

Promoting School-Aged Children's Physical Literacy in Schools: A Brief Review

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Abstract: Physical literacy has received attention globally, but the definition and concept of physical literacy remains ambiguous in both research and practice. This obscurity may impede implementing the development of physical literacy among school-aged children. Therefore, the major purpose of this brief review was to examine the definitions, assessments, and benefits of physical literacy in order to promote school-aged children's physical literacy in educational settings as well as to continue the dialogue for deepening related research and best practice. Using a narrative review approach, physical literacy is defined and its interactions with physical education are clarified. School physical education teachers and practitioners should understand the appropriate assessment of physical literacy in educational settings in order to promote school-aged children's physical literacy.

Keywords: *Physical education, physical activity, physical literacy, children, education*

It is well documented that regular physical activity in school-aged children contributes to positive health benefits, such as an increase in cardiovascular endurance, skeletal muscle strength, self-esteem, quality of life, and psychosocial well-being (Lubans et al., 2016; McMahon et al., 2017; Thompson et al., 2003). Conversely, physical inactivity and sedentary behaviors at a young age may cause childhood obesity (Gilbert-Diamond, Li, Adachi-Mejia, McClure, & Sargent, 2014), which may lead to cardiovascular disease, type-2 diabetes, depression, and psychosocial issues (Daniels, 2006; Lavie et al., 2016; Llewellyn, Simmonds, Owen, & Woolacott, 2016).

Notwithstanding the significant health benefits of physical activity during childhood, over 80% of school-aged children do not engage in the recommended daily 60 minutes of moderate-to-vigorous physical activity (MVPA) and spend excessive time in sedentary activities (Hallal et al., 2012). Moreover, growing evidence has shown a high probability of obese children becoming overweight and obese adults (Craigie, Lake, Kelly, Adamson, & Mathers, 2011; Singh, Mulder, Twisk, Van Mechelen, & Chinapaw, 2008; Telama et al., 2014). With staggering percentages of obese school-aged children, solutions to reduce childhood obesity in educational settings are needed.

Childhood obesity has been shown to have a negative impact on adolescent development; thus, early interventions need to be provided for young children to engage in active lifestyles (Llewellyn, Simmonds, Owen, & Woolacott, 2016). Promoting physical literacy among

school-aged children has been suggested to prevent/decrease childhood obesity and provide long-time health benefits (Evensen, Wilsgaard, Furberg, & Skeie, 2016). Being physically literate is identified as having motivation, confidence, physical competence, knowledge, and understanding to value and participate in physically active lifestyle over the lifespan (Whitehead, 2013).

Recently, physical literacy has been widely studied in various contexts, such as education, sports, and physical activity promotion (Castelli, Centeio, Beighle, Carson, & Nicksic, 2014; Shearer et al., 2018; Whitehead, Durden-Myers, & Pot, 2018). International policies also support physical literacy and emphasize the importance of physical activity within education (Ontario Ministry of Education, 2015; SHAPE America, 2015). An important aspect of physical literacy is to develop school-aged children's healthy habits of being physically active and learning sports that will be retained throughout their lives (Corbin, 2016). The main purpose of this brief review was to refine definitions of physical literacy, to clarify the interactions between physical literacy and physical education, to introduce the assessment of physical literacy, and summarize the benefits of physical literacy.

The Definition of Physical Literacy

Dr. Margaret Whitehead provided foundation of physical literacy concept, establishing with her 2001 report, *The Concept of Physical Literacy* (Whitehead, 2001). She believed that rather than being made up of several separate aspects, humans are "whole" with

multiple dimensions, a belief that led to this broad notion of physical literacy. Physical literacy combines all aspects of health, fitness, and wellness (Roetert & MacDonald, 2015). With a growing prevalence of childhood obesity, decreased physical activity engagement, and increased sedentary lifestyles, Whitehead attempted to streamline physical activity guidelines and provide easy-to-follow recommendations to promote healthy and active lifestyles (Lundvall, 2015).

A variety of definitions of physical literacy has been discussed in current literature (Edwards, Bryant, Keegan, Morgan, & Jones, 2017; Shearer et al., 2018). Some definitions of physical literacy only emphasized motor competency, fundamental motor skills, and motor development (Delaney, Donnelly, News, & Haughey, 2008; McKee, Breslin, Haughey, & Donnelly, 2013). SHAPE America explains physical literacy as, "the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit" (SHAPE America, 2014) and emphasizes developing "physically literate individuals" as part of their national standards for K-12 physical education programs (SHAPE America, 2013). Previous definitions have focused on domains of knowledge, understanding, thinking, communication, and application leading to physically active and healthy lifestyles (Roetert & Jefferies, 2014; Whitehead, 2001). More recently, a definition of physical literacy endorsed by the International Physical Literacy Association (IPLA) is motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life (IPLA, 2017). The central idea of physical literacy is to unify many different health and physical activity domains to benefit the individual as a whole (Edwards et al., 2017). Once a child has acquired health and physical activity knowledge, understanding, and skills, the hope is that the child will begin to make choices leading to choose a healthy and active lifestyle that will be sustained throughout the lifespan (Ellerton, 2018).

The Role of Physical Education in Physical Literacy

Physical literacy is concerned as direction of physical education (Shearer et al., 2018). Physical education is a specific term, referring to the actual knowledge and understanding, and participation in a physical activity class with a teacher as the leader (Lund & Tannehill, 2014). Physical education teachers have an organized plan or curriculum for the entire school year: along with specific goals, lessons, and state-based student learning objectives. A primary goal of physical education is to educate students in health, nutrition, and physical activity (Lund & Tannehill, 2014). Both personal fitness and sport education are taught in physical education settings (Shearer et al., 2018). Physical education plays an important role in increasing the development of physical

literacy in school-aged children (Roetert & MacDonald, 2015).

Physical literacy is becoming popular topic among physical education teachers. physical literacy can be fostered in school physical education classes (Choi, Sum, Leung, & Ng, 2018). The concept of physical literacy is in line with the goal of the SHAPE America to develop physically literate individuals (SHAPE America, 2013). However, the concept of physical literacy is more comprehensive rather than individual's physical literacy through physical education or just engaging in physical activities. Given the fact that physical education teachers are searching for strategies to promote physically, socially, and emotionally healthier children (United States Department of Health and Human Services [USDHHS], 2018), physical education in a school would be one of essential facilitators to influence school-aged children's physical literacy.

Essentially, physical education promotes physically active and physically literate children in the educational setting. Physically literate children possess the motivation, confidence, knowledge, and understanding to adopt physical activity and healthy practices (Roetert & MacDonald, 2015). Additionally, children may develop intrinsically motivated behaviors and have the necessary tools to live physically active lifestyle throughout their lives (Choi et al., 2018).

The role of physical literacy has been explored in school settings, such as Comprehensive School Physical Activity Program (CSPAP; Castelli et al., 2014; Erwin et al., 2013). CSPAP involves five components: (a) physical education, (b) physical activity during school, (c) physical activity before and after school, (d) staff involvement, and (e) family and community involvement. CSPAP indicates that integrating physical activity within and beyond schools is important to promote recommended daily physical activity for school-aged children (Erwin et al., 2013). The multicomponent approach of CSPAP was suggested as a logical avenue to offer more opportunities for school-aged children to engage in physical activities that contribute to developing their physical literacy (Castelli et al., 2014). Given that the goal of CSPAP is to develop a school atmosphere for promoting lifelong physical activity (Erwin et al., 2013), its implementation contributes to developing physically literate individuals by making physical activity and health a daily and constant part of school-aged children's lives. With physical literacy beginning in physical education classes, students can then take what they have learned and use it to be physically active both before and after school, as well as to get their families involved.

The CSPAP focuses on surrounding students with physical activity by giving them many opportunities to be physically active and by allowing them to observe their peers and adult role models being physically active (Castelli et al., 2014). Additionally, given the fact that children spend the majority of their awake time at school, schools play a critical role in shaping healthy behaviors within children. Growing evidence also suggest that even

an extra hour of physical activity per week during school could increase a student's physical literacy (Castelli et al., 2014). This continues to underscore that children need more time to be physically active during the school day. Classroom teachers, school administrators, and staff all play an important role in keeping students physically active and healthy (Castelli et al., 2014).

School-aged children's physical literacy was also examined in the sport context (Demetriou, Bachner, Reimers, & Göhner, 2018). Demetriou and colleagues (2018) found positive effects of sports-oriented programs on students' physical literacy. The goal of the sport-oriented school is to incorporate a variety of physical activities in students' school day. Physical education classes continued as normal in both educational settings: yet, in the sports-oriented school emphasis was placed on physical activity beyond physical education classes. The sport-oriented school had daily 90-minute physical education classes, two hours of swimming on Fridays, morning school-wide warm-ups, and movement breaks throughout the day. This study found that in the physical fitness and psychosocial domains, the sport-oriented school scored much higher than the regular primary school. Greater positive effects on physical literacy were found in the sport-oriented school (Demetriou et al., 2018), which implied that the school as a whole promoted physical literacy, not just the physical education classes and/or physical education teachers. This study demonstrated that the more physical activity a child has, the more physically literate he or she will be.

Physical education teachers, as leaders, can play an essential role in steering physical activity promotion schools that may contribute to development of physical literacy (Zhang, Gu, Zhang, Keller, & Chen, 2018). Quality physical education programs must be implemented in schools, focusing on keeping children active and teaching them ways to be physically active at home. School-aged children need to be educated about why physical activity is important and taught a variety of enjoyable skills to be physically active. Physical education teachers can promote children's physical literacy through recess, play, physical education classes, physical activity outside of the formal school day, and sports participation (Green, Roberts, Sheehan, & Keegan, 2018; Lundvall, 2015). Additionally, effective physical education programs could benefit the children's physical, cognitive, and affective domains leading to children's physical literacy (Green et al., 2018). CSPAP is also designed to give children knowledge about how to adopt healthy lifestyles and why it is important to do so (Centers for Disease Control and Prevention [CDC], 2013).

The Assessment of Physical Literacy in Physical Education

With the school and physical education roles outlined, research is needed to effectively assess physical literacy in school-aged children. Because it is a relatively new concept, especially in regard to physical education classes,

different assessments of the effectiveness of assessment are still evaluated. Physical literacy targets the whole person and appropriate assessments must do likewise (Dudley, Kriellaars, & Cairney, 2016). While assessment content is critical, so is the administration of physical literacy testing in physical education settings (Sum et al., 2016).

One of the most popular and effective assessments is the Canadian Assessment of Physical Literacy (CAPL; Longmuir et al., 2018). Longmuir and colleagues (2018) described the CAPL as reflecting the Canadian definition of physical literacy with four domains (a) motivation and confidence, (b) physical competence, (c) knowledge and understanding, and (d) engagement in physical activities for life. The CAPL assessment comprises 22 items assessing physical competence, daily behavior, knowledge and understanding, and motivation and confidence. Specifically, the knowledge and understanding portion is a written test with multiple choice and true/false questions. Daily physical activity behavior is measured with a pedometer. Motivation and confidence are measured through a self-reported questionnaire, and physical competence is measured through physical tests (Canadian agility and movement skill assessment [CAMSA], plank, FitnessGram Progressive Aerobic Cardiovascular Endurance Run [PACER]). The results for each test could be documented and entered into the CAPL website to obtain physical literacy scores. The Canadian Assessment of Physical Literacy's validity and reliability has been established in age 8-12 years old (Longmuir et al., 2018).

The Perceived Physical Literacy Instrument (PPLI) was developed by Sum, Ha, Cheng & Yiu (2016). This is an eighteen-item questionnaire that designed to determine students' perceived physical literacy. The PPLI is also an effective and useful tool in measuring the effectiveness of physical education teachers' physical literacy intervention programs (Longmuir et al., 2018). While this is a single domain test (questionnaire), the questions cover the main physical literacy concepts (i.e., physical activity, physical competence, motivation, confidence, knowledge, and understanding). Recently, the reliability and validity of PPLI was established to measure perceived physical literacy for Hong Kong adolescents (Sum et al., 2018). In addition, the PPLI was used to investigate relationship between perceived physical literacy and physical activity among Hong Kong secondary school students. Even though the findings showed that the correlation between perceived physical literacy using PPLI and subjective physical activity level was weak, the study supported the PPLI as an important tool to measure secondary students' physical literacy by physical education teachers (Choi et al., 2018). However, the assessment seems to lack evidence to support perceived physical literacy in other countries; thus, more research is needed to examine its validity and reliability in different countries.

The Benefits of Being Physically Literate

Even though physical literacy is still a relatively new topic, multiple benefits of being a physically literate individual have already been found and recorded (Whitehead et al., 2018). In educational settings, school-aged children with physical literacy tend to be physically active and participate in physical activity for personal enjoyment leading to active lifestyles (Dudley, Cairney, & Goodway, 2019; Edwards et al., 2017). These children do not view exercise or movement as a means to an end or something they have to do, but rather something they want to do for its own sake.

Whitehead and colleagues (2018) explained how physical literacy benefits the individual in all facets of life: cognitive, affective, psychomotor, and enjoyment. Cognitively, physically literate children appear to have stronger memory and reasoning (Whitehead et al., 2018). Affectively, physically literate children typically have higher levels of self-esteem, along with self-confidence and self-respect. Furthermore, self-esteem has been found to enhance independence, creativity, adaptability, and benevolence (Whitehead et al., 2018). Strong correlation between self-esteem and the ability to cope were also found (Whitehead et al., 2018). Children with high self-esteem are typically more likely to cope with a wide range of situations. Finally, physically literate children are found to have higher levels of motivation and confidence, which has been supported by literatures using self-determination (intrinsically motivated), self-efficacy (optimistic self-belief and confidence), and achievement goal theories (how we achieve success; Whitehead et al., 2018).

Physically literate children are related to higher psychomotor health outcomes, such as demonstrated a lower body mass index (BMI), lower body weight, stronger muscles and bones, reduced the risks associated with multiple diseases. Considering that obese school-aged children are at risk for multiple diseases and health problems such as cardiovascular disease, type 2 diabetes, psychosocial problems (Daniels, 2006; Lavie et al., 2016; Llewellyn et al., 2016), developing children to be physically literate may be the most effective way in preventing childhood obesity.

Finally, Whitehead and her colleagues (2018) proposed that physically literate children enjoy physical activity and are happier than children with lower physical literacy scores. There is growing support for physical literacy, and researchers and educators should use this information to foster and promote physical literacy in order to empower school-aged children to adopt physically active lifestyles to ultimately enhance their quality of life and wellbeing.

In conclusion, this brief review examined the definitions, assessments, and benefits of physical literacy in educational settings, especially in physical education and extended the conversation to advance research and practice. Using a narrative review approach, the definition of physical literacy was presented, and then interactions between physical literacy and physical education among school-aged children were highlighted. Research and literature are demonstrating the multiple benefits of

school-aged children being physically literate. With physical inactivity and sedentary behaviors increasing, interventions are needed to address this public health issue (Giblin, Collins, & Button, 2014). Physical literacy appears to be a promising solution, with its concept of combining all aspects of health and wellness to allow children and youth to independently lead healthy lifestyles (Evensen et al., 2016). Educational administrators and teachers are challenged to explore the interaction of physical literacy and physical education, and how they are intertwined within educational settings to promote student academic success. Educational administrators and teachers need to accept the significant role they play in facilitating school-aged children's physical literacy, with the understanding physical education teachers can serve as leaders. Once appropriate school practices have been established, proper assessment needs to take place to assess school-aged children's physical literacy and its associated benefits.

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