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Toward the Development of a Pedagogical Model for Health-Based Physical Education

**Leen Haerens, David Kirk, Greet Cardon,
and Ilse De Bourdeaudhuij**

The purpose of this advocacy paper is to make a case for the development of a pedagogical model for Health-Based Physical Education (HBPE) drawing on Jewett, Bain and Ennis's (1995) and Metzler's (2005) ground-breaking work on models-based practice in physical education. A selective review of what has been learnt about HBPE was made to be able to define the central theme for the model as 'pupils valuing a physically active life, so that they learn to value and practice appropriate physical activities that enhance health and wellbeing for the rest of their lives.' This theme requires that teachers' beliefs are oriented toward self-actualization and social reconstruction. It also suggests that the affective domain (*valuing* physical active) is prominent in planning for learning. The discussion focuses on identified tensions related to the central theme and its associated value orientations and learning domain priorities. A stepwise research agenda for progressively developing the model through implementation by teachers in different contexts is proposed.

It would now appear to be established beyond any reasonable doubt, and widely accepted across societies, that regular participation in physical activity is an essential component of a healthy lifestyle (e.g., Biddle, Gorely, & Stensel, 2004). Despite this recognition, studies of American (Pate et al., 2002) and European (Currie et al., 2004) children and adolescents show that considerable proportions of adolescents do not meet the physical activity guidelines of 60 minutes for moderate to vigorous physical activity (MVPA) daily. A case for the contribution of school physical education to physical activity and health promotion, at a time when there is considerable concern about children's health (Cale & Harris, 2006; Corbin, 2002), would likewise seem to be strong and compelling. Yet, despite interest in health-related physical education programs beginning around the late 1970s, the field of physical education continues to be ambivalent about its role in health promotion (Kirk, 2006).

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Some authors conceptualize health-based physical education as teaching health-related fitness or as engaging in high levels of moderate to vigorous activity during physical education lessons (e.g., Dwyer, Coonan, Leitch, Hetzel, & Baghurst, 1983), conceptualizations we believe to be important, but incomplete. Other authors argue that school-based physical education can only promote a healthy and active lifestyle (Fairclough, Stratton, & Baldwin, 2002) by providing personally relevant, interesting, and enjoyable activities that positively influence adolescents' intrinsic motivation to engage in these activities outside school (Hassandra, Goudas, & Chroni, 2003). This perspective is also supported by motivational theories such as the self-determination theory (SDT) of Deci & Ryan (2000) that suggests that when students find activities inherently interesting, meaningful, and enjoyable, or when activities hold personal relevance, students will be more likely to engage in these activities outside physical education (Haerens, Kirk, Cardon, De Bourdeaudhuij, & Vansteenkiste, 2010).

Rather than providing personally relevant, interesting, and enjoyable activities, the physical education curriculum as it is delivered today still reflects a predominant traditional orientation to curriculum development, which emphasizes mastery in a certain sport and focuses explicitly on acquiring basic movement skills (Jewett, Bain, & Ennis, 1995, pp. 23–24, p. 32). The content of a curriculum based on a disciplinary mastery orientation typically consists of the most popular sports such as basketball, football, gymnastics and athletics (Jewett et al., 1995, p. 25). We will refer to a curriculum based on this traditional disciplinary mastery value orientation as a *traditional multiactivity sports based curriculum*. Such curriculum fails to address the motivational needs that we believe are essential to develop and sustain a healthy lifestyle (Chen, Martin, Ennis, & Sun, 2008). Hence, the reasons for the reported ambivalence of physical educators toward HBPE are complex and relate to a proliferation of goals and learning outcomes that are reflecting the dominant disciplinary mastery orientation (Jewett et al., 1995; Kirk, 1986; McKenzie & Lounsbery, 2009; Tinning & Kirk, 1991). We will argue in this paper why accommodation of traditional multiactivity sports based approaches to physical education might no longer be an option if we are serious about making a meaningful contribution to health promotion and in the process assisting young people to be active and healthy adults (Kirk, 2010).

Our purpose in this paper is to make a case for the development of a pedagogical model for Health-Based Physical Education, drawing on the work of Jewett et al. (1995) on curriculum models and Metzler's (2005) work on instructional models, and building on the lessons learned from approaches to developing HBPE since the late 1970s. In approaching this task, we need to clarify three points. First, we are working with a vision of physical education, shared by Jewett et al. (1995), Metzler (2005), Lund and Tannehill (2005), and Kirk (2010) among others, of a models-based approach to physical education in general. This view envisions the use of several models with specific learning outcomes and unique features, including established models such as Sport Education (Siedentop, 1994), Tactical Games Model (Griffin, Mitchell, & Oslin, 1997), and Personal and Social Responsibility (Hellison, 1995), and other models yet to be developed. Second, we have a preference for the terms pedagogical model and models-based practice, which we will explain in the second section of the paper. Third, we also need to be clear that we are not setting out here merely to develop a program or curriculum for HBPE. On

the contrary, a pedagogical model is the basis for the development of particular programs or units of work. It is a blueprint for local schools to design their own HBPE program tailored to the context they are working in (Jewett et al., 1995). It is a form of meta-curriculum (i.e., general overarching framework), setting out the key and unique features of such programs so that they may properly be described as forms or versions of HBPE.

We start with a rationale for models-based practice, and define the concepts of pedagogical model and models-based practice in physical education. We then provide a selective overview of previous approaches to develop health-based programs in physical education with a view to learn from these approaches. We will show that much is already known about the pedagogy of HBPE, of what to do and also what not to do. As we aim to show in this paper, there has been no shortage of good ideas and lessons learned over the past thirty or more years. Next, we begin the process of developing a pedagogical model for HBPE, using basic frameworks as described by Jewett et al. (1995) and Metzler (2005). We conclude with a discussion about the means of resolving some tensions surrounding HBPE through the development of a research program that we suggest will need to underpin its implementation.

A Rationale for a Models-Based Practice Approach to Physical Education

The concept of a pedagogical model as used in the present manuscript draws from the work of Jewett et al. (1995) and Metzler (2005). Jewett et al. (1995, p. 15) refer to models-based practice through their description of a curriculum model. A curriculum model is a general pattern for creating or shaping program designs that is based on a conceptual framework and incorporates identification of learning goals, selection and structuring of program content. Moreover, it includes the development of instruction procedures and learning environments. Jewett et al. (1995) argue that models cannot be developed or understood without action or implementation and emphasize the process of planning, acting and evaluating. Similarly, Metzler refers to models-based practice through his definition of an instructional model:

An instructional model refers to a comprehensive and coherent plan for teaching that includes a theoretical foundation, a statement of intended learning outcomes, teacher's content knowledge expertise, developmentally appropriate and sequenced learning activities, expectations for teacher and student behaviors, unique task structures, measures of learning outcomes, and mechanisms for measuring the faithful implementation of the model itself. (Metzler, p. 16)

In their work, both Jewett et al. (1995) and Metzler (2005) provide a particular perspective on a model as a coherent approach to physical education that typically states program level outcomes or goals for learning. In Metzler's (2005) terms, models are the 'blueprints' for teachers to develop specific units of work or programs that help pupils to learn.

Given this very comprehensive definition of a model, which intends to reach far beyond the teacher and her actions, we suggest that use of the term *instructional*,

as proposed by Metzler (2005), retains too much of a teacher-focus. Similarly, the term *curriculum*, as proposed by Jewett et al. (1995), retains too much of a subject matter-focus and possibly de-emphasizes the teacher-related features of the model, especially since teachers often view curriculum content as learning activities (Jewett et al., 1995, p. 124). We propose as an alternative two terms that we believe are consistent with both definitions, the notions of ‘pedagogical model’ and ‘models-based practice.’ Use of the term *pedagogical* highlights the interdependence and irreducibility of learning, teaching, subject matter and context (Rovegno, 2006). The term *models-based practice* describes the approach Jewett et al. (1995) and Metzler (2005) are advocating that again does not privilege the instructor or the subject matter in the title and, furthermore, offers an institutionally-neutral term that could be used in sports and exercise, artistic and leisure settings beyond the school, such as sports and dance clubs and outdoor adventure centers.

Given the dominance of a disciplinary mastery orientation for teaching physical education, which implies top priority given to acquiring mastery in a certain subject (Jewett et al., 1995), content is typically teachers’ first consideration when they recount how they plan for teaching (Metzler, 2005). The ways in which games are taught, for example, tend to be similar regardless of the grade levels and experience of students; the game is broken down into the same components and tasks follow the same or similar sequences (Metzler, 2005). Whereas Jewett et al. (1995) mainly relate this type of program design to teachers’ dominant value orientation (i.e., disciplinary mastery orientation), Metzler describes this dominant approach to program design in physical education as ‘activity-based instruction,’ an approach that has also been noted by Penney and Chandler (2000) among others. Disciplines, learning activities or content are, in other words, the *organizing center* for physical education teaching.

Jewett et al. (1995) illustrate how curriculum models are related to different value orientations about teaching and learning, and stimulate teachers to think about the interrelationship between the features of a model and the dominant value orientations. Metzler furthermore argues it has long been recognized, at least since the publication of Muska Mosston’s work on teaching styles in the mid 1960s (Mosston & Ashworth, 1990), that there is no one best way to teach physical education. Nevertheless, according to Metzler, most activity-based instruction tends to use only Direct and Practice teaching styles, regardless of content, students’ learning needs, facilities and context, and intended learning outcomes. He suggests that physical education, with its broad-ranging and diverse content, presents complex challenges to teachers. This complexity suggests there is a need for multiple models of practice. He argues (pp. 24–28) that by taking a models-based approach, a number of benefits accrue. For example, program planning and coherence can be improved, learning domain priorities (cognitive, physical, affective) can be more clearly identified, and an instructional theme identified for each model. These benefits in turn assist the management of teachers’ and students’ expectations of a unit of work and because outcomes are primary considerations in planning, models-based practice permits the valid assessment and verification of learning.

Surprisingly, given its cultural salience and prominence in arguments for physical education at all levels of the curriculum, there is no pedagogical model for HBPE.

This paper considers how model-based practice might be applied to physical education programs that are explicitly designed to have a positive impact on young people’s health through the promotion of lifelong engagement in physical activity.

Approaches to Developing Health-Based Physical Education (HBPE) in Schools

A variety of forms of HBPE have been produced over the past forty years, often using different terminology. Some of the titles and their acronyms include health-oriented physical education (HOP) (Tinning, 1991), fitness education (McConnell, 2005), health-related fitness (HRF), health-related physical fitness (HRPF), health-related physical education (HRPE) and health-focused physical education (HFPE), and the term currently favored in the UK, health-related exercise (HRE) (Harris, 2000). This range of terminology suggests differences in emphasis and detail, but all are united by a concern for health rather than skill or sport outcomes for physical education. In this section, we examine a selection of these programs from across this forty year period as a means, first, of recollecting what we have learned about how (and perhaps how not) to do HBPE and second, of demonstrating the rich resources we already possess, in terms of guidelines, materials, and insights into effective teaching and learning, with which to construct a pedagogical model for HBPE.

One example of HBPE from the beginning of this era is the Daily Physical Education program (Dwyer et al., 1983), originating in South Australia. Daily Physical Education was an outcome of the 'Hindmarsh experiment,' a HBPE intervention in a South Australian primary school in the late 1970s. The Hindmarsh experiment itself sought to demonstrate that, properly designed, physical education could impact favorably on children's physical fitness and skill development while maintaining academic performance, even though between 45 to 60 minutes per day of curriculum time was devoted to physical education. The program itself became available to Australian schools in the early 1980s in the form of a commercially produced 'curriculum package,' published in seven volumes by the Australian Council for Health, Physical Education and Recreation (ACHPER) and sponsored by the cereal company Nabisco. It was aimed mainly at primary schools, and consisted of detailed lesson plans set out in two sections, headed 'fitness development' and 'skills.' While the latter section included skills for activities commonly found in school physical education such as gymnastics, games, dance, and aquatics, the inclusion of activities specifically designed to have a 'fitness effect,' such as running, circuit training, and flexibility exercises, was an innovative aspect of the program at that time. The Daily Physical Education program (Dwyer et al., 1983), was taken up widely by Australian primary and junior secondary schools, and was adapted by each of the State education departments to suit their local conditions (e.g., the program became 'Daily 15/30 Physical Education' in Queensland, indicating 15 minutes for fitness activities and 30 minutes for skills). Separate studies of the use of the program in the states of Victoria by Tinning and Queensland by Kirk (see Tinning & Kirk, 1991) revealed that while Daily Physical Education was initially greeted with great enthusiasm, it very quickly was adapted by schools to fit the crowded curriculum. For example, in both states, the skill aspect of the program was much reduced or discontinued, and the fitness aspect was offered two or three times per week instead of daily. Teachers also used the fitness sessions pragmatically, to suit other institutional objectives, for example at the beginning of the school day to 'blow away the cobwebs,' or in midmorning as a cathartic purge of energy, both with the aim of preparing the children for academic work (Tinning & Kirk, 1991).

Tinning and Kirk argued that Daily Physical Education itself was based on a rather narrow view of health based physical education-as-health related physical fitness, and that the government departments of education in Victoria and Queensland failed to appreciate that teachers needed to develop new skills to teach for lifelong engagement in health related physical activity.

With the creation of a National Curriculum for Physical Education (NCPE) in England and Wales in the early 1990s, Harris (2000) has provided a detailed rationale for Health-Related Exercise (HRE) within the NCPE. She argued that HRE comprises development in four domains—cognitive, psychomotor, behavioral and affective. She also identified seven guiding principles that inform HRE teaching, which are (1) Exercise can be a positive and enjoyable experience, (2) Exercise is for all, (3) Everyone can benefit from exercise, (4) Everyone can be good at exercise, (5) Everyone can find the right kind of exercise for them, (6) Exercise is for life, and (7) Excellence in health-related exercise is maintaining an active way of life (Harris, 2000, p. 18).

Harris provided detailed sample units for work in each of the four ‘Key Stages’ of the NCPE, from ages 5 through 16, attainment targets at the end of each Key Stage, assessment strategies, and examples of the contribution to HRE that can be made from physical education, Personal, Social and Health Education (PSHE) and Science. A major challenge presented by the NCPE for England and Wales is that it does not identify HRE as a separate aspect of physical education, afforded the same status as the major components of games, aquatics, athletics, gymnastics, outdoor and adventurous activities, and dance. Consequently, Harris outlined integrated and topic-based approaches to how HRE might be taught through each of these major components (e.g., through gymnastics, games, and dance). As Harris (2005) noted elsewhere, and notwithstanding her own ingenious attempts to meet the challenge presented by the NCPE, this approach to HRE has major shortcomings. Not least of these is that it fails to challenge the overriding priority given to competitive sport in much of the practice of physical education in England and Wales. Harris argued that, consequently, narrow interpretations of HRE are commonplace and widespread, as is the controversial practice of fitness testing. In this context, too, teachers are constrained in attempting to apply the seven guiding principles of HRE. Moreover, she claimed that physical education and public health risk pursuing disparate agendas, with physical educators failing to fully acknowledge their role in health promotion and with others failing to include physical activity within broader school-based health promotion initiatives.

In the USA, the National Association for Sport and Physical Education (NASPE) has done much to promote the use of standards in school physical education provision since the mid-1990s. In its revision of content standards published in 2004, two of the six standards make specific reference to health, while a third refers to regular participation in physical activity (NASPE, 2004). McConnell (2005) developed a Fitness Education curriculum model that makes specific reference to the NASPE standards. She argued that a concepts-based approach to fitness education is the most appropriate way to meet the standards, which requires the teacher to maintain a focus on the process of physical activity rather than outcomes such as fitness test scores. Four of the six standards form what she calls the ‘major components’ of the model, including the two health related standards, the physical activity standard and another concerned with movement concepts, while two others concerned with motor skill development and personal and social behavior

are described as ‘minor components.’ She drew on Corbin’s Stairway to Lifetime Fitness model (Corbin & Lindsey, 2002) to stress the importance of the over-arching goal of this curriculum model for lifelong physical activity and for a movement over time from dependence on the teacher to independence. McConnell (2005, p. 266) argued that it is “inefficient and developmentally inappropriate” to implement a concepts-based fitness education at elementary school level, and recommended instead that this model be included in middle and high school curricula.

In contrast to this view, NASPE have issued guidelines for physical activity for children from birth through infancy and childhood, and various support materials (NASPE, 2010). Moreover, another HBPE initiative developed in the USA, Sports, play and active recreation for kids (SPARK), has focused on both elementary and middle schools (McKenzie, Sallis, & Rosengard, 2009). Informed by an extensive program of research, SPARK was constructed in response to the need to address perceived low levels of physical activity and physical fitness among children in the USA. The program consists of a curriculum designed to increase moderate to vigorous physical activity (MVPA) during physical education lessons and to promote engagement in physical activity during leisure time (McKenzie et al., 2009). Detailed instructional units and lesson plans are provided for physical education teachers. Individual lessons are divided into two parts, the first part focusing on health-related fitness activities (e.g., dance, rope skipping, aerobic) and the second part focusing on motor skill development. The latter involves activities such as basketball, soccer, volleyball, chosen because of their likelihood to contribute to children’s cardiovascular fitness. The physical education curriculum is supplemented by a self-management program designed to teach children the behavioral skills needed for generalization and maintenance of physical activity (PA) and include self-monitoring, goals setting, behavior contracting, stimulus control, self-reinforcement, self-instruction scheduling, decision-making and problem-solving (McKenzie et al., 2009).

Similar to the SPARK physical education program, CATCH (Coordinated Approach To Child Health, McKenzie et al., 2003) was aimed at increasing MVPA during physical education classes. Recommendations for lessons, activities and equipment were given together with instructional and management recommendations. Teacher training sessions and teacher support were provided together with curricular materials. Again, like SPARK, the CATCH program aimed at developing health-related fitness, skill competency, and cognitive understanding about the importance of physical activity for all children. McKenzie et al. (2003) found that, as a result of participating in this program, classroom teachers spent more time on fitness activities while reducing the time for game play and free play.

Although brief and inevitably selective, we think this review of versions of HBPE dating from the late 1970s provides us with some important lessons for the development of a pedagogical model. One message that comes across very clearly from this review is that the mixing of health goals with the many other goals of sport-based, multiactivity physical education programs risks undermining sustained implementation of any health-based initiatives as they were intended. This is evident in the case of the NCPE in England and Wales, where it is only possible to teach physical education through the six major activity areas of dance, games, swimming, gymnastics, athletics, and outdoor and adventurous activities. The kind of radical reconceptualization of physical education proposed by Whitehead and Fox (1983), only possible in pre-NCPE England, was not sustained because it was

judged inappropriately against the traditional, sport-based model (Kirk, 1986). These examples suggest to us the need for a form of physical education that is clearly focused on learning outcomes that relate specifically to lifelong engagement in physical activity.

Moreover, Harris (2000) very usefully makes the point that while engaging children in moderate to vigorous physical activity may be a central feature of HBPE, it is insufficient by itself. Evidence in support of this key point is provided by the Australian Daily Physical Education program, where a limited view of health-as-physical fitness allowed the program to be too easily captured by other interests within the school, such as maintaining class control and enhancing academic performance. McConnell's (2005) reminder to focus on process rather than outcomes supports Harris's (2005) sustained criticism of the use of fitness testing as the sole measure of the effectiveness of programs. Harris's insistence that all knowledge domains (cognitive, physical, affective) are relevant to HBPE is further supported by the SPARK program in the USA, which included a self-management component centered on motivational and other psycho-social skills, and by McConnell's emphasis on the importance of *concepts*-based fitness education.

The Major Theme for a Health-Based Physical Education (HBPE) Pedagogical Model

Learning from this review, we think that it will be of particular importance to identify a) what Jewett et al. (1995) describe as learning goals or desired outcomes, situated within particular value orientations to physical education and b) what Metzler (2005) calls the 'major theme' of the model as a means of reconciling the relationships between the various knowledge domains of cognitive, physical and affective.

One point of entry into this issue is provided by NASPE's Standard 6, which 'values physical activity for health, enjoyment, challenge, self-expression, and/or social interaction.' We suggest, following Siedentop (1996), that 'valuing the physically active life' could form the major theme of a pedagogical model for HBPE, and that this focus offers a means of moving forward a health focus in physical education because the affective domain (*valuing* physical active) will be prominent within the HBPE model. Siedentop assists us to understand what it might mean to value the physically active life. He wrote:

The fundamentally important approach for those of us in the physical activity sciences and professions is the valuing manifest in participation habits; that is, people *value* physical activity when they organize their lives so that regular involvement in activity occurs throughout the lifespan. (Siedentop, p. 266)

This highlights that the central theme of valuing the physically active life requires a focus on self-actualization and individual development to prepare for meaningful participation in society. In that respect, personal and sociocultural goals are considered as higher priorities than subject matter related goals. Subject matter will be chosen as a means to realize the individual and societal goals (Jewett et al., p. 53).

Siedentop furthermore highlights a crucially important point, that valuing is not something that can be easily, immediately or directly evidenced, and that

central to valuing is that it is a sustained and sustainable long-term process. In other words, it is only in retrospect and after the passage of time that we can see evidence of someone valuing something. Siedentop's analysis provides great clarity for our thinking about what it might mean to value the physically active life and also, presents us at the same time with some considerable challenges for physical education. He goes on:

Although participation may be the key component in valuing physical activity, we must attend to a second component of valuing; willingness to participate in the sport, fitness, and leisure activity cultures in ways that are literate and critical. By *literate*, I mean that persons are knowledgeable and activist cyclists, volleyball players, hikers, and the like. . . . By *critical*, I mean that persons should understand the structural inequities in their local, regional, and national activity cultures that may limit access to activity based on irrelevant attributes such as race, gender, age, handicapping conditions, or socioeconomic status. Individuals should *value* fair access to participation so much that they are willing to work at local, regional, and national levels to make that activity more available to more people. (Siedentop, p. 266)

In addition to sustained participation in physical activity, Siedentop introduces two further dimensions of literacy and criticality. Both have profound implications for the development of a pedagogical model for HBPE signaling, first, a significant knowledge component and, second, a move beyond the individual to the wider communities of which individuals are a part. While many HBPE programs have included significant knowledge components, few have taken a socially-critical perspective that Siedentop demonstrates persuasively is centrally important to the goal of sustainability.

In the next section of this paper, we consider the implications of this approach for the construction of a pedagogical model for HBPE.

Starting to Think About a Pedagogical Model for HBPE: What Have We Learned?

After having described the background and the major theme or desired outcomes for HBPE, we highlight next those aspects where we have learned from the literature review to begin to approach the production of a pedagogical model for HBPE. We also indicate those aspects where we need to further develop the model. Major elements as described by Jewett et al. (1995) and Metzler (2005) are described.

Component 1: Foundations (Metzler, 2005)

The foundations of a pedagogical model relate to its underlying theory and rationale, the major theme of the model, which we have already introduced, and the assumptions about teaching and learning.

The rationale for HBPE is provided in numerous scientific and policy documents indicating low levels of physical activity adherence among children and adolescents (e.g., Pate et al., 2002; Currie et al., 2004) and advocating the need for physical education to impact upon the population's health through the promotion

of an active lifestyle (e.g., Corbin, 2002; NASPE, 2004). Because HBPE aims at promoting an active life beyond school, concepts derived from theories on transfer of learning and long-term behavioral change (e.g., SDT, constructivism) together with the evidence-based recommendations derived from previously implemented and evaluated HBPE-curricula, some of which we have reviewed earlier, will inform the design of the key components of the model.

We suggest that Siedentop's (1996) notion of 'valuing a physically active life' could form the major theme of a pedagogical model for HBPE, so that students learn to value and practice appropriate physical activities that enhance health and wellbeing for the rest of their lives. This theme suggests to us that teachers implementing the model will value physical education's role for preparing pupils for a meaningful participation in society (Jewett et al., 1995) and that the affective domain (*valuing* physical active) should be prominent in planning for learning within a HBPE model. Consistent with Siedentop's view, many studies evaluating health-based curricula have emphasized the need to more explicitly focus on affective learning outcomes (e.g., McKenzie et al., 2009; Verstraete, Cardon, De Clercq, & De Bourdeaudhuij, 2007; Whitehead & Fox, 1983). At the same time, we note that many authors have also proposed cognitive and motor learning outcomes as intended learning outcomes for HBPE (e.g., Harris, 2000; Verstraete et al., 2007). In their papers they argue that it is equally important for pupils to know the benefits of an active life (cognitive) and to be sufficiently motor competent (motor learning) to participate in lifetime physical activities.

Component 2: Role of the Teacher and Student Learning (Jewett et al., 1995) or Teaching and Learning Features (Metzler, 2005)

Reflecting our review of HBPE programs, we propose that a pedagogical model for HBPE would incorporate a number of key points about learning. Focusing on learning in the affective domain, HBPE would be concerned with the development of positive attitudes toward health (Whitehead & Fox, 1983) which are mainly realized through students valuing the physically active life (Siedentop, 1996). Moreover, learning would involve cognitive understanding about the importance of physical activity for all (Harris, 2000; McKenzie et al., 2009), lifestyle management (Whitehead, & Fox, 1983) and the development of self-management strategies (Sallis et al., 1997; Verstraete et al., 2007). Similar learning goals are emphasized by McConnell's (2005) description of students becoming increasingly independent from the teacher. Finally, we think learning should be evaluated according to criteria that relate specifically to health and should not be aimed at learning skills solely through traditional sports curricula (Harris, 2000) or fitness activities (circuit training and flexibility exercises) (Tinning & Kirk, 1991).

As the focus is on valuing and enjoying the active life, SDT will be the grand theory informing the development of the teacher and learning features of the model. SDT (Deci & Ryan, 2000), suggests that when students find activities inherently interesting, meaningful, and enjoyable, or when activities hold personal relevance, they will be more likely to engage in these activities outside physical education (Haerens et al., 2010). Deci and Ryan (2000) argue that pupils are more likely to

enjoy or value an activity when their universal human needs of autonomy, competence and relatedness are satisfied. Autonomy refers to the experience of a sense of volition and psychological freedom when carrying out activities. Competence concerns the feeling of effectiveness when mastering tasks. Relatedness refers to the experience of connectedness and intimacy with others. A teenager who feels that the physical education class is organized consistent with his or her expectations, who feels capable of effectively completing the learning tasks, and who experiences a sense of connection with peers and the teacher, would have his or her needs satisfied.

As with any pedagogical model, teachers will need to incorporate the theoretical and scientific foundations of the HBPE model for effective implementation. More specifically, this will require that teachers have a sound technical understanding of physical activity and of how students at particular ages may participate safely and effectively in health-related physical activity. They also will need to understand the psychological and social concepts related to valuing and practicing an active life. Our review of HBPE also revealed the need for teachers to develop new skills and teaching styles to effectively teach physical education for health (Harris, 2005; Kirk, 1986; Tinning & Kirk, 1991; Verstraete et al., 2007; Whitehead & Fox, 1983). According to Harris (2000), teachers will only effectively change their teaching styles when they fully acknowledge the importance of physical activity for health, when they strongly value the health promoting role of physical education and when they change their philosophies about teaching and learning in physical education practice from a disciplinary mastery orientation toward an integration of self-actualization and social reconstruction orientations because the focus is on the learner as an independent participant in the existing society (Jewett et al., 1995).

We can make some more specific assumptions about teaching within a HBPE pedagogical model. For example, teachers need to provide enjoyable experiences for all students, including implementing motivational strategies, whereas de-motivational activities (e.g., elimination play) need to be discontinued. Again SDT can inform the development of this part of the teacher features because SDT suggests that teachers can nurture pupils' need for autonomy, competence and relatedness by creating an autonomy-supportive instead of controlling, well-structured and competence-facilitating instead of chaotic and critical, and emotionally warm instead of cold, learning environment. Teachers' autonomy support includes offering choice, minimization of controlling language, and provision of a meaningful rationale for taking part and being active (Deci, Eghrari, Patrick, & Leone, 1994). Within a pedagogical model for HBPE, an exclusively directive teaching style will, hence, not be appropriate for achieving affective and cognitive learning outcomes, which require students to personalize and internalize information in the process of coming to know and value the benefits of a physically active life, and eventually to be relatively independent learners and decision-makers. This emphasis on independent learning is present in several health-based programs such as Student-Centred Physical Education (Whitehead & Fox, 1983), SPARK, which includes a self-management component (Sallis et al., 1997; Verstraete et al., 2007) and the Fitness Education Curriculum Model (McConnell, 2005). In constructing a HBPE pedagogical model, it will be important that pupils have opportunities to act and think for themselves in terms of how to choose and organize physical activities that are easily transferable into leisure time (Harris, 2000; Whitehead & Fox, 1983).

Researchers working with SDT propose that teachers structure the learning environment through the provision of optimal challenging tasks, positive feedback, encouragement after failure, and adequate help as well as the communication of clear guidelines and expectations with respect to the task that needs to be accomplished (Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). These aspects relate to the provision of successful movement experiences for all students (Harris, 2000; Sallis et al., 1997; Verstraete et al., 2007). Teachers will clarify expectations and facilitate student learning, through prompting students with information on activity-related guidelines and benefits of an active lifestyle, and through providing them with strategies on how to become more active. Teachers will create the learning experiences that empower pupils to practice the skills they need to feel competent to engage in physical activities in contexts beyond the school, such as leisure time (Harris, 2000; Sallis et al., 1997; Tinning & Kirk, 1991).

Teacher involvement is defined by Connell and Wellborn (1991) as the degree of interest and emotional support shown by the teacher to the pupils. Importantly, teachers will be required to show considerable interest and support in the pupils' individual possibilities for transfer of learning to contexts beyond the school (Harris, 2000; Whitehead and Fox, 1983).

It is important to note Metzler's (2005, p. 47) key point that some aspects of a pedagogical model cannot be modified, for to do so would be to fail to implement the particular model. In the case of a pedagogical model for HBPE, the nonnegotiable aspects relate to the key learning outcomes, the assumptions about learning and teaching, and the domain priorities. These features of the model will have far-reaching implications for the detailed development of the HBPE-model. These are what Metzler (2005, pp. 36–40) calls 'teacher control versus student control,' referring to the degree of teacher direction and student participation in a number of teaching and learning activities.

Other teaching and learning features include the nature and structure of learning tasks, engagement patterns for learning, students' developmental requirements and teacher and student roles and responsibilities and the assessment of learning. With regard to the learning tasks, for example, the literature review made clear that HBPE should not be delivered solely through traditional sports-oriented multiactivity programs (e.g., Harris, 2000) and that learning tasks should be chosen in relation to the health-related learning outcomes.

Finally, given the complex interactions in schools required to sustain productive teaching and learning, it will be essential for teachers (and students) to be able to monitor whether their engagement patterns and roles and responsibilities are being implemented in ways that are faithful to the model. The development of benchmarks for teacher and student actions that will allow for regular implementation checking will form the basis for the verification of the model.

Component 3: Implementation Needs and Modifications

Jewett et al. (1995) argue that models cannot be developed or understood without action, the HBPE-model will only develop through action and reflection of teachers working with the model. The third component of the model describes specific teacher expertise and effective teaching skills needed to implement the model. In addition, contextual requirements for the model need to be considered.

The work of Cohen and Hill (2001) on educational change in mathematics in the US informs us about the need to create opportunities for teachers to learn about new student curricula and assessments. In their book, Cohen and Hill (2001) furthermore strongly recommend teacher learning opportunities are grounded in the actual topic of the course (in their case mathematics) and student work, and in the curricula and assessments that are the instruments of practice.

Specifically for HBPE, teachers will need to acquire insight into and reflect about their curriculum value orientations (Jewett et al., 1995) and how these are related to the present model. They will also need the expertise and skills for translating the HBPE model in an effective curriculum adapted to the context in which they work. This can only be realized through creating professional learning opportunities and a professional learning community that focuses on how physical education curricula that are grounded in the HBPE model might look like and how this relates to their dominant curriculum value orientations.

Cohen and Hill (2001) argue furthermore that consistency among policies and the messages given by different institutions involved in the implementation of new educational curricula are crucial for achieving success. Hence, HBPE will probably be more effective if it is incorporated in a whole-of-school or even wider, a whole-of-a community approach including policy, institutional, and curriculum strategies aimed at increasing students activity levels. To illustrate, schools that measure the success of a physical education curriculum based on the results of the school sports teams will not provide a fertile context for models-based practice in HBPE. In addition, curriculum plans or guidelines should provide the freedom for teachers to work toward attainment goals of HBPE without being restricted to offer traditional sports activities (Harris, 2000). Finally, teachers should be acknowledged and rewarded by their institution for models-based practice in HBPE (Kirk, 1986).

Finally, some aspects of the model will need to be modified for a range of legitimate reasons appropriate to specific contexts, including the age and readiness to learn of students, specific learning outcomes, the complexity of information and tasks, and available facilities and equipment. It is also important to note Metzler's (2005, p. 47) key point, however, that some aspects of a pedagogical model cannot be modified, for this model this relates to the key learning outcomes, the assumptions about learning and teaching, and the domain priorities.

Discussion

Resolving Tensions Surrounding HBPE: The Development of a Research Agenda

The work of Jewett et al. (1995) and Metzler's (2005) work, demonstrating the richness and value of curriculum or instructional models for the practice of physical education together with the numerous scientific and policy documents advocating the need for physical education to impact on young people's health through the promotion of an active lifestyle, initiated our thinking about the development of a pedagogical model for HBPE. This paper should be seen as the most preliminary step in the development of one HBPE pedagogical model that might be drawn on alongside other models. In this final section, we want to suggest how the proposals

contained in this paper might form the basis for an extensive research agenda around models-based practice in HBPE.

In the first part of the paper, we reviewed pedagogical knowledge available from existing health-based curricula and sought to integrate what we learned from this review into a models-based framework as a first step toward setting out the foundations for the HBPE model. This essential first step, we suggest, needs to underpin all following steps that will be undertaken to further develop and validate the way we are thinking about a HBPE pedagogical model. As a next step, we propose the organization of several ‘summit’ meetings of experienced researchers and practitioners that could critically review the groundwork for the model as set out in the present paper. The integration of existing pedagogical knowledge has already revealed several tensions that relate to the accommodation or modification of traditional disciplinary mastery oriented approaches to physical education that such meetings might highlight and offer means to resolve.

The first tension relates to the type of activities that should form the content of HBPE. Currently, there is no scientific evidence supporting the assumption that sports-based curricula focusing on motor learning activities will or will not motivate pupils to be active beyond the school, continuously in leisure time or in adulthood. Neither is there evidence to show that teaching lifetime physical activities will result in higher physical activity levels in leisure time (Trudeau & Shephard, 2008). Despite this lack of evidence, many authors are convinced that, where the main learning outcomes relate to health and lifelong participation, physical education should de-emphasize engagement in competitive team sports and place much more attention on so-called lifetime physical activities (e.g., Fairclough et al., 2002; Harris, 2000; Kirk, 2005). This perspective is also supported by motivational theories such as SDT (Deci & Ryan, 2000). Although we consider that traditional, multiactivity, sport-based approaches to physical education cannot realize the key theme for HBPE of valuing the physically active life, nevertheless we think studies comparing the effectiveness of the model using different types of physical activities will be needed to be conclusive about which types of activities work best for an individual pupil or a particular group of pupils. Hence, in the present model individual development and sociocultural goals are considered as higher priorities than subject matter (Jewett et al., 1995, p. 53).

A second tension relates to learning domain priorities. According to Metzler (pp. 4–7), physical education’s evolution in attainment goals has developed from learning solely in the motor domain, to learning in the motor and cognitive domains, toward learning in the motor, cognitive and affective domains. In line with this evolution in attainment goals, up until today, most physical education teachers and teacher education programs focus on developing competences in the motor and cognitive domains, while realizing affective goals mainly as a byproduct of these two more prominent goals (Bailey et al., 2009). This priority given to learning in the motor domain, again stems from a traditional disciplinary mastery orientation to physical education. Consequently, according to Bailey et al. (2009), most of the practical and research knowledge available to inform the development of a pedagogical model for HBPE is on teaching and evaluation methods for improving learning in the motor domain. The focus on learning in the affective domain will require the development and application of different teaching and evaluation methods, the effectiveness of which will need to be tested through research. Although experiences

from teachers with implementing other models that foreground affective learning, such as cooperative learning, might give inspiration, these methods will need to be refined specifically for HBPE.

A third tension relates to the concept of sustained or lifelong learning, which requires 'transfer of learning' beyond the school. The issue of transfer of learning has generally been a problematic issue for educational researchers and policy-makers (Lave, 1997). Transfer of learning requires the construction of a meaningful relationship between what students learn in school and the knowledge, skills and attitudes needed to lead a successful and productive life beyond school. As Siedentop (1996) argues this sustained or prolonged aspect of HBPE might require that we move beyond the individual to consider wider communities. It is, however, not clear how this should be realized as such a socially-critical perspective has not been previously included in HBPE programs.

We suggest that the identified gaps and tensions in the existing literature could form the basis for several expert meetings. These expert meetings could finally lead to a consensus document in which the foundations of the model (Component 1), teaching and learning features (Component 2) and implementation needs and modifications (Component 3) are described in detail. The first version of a HBPE pedagogical model could then be pilot-tested with teachers working in different contexts (e.g., grades, school types) to investigate how teachers translate the model into specific program designs.

After refinement of the model through piloting, we believe that further validation of the model may be needed through implementing different versions of HBPE in a wide range of contexts. Jewett et al. (1995, pp. 12–15) define curriculum as praxis in that theory and practice are inseparable and interactive and argue that models cannot be completely developed or understood without action. Their work in the eighties already focused attention on the importance of progressively developing models through implementation of different program designs by teachers in different contexts. In Metzler's work (2005, p. 140) a similar emphasis on progressively developing models is made.

Validation in the research literature will occur at the teacher and at the pupil level. At the teacher level, we would propose to test the model's effects on teachers' philosophies about teaching and learning in physical education. Since various authors have argued that changes in physical education teachers' teaching styles are needed to effectively implement HBPE (Harris, 2005; Tinning & Kirk, 1991; Verstraete et al., 2007; Whitehead & Fox, 1983), we think we would also need to investigate whether changes in philosophies or beliefs will result in the development or implementation of different teaching styles.

After revising the model for content and applicability and researching its effects at the teacher level, the model could then be further validated by assessing its effectiveness for realizing the intended learning outcomes such as students' acquisition and internalization of the values, knowledge and skills that form the core of the HBPE model. A further step would be required, we suggest, in which we could investigate whether acquiring these values, knowledge and skills actually stimulate young people to engage in a physically active life beyond school. In the final stage of a research program, longitudinal and retrospective studies investigating the relationships between the skills, knowledge and values acquired during physical education classes and the likelihood of sustained engagement in

physical activities as an adult will be indispensable to validate the model in terms of prolonged transfer of learning. In practice, this will require studies that follow through with students who have been exposed to forms of HBPE. Through this process and over time, we should be able to establish which forms of HBPE derived from the model are most likely to predict lifelong physical activity.

Conclusion

The purpose of this advocacy paper was to make a case for the development of a pedagogical model for HBPE drawing on the work of Jewett et al. (1995) and Metzler's (2005) work on curriculum and instructional models for physical education. A selective review of what we have learned about the practice of HBPE over the past 40 years was made to be able to define the central theme for the model as 'pupils valuing a physically active life, so that they learn to value and practice appropriate physical activities that enhance health and wellbeing for the rest of their lives.' This theme requires that teachers' beliefs about teaching and learning in physical education are oriented toward self-actualization and social reconstruction because the focus is on the learner as an independent participant in the existing society (Jewett et al., 1995). It also suggests that the affective domain (*valuing* physical active) is prominent in planning for learning within the HBPE model. We suggest that a pedagogical model for HBPE, grounded in a robustly designed and systematic program of research, is well overdue. Our aspiration is that the development of such a pedagogical model for HBPE, alongside possible other HBPE models, can provide further momentum to the pursuit of lifelong physical activity through school physical education.

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