, 2010, p. 11). In 2013, Whitehead had described physical literacy in the International Council for Sport Science and Physical Education (ICSSPE) bulletin as "the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for maintaining purposeful physical pursuits/activities throughout the lifecourse" (Whitehead, 2013b, p. 29). Following discussions and refinements, the definition was recently changed on the IPLA website, to read as follows: "the motivation, confidence, physical competence, and knowledge and understanding to value and engage in physical activity for life" (IPLA, 2017). While there have been three iterations of the definition since 2001, Whitehead and her colleagues at the IPLA have always retained the elements of motivation, confidence, physical competence, knowledge, and understanding. Another constant throughout Whitehead's definitions is the notion that the concept is applicable throughout the lifecourse. Nevertheless, the evolving nature of the definition may be a pivotal consideration in illustrating how individuals who approach physical literacy as a new/novel concept may be left bewildered in their search for a definitive definition as arguably, none exists at this time.

Generally, good science is embodied by debate, discussion, and a willingness to evolve and progress ideas (Popper, 1957) and, in this respect, physical literacy is thriving. The following sections will demonstrate that while there may not be a correct or true definition, as both consensus and evidence are currently lacking (Jurbala, 2015), instead there are – or should be – transparent approaches (Edwards et al., 2017). This paper aims to collate, compare, and critically review existing definitions of physical literacy from leading organisations implementing physical literacy agendas around the world. This process will thus facilitate the positioning and contextualisation of various policy frameworks, measurement and assessment approaches, and intervention data and results. Each will be discussed with respect to its specific underlying

definition and conceptualisation. Common themes and differences will then be discussed, as well as origins for these differences. While other papers have sought to critically appraise varying concepts (Robinson & Randall, 2017), or offer their own interpretations (Chen, 2015), the aim of this paper is to clearly identify, articulate, and compare the various approaches of each group, united under the label of physical literacy.

Methods

Members of the IPLA (n=4) were contacted via email in Spring 2017 and asked to identify leading organisations/groups working within the physical literacy community. Physical literacy is a relatively novel concept with almost all organisations/groups using freely available online platforms to share research and express definitions and interpretations. Working with these experts allowed access to definitions produced both inside and outside of the traditional academic publishing distribution channels. In tandem, the references of a recent systematic review of definitions, foundations, and associations of physical literacy (Edwards et al., 2017) were also checked to ensure all relevant organisations/groups and resources were identified. The websites and publicly available material from each organisation/group were searched to capture information regarding the definitions and theoretical/conceptual underpinnings of physical literacy being operationalised internationally.

Findings

We identified that there are seven prominent groups currently working to promote and develop physical literacy, each operating with at least one identifiable definition. The groups included research teams, government organisations (national or state), not-for-profit and corporate groups, or multi-sector partnerships spanning all of these. These organisations/groups use online platforms to share research and present definitions and interpretations of the concept and these were used to gain insight. Definitions and interpretations of physical literacy from each of these seven groups are presented according to country of origin in Table 1.

142 ***(Place Table 1 about here)***

143 **United Kingdom (UK)**

144 The IPLA is a leading advocacy group for physical literacy in the UK, having been
145 established as a UK charity in 2014, whereupon Margaret Whitehead was appointed as the
146 president. The IPLA was formed with the purpose of providing guidance, clarity, and
147 consistency regarding physical literacy. At the time of this study, the IPLA promoted their
148 definition of physical literacy through their website (www.physical-literacy.org.uk), as well as
149 delivering training programmes to practitioners and hosting an annual conference. Nonetheless,
150 there was a lack of research published by the association, and despite being named the
151 "International Physical Literacy Association," the group is predominantly connected with UK
152 partners and focused on promoting physical literacy within the UK.

153 Despite the establishment of the IPLA, different definitions and interpretations of physical
154 literacy had been utilised across UK countries (England, Wales, Scotland, and Northern Ireland).
155 The importance of physical literacy for children and young people was first affirmed within
156 national government policy and strategy in England in "Sporting Future: A New Strategy for an
157 Active Nation" (Sport England, 2016). In response, Sport England – a non-departmental public
158 body tasked by Department for Culture Media and Sport with increasing population levels of
159 participation in physical activity in England – had identified "increasing the percentage of
160 children achieving physical literacy" as a key performance indicator within their 2016-2021
161 strategy (Sports England, 2016, p. 20). The Youth Sport Trust, in partnership with Sport
162 England, Association for Physical Education, Sports Coach UK, and County Sports Partnership
163 Network had created a Primary School Physical Literacy Framework, detailing the role of school
164 physical education (PE), extra-curricular activities, and competitive sports. Within this
165 framework physical literacy was defined as the "motivation, confidence, physical competence,
166 knowledge, and understanding that provides children with the movement foundation for lifelong

participation in physical activity" (Youth Sport Trust, 2013, p. 1). Although similar to the previously discussed Whitehead definition, the additional outcome of movement foundation implied a movement focus within the physical literacy framework. Notably, the IPLA are also not listed as collaborating or endorsing this framework.

In Wales, the devolved Welsh Government (Llywodraeth Cymru) prioritised physical literacy at a policy level considerably earlier than England, with physical literacy highlighted as an opportunity to enable lifelong participation in sport and physical recreation. As such, recommendations to raise the status of physical education to become a core subject in Wales - alongside mathematics, English, Welsh, and science - were proposed (Schools and Physical Activity Task and Finish Group, 2013). At the time of publication, the physical literacy definition adopted by Sport Wales displayed similarities to the definition put forward by Whitehead and the IPLA, but instead, it was articulated in the form of an equation: "Physical Skills + Confidence + Motivation + Lots of opportunities = Physical Literacy" (Sport Wales, 2017). In turn, the Sport Wales definition was an attempt to translate the complex physical literacy concept into one that the general public could easily interpret. In line with Whitehead's approach, Sport Wales advocated the notion of physical literacy as a journey throughout life through their interactive website (http://physicalliteracy.sportwales.org.uk/en/) that displayed physical literacy in relation to different life stages. Further, in 2014, approximately £1.78 million ($2.3 million) was invested by the Welsh government into the "Physical Literacy Programme for Schools." The program was a targeted intervention programme that aimed to develop young people along their physical literacy journey. The programme had a political agenda of improving young people's engagement and confidence in secondary schools and reducing the impact of deprivation on academic attainment (Sport Wales, 2017). More recently, upcoming curricular changes in Wales were implicitly aligned with the concept of physical literacy, whereby physical

education will be part of the "health and well-being area of learning and experience" that aims to develop "healthy and confident individuals" (Donaldson, 2015, pp. 45-46).

Canada

As a nation, Canada is often praised for being a strong advocate and leader of physical literacy through its implementation of well-funded programmes and strategies within national sport systems (Allan et al., 2017). There are many groups across Canada's provinces and territories using the term physical literacy, with varying definitions and interpretations of the concept. Two leading government funded groups that work to promote physical literacy on a national scale are Canadian Sport for Life (CS4L) and Public Health and Education Canada (PHE Canada). There are also regional groups dedicated to physical literacy research, such as the Healthy Active Living and Obesity group and the Pacific Institute for Sporting Excellence.

Initially a range of physical literacy definitions were developed in Canada, often adapted from the Whitehead (2010) original definition to suit the needs of specific organisations. The Whitehead (2010) physical literacy definition is – in some capacity – recognised or endorsed by each research team or organisation. Nevertheless, in 2015, discourse within the physical literacy community – surrounding concerns for the divergence in approaches and foci of programme – prompted the creation of a consensus statement within Canada. The purpose of the statement was to provide clarity for the development of policy, practice, and research. The consensus statement was a collaborative process and authors of the statement included: ParticipACTION, Sport for Life Society, the Healthy Active Living and Obesity Research Group at the Children's Hospital of Eastern Ontario Research Institute, Physical and Health Education Canada (PHE Canada), Canadian Parks and Recreation Association, and the Ontario Society of Physical Activity Promoters in Public Health (CS4L, 2015). The IPLA definition (IPLA, 2017) informed by Whitehead (2013b; the motivation, confidence, physical competence, knowledge and

understanding to value and engage in physical activity for life) was endorsed within the consensus statement as the definition of physical literacy (CS4L, 2015, p. 1).

Despite the generation of this consensus statement, the previous definitions from these organisations were often referred to in practice and the primary sources available to interested parties searching the internet (Hyndman & Pill, 2017). The prevalence of these competing approaches leads to the continued confusion and disagreement within the physical literacy community (Robinson & Randall, 2017). For example, in 2009, PHE Canada, a leading professional organisation for physical education teachers, released a physical literacy positioning paper using the following working definition: "Individuals who are physically literate move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person" (Mandigo, Francis, Lodewyk, & Lopez, 2012, p. 6). This definition was displayed on the PHE Canada (2017) website (http://www.phecanada.ca/programs/physical-literacy), however, at the same time the IPLA definition was also endorsed with reference to the consensus statement.

In addition to PHE Canada's approach, The Sport for Life Society (previously Canadian Sport For Life) endorses the IPLA definition of physical literacy, alongside the description: "Physical literacy is the mastering of fundamental movement skills and fundamental sport skills" (The Sport for Life Society, 2017). In 2016, The Sport for Life Society registered "60 Minutes Kids Club," which became "Physical Literacy for Life" (PLFL, 2017). PLFL aimed to advance physical literacy in the health, recreation, and education sectors, with the aspiration "to develop physical literacy in all Canadians" (PLFL, 2017, p. 1). Again, the materials accompanying this site reiterated the IPLA 2014 definition of physical literacy, alongside the full 2015 consensus statement, although it has been debated whether this acknowledgement was translated in practice (Robinson & Randall, 2017). For example, in 2014, physical literacy was adopted as one of the 10 key factors influencing the CS4L model of Long Term Athlete Development (CS4L, 2015).

This model became a popular and influential approach often deployed in relation to physical literacy in Canada (Robinson & Randall, 2017). The model evolved to try to acknowledge the wide variety of factors that influence physical literacy, and in turn athletic development, including a range of skills and environments. As an internationally recognised talent development model, this performance-driven approach to physical literacy received global attention (Allan et al., 2017). Nevertheless, although CS4L adopted the IPLA definition of physical literacy, strategies intended to promote physical literacy within the Long-Term Athlete Development model largely focussed on physical skills and motor development (Allan et al., 2017) and as the popularity of this model grew, so too have criticisms regarding whether the model truly acknowledges the holistic nature of physical literacy (Robinson & Randal, 2017).

United States

At the time of our sampling, physical literacy in America was supported by The Society of Health and Physical Educators (SHAPE America) as a part of the National Standards and Grade Level Outcomes for K-12 Physical Education (Moreno, 2013). In 2013, SHAPE America defined physical literacy as **"**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*"* (Mandigo et al., 2012, p. 6; SHAPE America, 2014, p. 4). This definition was the same as that utilised by PHE Canada, and physical literacy is outlined as the goal for both physical and health education, highlighted through the campaign *50 Million Strong* which reflected SHAPE America's commitment to put all children on the path to health and physical literacy by 2029 (Jefferies, 2016).

In 2015, The Aspen Institute (an education and policy studies organisation) was commissioned by SHAPE America to produce the document: "Physical literacy in the United States: A model, strategic plan, and call to action" (The Aspen Institute, 2015). Alongside the SHAPE America website, the Aspen Institute developed further resources via their "Physical

Literacy: Project Play" website which defined physical literacy as "the ability, confidence, and desire to be physically active for life*"* (The Aspen Institute, 2013), thus deviating quite significantly from the SHAPE America definition. Crucially, this wording removed the element of knowledge and understanding from Whitehead's definitions, although it could be argued that this was in an attempt to simplify the definition in order to engage youth populations. Both Physical Literacy: Project Play (The Aspen Institute, 2013) and SHAPE America are initiatives for school-aged children, so will undoubtedly focus on children and young people.

SHAPE America asserted that physical education "develops the physically literate individual through deliberate practice of well-designed learning tasks*"* (SHAPE America, 2017, p. 1). In 2014, the term "physically educated" was replaced with "physically literate" in the National Standards and Grade Level Outcomes for K-12 Physical Education (SHAPE America, 2014). This was critiqued by Lounsbery and McKenzie (2015) and it was reported that this change occurred without the consultation of the physical education profession. It was also argued that there appeared to be little difference between the definitions of physical education and physical literacy. This argument was echoed by Hyndman and Pill (2017), who argued that the substitution and interchangeable use of physical education for physical literacy has led to "definitional blurring."

New Zealand

Sport New Zealand is a government-funded agency that supports and funds local, regional, and national organisations working to promote grassroots and elite sports throughout New Zealand. The 2015-2022 Community Sports Strategy (Sport New Zealand, 2015), which followed the first national strategy published in 2009, highlighted physical literacy as a key focus area for young people within New Zealand. To guide this focus area, Sport New Zealand (2015) published a document titled *Physical Literacy Approach - Guidance for Quality Physical Activity and Sport Experiences,* wherein they used Whitehead's (2013b) definition of physical literacy:

"the motivation, confidence, physical competence, knowledge and understanding required by participants that allows them to value and take responsibility for engaging in physical activity and sport for life" (Sport New Zealand, 2015, p.1). Sport New Zealand reasoned that although they wanted to be a successful sporting nation, they require a participant-focused physical literacy approach to community sport. This approach took a holistic view of the participant, considering their physical, social and emotional, cognitive, and spiritual needs (Sport New Zealand, 2015). The inclusion of a spiritual aspect to their interpretation of physical literacy reflected the important spiritual facets of the Maori culture, which is specific to, and has great importance within New Zealand culture and society. Further, Sport New Zealand outlined their vision, provided information regarding physical literacy, and considered the needs and considerations of various life stages. This document (Sport New Zealand, 2015) gave significance to the "lifecourse," in line with Whitehead's (2010) definition, through a section called "traveling through life" where physical literacy was considered in regard to each life stage (i.e., from early years through to seniors), thus promoting a holistic and inclusive approach to physical literacy. The most recent annual report from Sport New Zealand targets improving physical literacy in children between 2017 and 2020 (Sport New Zealand, 2016).

Australia

The first Australia-wide curriculum for Health and Physical Education (HPE) was released to Australia's states and territories and their respective education systems in 2015. Although the HPE documents did not make an explicit reference to physical literacy, there were strong alignments between particular interpretations of physical literacy and aspects of the HPE curriculum; for example, the aim of the curriculum is to provide the basis for developing knowledge, understanding, and skills for students to lead healthy, safe and active lives (Australian Curriculum, Assessment and Reporting Authority - ACARA, 2016). The concept of physical literacy was specifically mentioned in the document titled *Getting Australia Moving*,

which was commissioned by the local state government in the Australian Capital Territory (Keegan, Keegan Ordway, Daly, & Edwards, 2013). During this time, the University of Canberra's physical literacy research group was arguably the leader of physical literacy within Australia (The Aspen Institute, 2015), aiming to improve the physical literacy of Australian children through school physical education and sport, community linkages, and the development of resources such as web apps and task-cards for teachers.

In May 2016, the Australian Sports Commission recruited a team of researchers to produce, for Australia, a physical literacy definition, standards framework, assessment guidelines, and implementation guidelines. The core researchers in the team conducted a wide-ranging literature review of physical literacy, followed by expert panel meetings, and a Delphi consultation process involving three rounds of Delphi surveys to pursue consensus (Australian Sports Commission, 2017). Following this process, it was agreed that physical literacy should be theoretically separable from physical activity, a so-called double dissociation wherein a person could be high or low in both, separately, or together. The group agreed on a set of defining statements making it clear that each individual has the potential to learn through participation in physical activity and that potential can be developed to a level where it is self-perpetuating. In the end, there were four defining statements issued by the Australian Sports Commission, with between 94-100% consensus recorded from an expert group of 18 leading researchers. The four defining statements were: (a) Physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts (Core/process; 94% consensus); (b) It reflects ongoing changes integrating physical, affective (subsequently renamed psychological), cognitive, and social capabilities (Components/constructs; 94% consensus); (c) It is vital in helping us lead healthy and fulfilling lives through movement and physical activity (Importance; 100% consensus); and (d) A physically literate person is able to draw on their integrated physical, psychological, cognitive, and social capacities to support health promoting and

fulfilling movement and physical activity – relative to their situation and context – throughout the lifespan (Aspiration/product; 94% consensus).

Central to these defining statements was the clarification that whole-person, holistic development spans four key learning domains: the physical, affective, cognitive, and social (Australian Sports Commission, 2017). The physical domain included physical competence, motor skills, health- and skill-related fitness, technique and psychomotor skills. The affective (subsequently 'psychological') domain concerned itself with one's experiences of internal signals such as fatigue and exertion, as well as motivation, confidence, self-esteem and engagement. The cognitive domain covered conscious and unconscious knowledge and understanding, including problem-solving and decision-making, awareness of rules and tactics, appreciation of healthy and active lifestyles, and processing of feedback and reflection. The social domain included leadership, understanding ethical principles, working with peers, coaches, teachers and more, treating others with sensitivity and effective communication. The group emphasised that development and learning must be "integrated across" all four domains, and not merely focussing on the physical. It is early days for this new approach, using defining statements rather than a singular definition, but the work has been well received in stakeholder focus groups and has support from the Federal government, including ongoing funding of the Australian Sports Commission's work in this area across Australia.

Discussion

The current paper has endeavoured to collate, compare, and critically review the current understandings of physical literacy internationally. We have identified seven established and prominent groups, and have provided an overview of those groups operating with the term physical literacy. The following discussion will critically review these by identifying common themes and issues regarding the definitions used by these groups, exploring potential reasons for these issues, and pointing out the implications this has for the future of physical literacy.

Global Differences

In articulating her views on the concept of physical literacy, Whitehead (2010) was clear that there are good reasons to expect different approaches to physical literacy. The underlying philosophy (or philosophies) she argued as being central considerations denoted that the unique personal experience, unique personal capabilities at any point in time, and unique social and environmental contexts all necessitate a context-specific approach. International differences in the interpretation and operationalization of physical literacy are expected, indeed needed, in order to create meaning and cultural relevance. The influence of culture was extensively discussed by Whitehead (2010) who identified that "specific expression (of physical literacy)… will be particular to the culture in which they live" (p. 12). Although physical literacy is proposed to be a universal and inclusive concept, there is a debate as to how much tailoring the socio-cultural context should necessitate, and this is referred to throughout Whitehead's book (2010). Initially, it was assumed that the differences in interpretation could stimulate the implementation of physical literacy in practice and allow it to flourish within a variety of settings, ultimately, leading not only to different approaches to applied practice, but also different definitions of physical literacy. As a consequence, however, some have argued that this diversity in definitions has generated a level of inconsistency and conflict within the physical literacy community (Dudley et al., 2017; Jurbala, 2015; Tremblay & Lloyd, 2010).

Each of the seven organisations, discussed above, have adopted their own definition(s) of physical literacy. With the exception of SHAPE America, these groups are non-governmental public sports bodies. While the growing interest from international organisations aiming to promote physical literacy is promising, it should be noted that these organisations each have their own specific purposes, philosophies, expertise, and funding priorities in order to promote the concept within their communities. These contextual constraints then influence associated

characteristics, descriptors, objectives, methodologies, programmes, and evaluations of physical literacy, perhaps perpetuating the issues that form the focus of the current paper.

The Canadian consensus statement (CS4L, 2015) aimed to decide upon a single definition as, even within one country, the interpretations of physical literacy were notably different across provinces. The Canadian consensus statement went some way towards unifying a physical literacy approach, yet there is a marked difference between endorsing a definition and appropriately operationalising said definition (Edwards et al., 2017). It is unclear, however, what meaningful difference this consensus achieved in terms of changes to practice and approaches, with conflicting definitions presented alongside the 'agreed' one. More substantive, transparent, and scientific processes may be required in order to develop and agree on a robust working consensus regarding the definition and meaning of physical literacy.

Philosophy within the definition. The philosophy underpinning the physical literacy concept and its holistic nature is arguably what makes the concept unique. Whitehead has consistently noted that philosophy is the vital foundation behind physical literacy and one cannot truly understand physical literacy without embracing its philosophical roots (2001, 2007, 2010, & 2013b). Nevertheless, the philosophy surrounding physical literacy programmes was often ill-aligned or simply missing, both in research and practice (Edwards et al., 2017). For example, SHAPE America (2017) and Sport Wales (2014) may have neglected the lifelong experience in their materials, as their focus at the time was on school-aged populations. Likewise, having historical associations with talent development pathways, The Sport for Life Society (2017) and Sport New Zealand (2016) may have placed higher importance on movement skills rather than valuing the diverse and holistic construction of physical literacy. Yet despite the emphasis on philosophy, Whitehead has never successfully included an acknowledgement of philosophy within the definitions she has developed, or helped to stimulate. This may be a potential reason for the confusion and misinterpretations surrounding the concept.

Defining the Core Elements

While making the concept culturally relevant, some organisations may have deviated from the original Whitehead (2001) definition, which included the four elements of confidence, physical competence, motivation, and knowledge and understanding. For example, CS4L (2015) and PHE Canada (2017) expressed the physical literacy elements as "fundamental movement and sport skills" (CS4L, 2015, p. 1) and "competence and confidence*"* (PHE Canada, 2017, p. 1). In each case, some of the physical literacy core elements described in Whitehead's definition are omitted; therefore, is the term physical literacy appropriate? Whitehead's definition has taken different forms over the 10 years preceding this analysis, however, it remained consistent in the sense that all four elements (motivation, confidence, physical competence, and knowledge and understanding) were included. Sport Wales (2017) replaced the element "physical competence" from the Whitehead definition with "physical skill." This was seemingly an attempt to translate the core elements into language that can be easily understood by the general population, thus making it possible to implement within local and education sectors.

Sport Wales (2017, p. 1) added an additional core element, "a range of opportunities" referring to facilities available and the environment facilitating physical activity. By adding this element into the definition, Sport Wales emphasised that physical literacy was not only the responsibility of the individual, but also of parents, teachers, council members, and the community as a whole. Similarly, CS4L (2015), PHE Canada (2017), and SHAPE America (2014) also added this element referring to it as "multiple environments." This aspect was discussed extensively by Whitehead (2001), who sought to clarify what constituted a physically challenging environment, and how a physically literate individual would read the environment. In contrast, however, interacting with the environment was not featured in Whitehead's subsequent definitions (2001, 2007, 2010, 2013a, & 2013b; IPLA, 2017). Recent research by Dudley et al. (2017) identified movement contexts as a significant consideration for policy

makers, so much so as to suggest the Whiteheadian definition could beneficially be adapted further to incorporate this crucial element. Interestingly, and in contrast to other groups, Australia's new approach does not mention the four elements of motivation, confidence, competence, and knowledge and understanding. Instead, it has included the components/constructs of physical, affective (subsequently psychological), cognitive, and social capacities (Australian Sports Commission, 2017). The research group reached a consensus that it would be more inclusive and engaging to specify the broader domains as there were concerns that concepts such as motivation and confidence held different meanings to different cultures, between researchers, and versus the wider stakeholder group. This presents an alternative interpretation in approaching physical literacy, which warrants consideration.

A Lifelong Journey

Whitehead (2001, 2010) consistently argued that physical literacy represents a lifelong journey. A recent systematic review of the definitions of physical literacy conducted by Edwards et al. (2017) found "throughout the lifespan" as a core category in defining physical literacy. Within existing literature, they reported the existence of three categories: throughout the lifespan, unique journey, and the Long-Term Athlete Development model. Nonetheless, the systematic review also highlighted physical education as a core category, alluding to the focus that has been placed upon school-aged populations.

Despite most of the groups reviewed advocating Whitehead's definition (2001, 2007, 2010, 2013a, & 2013b; IPLA 2017) to some degree, many groups that have operationalised physical literacy in practice have predominantly focused on school-aged children and young people. This is not surprising, especially as PHE Canada and SHAPE America are organisations formed within the physical education sector. Many of these organisations have received funding from governments who wish to invest in children's health. Particularly within policy, where cost versus benefit must be evidenced, the lack of research to support physical literacy across the

lifecourse presents a major barrier. At the time of writing, much of the published literature relating to physical literacy concerned school-aged populations. Within the 2013 special issue on physical literacy published in the *Journal of Sport Science and Physical Education*, authors admitted many of the articles were school focused (Weinburg, 2013). Likewise, within the current special issue, articles also focus on physical education, as is the mission of the *Journal of Teaching in Physical Education*. Therefore, in order to generate evidence throughout the lifecourse, relevant and appropriate research from the established contexts of physical education and physical activity should be considered. Nevertheless, physical literacy has only been adopted by policymakers in recent years, and the youth population has evidently been the easiest to access and impact. Perhaps it is too early to comment on the focus of applied practice. We would suggest that a more holistic approach needs to be taken to consider physical literacy across the lifecourse.

Process Versus Product

An apparent difference when comparing global organisations became the choice of some groups to define a physically literate person as opposed to defining physical literacy. For example, achieving physical literacy in children is a key performance indicator in Sport England's (2016) strategy for physical activity in the UK. Similarly, PHE Canada (2017) described a person who is physically literate in their definition, while SHAPE America identified that physical education is the means "to create the conditions for all youth in the United States to be physically literate by the middle school years" (The Aspen Institute, 2015, p. 11). This process (journey) versus product (outcome/goal) debate became apparent in the work of Keegan et al. (in review), and has led to a core point of difference in the work produced from Australia. The Australian (2017) defining statements differentiate between physical literacy as a process (Statement 1 – Core/process) versus physical literacy as the product/outcome (Statement 4 – Aspiration/product). Different approaches to physical literacy have emphasised an inherent,

ongoing potential to learn and develop through movement (process), which has been contrasted against some kind of current physical literacy status (product), which is presented as a desirable level of being physically literate. Concerns remain, however, that discussing physical literacy as an end state, also implies that someone may be physically illiterate, which has been a particular source of contention; Whitehead (2013a) argued that physical illiteracy cannot occur in a living being as human movement potential is necessary for life. Nonetheless, in the book *Physical Literacy: Throughout the Lifecourse,* Whitehead refers openly to "physically illiterate individuals" (2010, p. 7). In a recent personal communication, Whitehead has expressed frustration at the process versus outcome (versus both) debate. Whitehead has attempted to clarify her view that although a journey is a process in the interests of seeking a goal, progress on a physical literacy journey depends on the accumulated processes in which the individual is involved (Whitehead, personal comunication, August 14, 2017). Separately, the ongoing process versus outcome (versus both) debate is another core source of disagreement and inconsistencies in definitions, viewpoints, and approaches. Robust and contemporary research on this topic should be published in publically accessible peer-reviewed journals, to engage and render transparent the current debate, thus also stimulating the development of understanding of physical literacy.

Future Implications

This review of the current approaches to defining physical literacy, while not exhaustive, has identified several distinguishable approaches, between and within different countries. For example, in conducting this review we have been made aware of physical literacy programs being conducted in Singapore, Scotland, China, and India. At the time of writing, these programs were not sufficiently developed, or distinguishable from other programs, to warrant a separate analysis. Nonetheless, a common issue experienced by both established and emerging groups working around physical literacy is a lack of empirical evidence (Giblin, Collins, &

Button, 2014; Jurbala, 2015). This paucity-of-evidence was a limiting factor in the current paper, as we were only able to include established organisations, all of which existed in English speaking, developed countries. Yet even in these groups, many had an online presence without a peer-reviewed, published evidence-base. Conducting peer-reviewed research and robustly evaluating programmes throughout policy and practice should therefore be a key focus for organisations moving forward.

Crucially, however, when presenting this empirical evidence, understandings of, and assumptions regarding, physical literacy should be clearly presented in order to provide a frame for interpretations of findings. While the concept and topic of physical literacy appears to hold strong potential – particularly the notion of re-emphasising the holistic, integrated nature of personal development through movement experiences – researchers within the area have increasingly recommended that academics need to focus on clearly articulating aligned definitions, philosophical assumptions, and conceptual frameworks (Dudley et al., 2017; Edwards et al., 2017). Furthermore, with this research transparency, there is also a need for tolerance for differing approaches of physical literacy in order to permit collaborations, sharing, and critical discussions while operationalising the concept (Edwards et al., 2017). This paper demonstrates that different approaches have been adopted towards physical literacy by different groups. Some advocates, often from a specific group promoting a specific approach, are troubled by this divergence in meanings, calling for alignment to agreed core elements of definition wordings. While this paper recognises that there will be different interpretations of physical literacy, it also urges all authors and researchers to clearly articulate their definition, assumptions, and core values when they deliver and report their findings in relation to physical activity and physical literacy.

Conclusion

A number of international groups, and numerous papers, chapters, and books, have focussed on physical literacy in the recent years. Such is the perceived benefit of physical literacy that within the UK, Canada, USA, New Zealand, and Australia, the term physical literacy has been recently cited within recent national policies. Nonetheless, in order for physical literacy to develop, robust evidence-based research is needed. Within such research, a level of clarity, transparency is needed; and through such clarity and clear evidence, consensus may be pursued regarding the "what and for what" questions (Edwards et al., 2017). To be clear, we do not advocate that each group adopts the same definition *a priori*, but it must be possible to compare different interpretations and evaluate the effectiveness of measurement/assessment attempts, intervention programmes, and policies internationally. Opportunities for cooperation in promoting physical literacy should continue to be developed, as open discussions could help determine the importance of physical literacy in research and practice (Corbin, 2016). As such, all stakeholders, throughout both academia and applied practices, should seek to clearly and coherently articulate their approach to physical literacy in order to make meaningful differences that stand a chance of significantly advancing the field.

554 **References**

555 Allan, V., Turnnidge, J., & Côté, J. (2017). Evaluating approaches to physical literacythrough the
556 lens of positive youth development. *Quest*, *69*, 515-530.
557 Australian Curriculum, Assessment and Reporting Authority [ACARA]. (2016) *Health and*
558 *physical education (HPE*). Canberra, ACT: Commonwealth of Australia. Retrieved from
559 https://www.australiancurriculum.edu.au/f-10-curriculum/health-and-physical-education/
560 Australian Sports Commission (2017). *Draft Australian physical literacy standard*. Retrieved
561 from http://ausport.gov.au/physical_literacy
562 Canadian Sport For Life (CS4L). (2015). *Canada's physical literacy consensus statement.*
563 Retrieved from: http://physicalliteracy.ca/physical-literacy/consensus-statement/
564 Canadian Sport For Life (CS4L). (2017). *Physical literacy definition.* Retrieved from
565 http://physicalliteracy.ca/physical-literacy/
566 Chen, A. (2015). Operationalizing physical literacy for learners: Embodying the motivation to
567 move. *Journal of Sport and Health Science, 4*, 125-131.
568 Corbin, C. B. (2016). Implications of physical literacy for research and practice: A commentary.
569 *Research Quarterly for Exercise and Sport, 87*, 14-27.
570 Dennett, D.C. (1995.) *Darwin's dangerous idea: Evolution and the meanings of life*. New York.
571 NY: Simon and Schuster.
572 Donaldson, G. (2015). *Successful futures: Independent review of curriculum and assessment*
573 *arrangements in Wales*. Retrieved from
574 http://dera.ioe.ac.uk/22165/2/150225-successful-futures-en_Redacted.pdf
575 Dudley, D., Cairney, J., Wainwright, N., Kriellaars, D., & Mitchell, D. (2017). Critical
576 considerations for physical literacy policy in public health, recreation, sport, and
577 education agencies. *Quest*, *69*, 436-452.

578 Edwards, L. C., Bryant, A. S., Keegan, R. J., Morgan, K., & Jones, A. M. (2017). Definitions,
579 foundations and associations of physical literacy: A systematic review. *Sports Medicine,*
580 *47*, 113-126.
581 Giblin, S., Collins, D., & Button, C. (2014). Physical literacy: Importance, assessment, and
582 future directions. *Sports Medicine, 44*, 1177-1184.
583 Grix, J. (2002). Introducing students to the generic terminology of social research. *Politics, 22*,
584 175-186.
585 Hallal, P. C., Andersen, L. B., Bull, F. C., Guthold, R., Haskell, W., Ekelund, U., & Group, L. P.
586 A. S. W. (2012). Global physical activity levels: Surveillance progress, pitfalls, and
587 prospects. *The Lancet, 380*(9838), 247-257.
588 Hassmén, P., Keegan, R., & Piggott, D. (2016). Research and practice in applied sport and
589 exercise psychology. *Rethinking sport and exercise psychology research* (pp. 195-220).
590 UK: Palgrave Macmillan.
591 Hyndman, B., & Pill, S. (2017). What's in a concept? A Leximancer text mining analysis of
592 physical literacy across the international literature. *European Physical Education*
593 *Review,* Advance online publication. doi:10.1177/1356336X17690312
594 International Physical Literacy Association. (2017). *IPLA definition*. Retrieved from
595 https://www.physical-literacy.org.uk/
596 Jurbala, P. (2015). What is physical literacy, really? *Quest, 67*, 367-383.
597 Jefferies, S. (2016). *What exactly is 50 million strong by 2029? - SHAPE America*. Retrieved
598 from http://community.shapeamerica.org/blogs/steve-jefferies/2016/04/01/what-exactly-
599 is-50-million-strong-by-2029.
600 Keegan, R. J., Keegan, S. L., Daley, S., Ordway, C., & Edwards, A. (2013). *Getting Australia*
601 *moving: Establishing a physically literate & active nation (GAME PLAN)*. Retrieved

602 from http://www.canberra.edu.au/researchrepository/file/50f8c79c-2aca-a83f-aee8-
603 254288c36220/1/full_text_final.pdf
604 Lounsbery, M. A. F., & McKenzie, T. L. (2015). Physically literate and physically educated: A
605 rose by any other name? *Journal of Sport and Health Science, 4*, 139-144.
606 Lundvall, S. (2015). Physical literacy in the field of physical education–A challenge and a
607 possibility. *Journal of Sport and Health Science, 4*, 113-118.
608 Mandigo, J., Francis, N., Lodewyk, K., & Lopez, R. (2012). Physical literacy for educators.
609 *Physical & Health Education Journal, 75*, 27-30.
610 Moreno, T. (2013). American physical education: A discursive essay on the potential unifying
611 role of physical literacy in the United States. *Journal of Sport Science and Physical*
612 *Education, 65*, 371-377.
613 Physical Literacy for Life (PLFL). (2017). Developing physical literacy and delivering quality
614 sport. Retrieved from http://physicalliteracy.ca/
615 Popper, K. (1957). Philosophy of science. In C.A. Mace (Ed.), *British philosophy in the mid-*
616 *century*. London, UK: George Allen and Unwin.
617 Public Health & Education (PHE) Canada. (2017). *Physical literacy*. PHE Canada. Retrieved
618 from http://www.phecanada.ca/programs/physical-literacy.
619 Robinson, D. B., & Randall, L. (2017). Marking physical literacy or missing the mark on
620 physical literacy? A conceptual critique of Canada's physical literacy assessment
621 instruments. *Measurement in Physical Education and Exercise Science, 21*, 40-55.
622 Schools and Physical Activity Task and Finish Group. (2013). *Physical literacy – An all-Wales*
623 *approach to increasing levels of physical activity for children and young people.* Cardiff,
624 UK: Crown.
625 SHAPE America. (2014). National standards & grade-level outcomes for K-12 physical
626 education. Champaign, IL: Human Kinetics.

SHAPE America. (2017). *Physical literacy*. Retrieved from http://www.shapeamerica.org/events/physicalliteracy.cfm.

Sport England. (2016). *Sport England: Towards an active nation*. Retrieved from https://www.sportengland.org/media/10629/sport-england-towards-an-active-nation.pdf

Sport New Zealand (2015). *Physical literacy approach - Guidance for quality physical activity and sport experiences*. Retrieved from http://www.sportnz.org.nz/assets/Uploads/attachments/About-us/2015-PhysicalLiteracyDocument-Online.pdf

Sport New Zealand (2016). *Annual report 2016*. Retrieved from http://www.sportnz.org.nz/assets/Uploads/3019-SNZ-Annual-Report-2016-FINAL-singlepages2.pdf

Sport Wales. (2017). *Physical literacy programme for schools (PLPS) | community sport | sport Wales - Chwaraeon Cymru*. Retrieved from http://sport.wales/community-sport/education/physical-literacy-programme-for-schools-(plps).aspx

The Aspen Institute. (2013). *Project play*. Retrieved from https://www.aspenprojectplay.org/

The Aspen Institute. (2015). *Physical literacy in the United States: A model, strategic plan, and call to action*. Retrieved from http://aspenprojectplay.org/sites/default/files/PhysicalLiteracy_AspenInstitute.pdf

The Sport for Life Society. (2017). Physical Literacy. Retrieved from http://sportforlife.ca/

Tremblay, M., & Lloyd, M. (2010). Physical literacy measurement: The missing piece. *Physical & Health Education Journal, 76*(5), 26-30.

Weinburg, B. (Ed.) (2013). Feature: Physical literacy [*Special issue*]. *Journal of Sport Science and Physical Education, 65,* 18-20.

Whitehead, M. (1993, August). *Physical literacy*. Paper presented at the IAPESWG Congress, Melbourne, Australia.

Whitehead, M. (2001). The concept of physical literacy. *European Journal of Physical Education, 6*, 127-138.

Whitehead, M. (2007). Physical literacy: Philosophical considerations in relation to developing a sense of self, universality and propositional knowledge. *Sports, Ethics, and Philosophy, 1*, 281-298.

Whitehead, M. (Ed.). (2010). *Physical literacy: Throughout the lifecourse*. London, UK: Routledge.

Whitehead, M. (2013a). The history and development of physical literacy. *ICSSPE Journal of Sport Science and Physical Education, 65,* 22-28.

Whitehead, M. (2013b). Definition of physical literacy and clarification of related issues. *ICSSPE Journal of Sport Science and Physical Education, 65,* 29-34.

Youth Sport Trust (2013). *Primary physical literacy framework*. Retrieved from https://www.youthsporttrust.org/sites/yst/files/resources/documents/physical_literacy_framework.pdf

Table 1. International Definitions of Physical Literacy

Group	Country of Origin	Reference/ Web link	Adopted Definition of Physical Literacy
International Physical Literacy Association (IPLA)	UK	Whitehead (2017) https://www.physical-literacy.org.uk/	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
Sport Wales	Wales (UK)	Sport Wales (2017) http://physicalliteracy.sportwales.org.uk/en/	Physical Skills + Confidence + Motivation + Lots of opportunities = Physical Literacy
Physical and Health Education (PHE) Canada	Canada (Montreal)	PHE Canada (2017) http://www.phecanada.ca/programs/physical-literacy/what-physical-literacy	Individuals who are physically literate move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person
Canadian Sport for Life (CS4L)	Canada (Toronto)	CS4L (2017) http://sportforlife.ca/qualitysport/physical-literacy/	Physical literacy is the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life
Society of Health and Physical Educators (SHAPE)	United States of America	Mandigo, Francis, Lodewyk & Lopez (2012) http://www.shapeamerica.org/events/physicalliteracy.cfm	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
Sport New Zealand	New Zealand	Sport New Zealand (2015) http://sportnz.org.nz/about-us/who-we-are/what-were-	The motivation, confidence, physical competence, knowledge and understanding required by participants that allows them to value and take responsibility for engaging in physical activity and sport for life

		working-towards/physical-literacy-approach	
Australian Sport Commission	Australia	Australian Sports Commission (2017) http://ausport.gov.au/physical_literacy	Four defining statements: 1.Core / process - Physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts 2.Components / constructs - It reflects ongoing changes integrating physical, affective (subsequently renamed 'psychological'), cognitive and social capabilities 3.Importance - It is vital in helping us lead healthy and fulfilling lives through movement and physical activity 4.Aspiration / product - A physically literate person is able to draw on their integrated physical, affective, cognitive, and social capacities to support health promoting and fulfilling movement and physical activity - relative to their situation and context

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