Health Optimizing Physical Education (HOPE)

A New Curriculum for School Programs

Part 1: Establishing the Need and Describing the Model

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There is a growing consensus that the overall goal of physical education programs in P–12 schools should be to teach children and youths the knowledge, skills, and dispositions to lead an active, healthy lifestyle. With initiatives such as *Let's Move!* Active Schools (n.d.), prominent governmental, research, and advocacy organizations have expressed strong support for physical activity programs in schools. However, we are only beginning to understand how programs should be designed and implemented to effectively accomplish the goal of instilling lifelong physical activity habits in students. Furthermore, it has become apparent that this goal cannot be achieved with the traditional curriculum models used to guide the design and implementation of physical education today (Siedentop, 2009).

The National Association for Sport and Physical Education (NASPE, 2011c) recently introduced the concept of comprehensive school physical activity programs (CSPAP), which includes physical activity programming beyond regularly scheduled physical education lessons. The goal is for all children to have at least 60 minutes of moderate-to-vigorous physical activity (MVPA) each school day. It is recommended that a CSPAP include the following main components: (1) quality physical education, (2) physical activity during the school day, (3) physical activity before and after school, (4) school employee wellness and involvement, and (5) family and community involvement (NASPE, 2011c). While one or more of these components are in place in many schools, AAHPERD (2011) recently reported that only 16% of elementary schools, 13% of middle schools, and 6% of high schools currently provide a full CSPAP. One possible reason for this is that curriculum plans for CSPAPs have not been fully articulated yet, so few teachers have little more than a general idea of what a CSPAP might look like and are even less sure about how to put one in place in their school. The purpose of this first article in a two-piece series is to describe a version of a CSPAP called Health Optimizing Physical Education (HOPE), including the need for HOPE, major learning outcomes, its theoretical foundation, and program content.

Health Optimizing Physical Education

A curriculum model is the overall plan that guides a school or district physical education program. It contains the program's major learning outcomes, content units, necessary resources, program policies

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and management, instructional methods, and assessment strategies. Siedentop and Tannehill (2000) described main-theme curriculum models as those that are built around specific assumptions; become a clear organizing center for a school or district program; and promote a strong alignment among program goals, learning objectives, unit content, and instruction. Lund and Tannehill (2010) identified eight prominent main-theme curriculum models for contemporary physical education programs that meet these criteria. The HOPE curriculum also meets those criteria and could be added to that list of models to guide school and district programs.

The overarching goal of the HOPE curriculum model is to help P–12 students *acquire knowledge and skills for lifelong participation in physical activity for optimal health benefits*. All components of HOPE described in parts 1 and 2 of this article are in strong alignment to achieve that primary goal. It should be acknowledged that some other main-theme curriculum models in physical education mention similar outcomes, but HOPE is unique in its prioritization of this overarching goal and makes *direct* attempts to achieve it, by not promoting other kinds of learning that are thought to *indirectly* lead to increased participation in physical activity and other healthy behaviors. Moreover, the central focus on promoting lifelong physical activity behaviors is unique to physical education, compared to other school subjects. To date, there is no evidence to suggest that lifelong participation in physical activity for optimal health benefits is achieved as an ancillary (or secondary) outcome in physical education—it must be pursued as the primary programmatic goal in order to have any reasonable chance of success among children and youths.

The Evidence-Based Need for HOPE

Every main-theme curriculum model is built on several assumptions (Siedentop & Tannehill, 2000). One of those assumptions is that a model can meet the identified educational needs of students in a program based on that particular model. In the past 20 years, there has been an undeniable body of empirical evidence that consistently highlights the need for children and youths to be more physically active and more regularly engaged in other healthy behaviors.

Engaging in physical activity is associated with numerous positive health outcomes and reduced occurrences of diseases such as obesity, type 2 diabetes, some cancers, and cardiovascular diseases (May, Kuklina, & Yoon, 2012; U.S. Department of Health and Human Services [USDHHS], 2008a, 2008b). As a result, increasing physical activity in all segments of the population has been identified as an important public-health priority (Centers of Disease Control and Prevention [CDC], 1997), and recently the first-ever physical activity guidelines for the United States were developed (USDHHS, 2008a). These *2008 Physical Activity Guidelines for Americans* recommend that children and adolescents accrue 60 minutes or more of physical activity daily, and that most of it be at least of moderate-to-vigorous intensity with vigorous-intensity, muscle-strengthening, and bone-strengthening activities occurring at least three days per week (USDHHS, 2008a). Objective measurements with accelerometers, however, have indicated that 58% of children ages 6 to 11 years old and 98% of adolescents ages 12 to 19 years old do not meet the national recommendations (Troiano et al., 2008). These results are particularly relevant, given the dramatic increases in the numbers of U.S. youths who are overweight or obese.

Nearly all children spend most of their waking hours at school for over 12 years, and school settings have been identified as important places for youths to be physically active (CDC, 1997; Pate et al., 2006). The most salient of these settings are physical education, recess, and structured programs before, during, and after school. Of these, only physical education is required. Thus, physical education is the only place (both in and outside of school) where some children are likely to have an opportunity to engage in MVPA, become physically fit, and learn the movement and behavioral skills needed for a lifetime of active, healthy living.

The important role that physical education plays in promoting health was elucidated in the seminal paper *The Role of Physical Education in Public Health* (Sallis & McKenzie, 1991). That paper, and its 20-year follow-up (Sallis et al., 2012), provide a rationale for altering the goals of physical education from multiple cognitive, social, and physical-skill objectives to goals that are more focused on and aligned with public health needs. The two main goals for physical education to optimize health contributions were identified as (1) preparing youths for a lifetime of physical activity and (2) providing them with sufficient physical activity during physical education classes. The follow-up report (Sallis et al., 2012) recognized that physical education professionals have made some attempts to align programs with health promotion, but suggested that there is still much to be done. In addition, they recommended that the previous label of health-related physical education be changed to that of health optimizing physical education, to better reflect both the content and goals of those programs.

This notion of physical education serving an important role in public health has received widespread support from national government agencies and the health community. For example, recommendations and guidelines relative to the frequency and implementation of physical education have been put forth

by the American Heart Association (AHA; Pate et al., 2006), CDC (1997, 2010), Partnership for Prevention (2008), American Academy of Pediatrics (2006), and USDHHS (2000, 2008a, 2010). More specifically, the *Guide to Community Preventive Services* (Keener, Goodman, Lowry, Zaro, & Kettel Kahn, 2009) recommends enhanced (i.e., highly active) physical education, and the CDC and the AHA recommend that at least 50% of physical education class time be spent on MVPA. This objective was also included in the USDHHS's *Healthy People 2000* (U.S. Public Health Service, 1991) and *Healthy People 2010* (USDHHS, 2000) objectives for the nation. Finally, in a review of the evidence in 94 studies, the CDC (2001) reported that school physical education was one of only six community interventions with sufficiently strong empirical support.

Unfortunately, current school physical education programs are often marginalized and characterized by low subject status, insufficient curriculum time, and inadequate financial and staffing allocations (Lee, Burgeson, Fulton, & Spain, 2007; McKenzie & Lounsbery, 2009; National Association for Sport and Physical Education, 2010). Objective measures clearly show that students typically spend far less than 50% of physical education class time in MVPA (e.g., Fairclough & Stratton, 2006; McKenzie et al., 1995, 2006). While it is clear that physical education cannot provide all the activity minutes needed to meet the national recommendations, teachers spend little, if any, lesson time encouraging students to seek out physical activity beyond the physical education lessons (McKenzie et al., 2006).

Physical activity participation is necessary for children to learn and practice fundamental movement skills and to obtain more advanced and specific sport and dance skills. Additional time spent in physical activity, especially under the direction of certified physical education instructors, has been shown to significantly improve the motor skills of children (McKenzie, Alcaraz, Sallis, & Faucette, 1998). In turn, higher levels of movement skill in children and adolescents are associated with increased physical activity (Lubans, Morgan, Cliff, Barnett, & Okely, 2010). Additionally, increased time in physical activity, especially at higher intensities, has been shown to improve physical fitness, including cardiovascular fitness, muscular strength and endurance, and skeletal health (Stensel, Gorley, & Biddle, 2008). Some evidence also supports that physical activity may contribute to improved social and mental health, including reduced anxiety and depressive disorders, and improved self-esteem (Landers, 1997; Murtrie & Parfitt, 1998; Stensel et al., 2008).

The enactment of the No Child Left Behind legislation in 2001 has resulted in significant reductions in the weekly minutes allocated to physical education and recess in elementary schools (Center on Education Policy, 2007), along with concurrent similar increases in time allocated to mathematics and reading due to the increased pressures on schools to demonstrate "adequate yearly progress" in core classroom subjects. The CDC (2010) recently completed a review of 50 studies on the association between school-based physical activity, which includes physical education, and academic performance, including indicators of cognitive skills and attitudes, academic behaviors (e.g., concentration, attentiveness, and time on task), and academic achievement (e.g., grade point average and test scores). Of the 251 associations found between school-based physical activity and academic performance, 51% were positive and only 2% were negative. There is also evidence that decreases in physical education time (and other "non-essential" school subjects) does not necessarily translate into improved academic performance (Trost & van der Mars, 2009). There is substantial evidence to suggest that physical activity can affect cognitive skills, attitudes, and academic behavior, as well as help improve academic achievement; and that increasing or maintaining physical education time does not adversely affect academic performance.

Figure 1.
A Social Ecological Model

It is well known that physically skilled and physically fit children have more opportunities to engage in physical activity. As more highly skilled and physically fit children typically get to play more often and for longer periods of time, the activity benefits occur in both organized youth sports and during unstructured recreational activities. This additional time in physical activity, when accrued in an appropriate environment, could also potentially assist in improving social skills and mental health.

Another Need for HOPE

In addition to the strong empirical evidence that children and youths need curriculum models such as HOPE, it should be pointed out that a more active and healthy lifestyle contributes directly to improved quality of life in many ways that cannot be measured or reported in research. Physical activity that occurs in the form of sport, play, and dance, for instance, can bring new perspectives to participants' lives, promote deeper appreciation for the role of movement in their lives (Kretchmar, 2008), and promote new types of personal and social values that can stem only from regular physical activity. Children and youths need these things, in addition to the aforementioned evidence-based benefits that define the need for HOPE in schools.

Theoretical Foundation for HOPE

Developing health-enhancing behaviors is a complex and dynamic process, but interventions focused solely on the individual are limited in producing meaningful change (Stokols, 1996). Yet much of the research has focused on modifying knowledge, beliefs, attitudes, and motivation at the individual level, without assessing the effect of social, environmental, and policy factors on behavior change (Lox, Martin Ginis, & Petruzzello, 2010). Therefore, it is essential to understand behavior change from a multilevel perspective when designing, implementing, and evaluating interventions to modify health-enhancing behaviors such as physical activity.

A promising theoretical framework suited for multilevel physical activity intervention design is a social ecological model (Lox et al., 2010). Social–ecological models (SEM) are based on Bronfenbrenner's (1989) bio-ecological systems theory of human development and

Stokol's (1992) social ecological theory of health promotion. Within these models, it is hypothesized that human behavior is influenced by multiple factors in several interrelated environments (see Figure 1). At the center of the SEM are individuals (school-age children and youths in this application) who are surrounded by interpersonal influences that include family, teachers, and peers (social environments); agencies and organizations that create policies that govern those environments (e.g., school boards, government); natural and built physical environments in the community where people can be physically active or receive information and support to be active (e.g., recreational spaces, schools, parks, worksites, and homes); and, finally, the surrounding context in which individuals live that reflects values, customs, economics, and social conditions (public policy; Victorian Curriculum and Assessment Authority, 2010). According to SEM, behavior change is more likely if individuals reside in supportive environments (Lox et al., 2010). Thus, the SEM provides opportunities for intervention to increase physical activity participation and goes beyond the idea of simply changing an individual's thoughts and feelings to produce meaningful behavior change. Moreover, it recognizes that behavior change is not just a personal responsibility; there is also a communal or social responsibility to create environments that invite and support people's physical activity. Figure 1 presents a version of SEM that can be applied generically, or to increase physical activity and improve other health-enhancing behaviors (Denver Department of Public Health, 2007).

The HOPE curriculum model recognizes the importance of surrounding environments for the promotion of physical activity and other health-enhancing behaviors among school-age children. The potential benefit of community and public-policy changes to increase children's physical activity participation is great, though these are often the most difficult levels for intervention implementation because they are typically beyond the control of individual physical education teachers and the farthest away from the individuals who are targeted for behavior change. However, teachers can and should actively participate in school policy decisions that affect physical activity and food consumption patterns (e.g., recess, school vending machines, and wellness policies). Therefore, to achieve the model's main objective of helping children acquire the knowledge and skills for lifelong participation in physical activity for optimal health benefits, the HOPE strategies for behavior change described here are primarily focused on the individual, interpersonal, and organizational levels of the SEM. Individuals are viewed as the primary benefactors of knowledge about movement and skill performance, diet and nutrition, physical activity literacy, and the opportunities for physical activity promoted in HOPE. The purpose of all other intervention bands in a SEM is to positively affect individual children and youths. Interpersonal intervention strategies will include parent and guardian education about how to promote children's physical activity and nutrition at home and in the community. Finally, organizational intervention strategies will include before- and after-school physical activity programs and integration of HOPE throughout the school.

The HOPE model uses strategies in multiple bands that focus directly on school-age children and their surrounding social (interpersonal) and physical (organizational, community, public policy) environments to increase physical activity participation and improve health-enhancing behaviors. Based on the principles of the SEM, these multiple supportive environments should facilitate children's knowledge and motivation for long-lasting behavior change.

The most recent guidelines for promoting increased physical activity and better eating habits in children and youths (CDC, 2011) make it clear that schools must play an essential role in conducting broad-based programs for those purposes:

> Schools offer an ideal setting for delivering health promotion strategies that provide opportunities for students to learn about and practice healthy behaviors. Schools, across all regional, demographic, and income categories, share the responsibility with families and communities to provide students with healthy environments that foster regular opportunities for healthy eating and physical activity. (p. 11)

Recognizing P–12 physical education programs as effective environments for achieving health-promoting outcomes is an important first step. The next and even more important step is to design and implement school programs that can provide regular, direct opportunities within multiple bands of the SEM for children to achieve the overarching goal of HOPE.

Program Strands in HOPE

Since teaching and learning in HOPE takes place in a variety of settings and includes a greatly expanded range of learning activities, this curriculum model will not be effective if it is implemented only in traditional content units that occur during regularly scheduled physical education time. Rather than content units, HOPE contains several identified strands. A strand can be thought of as a "teaching and learning area" in the program that includes specific outcomes, one or more groups of learners, unique teaching and learning activities, and assessments. A strand can be planned as a traditional content unit (e.g., team handball, fitness), or a strand can be planned as a before- or after-school program, an educational event for parents, or training for other teachers in the school to promote HOPE-based learning. It should be noted that the list of strands and suggested learning activities presented here is not definitive—teachers can develop other strands and learning activities in their own version of HOPE, as long as those components remain in alignment with the overarching goal: to help learners acquire knowledge and skills for lifelong participation in physical activity for optimal health benefits.

Table 1 shows eight strands for HOPE. Many of the strands are directly aligned with the guidelines now endorsed by the CDC (2011) as key components of a CSPAP that can help children and youths become more active and practice other health-enhancing behaviors. Each strand includes one or more learning outcomes, its location in the SEM, intended learners, and a few suggestions for learning activities.

Some HOPE strands look very much like many current physical education programs. For instance, strands with familiar content units for team sports, individual sports, dance, skill themes, and fitness would still be included in HOPE, but only if they can provide high rates of MVPA. That is, activities that inherently provide few MVPA opportunities, such as softball, would be included only if they were modified sufficiently to promote high levels of MVPA. Other strands would include instruction that occurs outside of regular physical education time (before, during, and after school) and in other settings in and outside of the school, such as classrooms and laboratories, on the Internet, at home, and in the local community. In some strands, the learners are not P–12 students—they are teachers of other subjects, school administrators, school staff, parents or guardians, and members of the local community who can then influence individual students in the interpersonal, organizational, and community environments of the SEM.

How Much HOPE Is Needed?

We do not yet know how many strands are needed to implement an effective HOPE curriculum. It is likely, however, that a HOPE curriculum will not be effective if it is implemented as only a temporary

Table 1.
HOPE Program Strands

Strand	Learning Outcomes	Target Group	Examples of Units, Learning Activities, and Events	SEM Band (see Fig. 1)	Comments
Before-, during-, and after-school extended PA programming	Promote high rates of MVPA and health-related knowledge to supplement the scheduled PE program	P–12 students	• SPARK® after school • Intramurals • Before school Walking Club • "Drop in time" in gym	Individual	Instruction can be provided by the physical education teachers, other subject teachers, or parent volunteers.
Sport, games, dance, and other movement forms	To learn sports, games, dance, and other movement forms as a source of lifelong participation in PA	P–12 students	• Skill themes • Team sports • Individual sports • Games • Outdoor/adventure • International dance • SPARK® in PE	Individual	Sports, games, and dance should have high rates of MVPA and over 50% activity time in classes. This strand will look much like many current physical education instructional units.
Family/home education	To teach parents, guardians, and other family members to promote PA and a better diet at home	Parents/guardians and other family members and caregivers	• School/parent organization programs • How to read Fitnessgram® reports • Healthy cooking courses • Behavior change strategies • School newsletters	• Individual • Interpersonal • Organizational • Policy	Opportunities should be sought to provide parents/guardians with knowledge and other resources they can use to promote regular PA and other health-enhancing behaviors for their children at home. Teachers are not expected to be the main source of expertise—their role is to find ways to lead parents/guardians and children to these resources.
Community-based PA programming	To promote PA opportunities for children in community settings	P–12 students	• Youth sports • Recreation programs • VERB® Scorecard	• Individual • Community	The teacher's role is to locate community-based opportunities for PA and to link them with the school program.
Health-related fitness	• To promote weekly MVPA according to national standards • To promote individual achievement of the "Healthy Fitness Zone" on standardized measures	P–12 students	• High MVPA units • Making personal physical activity plans • Strategies for physical activity at home • Knowledge of health-related fitness	Individual	The primary purpose is to increase knowledge and MVPA that can improve health-related fitness and enjoyment of physical activity. Improved performance on fitness tests should be viewed as the secondary outcome in this strand.

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Table 1.
HOPE Program Strands (Continued)

Strand	Learning Outcomes	Target Group	Examples of Units, Learning Activities, and Events	SEM Band (see Fig. 1)	Comments
Diet and nutrition for physical activity	To learn and demonstrate knowledge of diet and nutrition that enhances PA	P–2 students, parents/guardians, school food staff, and school administrators	• Units on diet and nutrition for PA • Seminars for parents • Analysis of school vending machines • Consultations with school food staff	• Individual • Interpersonal • Organizational • Community • Policy	Other than the content units for P–12 students, teachers will need the support and assistance of community nutrition experts.
Physical activity literacy •Consumerism •Technology •Advocacy	To acquire knowledge and appreciation that can increase and enhance participation in and enjoyment of PA	P–12 students, parents/guardians, other teachers, school food staff, school administrators, and community organizations	• PA health fair at school • Guest speakers from the PA business community • Guest speakers from community advocacy organizations • Seminar on finding web resources for PA • Seminar on buying PA equipment and clothing	• Individual • Interpersonal • Organizational • Community	In addition to the content units for P–12 students, teachers will need the support and assistance of many school and community experts.
Integration of HOPE across all school subjects (including recess)	To increase (non-PE) teacher, school administrator, and school staff knowledge of and support for children's PA and dietary habits	P–12 students, PE teachers, other teachers, and school administrators	• Integrated content units with other subjects • Classroom activity • Breaks (e.g., Take10!®) • Seminar on promoting high PA and positive socialization in recess	• Individual • Interpersonal • Organizational	HOPE teachers must recognize common learning outcomes across subjects and inform other teachers of those shared outcomes in order to establish a need for integrated units and instruction.

or sporadic supplement to current physical education programming, or if it is delivered by only a single physical education teacher and supported by only the physical education department. The best chance for HOPE to succeed is for it to be envisioned as a truly comprehensive physical education program, built for longevity with participation and support from many others in and beyond the school setting. With support from school administrators, physical educators can recruit assistance from paraprofessionals and playground supervisors to help in encouraging students to get active, providing equipment, setting up different activity zones, and actively monitoring recess periods. This does not mean that an entire HOPE curriculum must be established at once; physical education teachers can start with two or three strands that they can implement with confidence and success, and then look for resources and opportunities to add more strands to their program.

Teacher Expertise and Collaboration for HOPE

Teachers in HOPE programs must have an expanded knowledge base to provide effective programming. Beighle, Erwin, Castelli, and Ernst (2009) proposed that teachers be prepared to implement a CSPAP with more content knowledge and pedagogical expertise. The National Association for Sport and Physical Education (2011a) has also published a number of tips for teachers who wish to start a CSPAP in their school. HOPE teachers will also need to know how to identify and collaborate with other professionals in the school and in the larger community. Part 2 of this article will present plans for aligning the knowledge base for preservice and in-service teachers with the eight HOPE strands presented in Part 1. Part 2 will also provide some examples for collaborations that HOPE teachers can use to achieve the learning goals in each strand, and the overall programmatic goal of helping learners to acquire knowledge and skills for lifelong participation in physical activity for optimal health benefits.

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