

## What Works in Physical Education: Designing and Implementing a Quality Educational Program

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### **Article:**

When coupled with effective teaching practices, the National Standards for Physical Education (NASPE 1992, 1995) enhance students' physical skills and conceptual understandings associated with human movement (Allison et al. 2000; Mohnson 1998). The National Standards emphasize the knowledge base of kinesiology and facilitate the development of connections between physical education and other subject areas, especially science. Recent research (e.g., Rink 2001, 2002) supports the use of multiple teaching strategies that enhance the quality of student practice time. In this article, I will begin by reviewing the NASPE National Standards and the guidelines for physical activity, followed by a discussion of effective approaches to physical education.

### NATIONAL CONTENT STANDARDS FOR PHYSICAL EDUCATION

A quality physical education program focuses on student learning as the primary goal. The standards have been elaborated as benchmarks and indicators that guide curriculum development and clarify goals for assessment. The National Standards, sanctioned by the National Association for Sport and Physical Education (1995), consist of seven broad content standards that define expectations:

- Students should demonstrate competency in many and proficiency in a few movement forms.
- Students should apply movement concepts and principles to the learning and development of motor skills.
- Students should achieve and maintain fitness (e.g., American Heart Association 1995; Centers for Disease Control 1997; Corbin and Pangrazi 1998).
- Students should participate in and understand the costs and benefits of health-enhancing physical activity.
- Students should demonstrate responsible personal and social behaviors in physical activity settings.
- Students should understand and respect differences among people in physical activity settings.
- Students should understand that physical activity provides opportunities for enjoyment, challenge, self-expression, and social interaction.

THE CENTRAL ROLE OF PHYSICAL ACTIVITY IN A HEALTHY, ACTIVE LIFESTYLE  
NASPE emphasizes physical activity as the central focus of physical education. Physical activity can include walking, gardening, stair climbing, hiking, biking, traditional sports, dance, and any other activity that raises the heart rate into the moderate to vigorous range (Blair 1991). When physical activity is the focus of physical education, the content expands beyond traditional sports and exercises to include activities that foster health, self-regulation, self-challenge, and group problem solving in many different social and cultural environments (Ennis 1998). Over the past two decades, research has documented substantial benefits from physical activity for children and adults (Blair et al. 1989).

In 1985, the American Heart Association added physical *inactivity* to its list of primary risk factors for coronary heart diseases, joining smoking, hypertension, and high cholesterol as *controllable* lifestyle variables. Increasing the amount of physical activity that individuals engage in each day is an inexpensive lifestyle change for most people and one that can pay significant dividends (Blair et al. 1989). Based on scientific evidence, numerous studies (National Institute for Health, Centers for Disease Control, Department of Health and Human Services, and Public Health Services) have called for increased public awareness of the positive benefits of regular to moderate physical activity and the negative consequences of a sedentary lifestyle. In 1996, the Surgeon General's *Physical Activity and Health* report (U.S. Department of Health and Human Services [USDHHS] 1996) presented conclusive findings supporting the role of physical activity in a healthy lifestyle. The report cited research evidence correlating regular, moderate to vigorous physical activity with lower mortality rates in severe chronic diseases, including coronary heart disease, hypertension, non-insulin-dependent diabetes mellitus, osteoporosis, colon cancer, depression, and anxiety. Further, the Surgeon General's report stated that all people over the age of two years should accumulate at least thirty minutes of moderate to vigorous endurance-type physical activity more than one day a week if not daily (c.f. American Academy of Pediatrics 1987; American Heart Association 1995; Trudeau et al. 1999).

The report also emphasized that childhood and adolescence are pivotal times for preventing sedentary habits. Currently only 15 percent of U.S. adults engage regularly (three times a week for twenty minutes) in vigorous physical activity during their leisure time, while 25 percent of adults report no physical activity (USDHHS 1996). Recent data indicate that minorities in general, and minority women in particular, are more predisposed to a sedentary lifestyle than the general population. For example, although 30.7 percent of female adults reported no physical activity, this percentage increased to 42.7 percent and 43.8 percent for African-American females and Hispanic females, respectively. Additionally, though it seems logical to expect young children and adolescents to be active, findings from the Youth Risk Behavior Survey indicated that half of young people between the ages of twelve and twenty-one are not. Again, minority girls are at greater risk of being included in this category. Typically, physical activity decreases during adolescence and continues to decline through young adulthood (Taylor, Baranowski, and Young 1998; USDHHS 1996).

Spurred by these reports, physical educators are working to improve the quality of physical education (Ennis 1998; Lawson 1998). For example, they have developed innovative curricula (Hellison et al. 2000; Kirk et al. 1999), restructured traditional physical education programs (Ennis 1999; Ennis et al. 1999), and embraced new techniques for monitoring and assessing

students (e.g., Lambert 1999). These revitalized programs emphasize learning and physical activity as the focus of an *educational* physical education program. Their goal is to ensure that every child demonstrates skills and knowledge necessary to participate in physical activity.

## RESEARCH-BASED PRACTICE

An extensive body of research has been published on the role of teachers in planning and implementing effective physical education programs (Kulinna, Silverman, and Keating 2000; Silverman and Skonie 1997). Because textbooks are rarely used in physical education, teachers are responsible for selecting and organizing content consistent with the National Standards. Effective teachers are instrumental in organizing and sequencing developmentally appropriate content, communicating that content effectively, and encouraging administrator support for physical education (Housner and French 199j). In the next section, I will describe six research-based practices—time for practice, appropriate practice, content sequencing, cognitive engagement, task-specific communication, and interdisciplinary content selection—that "work" to enhance the quality of teaching and learning in physical education (Richardson 1992).

## TIME FOR PRACTICE

Practice is a particularly important aspect of skillful movement and movement participation (Cousineau and Luke 1990). Metzler (1989) has noted the direct relationship between the time students spend practicing a skill and the learning that occurs. Other researchers (e.g., Rink 2002; Silverman 1990; Silverman, Devillier, and Ramirez 1991) have identified three elements of practice necessary to increase student learning. First, students should spend sufficient time practicing the task to repeat the movement correctly and refine the movement quality. Second, the task difficulty should match the student's current ability. Third, the student should concentrate on performing the task correctly. In physical education, this assumes that each student has a piece of equipment and that the class is of a reasonable size for the teacher to monitor, provide corrective feedback, and assess each student's performance (Hastie, Sanders, and Rowland 1999). Although practice affords the opportunity to learn, the practice tasks must be specific to the end product and the student's cognitive, physical, and emotional abilities.

Class time assigned to practice assumes that the teacher is able to organize and manage the class so that the practice tasks can be completed correctly (Rink 2001). Academic learning time in physical education is defined as time that each student spends engaged in performing, analyzing, and evaluating the performance (Donnelly, Helion, and Fry 1999; Ennis 1990). Students are considered "on-task" when they are engaged physically and cognitively. For example, disengaged students standing or jogging aimlessly in a traditional game are not receiving optimal practice because they are not manipulating the ball or thinking about game tactics (Duda 1996). Modified games in which a few players participate in a small space with multiple balls or other objects dramatically increase students' opportunities for appropriate practice necessary for learning (Ennis 1999). Students standing in lines, sitting out of games, or engaging in "off-task" or disruptive behaviors signal that the class lacks appropriate task structures, equipment, or content. There is no traditional game (e.g., kickball, dodgeball) or sport (e.g., basketball) so sacred that it *must* be played to the detriment of low-skilled or intimidated students. Instead, skills, concepts, and principles from the body of research can be taught through assorted appropriately designed tasks and activities (Mohnson 1998). In an educational physical education

program, teachers redirect students' attention to modified games and lead-up activities in which they can experience high-quality practice time resulting in success (Treasure and Roberts 2001).

### APPROPRIATE PRACTICE

Appropriate practice describes activities in which the learning objective and the practice task are consistent with the learner's ability (French, Rink, and Werner 1990). The emphasis on appropriate tasks and task structures has greatly enhanced the quality of physical education teaching. Task difficulty is an essential variable crucial to student success and learning. It is clear that tasks that are too difficult often lead to student confusion, frustration, and failure, limiting the value of the practice. Likewise, easy tasks do not challenge learners to stretch their current ability to the next learning stage (Greenockle, Lee, and Lomax 1990). Because students in physical education are rarely grouped by ability and fitness level, students in a given class represent a range of interests and physical abilities that challenge teachers' task designs (Silverman 1985). Expert teachers design tasks embedded with multiple levels of difficulty. This pedagogical concept can be applied in modified games by setting clear criteria for students' performance within small-sided games. Students complete objectives while experiencing multiple opportunities to catch, throw, attack, or defend. Students' increasing ability is rewarded by increasing game complexity (Griffin, Mitchell, and Oslin 1997).

### CONTENT SEQUENCING

Content sequencing (Rink 2002) assumes that there is an ideal order in which tasks should be presented for optimal learning. Content sequencing also assumes that there is a target behavior that can be clearly defined. Effective sequencing is based on the teachers' knowledge of content and how to teach it most effectively to students. This pedagogical content knowledge is essential for ordering tasks and ensuring that skills increase progressively (French et al. 1991). Student frustration may signal that (a) the teacher has omitted an important step in the sequence, (b) students have not learned information in the previous step, or (c) they cannot apply what they have learned as the foundation for the new skill or knowledge. Effective teachers are quick to acknowledge student concerns and to return to the previous step or create a new intermediate step to assist students.

There are a number of steps involved in teaching a complex skill or concept (Rink et al. 1992). Often a movement in a game is particularly difficult for students because the game context is substantially more complex than the isolated skill. Teachers can increase students' success in games by sequencing tasks that have been simplified, adapted, or modified to provide appropriate practice. In physical education, modified games provide numerous opportunities for sequencing. For example, teachers can adjust the playing area's size; the object's size, shape, color, or weight; rule complexity; or the number of players on a team. Careful attention to content sequencing helps students to progress from an elementary conceptual understanding to a more complex knowledge consistent with the learners' increasing physical abilities.

### COGNITIVE ENGAGEMENT

Students' cognitive engagement is central to the learning process in physical education (Lee 1997). Beginning and intermediate-level performers must focus their attention on their skill performance to increase learning (Magill 1994). They should think about each skill component and compare their movements with a clear model of correct performance. When teachers or

peers provide corrective feedback, performers must attend to and understand the comment and apply it to the correct movement component at the proper time (Landin 1994; Silverman 1985). As individuals become more skilled, their attention changes from an internal focus on how to perform to an external perspective on the conditions under which the movement will be performed (Lee, Swinnen, and Serrien 1994). For example, instead of focusing on the correct stepping pattern necessary to perform a basketball lay-up shot, advanced performers are evaluating opponent and teammate positioning to determine how they should adjust the movement for success (e.g., pass, dodge, or accelerate). Both low- and high-level performers must cognitively engage, but they will attend to different factors at different times.

In concept-based interdisciplinary approaches to physical education, students might engage in the scientific inquiry process as they examine the short-term effects of exercise on their bodies. The instructional task might require adjusting the movements' intensity to increase or decrease their heart rate. Students are cognitively engaged as they select the activities to raise and lower heart rate, assess their performance using heart rate monitors, examine their results, and communicate findings. Teachers facilitate engagement by using task sheets that help students focus their attention on a progressive series of tasks (Griffin and Placek 2001). They may ask application, analysis, synthesis, or evaluation questions to assist students in understanding the effects of newly learned concepts or principles on a movement or to examine several variables interacting to create a novel outcome. Unfortunately, students often stop engaging when the task becomes repetitive or is not adjusted as the students' skill or knowledge increases (Lee, Swinnen, and Serrien 1994). Teachers who are able to sequence and adjust tasks and group multiple levels of a single task together, as in the earlier target orientation example, continually challenge students with stimulating activities that foster success (Lee and Solmon 1992; Magill 1994).

#### TASK-SPECIFIC COMMUNICATION

Giving students clear, concise directions, criteria for successful performance, and specific, corrective feedback requires the teacher to mentally organize the task and present it sequentially (Rink 1994). Effective teachers often use a six-step progression to enhance task-specific communications (Graham 1988). First, they signal for students' attention, encouraging them to focus on the demonstration or verbal directions. Second, they give clear, sequential directions anchored with visual images of correct performance. If the directions involve using scientific inquiry, teachers can provide a written task sequence that presents a logical step-by-step progression of student tasks. Third, they check with students frequently to ensure that they have understood the directions and are on-task. Fourth, they direct students' attention to the central or critical components essential for success. Fifth, they summarize and repeat information to ensure that all students have heard the information and can use it to refine their performance. Sixth, they monitor and assess performance throughout the task, holding students accountable for performance (Graham et al. 1993; Silverman, Kulinna, and Crull 1995).

#### INTERDISCIPLINARY CONTENT SELECTION

The body of knowledge for physical education originates in the discipline of kinesiology, the art and science of human movement. Because physical education shares close ties with life and physical sciences, opportunities to work collaboratively with elementary and secondary science teachers abound. Cooperation may lead to multi-disciplinary topics, such as mechanics, force, and the effects of exercise on the body, which can be coordinated throughout the year. When

students exercise in physical education class, they can use their own bodies as the focus for scientific inquiry.

One benefit of this collaboration is the opportunity to change physical education from a recreational focus to a scientific one. Connections to life science (health, nutrition, body systems) and physical sciences (energy, mechanics of motion, force) are central to kinesiological approaches to physical education. There also exist natural interdisciplinary connections between physical education and mathematics (measurement of performance, scoring systems, statistics), reading (sequencing, tracking, opposition), and social studies (map reading/orienteering, team building, social justice, equity).

#### EXEMPLARY PROGRAMS IN PHYSICAL EDUCATION

Exemplary physical education programs are structured and implemented to engage students in developmentally appropriate tasks in which they are likely to find success. They use carefully considered skill progressions to enhance the quality of movement (Rink 2002). Teachers monitor individual and group performance, adjust task difficulty, and evaluate the extent to which performance matches criteria.

Physical educators, like other teachers, need to be held accountable for high-quality instruction that contributes to the school's academic mission, provides students with moderate to vigorous physical activity, and offers enough time for practice. The physical education curriculum should be consistent with NASPE National Content Standards (1995) and articulated sequentially within units and grades, and across age groups. Physical education should afford multiple opportunities for students to engage in interesting activities in a positive, stimulating environment. When administrators and teachers expect and facilitate these outcomes, physical education can be a positive, rewarding experience.

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