

Evidence-Based Research

Overview

Fitness for Life is an award-winning fitness education text at the secondary school level (Texty Award of TAA). As the first text of its kind, it set the standard for all texts that followed. Now in its sixth edition, *Fitness for Life* is based on sound educational standards (SHAPE America physical education standards, 2014; SHAPE American Fitness Education Framework, 2012) and sound educational and psychological theory. Considerable scientific evidence support *Fitness for Life* as part of a high-quality physical education program. A description of the theoretical and evidence base follows.

Theory-Driven Programs Based on Current Educational Standards

A foundation in *educational standards* is essential for high-quality programs. In planning programs, current educational standards for domain-specific content are of prime importance. The sixth edition of *Fitness for Life* is based on current standards for physical education (SHAPE America: Physical Education, 2014; SHAPE America: Fitness Education Framework, 2012).

In meeting standards, content must be *theory driven* to ensure that it is presented in a manner that is most likely to result in health behavior change in learners. Concepts and principles derived from educational and psychological theory have been used in identifying key self-management skills that are important in making health behavior changes such as those included in *Fitness for Life*. A large randomized trial (Dunn et al., 1998; Dunn et al., 1999) provides evidence of the value of theory-driven programs designed to change physical activity patterns and health behaviors. The self-management skills in *Fitness for Life* are derived from several health behavior change theories and models (see table 1).

Table 1: Educational and Psychological Theories and Models

Theories	Description
Social cognitive theory	Also referred to as social learning theory, this theory emphasizes the importance of self-efficacy and positive expectations in making behavior changes. It also emphasizes the importance of trying ability-appropriate tasks to gradually enhance self-efficacy for a specific task. The theory suggests that a person must value the outcomes of a behavior if a change in behavior is the goal.
Self-determination theory	Central to self-determination theory is personal autonomy. Autonomy refers to the ability of a person to make his or her own decisions. Feelings of competence at mastering skills or tasks are also critical to the theory. Personal choice is emphasized rather than choice based on external pressures to comply. Intrinsic (internal) motivation is considered more important than extrinsic (external) motivation (e.g., rewards or payments). Intrinsic motivation makes adopting a behavior fulfilling rather than forced.
Theory of reasoned action	This theory suggests that a person's behavior is most associated with the person's stated intention to carry out the behavior. According to this theory, a person's intentions are influenced by attitudes (beliefs) and the social environment (opinions of others).
Theory of planned behavior	This theory has many of the tenets of the theory of reasoned action, but it includes the concept of perceived control over the environment. If a person is to change a behavior, he must believe that he has some control over the factors that influence the behavior. Perceived control is in many ways similar to self-efficacy in social cognitive theory.

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Models	Description
Health beliefs model	A model is similar to a theory in that it provides a blueprint for behavior change. This model suggests that a person's health behavior is related to five factors: the belief that a health problem will have harmful effects, the belief that a person is susceptible to the problem, the belief that the perceived benefits of changing a lifestyle will prevent the problem, the belief that overcoming barriers to the problem will solve the problem, and confidence that he or she can do what is necessary to prevent or solve a problem.
Social ecological model	This model is based on the idea that health behavior change is influenced by the interaction of cultural, social (intrapersonal), and physical environmental factors. For example, when people practice a negative behavior such as smoking, they affect the environment. Others in the environment are then exposed to a health risk. Unlike the other theories and models, the social ecological model emphasizes the importance of social and environmental factors rather than personal health behavior change.
Transtheoretical model	This model is also referred to as the stages of change model. The model uses elements of all of the previously described theories and models. As noted in the student text, the model suggests that health behavior change does not occur all at once. Rather, five stages exist and behavior change occurs when people move from one stage to another. The model also emphasizes the importance of the process of change, including factors such as goal setting, self-monitoring, self-assessment, and self-planning.

Evidence Base for Integrated Health and Physical Education Programs at the College Level

Over time, the effectiveness of programs can be established. *Fitness for Life* now has a firm *evidence base*. The sections that follow present evidence of effectiveness for health-based physical education programs.

The first integrated health and physical education programs (CPE) were started in the 1950s at the college level. These combined classroom and activity classes include both fitness and activity and health education components. CPE programs grew dramatically from 1970 until the turn of the century. Oxendine and Roberts (1978) indicated that 10% to 20% of colleges offered lecture courses for non-majors in 1978, but not all were CPE classes. By the late 1990s 60% offered a CPE class as all or part of their requirement (Hensley, 2000). Currently CPE programs that integrate personal fitness and health/wellness topics are almost universal. More than 95% of all colleges and universities offer a CPE class (Kulinna et al., 2009; Cardinal, Sorenson, & Cardinal, 2012).

Because of their effectiveness, CPE programs became the standard for most college and university programs. Research indicates that CPE programs have a positive effect on knowledge, attitudes, and physical activity behaviors (Adams & Brynteson, 1992, 1995; Brynteson & Adams, 1993; Calfas et al., 2000; Hager et al., 2012; Pearman et al., 1997; Saelens et al., 2000; Slava, Laurie, & Corbin, 1984; Cardinal & Spaziani, 2007; DeVoe et al., 1998; Quinn & Wilson, 1987). Bjerke (2013) found that both traditional activity-based physical education and CPE had benefits, but CPE was more beneficial than traditional programs in promoting the number of walking days and the total time of walking. Ferkel et al. (2014) studied health-related fitness knowledge and noted that it has successfully predicted physical activity and fitness levels, though research is limited. The authors noted that health-related fitness knowledge is low among elementary- through college-aged students. Most important is their conclusion that educational interventions, such as CPE that builds fitness knowledge, result in increases in physical activity and fitness levels. The authors recommend the “adoption of health-related fitness education initiatives with the intent of improving long-term physical activity and fitness” (p. 219). Research by Kruger et al. (2014) provides evidence that college students have significant risk factors for cardiovascular disease. In this study, 73% of the participants were found to have at least one risk factor, and 15% had multiple risk factors. The author concluded that this research has “important implications for future prevention and educational initiatives. Specifically, this knowledge will assist in providing effective programming and curriculum to support behavior change in college students considering the window of opportunity available at the college setting” (p. 581).

A key element of successful CPE is the development of self-management skills that aid students in changing health behaviors and adopting healthy lifestyles (Cardinal, Cardinal, & Burger, 2005; Cardinal, Jacques, & Levy, 2002). One study showed that within three years after dropping the programs, activity patterns decreased and nutrition habits deteriorated among students (Ansuini, 2001). Several researchers have pointed out the importance of reaching students while they are in school and before they become self-supporting adults (Ferrara, 2009; Keating, Guan, Pinero, & Bridges, 2005; Nelson et al., 2008; Wengreen & Moncur, 2009).

Higgins and colleagues (2009) found that students valued their CPE course for three reasons: finding balance in all aspects of wellness, learning to recognize the value of social support, and learning skills to address challenges. Jenkins and colleagues (2006) found that fitness testing, wellness assignments, and meeting new people were perceived as positive outcomes of a CPE class. Qualitative research has shown that CPE programs “create awareness through providing factual information and practical strategies for health behavior changes at a transitional time to adulthood” (Woekel et al., 2013, p. 375). In addition, Kupchella (2009) and Sparling (2003) summarized the value of conceptual physical education classes in promoting lifelong physical activity and other healthy behaviors. For a summary of the history of conceptual physical education at the college level, see Corbin and Cardinal (2008).

The Evidence Base for Integrated Health and Physical Education Programs at the Secondary School Level

As noted earlier, *Fitness for Life*, published in 1979, was the first conceptual physical education textbook for use by high school students. The authors felt that the book was necessary because many students did not go to college and would benefit from the information commonly presented in college classes. In fact, research has shown that there is a 62.5% decrease in physical activity from high school to college (Cullen, 1999). One recent study that used a knowledge test from *Fitness for Life* indicated “...that secondary students have many misconceptions, or incomplete knowledge, regarding healthy behavior content...” (Teatro, et al., 2013, p. A-30). A study by Thompson and Harmon (2012) indicates that high school students who lack fitness knowledge are less likely to be physically active than students with better fitness knowledge.

Several published studies provide evidence of the effectiveness of high school CPE (Dale, Corbin, & Cuddihy, 1998; Dale & Corbin, 2000; Wallhead & Buckworth, 2004). The research shows that high school students who take CPE classes make health behavior changes that persist later in high school and in the years after graduation.

Additional Evidence

Research (Owens et al., 2006) has led to the development of principles that can promote optimal use of class time and optimal activity participation during activity lessons. These principles result in activities that create instant involvement, relate to conceptual content from classroom sessions, are enjoyable, are developmentally appropriate, and provide for formative and summative assessment. The activity lessons in *Fitness for Life* were developed using these principles. In addition, the HOPE program follows basic curriculum and instruction guidelines for effective learning: use of teacher-friendly and easy-to-use lesson plans, use of limited and easily accessible equipment, and use of activities that reinforce concepts in physical activity and health as well as concepts from other academic disciplines.

Surveys have shown that more than 90% of parents support high-quality programs that focus on health benefits such as reducing obesity through physical activity and improved nutrition (Harvard School of Public Health, 2003; SHAPE America, 2012). Finally, there is considerable evidence (including a CDC report) that physical activity and physical education in schools can enhance academic achievement, reduce discipline problems in schools, and reduce absenteeism (Centers for Disease Control and Prevention, 2010; Welk et al., 2010).



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