Charting Physical Literacy Journeys within Physical Education Settings

Nigel R. Green[1]*, William M. Roberts[2], Dwayne Sheehan [3], & Richard J. Keegan[4]

[1] Faculty of Education, Health and Community, Liverpool John Moores University, UK

[2] School of Sport and Exercise, University of Gloucestershire, Gloucester, GL2 9HW, UK

[3] Faculty of Health and Physical Education, Mount Royal University, Canada

[4] Research Institute for Sport and Exercise, Faculty of Health, University of Canberra, Bruce, ACT 2601, Australia

*Corresponding Author. Email: n.r.green@ljmu.ac.uk

Abstract

Physical literacy is creating significant interest worldwide due to its holistic nature and the potential it has to impact on peoples' lives. It is underpinning many physical education programmes, coaching strategies, health initiatives, and policy makers' decisions. However, the complex philosophical and holistic nature of the concept has meant that methods used to chart/assess/measure progress have been very much dependent on the pedagogues interpretation of the concept. This paper will provide a review of current practices and issues related to charting/assessing/measuring progress of an individual's journey. It will go on to highlight considerations that, we suggest, should be made by any organisation developing methods to chart/assess/measure progress.

Keywords: physical literacy, assessment, pedagogy, evaluation, monitoring, measurement

Charting Physical Literacy Journeys within Physical Education Settings

The term physical literacy is reported to be generating significant interest worldwide (Dudley, 2015; Robinson & Randall, 2017; Spengler & Cohen, 2015). Many physical education curricula identify the development of themes synonymous with physical literacy, as a major focus of physical education programmes (Lloyd, 2011). Assessment or charting progress in relation to physical literacy is important, as this will help clarify policy makers' understanding of the concept as well as individuals' appreciation of their own physical literacy journeys, and how they might develop physical literacy over time (Tremblay & Lloyd, 2010). It is also a crucial way to make the concept of physical literacy tangible to multiple different stakeholders ranging from research funders, to schools and curriculum-writers, as well as coaches, sporting bodies, parents and, of course, participants in movement and physical activity. On the broadest level, spanning all these stakeholder-groups, being able to measure physical literacy journeys will enable us to understand what strategies are most effective in helping to promote physical literacy (Keegan, Keegan, Daley, Ordway, & Edwards, 2013). For reasons that will become clear within this paper, the International Physical Literacy Association (IPLA) favours the term "charting progress" for physical literacy, as opposed to measurement, assessment, evaluation, characterising etc. These reasons include the consideration that each person's physical literacy is conceived to be quite unique, and almost impossible to compare to another person's development (past or present). Likewise, progress in physical literacy is increasingly being understood as a dynamic and non-linear phenomenon, for which conventional linear measurement assumptions would be inappropriate. To try to reflect this, the IPLA invoke a "journey" metaphor, perhaps triggering thoughts of landscapes and different paths through various terrains. As such, each learner in movement and physical activity contexts may chart their individual journey, but no two will be alike. As Edwards et al. (2017) concur, practitioners who use assessment measures without understanding the concept are at risk of "contradicting the key purpose of the concept" (p. 20). They go on to suggest that the complex nature of the physical literacy poses a real challenge for practitioners to operationalise an assessment system. Creative, non-conventional methods of measuring/assessing physical literacy are therefore encouraged.

Assessing physical literacy, therefore, depends how we define it and, in turn, how it is operationalized. This paper is founded on IPLA's definition of physical literacy: "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" (IPLA, 2017). This definition is elaborated in the attributes or behaviours symptomatic of making progress on a physical literacy journey (Whitehead, 2010a; updated in IPLA, 2017). These attributes spell out, in more detail, the affective, physical, and cognitive aspects of physical literacy. This definition was also accepted by Canada in the Canadian consensus agreement in 2015, although several groups involved continue to adopt other definitions (Shearer et al., in review). Notably, however, there remains work to be done in operationalizing this definition for the purposes of assessment, or charting progress.

Previous attempts to understand progression in physical literacy have, according to Dudley (2015), "been limited to pre-existing knowledge, psychosocial and physical assessment instruments, or combinations thereof (Tremblay & Lloyd, 2010) and hence [have restrained] understanding of the contemporary physical literacy construct to that which is already known within these domains" (p. 237). Such measurement tools, as suggested by Almond (2013) and Jurbala (2015), attempt to

measure progress in relation to physical literacy, but their adoption of linear, simplistic, and reductionist instruments are at odds with the essence of physical literacy. The concept of physical literacy was proposed with the specific intention of moving away from such linear, simplistic, and reductionist ways of thinking. The tension between creating and using reliable and valid measurements of progress related to an individual's physical literacy journey and developing a process that measures the philosophically complex and holistic nature of the concept, are apparent.

The intention of this paper is to consider what the implications might be for assessing or charting physical literacy journey from a perspective that is more aligned to, and coherent with, the intended philosophy of physical literacy. To achieve this, we explore what tools are already being used, before then exploring how new approaches may be developed and integrated into practice. To frame this exploration, we first must consider the meaning and conceptual underpinnings of physical literacy.

The Meaning and "Make-Up" of Physical Literacy

While different approaches to physical literacy have emerged around the world (Keegan et al., 2013), there remains common ground within the conceptual parameters of physical literacy that centre around the notion that it is not an end state (Taplin, 2012, 2013; Whitehead, 2010a, 2010b). All of these theorists asserted that physical literacy should not be understood as a linear, homogenized, and universal scale of competency. With this understanding follows the consequence that physical literacy is not a personal skill, but rather a "disposition to use experience, understanding and abilities to interact effectively" (Whitehead, 2010a, p. 6). Hence, the journey of developing one's physical literacy is individual and unique (Taplin, 2012). Physical literacy is proposed as a "lifelong process in which … [we] continuously adapt to the changes that come as a result of the human development and aging cycle" (Higgs, 2010, p. 6). As such, the concept is applicable across the lifespan and to all individuals (Whitehead, 2010a, 2010b). Therefore, the journey of developing one's physical literacy is individual and always unique (Taplin, 2012). Formative experiences of physical education are proposed to significantly impact on participation in later years (Bailey, 2006; McNamee, 2005; Talbot, 2001; Whitehead, 1990) and while we acknowledge the life course focus of physical literacy, this paper will concentrate on school age implications in relation to assessment and charting of physical literacy.

As noted above, we accept that assessment/charting of physical literacy needs to be conceptually aligned to the monist/holistic ontology and phenomenological epistemology proposed by Whitehead (2007, 2010a). However, amidst conceptual and definition-based debates in the literature, Jurbala (2015) highlighted that the trend is to "strip out much of the holism inherent in Whitehead's definition" (p. 374), resulting in the "decenter[ing] of physical literacy, so it is no longer seen as an inherent human capacity, but rather a discrete set of skills to be taught and evaluated" (p. 374). Jurbala also argues that "the exigencies of creating practical tests lead to reductionist reverse engineering of the original concept" (p. 372) and notes that the conflation of fundamental movement skills and physical literacy serves to undermine or at least, as Almond (2013) suggests, do not adequately grasp the entirety of all that physical literacy entails.

Following this, Giblin, Collins and Button (2014) alluded to the fact that the positioning of fundamental movement skills as the most important element, or indeed the entirety, of physical literacy can be considered as highly inappropriate for a concept that ought to be defined by a focus on individual endowment and embodiment. What is deemed fundamental to one person or setting cannot be assumed fundamental to another. Moreover, decontextualized notions of throwing or

balancing, for example, detached from any consideration of where the movement is occurring, who is doing the movement, their experience of that movement and what consequences it has on the ecological system that they are a part of, is a futile objectification of our embodied relationship with the world (Ford et al., 2011; Lloyd et al., 2015a, 2015b). This concern was expressed by Edwards et al. (2017) as they reasoned that such disparate approaches to physical literacy meaning and measurement may "undermine the meaningful measurement of physical literacy, the interpretation of findings, and prevent any meaningful agglomeration of [such] research findings" (p. 2). Therefore, in this respect, measurement of progress related to physical literacy may be in danger of becoming diluted, redundant, or meaningless (Edwards et al., 2017).

Physical literacy, has a clear focus on lifelong participation in physical activity, as suggested by Whitehead (2010a). Although Whitehead (2010a) has stressed the importance and offered a definition to distinguish the difference between physical activity and physical literacy, the concept has undoubtedly become a key focus of physical activity (Giblin et al., 2014) and as such, Edwards et al. (2017) suggested that physical literacy is an antecedent of physical activity, whilst also being developed through physical activity. The recent analysis by the Australian Sports Commission (2017) proposed that physical literacy is supported through physical activity and movement and that physical literacy tends to increase the propensity to engage in further physical activity and movement. The link between physical activity and health benefits including reducing the risk of cardiovascular disease, diabetes, and cancer, as suggested by Warburton et al. (2006), has been well-documented. The opportunity for physical literacy to supplant existing and traditional approaches to physical education is of potential benefit for lifelong engagement in physical activity, and the positive health benefits (Gately, 2010; Whitehead, 2010a), which are worthy of further exploration. What is clear is that the increasingly narrow focus of current physical education is limiting, and whilst it is easier for educators to instruct and organise, it is certainly not centred on learning and development of young people in schools (Kirk, 2010).

Assessment and Charting in School Settings

The increasing accountability required in schools has led to the imposition of assessment in physical education, to maintain parity with other subjects (Decorby, Halas, Dixon, Wintrup, & Janzen, 2005; Kohn, 2003). Whilst assessment is an important aspect of pedagogy, both formative and summative, it could be argued that it is often utilised for evaluative and accountability purposes rather than to celebrate what has been achieved, what individuals value, or how progress has been made from a certain point (Caffrey, 2009). As Dudley (2015) suggested, with physical literacy, as with other concepts in education, there needs to be a shift from measuring success by judging against norm referenced standards to assessing growth against criterion referenced milestones over a period of time and embrace the holistic nature of the concept. Although many physical educators assess student performance using criterion referenced standards to determine how individual student progress from a certain point has been made, assessment of progress is limited to growth in the psychomotor, cognitive, and affective learning domains, which, arguably, do not reflect the holistic nature of the concept of physical literacy. Involving teachers, students, parents, and other stakeholders in discussion related to progress on a physical literacy journey, can only enhance the quality of reflection and enable future challenges to be negotiated that are engaging and realistic for each individual. So, what practices are currently being used in relation to charting the physical literacy journey of a student at school?

Current Approaches to Assessing Physical Literacy

Concentrating on physical literacy through play, physical education, physical activity, and sport participation allows children to develop their experiences and learning by interacting with the environments that they inhabit. This interaction promotes the physical, affective, cognitive, and social development (Mandigo & Fletcher, 2012) of a child; therefore, a focus on physical literacy provides the vehicle through which children can develop their confidence and motivation needed to engage in physical activity. Physical education is the formal time available for teachers to impact on children and provides the environments that allow an individual's physical literacy to develop. Keegan et al. (in review) argued that individuals who enjoy high quality experiences through physical education are more likely to be physically active for life.

The Aspen Institute released a document entitled, *Physical Literacy: A Global Environmental Scan* , in 2015 (Spengler & Cohen, 2015). It summarised the successes of 10 countries that have adopted physical literacy policies and programmes. Based on this list and new information that has emerged in the two years since 2015 the following summary of measuring physical literacy is presented. Commentary exists stating a concern regarding measuring, and thereby, quantifying physical literacy (Robinson & Randall, 2017). The report noted that, often, an assessment of physical competence is used as a proxy for physical literacy to the exclusion of its other dimensions, namely the affective and cognitive aspects. This summary was not meant to promote one form of assessment over another; it was simply a statement of what was available and what is being used in different countries.

Canada has been active in physical literacy assessment from both a formative and summative dimension. Several public and private organizations, have taken up the challenge to measure physical literacy in various forms. Physical and Health Education (PHE) Canada (n.d.) is a national professional organization for physical and health educators, school administrators, and university professors involved with the training of pre-service teachers and research. PHE Canada developed the *Passport for Life* document as a formative assessment tool that is designed to improve student learning, assist in goal setting, set standards that promote learning and positive attitudes, and act as a resource. This tool is not an evaluation tool used for report cards nor a comprehensive evaluation of physical literacy. The information gathered from Passport for Life is to be used to guide learning and physical education progress in schools and appears to be aligned with a common educational goal of focusing on the holistic development of the student (Robinson & Randall, 2017).

Sport 4 Life (S4L), the creator of Canada's *Long Term Athlete Development Plan* (LTAD), states that all national sport organizations seeking funding from the federal government must have a sport-specific LTAD framework that incorporates components of physical literacy (Sports for Life Society, 2017). S4L developed the Physical Literacy Assessment for Youth (PLAY) tools intended for children ages 7-12, the early stages of physical development where motor proficiency develops readily (Sport for Life Society, 2017). Six short tools (10-20 minute videos) compose the PLAY suite: PLAY*fun*, PLAY*basic*, PLAY*self*, PLAY*parent*, PLAY*coach*, and PLAY*inventory*. Each tool is intended for a different purpose. PLAY*fun* is used by trained professionals to test 18 fundamental movement skills. PLAY*basic* is also for trained professionals, however, it is a short version of PLAY*fun* and provides only a snapshot of a child's fundamental movement skills. PLAY*self* is used by children and youth to assess their own physical literacy. PLAY*parent* is intended for use by parents to assess their school-aged children's physical literacy. PLAY*coach* is used by coaches, physiotherapists, athletic therapists, and

exercise/recreational professionals to understand a child's physical literacy. Lastly, PLAY*inventory* is a form used to track children's leisure-time activities throughout a year. PLAY*self*, PLAY*parent*, and PLAY*coach* are not skills assessments; they are supplements to PLAY*fun* and PLAY*basic*. Whilst this assessment focuses on being user-friendly and considers developments in relation to the physical domain it does not appear to assess the other aspect of physical literacy such as the affective and cognitive domains.

As Robinson and Randall (2017) pointed out, these programmes are concerned with athlete development and participation in community activity, with a clear focus on the importance of fundamental movement skills, which, it is suggested, will lead to the development of more sport-specific skills. This focus on only fundamental movement skills does not align with the holistic nature of physical literacy, and the attachment of numbers as a means of assessment against benchmarks also fails to consider the individual ipsative nature of charting progress on a physical literacy journey.

The Canadian Assessment of Physical Literacy has been in development since 2008 through the Healthy Active Living and Obesity Research Group. It is a comprehensive research-grade protocol that, it is claimed, can accurately and reliably assess a broad spectrum of skills and abilities that contribute to and characterize physical literacy. These include physical activity skills, daily behaviours, motivation and confidence, knowledge and understanding and physical competence (Healthy Active Living and Obesity Research Group, 2017). A methodical process of tests, linked to assessment protocols, provide a score from which results can be interpreted and feedback can be provided to individuals or groups of participants.

Other assessment tools are currently in development or in early implementation. The *Physical Literacy Environmental Assessment* (PLEA; The Sandbox Project, 2017) is a programme evaluation tool to measure how well programmes are supporting the development of physical literacy by providing an appropriate environment for individuals to develop their physical literacy. The PLEA Tool is designed for programme self-evaluation and improvement, sharing of what works and what does not, and creating collaboration across multiple sectors. The PLEA Tool is being developed for physical educators, coaches, recreation staff, and physical activity leaders. Lastly, from Canada is the *Physical Literacy Observation Tool* (PLOT; Early Years Physical Literacy Research Team, 2017), which is intended for use in group settings with children ages six months to six years. This planning tool is designed to enhance adult understanding of the development of movement skills when children are exposed to stimulating environments.

Through a government-supported mandate, Wales has implemented physical literacy in school sport and physical education settings, as well as organized sport and active play, with the idea being that everyone should become "hooked on sport" (Sport Wales, 2015b, p. 3) . The mandate clearly exemplifies the holistic view of physical literacy that focuses on the affective, cognitive, and physical components. Sport Wales employs the School Sport Survey, a national inventory of young people's participation in sport. In 2015, over 116,000 student opinions of sport were captured, making it the largest sport survey in the United Kingdom (Sport Wales, 2015b). Since 1987, Sport Wales has also been assessing sport participation in adults using the Active Adults Survey. In 2014, over 8,000 adults (over the age of 15) participated in the study (Sport Wales, 2014). Additionally, Sport Wales conducted surveys for university and college students (Sport Wales, 2015a). All three of the Sport Wales surveys collect information on participation, enjoyment, confidence, and importance.

In the United Kingdom, the Youth Sport Trust (2017) has developed an app to help physical education teachers measure the fundamental movement skills of children through the *Start to Move* programme. The goal of this programme is to increase primary school teacher confidence in the area of physical literacy. By tracking fundamental movement skills over time, an enhanced learning environment can be created to allow children to become more competent and confident movers and remain physically active throughout their lives. The Youth Sport Trust (2017) moved forwards from this by introducing Skills2Achieve. This tool asked teachers, in conjunction with pupils, to consider their responses to over 200 statements related to each individual's healthy me, social me, thinking me, and physical me. Although the four areas being considered relate to the physical literacy concept, the number of questions being addressed and a limited focus on engagement and motivation suggests that the tool may not be the answer to charting a physical literacy journey.

The Society of Health and Physical Educators (SHAPE) America is a membership association of health and physical education professionals. Its aim is to support leadership, professional development, and advocacy in the areas of health and physical education. In 2014, SHAPE published the third edition of the national standards in physical education along with grade-level outcomes across the three educational learning domains (psychomotor, cognitive, and affective) for K-12 physical education (SHAPE America, 2014). While not an evaluation protocol, it does list the expected outcomes of children based on the definition of physical literacy that physical education teachers are expected to assess over the school year. However, measuring individuals against normative standards over a school year is not in accordance with the true nature of the concept. Progress should be considered in relation to each individual's capability and his or her starting point, rather than against an age/stage norm.

Many assessments of motor skills are also used as proxies for physical literacy, including the Bruininks-Oseretsky Test of Motor Proficiency (Bruininks & Bruininks, 2005), the Test of Gross Motor Development-2 (Ulrich, 2000) and the Movement Assessment Battery for Children-2 (Johnston & Watter, 2006). Physical literacy, however, encompasses much more than just fundamental movement skills as elaborated in both the definition and the attributes or behaviours symptomatic of making progress on a physical literacy journey (Whitehead, 2010a). The attributes, associated to the definition, spell out, in more detail, the affective, physical, and cognitive aspects of physical literacy, which will be explained later in this paper.

In 2016, the *Young People & Sport in Northern Ireland* publication was released with evidence from the 2015 Young Life and Times and Kids Life and Times surveys (Sport Northern Ireland, 2016). These bespoke surveys solicited youth on sport enjoyment, reasons to participate, and feelings on competence among other concepts directly aligned with physical literacy, although not stated explicitly. More recently, the Dumfries and Galloway region have adopted questions that were originally produced for the Department of Culture, Media, and Sport, to be used in the Sport England Child Measurement Survey that is in development and intended to be used in England from 2018 (there is currently no link to this survey on the Sport England website – it has been trialled but not released for use yet). The following statements have been used in a survey on physical activity engagement and are related to the four elements of physical literacy being: (a) motivation – I want to take part in physical activity; (b) confidence – I feel confident to take part in lots of different physical activities; (c) competence – I am good at different physical activities; and (d) knowledge and understanding – I know why physical activity is good for me and I enjoy the places I go for physical

activity. This approach allows school age children to indicate on a Likert scale their perceptions in relation to each of the four elements. This development supports the work of Education Scotland (n.d) who have a focus developing the *Better Movers and Thinkers Progression Videos* aimed at using physical education to encourage and enable the inactive to be more active throughout life (National Improvement Hub, 2016). The program has a built-in individual formative evaluation, intended to identify appropriate next steps for the continued participation in physical education, physical activity, and sport that support physical education practitioners.

Whilst we have not exhausted the various efforts to measure physical literacy, we have attempted to draw attention to the emphasis of current tools to measure movement skills and physical competency (assumed linear). A summary provided by Edwards et al. (2017) however, demonstrated two approaches to understanding the concept, being the idealist (academic) and pragmatic (practical) perspectives. They suggest that the idealist approach focuses on the holistic nature of the concept. They argue that the three domains (affective, physical, and cognitive) cannot be separated and any separation with regards to measurement would contradict physical literacy's holistic nature. The idealists would propose that any approaches to measurement of progress should be through qualitative methods. Edwards et al. go on to suggest that the pragmatic approach would see progress measured through methodologies that are compatible with the aims, and as such might combine qualitative measurement with quantitative. The complex philosophical nature of this concept provides a very challenging task to initiate any form of measurement.

Considerations for Conceptually Aligned Charting Approaches

Giblin, Collins, and Button (2014) note, when discussing equivocal research findings related to skill development and participation in physical activity, that one reason for the contradicting research findings appears to be the wide variety of assessment tools employed to test the physical component of programmes designed to promote life-long physical activity. Many of the international interventions discussed thus far all assert a focus on fundamental movement skills which is both contradictory to the essence of physical literacy as a concept, and reductionist in nature.

Whitehead (2010a) stressed the importance of adhering to the concept by maintaining a clear focus when reflecting on progress in relation to the core elements of physical literacy, that include motivation, confidence, physical competence, and knowledge and understanding to interact within a range of environments. Robinson and Randall (2017) clarify these elements by suggesting that motivation is the desire to participate in activity from an intrinsic point of view. They go on to state that "confidence and physical competence are related to the belief in one's own ability to effectively use and apply a variety of general, refined, and specific movement patterns" (p. 42). Finally, they suggest that knowledge and understanding of how and why to interact effectively and efficiently, in relation to one's movement capacity, within a range of environments, is their fourth element of physical literacy.

If these are the key elements of physical literacy, then any conceptually aligned approach to the charting of progress should encompass all four of these elements in relation to an individual's interaction with varied environments. However, acknowledging the focus on physical activity and movement as both a contributor to, and product of, physical literacy, many authors are also concerned about changes in behaviour. Therefore, an indication of an individual's behaviour in relation to engagement in physical activities must also be considered. In other words, improvement

in engagement in physical activity should be considered, but more importantly improvement in element specific characteristics should also be captured.

Lundvall (2015) appreciated the tensions that exist when physical literacy is subject to summative evaluations. She recognised the conflict where an abstract concept, such as physical literacy is placed into the educational context. Lundvall went on to question whether the ideals expressed within the "concept, such as empowerment, embodiment' etc. should be assessed mechanically" (p. 116). The multidimensional nature of physical literacy, with its cognitive, affective, and physical components makes it a challenge to measure the concept holistically using an empirical tool. If teachers are to help students monitor their progress, then a tool that considers the holistic nature of physical literacy should be the focus for development.

Whitehead (2013) argued that physical literacy is an individualized personal journey, and that any assessment that takes place to support this journey should be relative to the individual and their progress (i.e., relative to their previous position). Whitehead goes on to clearly articulate that there should be no comparison with others, or age/stage specific benchmarks, and in fact, there are no evidence-based benchmarks for development in the areas of motivation, confidence, and responsibility/valuing movement. Even the notion of "benchmarks" for physical competencies, for some researchers, become extremely contentious after the first year of life (Ford et al., 2011; Lloyd et al., 2015a, 2015b). Instead, progress may be better evaluated in relation to the person's combined/integrated motivation, confidence, competence, and knowledge and understanding in relation to their embodied interaction with the environment (Robinson & Randall, 2017). Likewise, a tool that monitors progress should recognise the changes in behaviour over a lifetime and the personalised nature of a physical literacy journey (Taplin, 2013). Through the school years, for example, this should therefore consider an individual's abilities and interests and reflect on progress over time in relation to engagement in personally meaningful and challenging activities (Robinson & Randall, 2017).

In pursuing progress in relation to charting and assessment, we propose that the constituent "constructs" of physical literacy are: (a) interrelated/integrated; (b) diverse, spanning physical, affective, and cognitive considerations; and (c) non-linear, in that they may not develop in predictable, consistent ways that can be represented as a straight line (or any sort of line). In line with, and responding to the debates identified above, recent work in Australia has also sought to develop conceptual understanding, and opportunities for assessing or charting physical literacy. This led to several consensus statements regarding physical literacy, negotiated through a Delphi methodology drawing on the expertise of 18 prominent experts in the field (Keegan et al., in review): (a) the core consideration is that physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts; (b) it is comprised of ongoing changes integrating physical, affective, cognitive, and social capabilities; and (c) this leads to an articulation of its importance, that is, physical literacy is vital in helping us lead healthy and fulfilling lives through movement and physical activity. An individual's physical literacy journey should be reflected upon, in relation to, personal goals and their integration of physical, affective, cognitive, and social capacities that support health-promoting and fulfilling movement and physical activity relative to the situation and context throughout the lifespan. The important implication of this final statement, however, is to create (or acknowledge) a distinction between the inherent capability/disposition of every individual, as a consequence of their embodied being, versus the development of this capability to a

point where it supports an active, healthy lifestyle. In the above-described research study in which Delphi methodology was employed, clarifying this difference was a key-step in reaching an improved understanding and resolving conceptual tensions.

Whitehead's (2010a) definition and writings rail against the notions of normative standards, developmental milestones/expectations, and objective/absolute standards, all of which are currently popular and considered quite normal in Western countries. Physical literacy thinking favours, instead, highly personal, developmental ipsative assessment of the whole person's journey (i.e., continuous and highly individualised assessment with no comparisons to standards or norms). Arguably, physical literacy, as was intended by Whitehead, constitutes a significant move away from the traditional assessment-based learning, and towards more qualitative observational and reflective analysis. A principle underpinning physical literacy is the encouragement of awareness of self through embodied interaction with the world; this should not be assessed through normative comparisons, absolute standards, or how well a child can replicate skills in games. In response to the considerations and issues presented in this paper, the list below proposes guidance for the development of any appropriate tools that chart an individual's progress on their unique physical literacy journey and given the holistic and whole nature of physical literacy we argue that judgements should be based on the following five characteristics which are currently under discussion within the IPLA:

Nature of Judgement. A judgement should be made on relevant changes in behaviour in relation to each element of the definition (motivation, confidence, competence, and knowledge and understanding) and these should have equal weighting. Any strategy should also be sensitive to cultural characteristics and the context in which it is being used.

Form of Judgement. Judgements should be ipsative, that is, they should be related to previous judgements. Comparison with others should not drive decisions about an individual's progress or be used in bench-marking. A more collaborative approach to learning would benefit each individual rather than a competitive assessment measure. The responsibility for making these various judgements should be devolved progressively, as appropriate, to the participant. Any strategy should respect and accommodate participants of all ages and should take account of the varying expertise and time availability of the practitioner carrying out the strategies.

Purpose of Judgement. To be aligned to the intention of physical literacy, judgements should identify progress in a physical literacy journey and enable individuals to look ahead with confidence to their next goal. Judgements across the life course are aligned with motivation, confidence, competence and knowledge and understanding. Broadly, these should be a cause for celebration but also provide a reference point for future engagement.

Participants. Self-perception by the participant is important and should provide a key focus in any strategy. However, judgements are more likely to be more informed and nuanced if both the participant and the practitioner are involved. In most cases, there is nothing confidential about judgements.

Gathering Evidence and Recording. The gathering of information should be based on criteria and recognise and celebrate participation. A range of qualitative and quantitative methods is likely to be required for this purpose that are appropriate to the individual and practitioner. Progress that is recorded throughout the individual physical literacy journey allows a reflection on the ongoing journey of each individual. This evidence could be gathered through pictures, videos, and reflective text that pertains to an individual's perception of progress. Real life situations must provide the reflective construct from which progress is considered.

When developing a tool to measure or chart progress we must caution that physical literacy is a complex multifaceted concept and as such, it is a challenging task to produce one form of monitoring that clearly meets all elements of the concept. It has been suggested that physical literacy does not necessarily need to be (or can be, or should be) assessed using a common instrument or tool (Robinson & Randall, 2017). However, teachers within an education system recognise the importance of monitoring progress, reflecting on, and celebrating achievement as an important aspect of pedagogy. Clarification of what we are seeking to measure, and how best to measure it from a conceptual, scientific standpoint, must consider that teachers, parents, and coaches may take a very different view to researchers on what is practically relevant and meaningful. This realisation may mean scientific definitions of reliability or validity do not apply at all, and that there is then a divergence between research-and-practice (Hassmen, Keegan, & Piggott, 2016). Real-world considerations include such elements as purpose of the data collection, the age of the population, whether the measurement is objective (i.e., measuring physical activity with a pedometer) or subjective (such as filling in a survey), respondent burden, method/delivery mode, assessment time frame, the intended sample size, and cost (Dollman et al., 2009). As such, in the real world, there is no perfect measure, but rather, the best measure that circumstances and resources allow. The IPLA accept that there may not be a set method of charting progress as each individual's physical literacy journey is unique and personal to himself or herself. However, underlying all gathering of information to chart a physical literacy journey should include all of the elements of the definition: motivation, confidence, physical competence, and knowledge and understanding, related to the physical, cognitive, and affective domains. The definition is supported by the attributes or symptomatic behaviours set out below:

Motivation. Motivation to be proactive in taking part in physical activity, applying self to physical activity tasks with interest and enthusiasm and persevering through challenging situations in physical activity environments;

Confidence. Confidence in relation to the ability to make progress in learning new tasks and activities and assurance that these experiences will be rewarding;

Movement. Movement with poise, economy, and effectiveness in a wide variety of challenging situations;

Thoughtful and Sensitive Perception. Thoughtful and sensitive perception in appreciating all aspects of the physical environment, responding as appropriate with imagination and creativity;

Working Independently and Together. The ability to work independently and with others, in physical activities in both co-operative and competitive situations;

Identify and Articulate. The ability to identify and articulate the essential qualities that influence the effectiveness of movement performance;

Understanding Principles. An understanding of the principles of holistic embodied health, in respect of a rich and balanced lifestyle; and

Self- Assurance and Self-Esteem. The self-assurance and self-esteem to take responsibility for choosing physical activity for life.

A simple process of reflection on and exemplification of progress in relation to development relative to the affective, cognitive, and physical domains through verbal discussion, written text, pictures, and video could provide a structure from which an individual's journey could be charted. The emphasis would be on the individual's interpretation of her/his progress from a previously considered starting point and would be related to personal goals. This self-reflection should be supported in the early years by parents and practitioners. However, as the individual develops this support would diminish and the reflection and charting of progress would become a personal responsibility. Reflecting on an individual's physical literacy journey should reflect its changing nature for each individual. As young children develop, so they will establish, maintain, and challenge themselves as they see fit or as they are encouraged by others. Reflections on this process would provide chapters in an individual's progress.

Conclusion

Physical literacy as a concept has gathered momentum in recent times, and what is clear is the call for evidenced-based research and empirical findings to support and propel the concept into mainstream consciousness and particularly into policy and practice across the life course. For this to happen, there remains the need to articulate appropriate means of assessment, or charting progress, without which learning cannot be evidenced. We have highlighted a number of commendable attempts to provide measurement intervention and whilst we have come some distance in the last decade, there is still an emphasis on discrete aspects of physical literacy (often physical competence in fact) rather than on the holistic and integrated nature of physical literacy as it was intended. Attempts, hitherto, have focussed on one specific domain from the three (affective, physical and cognitive) rather than all of the domains, in an integrated way, perhaps in an attempt to *prove* progress in answer to research funders, inspectors, parents, and other key stakeholders. This is admirable, and in some ways necessary in the climate of assessment and competition. However, what we have advocated is a call to arms that focuses attention on the true concept of physical literacy in order that we might encourage individual's to chart and reflect on their unique journey, one that is ever-changing and not in keeping with the linearity of current systems or mechanisms of measurement. We particularly call for practitioners, academics, and policy makers to note the holistic, integrating, and integrated nature of physical literacy and espouse an approach that rejects the notion of normative standards for ipsative judgements, thus reflecting the nature of physical literacy as it was intended. An integrated combination of qualitative and quantitative approaches, reflecting all of the domains, relevant to an individual's capabilities and their environment and culture, should be the aim of any system that is adopted to monitor progress on an individual's physical literacy journey. However, it must be emphasised that whatever systems of measurement are put into place, the key pedagogic focus of this holistic concept must not be lost.

References

Almond, L. (2013). What is the value of physical literacy and why is physical literacy valuable? *ICSSPE Journal of Sport Science and Physical Education*, *65*, 35-41.

Australian Sports Commission. (2017). *What is physical literacy?* Retrieved from https://www.ausport.gov.au/participating/physical_literacy

Bailey, R. (2006). Physical education and sport in schools: A review of benefits and outcomes. *Journal of School Health*, *76*, 397-401.

Bruininks, R., & Bruininks, B. (2005). Bruininks-Oseretsky test of motor proficiency (BOT-2; 2nd ed.). Mineapolis, MN: Pearson.

Caffrey, E. D. (2009). *Assessment in elementary and secondary education: A primer*. A CRS Report for Congress. Congressional Research Service (7-5700).

Decorby, K., Halas, J., Dixon, S., Wintrup, L., & Janzen, H. (2005). Classroom teachers and the challenges of delivering quality physical education. *The Journal of Educational Research*, *98*, 208-220.

Dollman, J., Okely, A.D., Hardy, L., Timperio, A., Salmon,J., & Hills, A.P (2009). Hitchhiker's guide to assessing young people's physical activity: Deciding what method to use. *Journal of Science and Medicine in Sport*, *12*, 518-525.

Dudley, D. A. (2015). A conceptual model of observed physical literacy. *The Physical Educator*, *72*, 236–260.

Early Years Physical Literacy Research Team. (2017). *Physical literacy observation tool 545 (PLOT)*. Retrieved from https://docs.wixstatic.com/ugd/05c80a_4d5d31e1f84440dab941060ff054b07e.pdf

Education Scotland. (n.d.). Better movers and thinkers resource package. Retrieved from https://education.gov.scot/improvement/Documents/hwb9-better-mover-and-thinkers.pdf

Edwards, L. C., Bryant, A. S., Keegan, R. J., Morgan, K., Cooper, S. M., & Jones, A. M. (2017). Measuring physical literacy and related constructs: A systematic review of empirical findings. *Sports Medicine*, *48*, 1-24. Retrieved from https://doi.org/10.1007/s40279-017-0817-9

Ford, P., De Ste Croix, M., Lloyd, R., Meyers, R., Moosavi, M., Oliver, J., . . . Williams, C. A. (2011). The long-term athlete development model—Physiological evidence and application. *Journal of Sports Science*, *29*, 389-402.

Gately, P. (2010). Physical literacy and obesity. In M. Whitehead (Ed.), *Physical literacy: Throughout the lifecourse* (pp. 83-99). London, UK: Routledge.

Giblin, S., Collins, D., & Button, C. (2014). Physical literacy: Importance, assessment and future directions. *Sports Medicine*, *44*, 1177-1184.

Hassmen, P., Keegan, R., & Piggott, D. (2016). *Rethinking sport and exercise psychology research. Past, present and future*. London, UK: Macmillan.

Healthy Active Living and Obesity Research Group. (2017). *Canadian assessment of physical literacy: About.* Retrieved from https://www.capl-ecsfp.ca/about/

Higgs, C. (2010). Physical literacy: Two approaches, one concept. *Literacy*, *6*, 127-138. Retrieved from https://www.capl-ecsfp.ca/about/

International Physical Literacy Association (IPLA). (2017). Retrieved from https://www.physical-literacy.org.uk/

Johnston, L., & Watter, P. (2006). Movement assessment battery for children (Movement ABC). *Australian Journal of Physiotherapy*, *52*, 68.

Jurbala, P. (2015). What is physical literacy, really? *Quest*, 77, 367-383.

Keegan, R.J., Barnett, L.M., Dudley, D.A., Telford, R.D., Lubans, D.R., Schranz, N.K., . . . Evans, J.R. (in review). Defining and operationalizing physical literacy: A modified Delphi methodology. *Journal of Teaching in Physical Education*.

Keegan, R., Keegan, S., Daley, S., Ordway, C., & Edwards, A. (2013). *Getting Australia moving: Establishing a physically literate & active nation (game plan)*. Centre of Excellence in Physical Literacy and Active Youth, University of Canberra. Retrieved from http://www.canberra.edu.au/researchrepository/file/50f8c79c-2aca-a83f-aee8-254288c36220/1/full_text_final.pdf

Kirk, D. (2010). *Physical education futures*. London, UK: Routledge.

Kohn, A. (2003). The 500 pound gorilla. *The Teachers' Net Gazette*, *4*(2). Retrieved from http://teachers.net/gazette/FEB03/kohn.html

Lloyd, R. J. (2011). Awakening movement consciousness in the physical landscapes of literacy: Leaving, reading and being moved by one's trace. *Phenomenology and Practice*, *5*, 73-92.

Lloyd, R. S., Oliver, J. L., Faigenbaum, A. D., Howard, R., De Ste Croix, M. B. A., Williams, C.A., & Myer, G.D. (2015a). Long-term athletic development: Part 1: A pathway for all youth. *Journal of Strength Conditioning Research, 29*, 1439-1450.

Lloyd, R. S., Oliver, J. L,, Faigenbaum, A. D., Howard, R., De Ste Croix, M. B. A., Williams, C.A., & Myer, G. D. (2015b). Long-term athletic development: Part 2: Barriers to success and potential solutions. *Journal of Strength Conditioning Research, 29*, 1451-1464.

Lundvall, S. (2015). Physical literacy in the field of physical education – A challenge and a 594 possibility. *Journal of Sport and Health Science, 4*, 113–118. doi:10.1016/j.jshs.2015.02.001

Mandigo, J., & Fletcher, T. (2012). The primary schoolteacher and physical education: A review of research and implications for Irish physical education. *Irish Educational Studies, 31*, 363-376.

McNamee, M. (2005). The nature and values of physical education. In K. Green & K. Hardman (Eds.), *Physical education: Essential issues* (pp. 1-20). London, UK: Sage.

National Improvement Hub. (2016). *Better movers and thinkers (BMT) progression videos*. Retrieved from https://education.gov.scot/improvement/pages/hwb11-bmt-progression-videos.aspx

Physical & Health Education Canada. (2013). *Passport for life: Teacher's guide*. Retrieved from http://passportforlife.ca/teacher/teachers-guide

Robinson, D. B., & Randall, L. (2017). Marking physical literacy or missing the mark on physical literacy? A conceptual critique of Canada's physical literacy assessment instruments. *Measurement in Physical Education and Exercise Science, 21*, 40-55. doi:10.1080/1091367X.2016.1249793

SHAPE America. (2014). *National standards & grade-level outcomes for K-12 physical education*. Champaign, IL: Human Kinetics.

Shearer, C., Goss, H. R., Edwards, L. C., Keegan, R. J., Knowles, Z. R., Boddy, L. M., Durden-Myers, E. J., & Foweather, L. (in review). How is physical literacy defined? A contemporary update. *Journal of Teaching in Physical Education*.

Spengler, J. O., & Cohen, J. (2015). *Physical literacy: A global environmental scan*. Washington, DC: Aspen Institute Sports & Society Program.

Sport for Life Society. (2017). *Frequently asked questions about PLAY*. Retrieved from https://play.physicalliteracy.ca/faq

Sport Northern Ireland. (2016). *Young people and sport in Northern Ireland*. Retrieved from http://www.sportni.net/sportni/wp-content/uploads/2016/12/Young-People-and-Sport.pdf

Sport, Physical Education, and Activity Research (SPEAR). (2015). *Youth sport trust: Lifetime evaluation of the Change4Life primary school sports club programme: Final report*. Canterbury Christ Church University. Retrieved from https://www.youthsporttrust.org/sites/yst/files/resources/documents/Change4Life%20Final%20Report.pdf

Sport Wales. (2014). *Active adults survey: 2014 state of the nation*. Retrieved from http://sport.wales/media/1685965/state_of_the_nation_active_adults_survey_2014.pdf

Sport Wales. (2015a). *Further education sport survey 2015*. Retrieved from http://sport.wales/media/1667685/further_education_sport_survey_state_of_the_nation_2015_english__final__2.pdf

Sport Wales. (2015b). *School sport survey: 2015 state of the nation*. Retrieved from http://sport.wales/media/1667736/school_sport_survey_2015_state_of_the_nation_english.pdf

Talbot, M. (2001). The case for physical education. In G. Doll-Tepper & D. Scoretz (Eds.), *World summit on physical education* (pp. 39-50). Berlin, Germany: ICSSPE.

Taplin, L. (2012). *A tale of two strangers: Investigating the concept of physical literacy*. Paper presented at the annual meeting for the International Convention on Science, Education and Medicine in Sport. Glasgow, Scotland.

Taplin, L. (2013). Physical literacy as journey. *ICSSPE Journal of Sport Science and Physical Education, Bulletin 65*, 57-63.

Tremblay, M., & Lloyd, M. (2010). Physical literacy measurement: The missing piece. *Physical and Health Education Journal, 76*(1), 26-30.

The Sandbox Project. (2017). *Survey: Physical literacy environment assessment (PLEA) tool.* Retrieved from http://sandboxproject.ca/news/2017/6/16/survey-physical-literacy-environmental-assessment-plea-tool

Ulrich, D. (2000). *The test of gross motor development-2*. Austin: TX. Pro-Ed, Inc.

Warburton, D., Nicol, C., & Bredin, S. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal, 174*, 801-809.

Whitehead, M. (1990). Meaningful existence, embodiment and physical education. *Journal of Philosophy of Education, 24*, 3-13.

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. (2010a). The concept of physical literacy. In M. Whitehead (Ed.), *Physical literacy: Throughout the lifecourse* (pp. 10-20). London, UK: Routledge.

Whitehead, M. (2010b, November). *The value of being physically literate*. Paper presented in Gothenburg, Germany.

Whitehead, M. (2013). What is the education in physical education? In S. Capel & M. Whitehead (Eds.), *Debates in physical education* (pp. 22–36). New York, NY: Routledge.

Youth Sport Trust. (2017). *Start to move: The ABCs of physical education for early years and key stage 1*. Retrieved from https://www.youthsporttrust.org/start-move