

Review

Operationalizing physical literacy through sport education

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Abstract

Physical literacy (PL), as embodied within physical education (PE), has been vaunted as having increasing importance as a disposition for students of all abilities to establish lifelong adherence to physical activity. The purpose of this paper was to provide a discussion of how the pedagogical features of a contemporary pedagogical model, Sport Education (SE), may be used to operationalize PL in PE and what empirical evidence currently exists to validate this claim. Substantial empirical evidence exists that the attributes associated with the development of PL (Whitehead, 2010) can be operationalized in PE with the effective implementation of the model. SE has distinct pedagogical features which positively contribute to many of the dimensions of PL and can further an individuals' journey towards greater PL and having an embodied self within PE. That stated, there remains concern that the context for this embodiment remains too narrow to be viewed as a panacea for the development of lifelong physical activity. SE must be developed as a connective specialism if these PL attributes are to transform the motivation and confidence for individuals to capitalize on their innate physical potential and make a more significant contribution to the quality of life.

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1. Introduction

Physical literacy (PL), as embodied within physical education (PE), is a concept that is rapidly gaining acceptance around the world.¹ In the US, for example, the latest iteration of the National Standards for Physical Education has embedded the development of physically literate individuals as its foundational goal.² The rationale for this inception is that PL has been vaunted as a key disposition for students of all abilities to establish lifelong adherence to physical activity (PA). If PL is to be viewed as a panacea for the development of lifelong PA then the concept warrants further exploration. This examination should include how PL is defined, and most importantly, how it could potentially be operationalized within the context of PE. The purpose of this paper was to provide an overview of current conceptualizations of PL and discuss how a contemporary

pedagogical model (Sport Education, SE) may contribute to the development of PL in PE.

Whitehead¹ described PL as a disposition acquired by individuals encompassing “the motivation, confidence, physical competence, knowledge, and understanding to maintain physical activity throughout the lifecourse” (p. 18). The emphasis of the nature of the lifecourse PL journey is important to recognize. Although recent discourse has focused on PL, as embodied in the context of PE, it is important to note that its development is relevant throughout life and, in fact, the school years only represent two of the life phases of PL. PL is also strongly situated within a monist philosophical tradition; that our embodied dimension is integral to who we are and in no way is it merely a servant to our intellect. This monist perspective resonates in PL descriptions as a holistic disposition characterized by the motivation to capitalize on innate movement potential to make a significant contribution to the quality of life.³ These authors suggest that on account of this focus, individuals who are making progress on their unique PL journey, demonstrate the following attributes: 1) the motivation and confidence to capitalize on

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innate movement/physical potential to make a significant contribution to the quality of life, 2) movement with poise, economy and confidence in a wide variety of physically challenging situations, 3) sensitive perception in reading all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination, 4) a well-established sense of self as embodied in the world. This together with an articulate interaction with the environment engenders positive self-esteem and self-confidence, 5) sensitivity to and awareness of embodied capability leading to fluent self-expression through non-verbal communication and to perceptive and empathetic interaction with others, and 6) the ability to identify and articulate the essential qualities that influence the effectiveness of movement performance, and have an understanding of the principles of embodied health, with respect to fundamental aspects such as exercise, sleep, and nutrition. These specific PL attributes provide a useful heuristic frame to examine how teachers can begin to operationalize PL within PE curriculum programs. These attributes will be used as an organizational framework to discuss the potential of SE⁴ to provide experiences that enable individuals to make progress on their individual journey towards PL within PE.

2. SE as a pedagogical model

SE is a pedagogical model designed to provide authentic, educationally rich sport experiences for girls and boys in the context of school PE.⁴ As part of this goal of providing rich experiences, the curricular design of SE is such that the positive features of sport as it is experienced outside of school are highlighted and replicated within PE. Within SE, students participate in *seasons* that are often two to three times longer than typical PE units. Within those seasons the students become members of teams which remain together over the course of the unit. This consistent team *affiliation* allows students to plan, practice, and compete together, as well as benefit from all the social development opportunities that accompany membership in a persisting group. A *schedule of competition* is organized that allows learners to practice and play within a predictable schedule of fair competition. A *culminating event* marks the end of the season and provides both the occasion to mark progress and the opportunity to celebrate successes. *Records* are kept and used for purposes of motivation, feedback, assessment, and the building of standards and traditions. The entire season is *festive* with continuous efforts made to celebrate success.⁵

Through the implementation of these features, Siedentop et al.⁶ proposed that students become *competent, literate, and enthusiastic* sportspersons. In other words, the students become knowledgeable and competent games players who understand and value sport, and can distinguish between good and bad sport practices. By consequence these students will then participate and behave in ways that preserve, protect, and enhance positive sport cultures. Siedentop⁵ had the vision that these three goals of the model had a strong cultural emphasis. That is, he commented that "Sport Education has always been

defined as a process through which sport cultures might grow and prosper as humanizing influences in the lives of nations and their citizens".⁵

As noted, Siedentop's goal was to recast PE lessons as matches and training sessions, thereby reproducing aspects of the community practice of sport as it exists outside of school.⁷ However, it should be noted that SE is not a direct replication of youth sport, and has structural features that enable student participation to be more inclusive. SE seasons are designed so that all students play all the time, and all teams are involved in the final festivities, irrespective of their ranking. As such, games are modified to promote developmentally appropriate involvement through the use of small-sided games. Finally, students take on sport-related roles other than player, for example referee, coach, manager, trainer, cheerleader, or publicity officer. As Pope⁸ noted, "students are encouraged to share ownership for the way the model is implemented and pursue greater responsibility for the operation of the model" (p. 12).

While it is important that we acknowledge that PL was not defined with a specific pedagogical model in mind, we argue that the pedagogical features inherent in SE and its goals of developing competent, literate, and enthusiastic participants have the potential to contribute to the attributes associated with the development of PL. The following section discusses this potential alignment and summarizes the empirical evidence that currently exists to support these suppositions.

3. Motivation and confidence to capitalize on innate movement/physical potential

Almond and Whitehead³ suggested that individuals who are making progress on their individual/unique PL journey have the motivation and confidence to capitalize on innate movement/physical potential to make a significant contribution to the quality of life. Siedentop⁴ described his long-term aim for SE being to "contribute to a sound, sane, and humane sport culture that maximizes participation" (p. 5). To achieve this goal he suggests it is necessary to give all students the chance to know and love sport and the opportunity to have a good educational and social experience as part of a team. As such, SE aims to reduce the discriminatory and exclusionary practices often present in the way sport is traditionally presented in schools and instead foreground the individual's contribution to the team culture. This is achieved by foregrounding "team outcomes", in which the performances of individuals contribute to team performance, and that working together toward a common goal is a key educational and developmental goal. This is achieved by making every effort to select teams that are as evenly matched as possible so that each team has a chance to be successful as a team. Participants are also provided the opportunity to build team affiliation using strategies such as team names, uniforms, posters, and pre-game team cheers. A guiding principle of SE is that all students get equal opportunity to play, which is expedited through the use of small-sided contests. Further, each member of the team has a specific role responsibility that is required to be completed for the team to be successful towards season goals. To promote

equitable participation, some teachers also employ a “sport board” made up of student representatives from all teams. One of the charges of this board is to develop policies of inclusion and make final decisions concerning violations of fair play rules and inclusive competition schedules. Some of the duties of the sport board can include planning the competitions with the teacher, dealing with disputes or student requests, meeting with the teacher to share ideas and feedback from students, providing positive role models for teams, planning the culminating event, and ensuring the smooth day-to-day functioning of the program.

Research that has examined the influence of SE on student motivation to utilize their physical capabilities to participate in the model has generally used social-cognitive theoretical perspectives. These studies suggest that the use of team-oriented structural features can be linked to a mastery-involved climate that can be produced within seasons.⁹ For example, Spittle and Byrne¹⁰ reported that middle school-aged students perceived elements of SE to maintain their perception of a mastery-involved climate better than a traditional teacher-directed unit of soccer. In a more recent study, Hastie et al.⁹ also demonstrated that the inherent features of SE allows teachers to manipulate the predominantly performance-based task structure of practice style tasks and formal competition within the model to foster a mastery climate with an emphasis on mastery-based recognition and evaluation structures.

Wallhead¹¹ recommended that social approach-avoidance achievement goals may be pertinent for better understanding students' motivation to participate within SE due to the socializing structures inherent in the model. These social goals include motives to achieve (or avoid) particular social outcomes or interactions such as recognition, responsibility, or affiliation. Research using this perspective has shown that team affiliation is one of the key motivating factors within the model.¹² Based upon this premise, a further series of studies that focused on amotivated students (those lacking the desire to engage in or participate in PE) have also been conducted.^{13–15} The overall findings of these studies concluded that students' placement in persistent, heterogeneous teams, where their contribution is important to team success, fostered physical engagement within SE and positive change in their perceptions of enjoyment and relatedness satisfaction. This empirical evidence supports the assertion that SE can contribute to one of the key elements of PL; students' motivation to capitalize on their physical capabilities within the group culture of the model. That is, the focus of a holistic game-play evaluation, together with the added provision of individual role responsibilities within the team fosters an individual accountability for achieving group goals. As a result, students see that their own individual efforts are critical to the success of the team.

4. Movement with poise, economy and reading the environment with intelligence and imagination

Almond and Whitehead³ also asserted that as students move along the continuum towards PL they exhibit movement

with greater poise, economy, and confidence in a wide variety of physically challenging situations. One of the foundational goals of SE is the development of the competent performer. Within the games-based structure of SE, Siedentop et al.⁶ suggested that a competent participant in SE “has developed sufficient skill to participate in games and activities satisfactorily, understands and can execute strategies appropriate to the complexity of the activity, and is a knowledgeable games player” (p. 5). This added dimension of strategic competency in the application of game play tactics within SE seems to resonate closely with the PL attribute of “reading” aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination.³

There are a number of pedagogical structures within SE that contribute to the development of games-based movement competency. The first is the idea of “graded competition”, in which students from one team divide into smaller groups and participate against others of similar skill levels. The games are still consequential in that the score from each mini team counts towards a team's total. The second way in which competence is developed is through modified game forms. Games are designed to be developmentally appropriate, even to the extent to where graded competitions can involve a different iteration of the parent game. As an example, certain defensive options such as stealing the ball may be allowed in the upper level basketball competition, while in the lower level students may not dispossess their opponent other than through interceptions. In this way, the environmental constraints placed upon players serves to promote movement competence and confidence. SE also follows a system of progressive competition formats, where the demands of the game increase as the season progresses. For example, during a soccer season, students might begin by playing 2 vs. 2 games, which then lead to matches of 4 vs. 4, and which culminate in 8 vs. 8 games. In this way, the foundational skills and tactical elements are developed first, and games involving increased complexity are introduced with time. This notion of time is also important in that SE seasons are designed to be longer than units traditionally presented in PE. The standard format of SE is a length between 15 and 20 lessons, which allows students to have repeated exposure to one activity over time, and also allows for the more inclusive, progressive levels of competition game forms.

Evidence for the development of student competence in SE has focused on both dimensions of motor skill execution and tactical efficiency during game play. The earliest trials of SE in Australia and New Zealand revealed that students' skill competency improved more than with the traditional skills-drills approaches used by teachers in previous classes.^{16,17} In these trials, teachers reported that “students were more interested in tactics as well as a desire for self-improvement and personal success as the season progressed”.¹⁷ Teacher anecdotal accounts rationalized this improvement in competence to the extended duration of time allocated to SE and the idea of persisting team membership promoting greater engagement in movement tasks. Other descriptive studies also provided

support for these initial claims, with Hastie and Buchanan¹⁸ as well as Carlson and Hastie¹⁹ providing evidence of improvements in student knowledge of strategy concepts within improved game-play performance.

As this line of inquiry became more sophisticated in terms of research design and objective measures, studies have emerged that quantitatively assessed the effect of SE on student skill and game play competency. In the first of these, Hastie²⁰ used Grehaigne and colleagues' efficiency index of performance to assess students' game-play tactical performance during an SE season of Frisbee. Analysis of specific tactical dimensions revealed an increase in the teams' utilization of short, efficient passes and an improved percentage of intercepted opposing passes. Later, Hastie et al.⁹ used the Game Performance Assessment Instrument²² to examine tactical knowledge development during badminton. In this study, the students made significant improvements in both their shot selection and execution of skills during game play. In particular, it was found that the students were able to control the shuttle and hit it more aggressively. Moreover, these findings have been replicated in both soccer²³ and volleyball,²⁴ where there were significant improvements in form, communication, movement to the ball, and effective overall play. Studies that have utilized comparative research designs to assess changes in student competency have also served to reinforce the perspective that the features of SE have greater efficacy in promoting students movement competency than traditional skills-drills based approaches.^{25,26} In these studies, findings indicated that students in both SE as well as the traditional skills-based approaches made significant improvements in skill execution. It must be noted however, that in all cases, the gains by students in SE were more substantive. In addition, the students in SE reported a belief that they had made significant gains in their skill levels, and also suggested that they developed a better understanding of the game.

These empirical data provide strong evidence that students who participate in seasons of SE become more proficient movers and tactical decision-makers within the specific game play contexts presented within the model. The progressive game play environments provided to the students and the focus on team efficiency seem to provide participants multiple opportunities to practice "reading" aspects of game play performance. This tactical knowledge development may occur within active game play participation, but also during their time spent as observers in fulfilling sport-related roles such as coach or official. That is, as a coach, students may be put in the situation of observing and diagnosing their peers' performance and thinking along the lines of "if I were on the court, where would I have hit the shuttle?", or perhaps in some cases, "why on earth did he hit it there?" These tactical movement diagnoses allow the students repeated opportunities to predict movement needs or possibilities, and respond appropriately to these with intelligent tactical decisions. The pedagogical practices inherent in the model thus seem to effectively facilitate students' movement along the PL movement proficiency continuum in that they can exhibit movement or skills with greater economy efficiency and gain confidence

to perform within progressively sequenced game play contexts.

5. A well-established sense of self as embodied in the world

A third attribute of PL is that individuals have a well-established sense of their physical self as embodied in the world, which engenders positive self-esteem and self-confidence. Historically, from a theoretical standpoint, the concept of self-esteem has been viewed as a one-dimensional construct without subcomponents.²⁷ This rationale has been based upon the widely held association of global self-esteem with feelings of pleasure and satisfaction. More recent conceptualizations of self-concept has prescribed a more multidimensional approach to understanding the benefits of a positive sense of self on academic, physical, and social outcomes.²⁸ This hierarchical conceptualization is based upon the recognition that individuals have an overall sense of self-worth which represents the highest level of the model. At a lower level individuals have more discrete self-concepts across different domains, for example, physical, social, or emotional. Finally, at the lowest level individuals have more specific self-judgments which feed into the mid-level self-concepts. An example of this hierarchical influence within the physical domain is that individuals make judgments about their sport competence, strength, and cardiovascular fitness which contribute to their evaluation of their physical self. The potential influence of the hierarchical multidimensional self-concept framework on PA behavior and PL is beginning to emerge. Martin et al.,²⁹ for example, showed that individuals with stronger global self-esteem and physical self-concepts are more likely to engage in regular PA compared to people with weaker global self-esteem and physical self-concept.

There remains a dearth of literature which has examined the influence of SE using a multidimensional self-concept framework. Despite the lack of evidential warrant there remains features inherent in SE which would suggest the development of the embodied self may be an attainable goal. The aforementioned empirical evidence for increases in students' competence, for example, would suggest that the model fosters some of the lower level domain specific self-concepts necessary to facilitate physical self-concept. In addition, one objective of SE is to provide an inclusive environment for all students. This is promoted by the fact that students remain on the same team for the length of a season, and have roles and responsibilities that contribute to the success of that team. The idea of the persisting team is generated from the theory of cooperative group work³⁰ in which students are expected to carry out their team and class tasks without the teacher's direct supervision. The notion of the persisting team is also designed so that students develop empathy towards others within their team. In contrast to the more familiar and *ad hoc* process where different teams are selected for each lesson, and in which the particularly low skilled students have the potential to be marginalized, within SE the challenge is for teams to adopt a caring and concern for all team members that helps

everyone develop competence in movement. It is in this shared value for inclusive competency that positive self-esteem and self-confidence may be engendered such that individuals have a more positive judgment of their embodied self.

6. Awareness of embodied capability and empathetic interaction with others

Within the persistent team framework inherent in SE, students have an increased opportunity for tacit social interactions within the student-centered instructional tasks. Carlson and Hastie¹⁹ suggested these social interactions provide opportunity for the development of such as trust and leadership skills. Initial trials of SE reflected these perspectives and teachers perceived the model to "develop qualities such as leadership, teamwork, peer support and active pursuit of socially responsible and equitable participation beyond what was evident in previous teaching".³¹ More recent research has confirmed these suppositions with reports that SE was potentially more motivating and inclusive of the students normally less inclined toward participation.³² Despite this body of evidence that SE has the potential to move individuals towards more socialized forms of PL the devolution of power from the teacher to the students may also provide students who are given responsibility, to act in ways that alienate or oppress their teammates. By observing all of the social interactions and decisions of one group during a season of soccer, Brock et al.³³ provided evidence that students with higher status dominated the social interactions during group work. In this case, high status was achieved by "being rich", physically attractive, being involved in athletics outside of class, and having a friendly and engaging personality. The poignant conclusion from this study was that "we must explore these inequities and study ways in which teachers can create an environment that enables students to learn physically, cognitively, and socially through equitable interaction and participation".³³ Although SE has the potential to facilitate individual awareness of embodied capabilities and empathetic interaction with others, teachers must still be vigilant to the potential for some students' voices to be silenced within the group tasks inherent in the model.

7. Articulation of the essential qualities that influence the effectiveness of movement performance

The final attribute that Almond and Whitehead³ suggested is an indicator that students are developing PL is their ability to identify and articulate the essential qualities that influence the effectiveness of movement performance. In addition they also include that students have an understanding of the principles of embodied health, with respect to fundamental aspects such as exercise, sleep and nutrition. One design feature of SE that allows students the opportunity to engage in analyzing movement performance is the students' role responsibility of coach. Within this role, students examine peer performance of specific skills or tactics and are facilitated to provide an accurate error detection and diagnosis for movement

remediation. Despite initial teacher skepticism of a model which relinquishes much of the responsibility for the delivery of content to students,¹⁶ more recent research has provided evidence that, with adequate preparation, student coaches can be effective in developing peer knowledge and performance of basic skill and game play tactical competencies.³⁴ It seems clear that participants who perform this role within SE are provided an opportunity to operationalize this attribute of PL and identify and articulate the essential qualities that influence the effectiveness of performance.

An important aspect of SE is that it has evolved to encompass a global conception of "sport" that has moved beyond team-oriented sports to include individual or esthetic activities such as gymnastics, dance, or swimming. In addition, there is no reason why SE seasons cannot be adapted to other health and fitness oriented endeavors such as weight training or aerobics. The key infrastructure of a season is the same in that students remain on teams, but the model is flexible enough to allow significant and consequential learning on issues such as exercise, nutrition, or recovery. By consequence, within SE there can be competitions, not only within the physical domain (e.g., creating, practicing, and presenting an aerobics routine), but also through presentations by students on some particular aspect of fitness or nutrition which can then be evaluated (or judged) by a jury of their peers in much the same ways in which presentations work in regular classrooms. From an empirical standpoint these potential applications remain largely unexplored, however they highlight a potential expansion and application of the model to develop broader attributes of PL.

8. What are the limitations of SE in terms of PL development?

The aforementioned discussion provides clear evidence that the attributes associated with the development of PL can be operationalized in PE with the effective implementation of SE. SE has distinct pedagogical features which positively contribute to the multiple dimensions of PL and further a students' journey towards greater physically literacy and having an embodied self within PE. That stated, there are still concerns that the context for this embodiment remains too narrow to be viewed as a panacea for the development of lifelong PA. Despite effective curricular innovation with the use of SE in PE the potential to transform these PL attributes to a broader context of PA participation remains largely unexplored. There remains a void of understanding of whether the PL attributes developed in SE contribute to the motivation and confidence for individuals to capitalize on innate movement/physical potential to make a significant contribution to the quality of life. A preliminary study has provided evidence that this transformation is feasible and positive experiences from SE can transfer to students' motivation to engage in extra-curricular sport opportunities within school.³⁵ Using the trans-contextual model of motivation,³⁶ this study revealed that SE elicited an increase in students' autonomous motivation in PE, which consequently transferred into autonomous

motivation in the lunch recess sport context. The majority of participants chose to regularly attend the lunch recess sport sessions and were generally physically active during participation.³⁵ More recent research has revealed that designing a PE program around the structural features of SE, by itself, may be insufficient to foster increased student motives for leisure-time PA. Without the provision of an appropriately designed extra-curricular outlet, the potential for transformation of PL may not manifest.³⁷

Penney et al.³⁸ highlighted this limitation of the lack of an overt connection between SE curricular innovation and the wider sport community. They suggested that students who are developing into competent, literate, and enthusiastic participants within PE must be provided with an outlet to activate their skills, otherwise we may be “setting children up” for rejection and failure as they attempt to move from their school-based SE to the “real world” of youth sport.³⁸ These authors proposed that to resolve this conflict, connections and collaborations with the youth sport community should be built such that the principles of SE can be moved from curricular to extra-curricular and community-based youth sport contexts. If these connections are not made there remains concern that the sport culture activism inherent in SE may not offer a serious challenge to the exclusionary discourses of much of institutionalized youth sport.

This transformation seems also relevant to the development of a wider operationalization of PL. Without the opportunity to connect the developing individual PL attributes with the wider PA community they may become decontextualized and thus potentially lost in the wider PL journey of developing an embodied self through the lifespan. Oslin³⁹ proposed that this lack of transformation may be a function of the types of activities currently utilized within SE and suggested that only by widening the continuum of sport included in the model will physical educators be able to provide “bridging activities that link what students learn in SE to the larger sport and physical activity cultures of the community,⁵ which may serve to enhance visibility as well as transferability” (p. 423). Whether the successful strategy is to provide a broader scope of activities within SE or build more overt connections with in-school and youth sport opportunities remains to be evaluated. Until that point, the jury is still out on whether SE can truly realize its potential to promote PL individuals; those who have the motivation, confidence, physical competence, knowledge, and understanding to maintain PA throughout the life course.

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