

Physical Exercise in School: Fitness for Both Body and Mind
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During the past few weeks, millions of children and adolescents have returned to school after summer vacation. With the beginning of the new school year, I hope that their school programs include time set aside each day for exercise and physical activity. In past writings I have reported that in my visits to a number of schools I have been disheartened to learn of the decrease in time allotted for physical education and exercise. Far too often in this age of high stakes testing, physical activity has been sacrificed for academic study. And far too often children have been denied recess if they have not completed all of their academic requirements.

I am not minimizing the importance of schools focusing on academic achievement. Obviously, the teaching of academic subjects is a prime function of education. Those familiar with my work know that I have written and lectured extensively about creating school environments that nurture motivation and learning. However, when physical education and physical activities are relegated to the equivalent of second class citizenship and when children are deprived of recess, these practices must be questioned by asking, “Do such actions enhance school performance or are they counterproductive, leading to a situation in which students are less likely to learn?” A related question is whether physical activity impacts not only on the academic success of students but on their social-emotional development and behavior as well.

Answers to these questions may be found in a thought-provoking new book *Spark: The Revolutionary New Science of Exercise and the Brain* by well-known psychiatrist and author Dr. John Ratey in collaboration with Eric Hagerman. Reading just the first two chapters of this well-researched and well-written book provides ample evidence of the far-reaching power of regular exercise in improving the learning and emotional and physical well-being of students. Ratey’s book deserves to be read by anyone entrusted with designing and implementing effective school programs. I would like to highlight some of the major points articulated in his book.

Ratey begins by describing the innovative approach in the Naperville, Illinois School District 203. Some members of the freshman class take part in Zero Hour PE,

running each morning prior to classes. The purpose of Zero Hour is to assess whether working out before school “gives these kids a boost in reading ability and in the rest of their subjects.”

Ratey notes that the hypothesis that exercise enhances school performance “is supported by emerging research showing that physical activity sparks biological changes that encourage brain cells to bind to one another. For the brain to learn, these connections must be made; they reflect the brain’s fundamental ability to adapt to challenges. The more neuroscientists discover about this process, the clearer it becomes that exercise provides an unparalleled stimulus, creating an environment in which the brain is ready, willing, and able to learn. Aerobic activity has a dramatic effect on adaptation, regulating systems that might be out of balance and optimizing those that are not—it’s an indispensable tool for anyone who wants to reach his or her full potential.”

In fact, Ratey reviews studies undertaken at Naperville that indicate that learning is enhanced when preceded by exercise. In addition to improving their mood, students involved in the Zero Hour program demonstrated a 17 percent improvement in reading and comprehension compared with a 10.7 percent improvement for students who decided to sleep later and take a standard physical education course. Ratey emphasizes that while the high test scores at Naperville 203 may be attributed to factors other than physical education such as students growing up in a high socioeconomic, advantaged community, the same results were evident in less affluent towns that adopted regular aerobic exercises.

The Naperville program is 17 years old, initiated by Phil Lawler, a physical education teacher, after he read a newspaper article in 1990 citing the declining health of children in the United States. Lawler reviewed the PE program at Madison Junior High in Naperville and felt that too much time in team sports was spent just waiting—waiting for a turn at bat or for a soccer ball to come in one’s direction. He decided to introduce cardiovascular fitness activities, including having students run a mile once a week. Lawler discovered that the grading scale discouraged the slowest runners. To offset this negative feeling, he and his colleagues allowed students to earn extra credit by working out on a bike. Further refinement led to what Lawler called the “New PE” in which students would be graded on effort rather than skill.

To measure the elusive quality of effort, Lawler purchased heart rate monitors and found that some students who appeared not to be exerting themselves actually were expending a great deal of energy in physical activity. “I started thinking back to all the kids we must have turned off to exercise because we weren’t able to give them credit.” Lawler not only included running in his PE program, but he built in “small-sided sports” such as three-on-three basketball or four-on-four soccer, in which the students were constantly moving.

Ratey emphasizes, “Instead of being tested on such trivia as the dimensions of a regulation volleyball court, Naperville’s gym students are graded on how much time they spend in their target heart rate zones during any given activity. . . . Lawler’s tack runs opposite to the trend in American public schools of cutting physical education in favor of increasing study time in math, science, and English—an effort to help students pass tests dictated by the No Child Left Behind Act. Only 6 percent of U.S. high schools offer a daily physical education class.”

An important feature of the success of the Naperville program as well as similar physical education programs instituted in different schools in the United States is the recognition that students should be offered a variety of activities from which to choose. As I have long advocated, students are more likely to engage in tasks when they are afforded realistic choices. Lawler and his colleague Paul Zientarski, Naperville Central High School’s physical education coordinator, skillfully blended physical activity requirements with options.

Zientarski observes, “I tell people it’s not my job as a PE teacher to make kids fit. My job is to make them know all of the things they need to know to keep themselves fit. Exercise in itself is not fun. It’s work. So if you can make them understand it, show them the benefits—that’s a radical transformation.” This emphasis on ownership for one’s behavior is reinforced by the curriculum, which “is designed to teach kids the principles, practices, and importance of fitness.” Ratey adds, “When they reach high school, students are given a broad menu of options—from kayaking to dancing to rock climbing to typical team sports like volleyball and basketball—and shown how to draw up their own fitness plans.” Assessments of fitness begin in the fifth grade and become

increasingly comprehensive in high school, combining fitness scores with such variables as blood pressure and cholesterol levels, along with lifestyle and family history.

Ratey quotes sports physiologist Craig Broeder, who conducted the fitness study in Naperville. “One of the things that too many people forget is that you have to find something that allows a student to feel comfortable at excelling. . . . When you only give a kid a limited option, like playing basketball, and you make it seem like punishment or boot camp, there’s no way he’s going to continue doing it. At Naperville, they give kids lots of options by which to excel; they design lifetime fitness activities.” Zientarski concurs, “We used to do chin-ups. I would say about sixty-five percent of our boys couldn’t do one chin up. Come on down to PE class and be a failure!”

As I read these quotes I reflected upon my belief that adults must learn to identify and reinforce the “islands of competence” in children and adolescents. I have found that youngsters are more willing to engage in challenging activities if we first allow them to “taste success” in exercises in which they feel more self-assured.

There is another goal of the PE program at Naperville that I found very appealing, namely, the focus on nurturing the social-emotional development of students. Ratey vividly captures this when he writes, “What strikes me about Zientarski’s transformation from drill sergeant to sculptor of bodies, brains, and minds is how far he has been willing to go in redefining gym. For example, one of the most innovative changes he made at Central was to add a mandatory square-dancing class for freshmen. It may not sound cutting edge, but the class is set up to use movement as a framework for teaching social skills—a wonderful idea on many levels. In the first few weeks of the class, all the students receive scripts to use as conversation starters with their partners, and everyone switches partners after every dance. As the course progresses, the students are given time to interact without the scripts, first for thirty seconds and building up from there. The final exam is based on how accurately the students remember ten facts about a partner after spending fifteen minutes chatting.

“Some kids who are socially timid never get a chance to learn how to talk to people and make friends, so they retreat, especially from the opposite sex. By not being singled out or relegated to a special social skills class, Zientarski’s square-dance students get to practice how to talk and interact in a nontoxic setting. The activity serves both as a

distraction and as a confidence builder. Some master the drill, and others merely break through their fears, but because everybody's doing it, it's less embarrassing.”

Throughout *Spark* Ratey outlines the latest research findings about the brain to explain why the PE program at Naperville and other schools enhance learning and academic performance. But his book is not confined to children and adolescents. He also examines the positive impact of physical activity in our adult lives, helping us to manage such conditions as stress, anxiety, and depression.

I believe that it is important for educators to recognize that the PE program developed in Naperville can serve as a model in all schools and that PE programs should not be reduced in order to devote more time for academics. We should appreciate that academic achievement is enhanced with physical activity. One need only examine what occurred in Titusville, Pennsylvania, a town of 6,000 residents in which 75 percent of the kindergarten students receive government assistance for school lunches. The secondary school staff adopted the Naperville program and took the bold step of restructuring the school day, adding ten minutes to the schedule while lessening a small amount of time from academic classes to include time for daily gym.

The results at Titusville were striking. Since the program was started in 2000, standardized scores of students moved from below the state average to 17 percent above it in reading and 18 percent above it in math. As significant were the social-emotional gains, including not a single fistfight among the 550 junior high students since the program began.

I look forward to the day when educators at all grade levels in all schools detail the ways in which their approach is rooted in the latest brain research, including that which confirms that physical activity and learning are inextricably interwoven. I also look forward to the day when removing recess is not applied as a punishment; instead, recess and other opportunities for physical expression are used to strengthen learning and interpersonal skills. Hopefully, that day is not too far in the future.