



## Increasing Physical Activity in Communities: What Really Works? Task Force on Community Preventive Services<sup>1</sup>

### A Note from the Editors

In recent years many studies have been conducted to determine the effectiveness of various approaches to promoting physical activity in our society. The Task Force on Community Preventive Services, with technical support from the Centers for Disease Control and Prevention, has recently analyzed the evidence from these studies to help determine which of these approaches is effective in community settings. Because of his involvement with the Task Force, the editors asked Dr. Greg Heath to prepare a report for the *Digest* based on the studies of the Task Force. This report is included in this issue of the *Digest*. The report refers to interventions, a public health term, for approaches or programs designed to promote physical activity. It is our hope that readers of this issue of the *Digest* will develop a clearer understanding of the effectiveness of various strategies (interventions) in promoting physical activity in our communities.

### Introduction

Physical inactivity is a leading contributor to morbidity and disability, accounting for 22% of coronary heart disease, 22% of colon cancer, 18% of osteoporotic fractures, 12% of diabetes and hypertension, and 5% of breast cancer (Colditz, 1999). Physical inactivity accounts for about 2.4% of U. S. health care or approximately \$24 billion a year (Colditz, 1999). In the United States, most people do not achieve the recommended amounts of physical activity (Centers for Disease Control and Prevention, 2003). Communities can do much to increase levels of physical activity among people of all ages and thereby address this serious public health problem.

Recommendations to increase physical activity have been made for individuals and clinical settings, but not for community settings. Increased physical activity has been linked not only to behavioral and social correlates, but physical and social environmental correlates as well. Therefore, the role of community-based interventions to promote physical activity has emerged as a critical piece of an overall strategy to increase physical activity behaviors among the people of the United States. In 1995, the American College of Sports Medicine and the Centers for Disease Control and Prevention (CDC) recommended that every adult in the United States accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week (Pate, 1995). That same year, the U.S. Preventive Services Task Force recommended that healthcare providers counsel all patients on the importance of incorporating physical activity into their daily routines (U.S. Preventive Services Task Force, 1996). To date, community-based

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interventions to increase physical activity have not been summarized in an evidence-based process.

The recommendations in this report represent the work of the independent, nonfederal Task Force on Community Preventive Services (the Task Force). The Task Force is developing the *Guide to Community Preventive Services* (the *Community Guide*) with the support of the U.S. Department of Health and Human Services (DHHS) in collaboration with public and private partners. The CDC provides staff support to the Task Force for development of the *Community Guide*.

Task Force recommendations are based primarily on the effectiveness of interventions as determined by a systematic literature review process and are a compendium of tested interventions that promote physical activity at the community level. They can be used for planning interventions to promote physical activity or to evaluate existing programs, including creation of or enhanced access to places for physical activity combined with informational outreach activities, community-wide campaigns, social support interventions in community settings, “point-of-decision” prompts to encourage use of stairs as an alternative to elevators or escalators, school-based PE, and individually adapted health behavior change programs. The Task Force believes that recommended and strongly recommended interventions can be used to address objectives set out in *Healthy People 2010* (U.S. Department of Health and Human Services, 2000).

## Intervention Recommendations

The Task Force evaluated the evidence of effectiveness of 11 selected types of interventions (see Table 1) that were grouped into three larger strategies for increasing physical activity: informational approaches, behavioral and social approaches, and environmental and policy approaches. Detailed findings from this evaluation appear in the work of Kahn et al. in 2002. Evaluations of additional interventions, including the effectiveness of urban form (design) and land-use planning approaches and changes to transportation and travel infrastructure and policy, are still in progress.

### *Informational Approaches*

Informational approaches focus on increasing physical activity by providing information that will motivate and enable people to change behavior and to maintain that change over time. The focus is primarily on the cognitive skills that are thought to precede behavior. The interventions primarily use educational approaches to present both general information, including

**Table 1.**

### **Task Force for Community Preventive Services: Physical Activity Intervention Recommendations**

The Task Force *strongly recommends*:

- **Community-wide campaigns:** These large-scale, highly visible, multicomponent campaigns direct their messages to large audiences using a variety of approaches, including television, radio, newspapers, movie theaters, billboards, and mailings.
- **Individually adapted health behavior change programs:** These programs are tailored to a person’s specific interests or readiness to make a change in physical activity habits. Teaching behavioral skills such as goal setting, building social support, self-rewards, problem solving, and relapse prevention, the programs help people learn to incorporate physical activity into their daily routines.
- **School-based physical education (PE):** This approach seeks to modify school curricula and policies, to increase the amount of time students spend in moderate to vigorous activity while in PE class. Schools can accomplish this either by increasing the amount of time spent in PE class or by increasing students’ activity levels during PE classes.
- **Social support interventions in community contexts:** The goal of this approach is to increase physical activity by creating or strengthening social networks. Examples include exercise buddies, exercise contracts, and walking groups.
- **Creating or improving access to places for physical activity combined with informational outreach:** Examples include building walking or biking trails or making it possible for people to use exercise facilities in community centers or in the workplace. Informational outreach includes activities such as providing training on equipment, seminars, counseling, risk screening, and health forums and workshops.

The Task Force *recommends*:

- **Point-of-decision prompts to encourage stair use:** These signs are placed by elevators and escalators and encourage people to use nearby stairs instead.

information about cardiovascular disease prevention and risk reduction, and specific information about physical activity and exercise. These programs were originally developed to complement a medical model of disease management by involving communities in understanding the cognitive antecedents of behavior.

Information is intended to change knowledge about the benefits of physical activity, increase awareness of opportunities for increasing physical activity, explain methods for overcoming barriers and negative attitudes about physical activity, and increase physical activity behaviors among community members. Interventions reviewed here are “point-of-decision” prompts to encourage use of stairs as an alternative to elevators or escalators, community-wide campaigns, mass media campaigns, and classroom-based health education focused on information provision and skills related to decision making.

#### **“Point-of-decision” prompts: *Recommended***

Point-of-decision prompts are motivational signs placed by elevators and escalators to encourage people to use nearby stairs for health benefits or weight loss. For people who want to increase their level of physical activity these prompts serve as a reminder to take the stairs and offer information about a health benefit from using the stairs. All interventions evaluated in this category were single component interventions, in which the placement of signs was the only intervention activity.

Point-of-decision prompts are recommended on the basis that they increase the number of people using stairs rather than escalators or elevators. This intervention has been shown to be effective in a range of settings and a variety of population subgroups. No harms or other potential benefits were reported and no qualifying economic information was identified from the literature.

#### **Community-wide campaigns: *Strongly Recommended***

Community-wide campaigns are sustained efforts with ongoing high visibility. These are large-scale campaigns that deliver messages promoting physical activity using television, radio, newspaper columns and inserts, and trailers in movie theaters. They use many components and include individually focused efforts such as support and self-help groups; physical activity counseling; risk factor screening and education at worksites, schools, and community health fairs; and environmental activities such as community events and

the creation of walking trails. Community-wide education is strongly recommended on the basis of its effectiveness in increasing physical activity and improving physical fitness among adults and children. Other positive effects include increases in knowledge about exercise and physical activity, and in intentions to be physically active. No harms were reported and no qualifying economic information was identified from the literature.

#### **Mass media campaigns: *Insufficient Evidence***

Mass media campaigns, designed to increase knowledge, influence attitudes and beliefs, and change behavior, address messages about physical activity to large and relatively undifferentiated audiences. Messages about benefits and opportunities for physical activity are transmitted using such media as newspapers, radio, television, and billboards, singly or in combination. Mass media campaigns include paid advertisements, donated time and space for promotions, and news or lifestyle features. These interventions differ from community-wide education in that they do not include other components such as support groups, risk factor screening and education, or community events.

The Task Force identified three qualifying studies that evaluated the effect of mass media campaigns. The studies identified in our search are over 10 years old; however, research is currently being conducted on the effects of mass media campaigns on physical activity. On the basis of the small number of available studies and variability in the interventions evaluated, insufficient evidence was found to assess the effectiveness of single component mass media campaigns.

#### **Classroom-based health education focused on information provision: *Insufficient Evidence***

Health education classes that provide information and skills related to decision making are usually multicomponent, with curriculum typically addressing physical inactivity, nutrition, tobacco use, and alcohol and drug misuse. Health education classes, taught in elementary, middle, or high school, are designed to effect behavior change through personal and behavioral factors that provide children or adolescents with the skills they need for rational decision making. The classes in this review did not include physical education (PE) but sometimes included behavioral instruction. (For recommendations on classes involving PE, see School-based PE, below.)

The Task Force identified six qualifying studies that evaluated the effect of classroom-based health education on students' physical activity levels and physical fitness. Because results were inconsistent across the body of evidence, insufficient evidence exists to make a conclusion about the effectiveness of classroom-based health education focused on information provision in improving physical activity levels and physical fitness. It is important to note, however, that such classes may provide other benefits, including increased knowledge, more supportive attitudes for physical activity initiatives, or changes in other health-related behaviors.

### ***Behavioral and Social Approaches***

Behavioral and social approaches focus on increasing physical activity by teaching widely applicable behavioral management skills and by structuring the social environment in ways that provide support for people trying to initiate or maintain behavior changes. Behavioral and social approaches were combined because these interventions often involve group behavioral counseling, and may also involve the friends or family members that constitute the individual's social environment. Skills focus on recognizing cues and opportunities for physical activity, ways to manage high-risk situations, and ways to maintain desired behaviors and prevent relapse. These interventions also involve making changes in the home, family, school, and work environments.

Interventions reviewed here are school-based PE, college-based health education and PE, classroom-based health education focusing on reducing television viewing and video game playing, family-based social support interventions, social support interventions in community settings, and individually adapted health behavior change programs.

### ***School-based PE: Strongly Recommended***

These interventions involve modifying curricula and policies to increase the amount of time students spend in moderate to vigorous activity while in PE classes. Increasing the amount of time students are active can be achieved either by increasing the amount of time spent in PE class or increasing the amount of time students are active during already-scheduled PE classes. Interventions in this review included changing the activities taught (e.g., substituting soccer for softball) and modifying the rules of the game so that students are more active (e.g., having the entire team run the bases together when the batter makes a base

hit). School-based PE is strongly recommended based on its effectiveness in increasing physical activity and improving physical fitness among adolescents and children. Other positive effects associated with school-based PE are increases in physical activity knowledge and increases in muscular endurance. One potential harm suggested in the literature is that PE classes could take away from the time that schools can devote to academic subjects, thereby harming academic performance. Examination of these studies and a systematic search for other studies of the effects of PE on academic performance found no evidence of this harm. No qualifying economic information was identified from the literature.

### ***College-based health education and PE: Insufficient Evidence***

These interventions use didactic and behavioral education efforts to increase physical activity levels among college students with the aim of setting long-term behavioral patterns during the transition to adulthood. The PE classes do not have to be offered by PE or wellness departments in college and university settings, but do include supervised activity in the class. These classes have both lectures and laboratory-type sessions; students engage in supervised physical activity, develop goals and activity plans, and write term papers based on their experiences. Social support is also built into these programs.

The Task Force identified two qualifying studies that evaluated the effectiveness of college-based health education and PE. Based on both the small number of available studies and variability in the interventions evaluated, insufficient evidence exists to assess the effectiveness of college-based health education and PE interventions.

### ***Classroom-based health education focusing on reducing television viewing and video game playing: Insufficient Evidence***

In these interventions, health education classes taught in elementary school classrooms as part of a general health curriculum by regular classroom teachers specifically emphasize decreasing the amount of time spent watching television and playing video games. Lessons include behavioral management strategies such as self-monitoring of viewing behavior, limiting access to television and video games, and budgeting time for television and video. All studies reviewed included a "TV turnoff challenge" in which students were encouraged not to watch television for a specified

number of days. Alternative activities that required greater energy expenditure were not specifically recommended. Parental involvement was a prominent part of the intervention, and all households were given automatic television use monitors.

The Task Force identified three qualifying studies that evaluated the effectiveness of these interventions. Although the studies showed decreases in the amount of time spent in television viewing and other sedentary behaviors, and found reductions in adiposity, they did not provide consistent evidence for increased physical activity. Based on the small number of available studies, the variability in the interventions evaluated, and the lack of information specifically linking these programs to increases in PA, insufficient evidence exists to assess the effectiveness of classroom-based health education focused on reducing television viewing and video game playing in increasing physical activity.

#### **Family-based social support: *Insufficient Evidence***

These interventions attempt to change health behavior through strategies that increase the support of family members for behavioral change. The intent is to create and facilitate behavioral patterns, social interactions, and family norms that support greater levels of physical activity. These interventions target environmental factors and interpersonal and behavioral patterns. Typical elements include setting up behavioral “contracts” between family members as well as goal-setting, problem-solving, and other family behavioral management techniques. Interventions may be targeted to families with children or to couples without children. Programs typically include educational sessions on health, goal-setting, and problem-solving; family behavioral management; or both educational sessions and behavioral management. The programs may also incorporate some physical activities. Interventions directed toward children and their families are often implemented as part of a more comprehensive approach that includes school-based interventions, such as school-based PE or classroom-based health education. In these instances, the family component is often seen as an adjunct to the school activities, involving take-home packets, reward systems, and family recordkeeping. These interventions may also include family-oriented special events.

The Task Force identified eleven qualifying studies that evaluated the effect of family-based social support programs on physical activity levels and physical fitness. Because results across the body of evidence

were inconsistent, the Task Force could not reach a conclusion about the effectiveness of these programs in improving physical activity levels and physical fitness.

#### **Social support interventions in community settings: *Strongly Recommended***

These interventions focus on changing physical activity behavior through building, strengthening, and maintaining social networks that provide supportive relationships for behavior change, specifically physical activity. This can be done either by creating new social networks or working within pre-existing networks in a social setting outside the family, such as the workplace. Interventions typically involved setting up a “buddy” system, making “contracts” with others to complete specified levels of physical activity, or setting up walking or other groups to provide friendship and support. These programs are strongly recommended based on their effectiveness in increasing physical activity (specifically the time spent exercising and frequency of exercise) and improving physical fitness among adults. Other positive effects include increases in muscular strength and flexibility and decreases in adiposity. No harms were reported and no qualifying economic information was identified from the literature.

#### **Individually adapted health behavior change programs: *Strongly Recommended***

Individually adapted health behavior change programs are tailored to the individual’s specific interests, preferences, and readiness for change. These programs teach participants the behavioral skills needed to incorporate moderate-intensity physical activity into daily routines. Behaviors may be planned (e.g., a daily scheduled walk) or unplanned (e.g., using the stairs when the opportunity arises). Many of these interventions use constructs from one or more established health behavior change models (e.g., Social Cognitive Theory [Bandura, 1986], the Health Belief Model [Rosenstock, 1990], or the Transtheoretical Model of Change [Prochaska & DiClemente, 1984]). All programs reviewed incorporated the following set of skills: (1) setting goals for physical activity and self-monitoring of progress toward goals; (2) building social support for new behavioral patterns; (3) behavioral reinforcement through self-reward and positive self-talk; (4) structured problem-solving geared to maintaining the behavior change; and (5) prevention of relapse into sedentary behaviors. All of the interventions evaluated were delivered either in group settings or by mail, telephone, or directed media.

Individually adapted health behavior change programs are strongly recommended based on their effectiveness in increasing physical activity and improving physical fitness among adults and children. Other positive effects include decreases in weight and percentage of body fat and increases in flexibility, strength, and cognitive effects related to physical activity. No harms were reported and no qualifying economic information was identified from the literature.

### ***Environmental and Policy Approaches***

Environmental and policy approaches are designed to help people adopt healthier behaviors. The creation of healthful physical and organizational environments is attempted through development of public policy that supports healthy practices, creation of supportive environments, and strengthening of community action. Correlational studies have shown that the availability of exercise equipment in the home and the proximity and density of places for physical activity within neighborhoods are associated with physical activity levels. Other neighborhood and environmental characteristics such as safety lighting, weather, and air pollution also affect physical activity levels, regardless of individual motivation and knowledge.

Interventions in this category are not aimed at individuals but rather affect entire populations by targeting physical and organizational structures. They are implemented and evaluated over a longer period of time than more individually oriented interventions. Interventions are conducted by traditional health professionals, but also involve many sectors that have not previously been associated with public health, such as community agencies and organizations, legislators, departments of transportation and planning, and the media. The goal is to create changes in social networks, organizational norms and policies, the physical environment, and laws. In addition to the intervention discussed here, reviews of two other interventions are underway: (1) urban form (design) and land-use planning strategies that lead to increased physical activity and (2) changes to transportation and travel policy and infrastructure that reduce dependence on motorized transport and increase physical activity.

### **Creation of or enhanced access to places for physical activity combined with informational outreach activities: *Strongly Recommended***

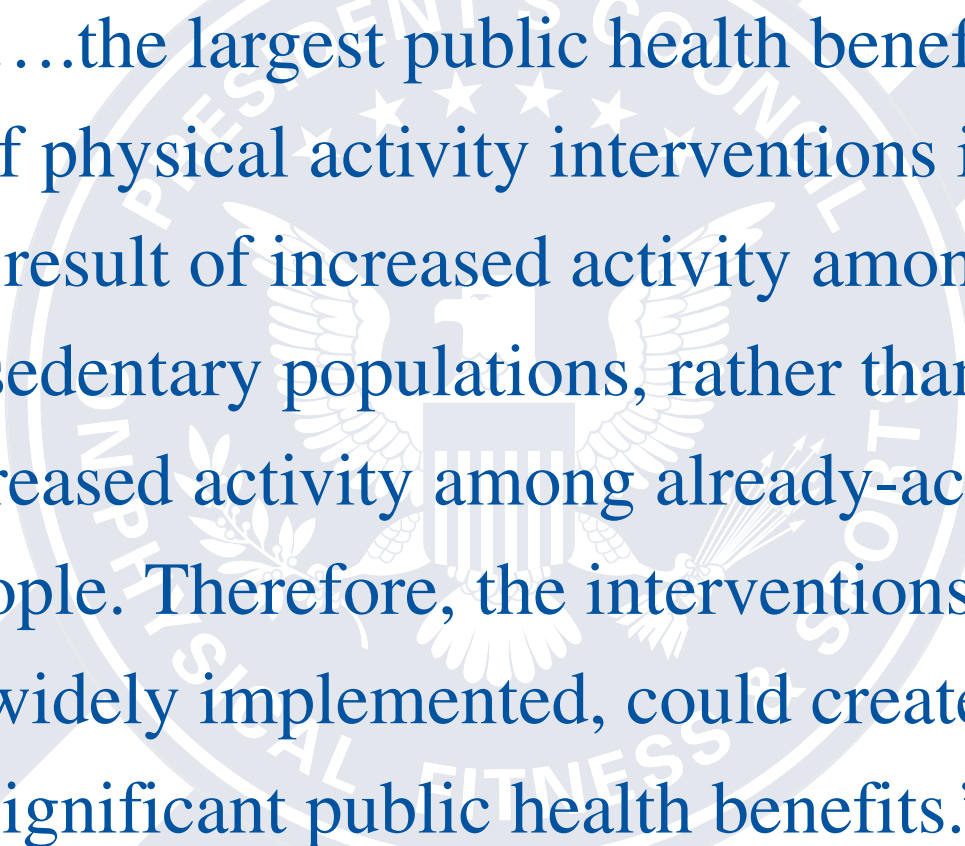
These interventions attempt to change the local environment to create opportunities for physical

activity. Access to places for physical activity can be created or enhanced both by building trails or facilities and by reducing barriers (e.g., reducing fees or changing operating hours of facilities). Many of these programs also provide training in use of equipment, other health education activities, and incentives such as risk factor screening and counseling. Several programs reviewed were conducted at worksites. These interventions are strongly recommended based on their effectiveness in increasing physical activity and improving physical fitness among adults. Other positive effects include decreases in adiposity. No harms were reported and no qualifying economic information was identified from the literature.

### ***Interpreting and Using the Recommendations***

Choosing interventions that are well-matched to local needs and capabilities, and then carefully implementing those interventions, are vital steps for increasing physical activity at the community level. In setting priorities for the selection of interventions to meet local objectives, recommendations and other evidence provided in the *Community Guide* should be considered along with such local information as resource availability, administrative structures and policies, and economic and social environments of organizations and practitioners. Taking into consideration local goals and resources, the use of strongly recommended and recommended interventions should be given priority for implementation. A finding of insufficient evidence of effectiveness should not be seen as evidence of ineffectiveness, but rather reflects the fact that the systematic review did not identify enough information for the Task Force to make a recommendation.

Although many of the recommended or strongly recommended interventions had small to moderate behavior change scores, readers should keep in mind that the interventions were targeted at populations of people rather than individuals and that such small changes occurring among populations can amount to significant changes in terms of public health. In addition, the largest public health benefit of physical activity interventions is a result of increased activity among sedentary populations, rather than increased activity among already-active people. Therefore, the interventions, if widely implemented, could create significant public health benefits.



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