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**How is Physical Literacy Defined? A Contemporary Update**

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26 **Abstract**

27 Physical literacy globally, continues to gain momentum, yet the definition and underlying

28 concept of physical literacy remain contested in both research and practice. This lack of clarity

29 has the potential to undermine the operationalization of physical literacy. This paper considers

30 the various definitions of physical literacy that are currently adopted internationally. Physical

31 literacy experts identified seven leading groups that have established physical literacy initiatives.

32 Although each group is unified in using the term physical literacy, there are contrasting

33 definitions and interpretations of the concept. Common themes were identified, including the: (a)

34 influence of physical literacy philosophy, (b) core elements of physical literacy, (c) lifelong

35 nature of physical literacy, and (d) the need to scientifically pursue a robust operationalization of

36 the concept. We conclude by recommending that programmes relating to physical literacy should

37 provide a definition, a clear philosophical approach, and transparency with how their actions

38 align with this approach.

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40

41 *Keywords:* definition, international, policy, practice

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

### 62 **The Origins of Physical Literacy**

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

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

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

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

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

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

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

## 122 **Methods**

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

## 134 **Findings**

135 We identified that there are seven prominent groups currently working to promote and  
136 develop physical literacy, each operating with at least one identifiable definition. The groups  
137 included research teams, government organisations (national or state), not-for-profit and  
138 corporate groups, or multi-sector partnerships spanning all of these. These organisations/groups  
139 use online platforms to share research and present definitions and interpretations of the concept  
140 and these were used to gain insight. Definitions and interpretations of physical literacy from each  
141 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](http://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

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

171 In Wales, the devolved Welsh Government (Llywodraeth Cymru) prioritised physical  
172 literacy at a policy level considerably earlier than England, with physical literacy highlighted as  
173 an opportunity to enable lifelong participation in sport and physical recreation. As such,  
174 recommendations to raise the status of physical education to become a core subject in Wales -  
175 alongside mathematics, English, Welsh, and science - were proposed (Schools and Physical  
176 Activity Task and Finish Group, 2013). At the time of publication, the physical literacy  
177 definition adopted by Sport Wales displayed similarities to the definition put forward by  
178 Whitehead and the IPLA, but instead, it was articulated in the form of an equation: “Physical  
179 Skills + Confidence + Motivation + Lots of opportunities = Physical Literacy” (Sport Wales,  
180 2017). In turn, the Sport Wales definition was an attempt to translate the complex physical  
181 literacy concept into one that the general public could easily interpret. In line with Whitehead’s  
182 approach, Sport Wales advocated the notion of physical literacy as a journey throughout life  
183 through their interactive website (<http://physicalliteracy.sportwales.org.uk/en/>) that displayed  
184 physical literacy in relation to different life stages. Further, in 2014, approximately £1.78 million  
185 (\$2.3 million) was invested by the Welsh government into the “Physical Literacy Programme for  
186 Schools.” The program was a targeted intervention programme that aimed to develop young  
187 people along their physical literacy journey. The programme had a political agenda of improving  
188 young people’s engagement and confidence in secondary schools and reducing the impact of  
189 deprivation on academic attainment (Sport Wales, 2017). More recently, upcoming curricular  
190 changes in Wales were implicitly aligned with the concept of physical literacy, whereby physical



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

### 193 **Canada**

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

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

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

217 Despite the generation of this consensus statement, the previous definitions from these  
218 organisations were often referred to in practice and the primary sources available to interested  
219 parties searching the internet (Hyndman & Pill, 2017). The prevalence of these competing  
220 approaches leads to the continued confusion and disagreement within the physical literacy  
221 community (Robinson & Randall, 2017). For example, in 2009, PHE Canada, a leading  
222 professional organisation for physical education teachers, released a physical literacy positioning  
223 paper using the following working definition: “Individuals who are physically literate move with  
224 competence and confidence in a wide variety of physical activities in multiple environments that  
225 benefit the healthy development of the whole person” (Mandigo, Francis, Lodewyk, & Lopez,  
226 2012, p. 6). This definition was displayed on the PHE Canada (2017) website  
227 (<http://www.phecanada.ca/programs/physical-literacy>), however, at the same time the IPLA  
228 definition was also endorsed with reference to the consensus statement.

229 In addition to PHE Canada’s approach, The Sport for Life Society (previously Canadian  
230 Sport For Life) endorses the IPLA definition of physical literacy, alongside the description:  
231 “Physical literacy is the mastering of fundamental movement skills and fundamental sport skills”  
232 (The Sport for Life Society, 2017). In 2016, The Sport for Life Society registered “60 Minutes  
233 Kids Club,” which became “Physical Literacy for Life” (PLFL, 2017). PLFL aimed to advance  
234 physical literacy in the health, recreation, and education sectors, with the aspiration “to develop  
235 physical literacy in all Canadians” (PLFL, 2017, p. 1). Again, the materials accompanying this  
236 site reiterated the IPLA 2014 definition of physical literacy, alongside the full 2015 consensus  
237 statement, although it has been debated whether this acknowledgement was translated in practice  
238 (Robinson & Randall, 2017). For example, in 2014, physical literacy was adopted as one of the  
239 10 key factors influencing the CS4L model of Long Term Athlete Development (CS4L, 2015).

240 This model became a popular and influential approach often deployed in relation to physical  
241 literacy in Canada (Robinson & Randall, 2017). The model evolved to try to acknowledge the  
242 wide variety of factors that influence physical literacy, and in turn athletic development,  
243 including a range of skills and environments. As an internationally recognised talent  
244 development model, this performance-driven approach to physical literacy received global  
245 attention (Allan et al., 2017). Nevertheless, although CS4L adopted the IPLA definition of  
246 physical literacy, strategies intended to promote physical literacy within the Long-Term Athlete  
247 Development model largely focussed on physical skills and motor development (Allan et al.,  
248 2017) and as the popularity of this model grew, so too have criticisms regarding whether the  
249 model truly acknowledges the holistic nature of physical literacy (Robinson & Randal, 2017).

## 250 **United States**

251 At the time of our sampling, physical literacy in America was supported by The Society of  
252 Health and Physical Educators (SHAPE America) as a part of the National Standards and Grade  
253 Level Outcomes for K-12 Physical Education (Moreno, 2013). In 2013, SHAPE America  
254 defined physical literacy as “the ability to move with competence and confidence in a wide  
255 variety of physical activities in multiple environments that benefit the healthy development of  
256 the whole person” (Mandigo et al., 2012, p. 6; SHAPE America, 2014, p. 4). This definition was  
257 the same as that utilised by PHE Canada, and physical literacy is outlined as the goal for both  
258 physical and health education, highlighted through the campaign *50 Million Strong* which  
259 reflected SHAPE America’s commitment to put all children on the path to health and physical  
260 literacy by 2029 (Jefferies, 2016).

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

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

272 SHAPE America asserted that physical education “develops the physically literate  
273 individual through deliberate practice of well-designed learning tasks” (SHAPE America, 2017,  
274 p. 1). In 2014, the term “physically educated” was replaced with “physically literate” in the  
275 National Standards and Grade Level Outcomes for K-12 Physical Education (SHAPE America,  
276 2014). This was critiqued by Lounsbery and McKenzie (2015) and it was reported that this  
277 change occurred without the consultation of the physical education profession. It was also argued  
278 that there appeared to be little difference between the definitions of physical education and  
279 physical literacy. This argument was echoed by Hyndman and Pill (2017), who argued that the  
280 substitution and interchangeable use of physical education for physical literacy has led to  
281 “definitional blurring.”

## 282 **New Zealand**

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

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

### 306 **Australia**

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

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

321 In May 2016, the Australian Sports Commission recruited a team of researchers to  
322 produce, for Australia, a physical literacy definition, standards framework, assessment  
323 guidelines, and implementation guidelines. The core researchers in the team conducted a wide-  
324 ranging literature review of physical literacy, followed by expert panel meetings, and a Delphi  
325 consultation process involving three rounds of Delphi surveys to pursue consensus (Australian  
326 Sports Commission, 2017). Following this process, it was agreed that physical literacy should be  
327 theoretically separable from physical activity, a so-called double dissociation wherein a person  
328 could be high or low in both, separately, or together. The group agreed on a set of defining  
329 statements making it clear that each individual has the potential to learn through participation in  
330 physical activity and that potential can be developed to a level where it is self-perpetuating. In  
331 the end, there were four defining statements issued by the Australian Sports Commission, with  
332 between 94-100% consensus recorded from an expert group of 18 leading researchers. The four  
333 defining statements were: (a) Physical literacy is lifelong holistic learning acquired and applied  
334 in movement and physical activity contexts (Core/process; 94% consensus); (b) It reflects  
335 ongoing changes integrating physical, affective (subsequently renamed psychological),  
336 cognitive, and social capabilities (Components/constructs; 94% consensus); (c) It is vital in  
337 helping us lead healthy and fulfilling lives through movement and physical activity (Importance;  
338 100% consensus); and (d) A physically literate person is able to draw on their integrated  
339 physical, psychological, cognitive, and social capacities to support health promoting and

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

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

### 358 **Discussion**

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

**365 Global Differences**

366 In articulating her views on the concept of physical literacy, Whitehead (2010) was clear  
367 that there are good reasons to expect different approaches to physical literacy. The underlying  
368 philosophy (or philosophies) she argued as being central considerations denoted that the unique  
369 personal experience, unique personal capabilities at any point in time, and unique social and  
370 environmental contexts all necessitate a context-specific approach. International differences in  
371 the interpretation and operationalization of physical literacy are expected, indeed needed, in  
372 order to create meaning and cultural relevance. The influence of culture was extensively  
373 discussed by Whitehead (2010) who identified that “specific expression (of physical literacy)...  
374 will be particular to the culture in which they live” (p. 12). Although physical literacy is  
375 proposed to be a universal and inclusive concept, there is a debate as to how much tailoring the  
376 socio-cultural context should necessitate, and this is referred to throughout Whitehead’s book  
377 (2010). Initially, it was assumed that the differences in interpretation could stimulate the  
378 implementation of physical literacy in practice and allow it to flourish within a variety of  
379 settings, ultimately, leading not only to different approaches to applied practice, but also  
380 different definitions of physical literacy. As a consequence, however, some have argued that this  
381 diversity in definitions has generated a level of inconsistency and conflict within the physical  
382 literacy community (Dudley et al., 2017; Jurbala, 2015; Tremblay & Lloyd, 2010).

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



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

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

400         **Philosophy within the definition.** The philosophy underpinning the physical literacy  
401 concept and its holistic nature is arguably what makes the concept unique. Whitehead has  
402 consistently noted that philosophy is the vital foundation behind physical literacy and one cannot  
403 truly understand physical literacy without embracing its philosophical roots (2001, 2007, 2010,  
404 & 2013b). Nevertheless, the philosophy surrounding physical literacy programmes was often ill-  
405 aligned or simply missing, both in research and practice (Edwards et al., 2017). For example,  
406 SHAPE America (2017) and Sport Wales (2014) may have neglected the lifelong experience in  
407 their materials, as their focus at the time was on school-aged populations. Likewise, having  
408 historical associations with talent development pathways, The Sport for Life Society (2017) and  
409 Sport New Zealand (2016) may have placed higher importance on movement skills rather than  
410 valuing the diverse and holistic construction of physical literacy. Yet despite the emphasis on  
411 philosophy, Whitehead has never successfully included an acknowledgement of philosophy  
412 within the definitions she has developed, or helped to stimulate. This may be a potential reason  
413 for the confusion and misinterpretations surrounding the concept.

**414 Defining the Core Elements**

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

428 Sport Wales (2017, p. 1) added an additional core element, “a range of opportunities”  
429 referring to facilities available and the environment facilitating physical activity. By adding this  
430 element into the definition, Sport Wales emphasised that physical literacy was not only the  
431 responsibility of the individual, but also of parents, teachers, council members, and the  
432 community as a whole. Similarly, CS4L (2015), PHE Canada (2017), and SHAPE America  
433 (2014) also added this element referring to it as “multiple environments.” This aspect was  
434 discussed extensively by Whitehead (2001), who sought to clarify what constituted a physically  
435 challenging environment, and how a physically literate individual would read the environment.  
436 In contrast, however, interacting with the environment was not featured in Whitehead’s  
437 subsequent definitions (2001, 2007, 2010, 2013a, & 2013b; IPLA, 2017). Recent research by  
438 Dudley et al. (2017) identified movement contexts as a significant consideration for policy

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

#### 449 **A Lifelong Journey**

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

457 Despite most of the groups reviewed advocating Whitehead's definition (2001, 2007, 2010,  
458 2013a, & 2013b; IPLA 2017) to some degree, many groups that have operationalised physical  
459 literacy in practice have predominantly focused on school-aged children and young people. This  
460 is not surprising, especially as PHE Canada and SHAPE America are organisations formed  
461 within the physical education sector. Many of these organisations have received funding from  
462 governments who wish to invest in children's health. Particularly within policy, where cost  
463 versus benefit must be evidenced, the lack of research to support physical literacy across the

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

#### 476 **Process Versus Product**

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

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

### 506 **Future Implications**

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

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

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

537 **Conclusion**

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

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**Table 1. International Definitions of Physical Literacy**

<b>Group</b>	<b>Country of Origin</b>	<b>Reference/ Web link</b>	<b>Adopted Definition of Physical Literacy</b>
International Physical Literacy Association (IPLA)	UK	Whitehead (2017) <a href="https://www.physical-literacy.org.uk/">https://www.physical-literacy.org.uk/</a>	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) <a href="http://physicalliteracy.sportwales.org.uk/en/">http://physicalliteracy.sportwales.org.uk/en/</a>	Physical Skills + Confidence + Motivation + Lots of opportunities = Physical Literacy
Physical and Health Education (PHE) Canada	Canada (Montreal)	PHE Canada (2017) <a href="http://www.phecanada.ca/programs/physical-literacy/what-physical-literacy">http://www.phecanada.ca/programs/physical-literacy/what-physical-literacy</a>	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) <a href="http://sportforlife.ca/qualitysport/physical-literacy/">http://sportforlife.ca/qualitysport/physical-literacy/</a>	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) <a href="http://www.shapeamerica.org/events/physical-literacy.cfm">http://www.shapeamerica.org/events/physical-literacy.cfm</a>	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) <a href="http://sportnz.org.nz/about-us/who-we-are/what-were-">http://sportnz.org.nz/about-us/who-we-are/what-were-</a>	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) <a href="http://ausport.gov.au/physical_literacy">http://ausport.gov.au/physical_literacy</a>	<p>Four defining statements:</p> <ol style="list-style-type: none"> <li>1.Core / process - Physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts</li> <li>2.Components / constructs - It reflects ongoing changes integrating physical, affective (subsequently renamed ‘psychological’), cognitive and social capabilities</li> <li>3.Importance - It is vital in helping us lead healthy and fulfilling lives through movement and physical activity</li> <li>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</li> </ol>
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