



October 26, 2001 / Vol. 50 / No. RR-18



***Recommendations
and
Reports***

Increasing Physical Activity

**A Report on Recommendations of the Task
Force on Community Preventive Services**

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention (CDC)
Atlanta, GA 30333



The *MMWR* series of publications is published by the Epidemiology Program Office, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

SUGGESTED CITATION

Centers for Disease Control and Prevention. Increasing physical activity: a report on recommendations of the Task Force on Community Preventive Services. *MMWR* 2001;50(No. RR-18):[inclusive page numbers].

Centers for Disease Control and Prevention Jeffrey P. Koplan, M.D., M.P.H.
Director

The production of this report as an *MMWR* serial publication was coordinated in
Epidemiology Program Office Stephen B. Thacker, M.D, M.Sc.
Director

Office of Scientific and Health Communications John W. Ward, M.D.
Director
Editor, MMWR Series

Recommendations and Reports Suzanne M. Hewitt, M.P.A.
Managing Editor

C. Kay Smith-Akin, M.Ed.
Project Editor

Beverly J. Holland
Visual Information Specialist

Michele D. Renshaw
Erica R. Shaver
Information Technology Specialists

Contents

Background	1
Introduction	2
Methods	3
Results	6
Using the Recommendations in Communities	13
Additional Information Regarding the <i>Community Guide</i>	14
References	14

Task Force on Community Preventive Services* October 1, 2001

CHAIR

Jonathan E. Fielding, M.D., M.P.H., M.B.A.
Los Angeles Department of Health Services
Los Angeles, California

VICE-CHAIR

Patricia Dolan Mullen, Dr.P.H.
University of Texas-Houston
School of Public Health
Houston, Texas

MEMBERS

Ross C. Brownson, Ph.D.
St. Louis University School of Public Health
St. Louis, Missouri

Mindy Thompson Fullilove, M.D.
New York State Psychiatric Institute
and Columbia University
New York, New York

Fernando A. Guerra, M.D., M.P.H.
San Antonio Metropolitan Health District
San Antonio, Texas

Alan R. Hinman, M.D., M.P.H.
Task Force for Child Survival
and Development
Atlanta, Georgia

George J. Isham, M.D.
HealthPartners
Minneapolis, Minnesota

Garland H. Land, M.P.H.
Center for Health Information Management
and Epidemiology
Missouri Department of Health
Jefferson City, Missouri

Charles S. Mahan, M.D.
College of Public Health
University of South Florida
Tampa, Florida

Patricia A. Nolan, M.D., M.P.H.
Rhode Island Department of Health
Providence, Rhode Island

Susan C. Scrimshaw, Ph.D.
School of Public Health
University of Illinois
Chicago, Illinois

Steven M. Teutsch, M.D., M.P.H.
Merck & Company, Inc.
West Point, Pennsylvania

Robert S. Thompson, M.D.
Department of Preventive Care
Group Health Cooperative of Puget Sound
Seattle, Washington

CONSULTANTS

Robert S. Lawrence, M.D.
Bloomberg School of Public Health
Johns Hopkins University
Baltimore, Maryland

J. Michael McGinnis, M.D.
Robert Wood Johnson Foundation
Princeton, New Jersey

Lloyd F. Novick, M.D., M.P.H.
Onondaga County Department of Health
Syracuse, New York

*Patricia A. Buffler, Ph.D., M.P.H., University of California, Berkeley; Mary Jane England, M.D., Regis College, Weston, Massachusetts; Caswell A. Evans, D.D.S., M.P.H., Office of the U.S. Surgeon General, Rockville, Maryland; and David W. Fleming, M.D., CDC, Atlanta, Georgia, also served on the Task Force while the recommendations were being developed.

The following CDC staff members prepared this report:

Emily B. Kahn, Ph.D., M.P.H.
Leigh Taylor Ramsey, Ph.D.
*Division of Prevention Research and Analytic Methods
Epidemiology Program Office*

Gregory W. Heath, D.H.Sc., M.P.H.
Elizabeth H. Howze, Sc.D.
*Division of Nutrition and Physical Activity
National Center for Chronic Disease Prevention and Health Promotion*

in collaboration with

Kenneth E. Powell, M.D., M.P.H.
*Georgia Department of Human Resources
Atlanta, Georgia*

Elaine J. Stone, Ph.D., M.P.H.
*National Heart, Lung, and Blood Institute
National Institutes of Health
Bethesda, Maryland*

Ross C. Brownson, Ph.D.
*Task Force on Community Preventive Services
and
St. Louis University School of Public Health
St. Louis, Missouri*

Increasing Physical Activity

A Report on Recommendations of the Task Force on Community Preventive Services

Summary

The Task Force on Community Preventive Services (the Task Force) has conducted systematic reviews of community interventions to increase physical activity. The Task Force either strongly recommends or recommends six interventions: two informational approaches (i.e., communitywide campaigns and point-of-decision prompts to encourage use of stairs); three behavioral and social approaches (i.e., school-based physical education, social support interventions in community settings [e.g., setting up a buddy system or contracting with another person to complete specified levels of physical activity], and individually adapted health behavior change programs); and one intervention to increase physical activity by using environmental and policy approaches (i.e., creation of or enhanced access to places for physical activity, combined with informational outreach activities). The Task Force found insufficient evidence on which to base recommendations for classroom-based health education focused on information provision, behavioral skills, and social support interventions in family settings because of inconsistent findings; mass media campaigns, college-age physical education, and health education because of an insufficient number of studies; and classroom-based health education focusing on reducing television viewing and video game playing because of the lack of a demonstrated link between reduced time spent watching television or playing video games and increased physical activity. This report provides additional information regarding the recommendations, briefly describes how the reviews were conducted, and provides information that can help in applying the interventions locally.

BACKGROUND

Regular physical activity is associated with enhanced health and reduced risk for all-cause mortality (1–4). Beyond the effects on mortality, physical activity has multiple health benefits, including reducing the risk for cardiovascular disease, diabetes, obesity, selected cancers, and musculoskeletal conditions (5). Even with all the known benefits of regular physical activity, only 25% of adults in the United States report engaging in recommended physical activity levels (i.e., either 30 minutes of moderate-intensity activity on ≥ 5 days/week or 20 minutes of vigorous-intensity physical activity on ≥ 3 days/week); 29% report no leisure-time regular physical activity (6); and only 27% of students in grades 9–12 engage in moderate-intensity physical activity (7).

In the Healthy People 2010 national health objectives (7), physical activity is listed as a leading health indicator. Goals have been developed to improve levels of physical activity among adults, adolescents, and children and to reduce sedentary behavior

among adolescents (Table 1). By implementing interventions demonstrated to be effective in increasing physical activity, policy makers and public health providers can help their communities achieve these goals while using community resources efficiently. This report and other related publications provide guidance from the Task Force on Community Preventive Services (the Task Force) to personnel in state and local health departments, education agencies, universities, community coalitions, organizations that fund public health programs, health-care systems, and others who have interest in or responsibility for increasing physical activity.

INTRODUCTION

This report is one in a series of topics included in the *Guide to Community Preventive Services: Systematic Reviews and Evidence-Based Recommendations* (the *Community Guide*), a resource that will include multiple systematic reviews, each focusing on a preventive health topic. This report provides an overview of the process used by the Task Force to select and review evidence and summarize its recommendations con-

TABLE 1. Selected objectives for increasing physical activity — Healthy People 2010

Objective	Population	Percentage of total U.S. population	
		Baseline*	2010 objective
No leisure time physical activity	Adult	40% (1997)	Reduce to 20%
Moderate physical activity for ≥ 30 min regularly, preferably daily	Adult	15% (1997)	Increase to 30%
Moderate physical activity for ≥ 30 min on ≥ 5 of previous 7 days	Adolescents	27% (1999)	Increase to 35%
Vigorous physical activity that promotes development and maintenance of cardiorespiratory fitness on ≥ 3 days/week for ≥ 20 min/occasion	Adult	23% (1997)	Increase to 30%
Vigorous physical activity that promotes development and maintenance of cardiorespiratory fitness on ≥ 3 days/week for ≥ 20 min/occasion	Adolescents	65% (1999)	Increase to 85%
Daily school physical education	Adolescents	29% (1999)	Increase to 50%
View television for ≤ 2 hours on a school day	Adolescents	57% (1999)	Increase to 75%
Trips of ≤ 1 mile made by walking	Adults	17% (1995)	Increase to 25%
Trips to school of ≤ 1 mile made by walking	Children and adolescents	31% (1995)	Increase to 50%
Trips of ≤ 5 miles made by bicycling	Adults	0.6% (1995)	Increase to 2.0%
Trips to school of ≤ 2 miles made by bicycling	Children and adolescents	2.4% (1995)	Increase to 5.0%

Source: U.S. Department of Health and Human Services. Healthy people 2010. 2nd ed. With understanding and improving health and objectives for improving health. 2 vol. Washington, DC: U.S. Government Printing Office, 2000.

* Years indicate when the data were analyzed to establish baseline estimates. Certain estimates are age-adjusted to the year 2000 standard population.

cerning interventions to increase physical activity. A full report of the recommendations, additional evidence (i.e., discussions of applicability, additional benefits, potential harms, and existing barriers to implementation), costs, cost-benefits, and cost-effectiveness of the interventions (when available), and remaining research questions is planned for publication in the *American Journal of Preventive Medicine* in 2002.

The independent, nonfederal Task Force is developing the *Community Guide* with the support of the U.S. Department of Health and Human Services (DHHS) in collaboration with public and private partners. Although CDC provides staff support to the Task Force for development of the *Community Guide*, recommendations presented in this report were developed by the Task Force and are not necessarily the recommendations of CDC or DHHS.

METHODS

The *Community Guide's* methods for conducting systematic reviews and linking evidence to recommendations have been described elsewhere (8). In brief, for each *Community Guide* topic, a multidisciplinary team conducts a review by

- developing an approach to organizing, grouping, and selecting interventions;
- systematically searching for and retrieving evidence;
- assessing the quality of and summarizing the strength of the body of evidence of effectiveness;
- summarizing information regarding other evidence; and
- identifying and summarizing research gaps.

For physical activity, the development team focused on interventions to increase physical activity through informational, behavioral and social, and environmental and policy approaches.

The coordination and consultation teams* generated a comprehensive list of interventions. From this, a priority list of interventions for review was developed on the basis of a process of polling the coordination team, consultation team, and other physi-

*Members of the consultation team were Terry Bazzarre, Ph.D., Robert Wood Johnson Foundation, Princeton, New Jersey; Carl J. Caspersen, Ph.D., CDC, Atlanta, Georgia; Diana Cassady, Dr.P.H., California Department of Health Services, Sacramento, California; Carlos J. Crespo, Dr.P.H., State University of New York School of Medicine and Biomedical Sciences, Buffalo, New York; Steve Hooker, Ph.D., California Department of Health Services, Sacramento, California; Jonathan Fielding, M.D., M.P.H., M.B.A., University of California at Los Angeles School of Public Health, Los Angeles, California; Barbara Fraser, M.S., Nebraska Department of Health and Human Services, Lincoln, Nebraska; George J. Isham, M.D., HealthPartners, Bloomington, Minnesota; Delle B. Kelley, CDC, Atlanta, Georgia; Abby C. King, Ph.D., Stanford University School of Medicine, Stanford, California; I-Min Lee, M.D., Sc.D., Harvard Medical School/Brigham and Women's Hospital, Boston, Massachusetts; Denise G. Simons-Morton, M.D., Ph.D., National Institutes of Health, Bethesda, Maryland; Reba A. Norman, M.L.M., CDC, Atlanta, Georgia; Cindy Porteous, M.A., Indianapolis Park Foundation, Indianapolis, Indiana; Michael Pratt, M.D., M.P.H., CDC, Atlanta, Georgia; Thomas Schmid, Ph.D., CDC, Atlanta, Georgia; Christine G. Spain, M.A., the President's Council on Physical Fitness and Sports, Washington D.C.; Wendell C. Taylor, Ph.D., M.P.H., University of Texas Health Science Center at Houston, Houston, Texas.

cal activity specialists. Factors for consideration included their perception of the public health consequences (i.e., number of persons affected), the practicality of application, and the need of those promoting physical activity for information regarding each intervention. Time and resource constraints precluded review of certain interventions (e.g., interventions oriented toward health-care providers or structured exercise classes that were not part of multicomponent community-based interventions).

Interventions reviewed were either single-component (i.e., using only one element to achieve desired outcomes) or multicomponent (i.e., using more than one element). Studies were grouped on the basis of similarity of the intervention being evaluated. Certain studies provided evidence for ≥ 2 interventions. In these cases, the studies were reviewed for each applicable intervention. Studies and outcome measures were classified according to definitions developed as part of the review process. The nomenclature used in this review might differ from that used in the original studies.

To be included in the reviews of effectiveness, studies had to a) be primary investigations of interventions selected for evaluation rather than, for example, guidelines or reviews; b) be published in English during 1980–2000; c) be conducted in established market economies;* and d) compare outcomes among groups of persons exposed to the intervention with outcomes among groups of persons not exposed or less exposed to the intervention, whether the study design included a concurrent or before-and-after comparison.

Searches of seven computerized databases (i.e., MEDLINE,[®] SPORTDiscus, PsychInfo, TRIS Online [Transportation Research Information Services], Enviroline,[®] Sociological Abstracts, and Social SciSearch[®]) were conducted. Team members also reviewed reference lists and consulted with other physical activity specialists to identify relevant studies.

For each intervention reviewed, the team developed an analytic framework indicating possible causal links between the intervention under study and predefined outcomes of interest. To make its recommendations, the Task Force required that studies demonstrate improvements in physical activity behavior outcomes (e.g., increased time spent walking) or increases in selected fitness measures (e.g., increased aerobic capacity). These outcomes were selected because they are linked to improved health outcomes, including those that document the following principles:

- Regular physical activity or improved cardiovascular fitness reduces the risk of all-cause mortality (1–4) and increases years of healthy life.
- Physical activity or improved cardiovascular fitness reduces risk for morbidity resulting from cardiovascular and other chronic diseases (9).
- Physical activity does not need to be vigorous and sustained to achieve health benefits. Improved health can be attained through the accumulation of shorter bouts of moderate-intensity activity (9); however, greater levels of activity do produce greater health benefits.

*Established market economies as defined by the World Bank are Andorra, Australia, Austria, Belgium, Bermuda, Canada, Channel Islands, Denmark, Faeroe Islands, Finland, France, Former Federal Republic of Germany, Germany, Gibraltar, Greece, Greenland, Holy See, Iceland, Ireland, Isle of Man, Italy, Japan, Liechtenstein, Luxembourg, Monaco, the Netherlands, New Zealand, Norway, Portugal, San Marino, Spain, St. Pierre and Miquelon, Sweden, Switzerland, the United Kingdom, and the United States.

- Changes in physical activity behavior precede changes in fitness levels and can be more evident with short-term interventions; thus, behavior changes are an appropriate outcome.

Each included study was evaluated by using a standardized abstraction form and assessed for suitability of the study design and threats to validity (10). Studies were characterized as having good, fair, or limited execution on the basis of the number of threats to validity identified (8). Results for each outcome of interest were obtained from each study that met the minimum quality criteria. Net effects were derived when possible by calculating the difference between the changes observed in the intervention and comparison groups relative to the respective baseline levels.* The median was used to summarize a typical measure of effect across the body of evidence for each outcome of interest. For bodies of evidence consisting of ≥ 4 studies, an interquartile range is used to represent variability; otherwise, a simple range is reported. The strength of the body of evidence of effectiveness was characterized as strong, sufficient, or insufficient on the basis of the number of available studies, the suitability of study designs for evaluating effectiveness, the quality of execution of the studies as defined by the *Community Guide* (8), the consistency of the results, and the effect size.

The *Community Guide* uses systematic reviews to evaluate the evidence of intervention effectiveness, and the Task Force makes recommendations on the basis of the findings of those reviews (8). The strength of each recommendation is based on the evidence of effectiveness (e.g., an intervention is strongly recommended when strong evidence of effectiveness exists and recommended when sufficient evidence exists) (8). Other types of evidence can also affect a recommendation. For example, harms resulting from an intervention that outweigh benefits might lead to a recommendation that the intervention not be used even if it is effective in improving certain outcomes. Although the option exists, the Task Force has yet to use economic information to modify recommendations.

A finding of insufficient evidence of effectiveness should not be regarded as evidence of ineffectiveness. Insufficient evidence might be determined for any one of multiple reasons, alone or in combination, including an insufficient number of studies; the available studies had too many threats to validity because of their design, execution, or both; or the results of the studies conflict in a way that precludes a coherent summary of effectiveness. In all of those situations, a finding of insufficient evidence is

*When information for both intervention (I) and control groups (C) was provided for times before and after the intervention, net intervention effect was calculated as

$$\frac{I_{post} - I_{pre}}{I_{pre}} - \frac{C_{post} - C_{pre}}{C_{pre}}$$

If no concurrent comparison group was used, the net intervention effect was calculated as

$$\frac{I_{post} - I_{pre}}{I_{pre}}$$

If no baseline measurements were provided, the net intervention effect was calculated as

$$\frac{I_{post} - C_{post}}{C_{post}}$$

key to identifying areas of uncertainty and continuing research needs. In contrast, sufficient or strong evidence of ineffectiveness would lead to a recommendation that the intervention not be used.

RESULTS

Database searches and bibliographic reviews yielded 6,238 potentially relevant titles. After a review of the abstracts and consultation with physical activity specialists, 849 reports were retrieved. Of these, 253 were retained for full review. On the basis of limitations in execution or design or because they provided no additional information regarding studies that were already included, 159 of these were excluded and were not considered further. The remaining 94 studies were considered qualifying studies. The 11 Task Force recommendations in this report are based on the systematic review and evaluation of these qualifying studies, all of which had good or fair quality of execution.

The Task Force strongly recommended or recommended six interventions (Table 2), as follows:

- two informational approaches,
 - communitywide campaigns and
 - point-of-decision prompts to encourage using stairs;
- three behavioral and social approaches,
 - school-based physical education,
 - social support interventions in community settings (e.g., setting up a buddy system or contracting with another person to complete specified limits of physical activity), and
 - individually adapted health behavior change; and
- one environmental and policy approach,
 - creation of or enhanced access to places for physical activity combined with informational outreach activities.

The Task Force determined that evidence was insufficient to make recommendations for or against the following interventions for the reasons provided:

- classroom-based health education focusing on information provision, behavioral skills, and social support interventions in family settings because of inconsistent effect on physical activity behavior, aerobic fitness, or both;
- mass media campaigns, college-age physical education, and health education because of an insufficient number of studies; and
- classroom-based health education focusing on reducing television viewing and video game playing because of the lack of a demonstrated link between reduced time spent watching television or playing video games and increased physical activity.

In addition to these 11 interventions, reviews for 2 additional interventions to increase physical activity by using environmental and policy approaches (i.e., transporta-

TABLE 2. Recommendations from the Task Force on Community Preventive Services regarding use of selected interventions to increase physical activity behaviors and improve physical fitness

Interventions (Number of qualifying studies)	Task Force recommendation for use	Intervention description	Key findings
Informational approaches to increasing physical activity			
Communitywide campaigns (n = 10)	Strongly recommended	<p>Large-scale, high-intensity, community-wide campaigns with sustained high visibility. Messages regarding physical activity behavior are promoted through television, radio, newspaper columns and inserts, and trailers in movie theaters.</p> <p>Interventions were multicomponent and included support and self-help groups, physical activity counseling, risk factor screening and education, community events, and creation of walking trails. These interventions were evaluated as a combined package because separating out the incremental benefit of each component was impossible.</p>	<p>Effective in increasing measures of physical activity including percentage of persons active (6 studies), estimated energy expenditure (3 studies), time spent in physical activity (3 studies), and scaled activity scores (2 studies). Median net increase: 14.0%; interquartile range: from 3.5% to 21.4%; 10 studies.</p> <p>Median net increase in percentage of persons active: 4.2%; interquartile range: from -1.3% to 8.3%; 5 studies.</p>
Mass media campaigns (n = 3)	Insufficient evidence*	<p>Single-component interventions designed to increase knowledge, influence attitudes and beliefs, and change behavior. These communitywide mass media campaigns include paid advertisements and donated promotions. Messages are transmitted by using channels (e.g., newspapers, radio, television, and billboards) singly or in combination. They do not include other components (e.g., support groups, risk factor screening and education, and community events).</p>	<p>Insufficient evidence on the basis of a minimal number of studies, limitations in the design and execution of available studies, and inconsistent evidence of effectiveness in increasing physical activity behavior.</p>

* A determination that evidence is insufficient should not be regarded as evidence of ineffectiveness. A determination of insufficient evidence assists in identifying a) areas of uncertainty regarding an intervention's effectiveness and b) specific continuing research needs. In contrast, evidence of ineffectiveness leads to a recommendation that the intervention not be used.

TABLE 2. (Continued) Recommendations from the Task Force on Community Preventive Services regarding use of selected interventions to increase physical activity behaviors and improve physical fitness

Interventions (Number of qualifying studies)	Task Force recommendation for use	Intervention description	Key findings
Informational approaches to increasing physical activity (Continued)			
Point-of-decision prompts to encourage using stairs (n = 6) (This intervention is also included in environmental and policy approaches)	Recommended	Motivational signs placed close to elevators and escalators encouraging use of nearby stairs for health benefits or weight loss. All interventions evaluated were single-component.	Effective in increasing the percentage of persons taking stairs rather than elevators or escalators (median net increase: 53.9%; interquartile range: from 45.4% to 89.5%; 6 studies). Settings in these studies included train, subway, and bus stations; shopping malls; and university libraries. Effective among males and females, overweight or not. All studies excluded children and persons carrying items, children, or both. Evidence from 1 published study demonstrates that messages tailored to ethnic/racial groups might be more effective than generic messages.
Classroom-based health education focusing on information provision and behavioral skills (n = 6)	Insufficient evidence*	Health education for children in classroom settings. Primary focus on providing information regarding health risks and behavioral risk factors related to physical activity, nutrition, smoking, and alcohol and drug misuse. Methods were primarily didactic with selected behavioral instruction. Did not include interventions to change the way physical education (PE) classes were taught. In the majority of cases, comparison groups received standard health education curriculum.	Inconsistent evidence of effectiveness in increasing physical activity behavior.

* A determination that evidence is insufficient should not be regarded as evidence of ineffectiveness. A determination of insufficient evidence assists in identifying a) areas of uncertainty regarding an intervention's effectiveness and b) specific continuing research needs. In contrast, evidence of ineffectiveness leads to a recommendation that the intervention not be used.

TABLE 2. (Continued) Recommendations from the Task Force on Community Preventive Services regarding use of selected interventions to increase physical activity behaviors and improve physical fitness

Interventions (Number of qualifying studies)	Task Force recommendation for use	Intervention description	Key findings
Behavioral and social approaches to increasing physical activity			
Individually adapted health behavior change programs (n = 18)	Strongly recommended	Programs tailored to the person's readiness for change or specific interests. Designed to help participants incorporate physical activity into their daily routines by teaching them behavioral skills, specifically a) goal-setting and self-monitoring, b) building social support, c) behavioral reinforcement through self-reward and positive self-talk, d) structured problem-solving, and e) relapse prevention. All interventions delivered in group settings or by mail, telephone, or directed media.	Effective in increasing physical activity as measured by minutes spent in activity (median net increase: 35.4%; interquartile range: from 16.7% to 83.3%; 20 studies) and energy expenditure (median net increase: 64.3%; interquartile range: from 31.2% to 85.5%; 11 studies). Effective in increasing aerobic capacity (median net increase: 6.3%; interquartile range: from 5.1% to 9.8%; 13 studies).
School-based PE (n = 13)	Strongly recommended	Modified curricula and policies to increase amount of moderate or vigorous activity, increase the amount of time spent in PE class, or increase the amount of time students are active during PE class. Studies designed to modify the amount of physical activity during already scheduled PE. Interventions included changing the activities taught (e.g., substituting soccer for softball) or modifying the rules of the game so that students are more active (e.g., the entire team would run the bases together if the batter made a base hit). Certain interventions also included health education. In the majority of cases, comparison groups received standard health and PE curricula.	Effective in increasing physical activity behavior as measured by minutes per week spent in moderate to vigorous physical activity (MVPA) (4 studies), percentage of class time spent in MVPA (3 studies), and estimated energy expenditure (3 studies). Effective in increasing aerobic capacity (median net increase: 8.4%; interquartile range: from 3.1% to 19.0%; 14 studies). Four studies evaluated interventions in urban settings, and 4 studies evaluated interventions in rural settings. Eight studies evaluated interventions among elementary school students, and 2 studies evaluated interventions among high school students. Evidence of effect was stronger among elementary students than high school students.

* A determination that evidence is insufficient should not be regarded as evidence of ineffectiveness. A determination of insufficient evidence assists in identifying a) areas of uncertainty regarding an intervention's effectiveness and b) specific continuing research needs. In contrast, evidence of ineffectiveness leads to a recommendation that the intervention not be used.

TABLE 2. (Continued) Recommendations from the Task Force on Community Preventive Services regarding use of selected interventions to increase physical activity behaviors and improve physical fitness

Interventions (Number of qualifying studies)	Task Force recommendation for use	Intervention description	Key findings
Behavioral and social approaches to increasing physical activity (Continued)			
Classroom-based health education focusing on reducing television viewing and video game playing (n = 3)	Insufficient evidence*	Classroom-based health education classes that specifically emphasize decreasing the amount of time spent watching television and playing video games. Behavioral strategies included self-monitoring, limiting access, and budgeting time spent watching television and videos. Parental involvement was a prominent part of the strategy, and all households were given automatic television use monitors.	Inconsistent evidence for increases in physical activity behavior and aerobic capacity (3 studies). Consistent evidence for decreases in television viewing, video game playing, and other sedentary behaviors, as well as decreases in adiposity (3 studies). Evidence linking decrease in television viewing to increase in physical activity or fitness was insufficient to make a recommendation.
College-age PE and health education (n = 2)	Insufficient evidence*	Classes taught in university or college settings through physical education or wellness departments, usually for credit or as part of graduation requirements. Components include a) didactic or lecture session on fitness and health and b) laboratory-type activities where students engaged in physical activity (e.g., running a specified time or distance or accumulating activity points).	A minimal number of available studies of sufficient quality.
Social support interventions in community settings (n = 9)	Strongly recommended	Focus is 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 preexisting networks in a social setting outside the family (e.g., the workplace). Interventions involved setting up a buddy system, contracting with another person to complete specified levels of physical activity, or establishing walking groups or other groups to provide friendship and support.	Effective in increasing physical activity as measured by minutes spent in activity (median net increase: 19.6%; interquartile range: from 14.6% to 57.8%; 7 studies) and frequency of exercise episodes (median net increase: 44.1%; interquartile range: from 19.9% to 45.6%; 6 studies). Effective in increasing aerobic capacity (median net increase: 4.0%; interquartile range: from 3.31% to 6.1%; 5 studies).

* A determination that evidence is insufficient should not be regarded as evidence of ineffectiveness. A determination of insufficient evidence assists in identifying a) areas of uncertainty regarding an intervention's effectiveness and b) specific continuing research needs. In contrast, evidence of ineffectiveness leads to a recommendation that the intervention not be used.

TABLE 2. (Continued) Recommendations from the Task Force on Community Preventive Services regarding use of selected interventions to increase physical activity behaviors and improve physical fitness

Interventions (Number of qualifying studies)	Task Force recommendation for use	Intervention description	Key findings
Behavioral and social approaches to increasing physical activity (Continued)			
Social support interventions in family settings (n = 11)	Insufficient evidence*	Changes in social environment that support greater levels of physical activity. Interventions focused on children and families. Intervention components included behavioral contracts among family members, goal-setting and problem-solving, and other behavioral management techniques. They were usually delivered in joint or separate educational sessions or were adjunct components of school-based interventions, which included take-home packets, reward systems, and family record-keeping. Certain interventions also included family-oriented special events.	Inconsistent evidence of effectiveness in increasing physical activity behavior and aerobic capacity (11 studies). Certain studies indicated a more consistent effect on improving strength and flexibility, but recommendations were based on inconsistency of findings for physical activity and aerobic capacity.
Environmental and policy approaches to increasing physical activity			
Creation of or enhanced access to places for physical activity combined with informational outreach activities (n = 12)	Strongly recommended	Access to places for physical activity can be created or enhanced by building trails or facilities or by reducing barriers to such places (e.g., by reducing fees or providing time for use). Certain programs also provide training in using equipment and incentives (e.g., risk factor screening and counseling or other health education activities). Work site programs were also included.	Effective in increasing physical activity as measured by percentage of persons exercising on ≥ 3 days/week (median net increase: 25.6%; interquartile range: from 10.6% to 50.2%; 4 studies); self-reported exercise score (median net increase: 13.7%; interquartile range: from -1.8% to 69.6%; 6 studies); and energy expenditure (median net increase: 8.2%; interquartile range: from 5.1% to 16.4%; 3 studies). Effective in increasing aerobic capacity (median net increase: 5.1%; interquartile range: from 2.8% to 9.6%; 8 studies).

* A determination that evidence is insufficient should not be regarded as evidence of ineffectiveness. A determination of insufficient evidence assists in identifying a) areas of uncertainty regarding an intervention's effectiveness and b) specific continuing research needs. In contrast, evidence of ineffectiveness leads to a recommendation that the intervention not be used.

TABLE 2. (Continued) Recommendations from the Task Force on Community Preventive Services regarding use of selected interventions to increase physical activity behaviors and improve physical fitness

Interventions (Number of qualifying studies)	Task Force recommendation for use	Intervention description	Key findings
Environmental and policy approaches to increasing physical activity (Continued)			
Point-of-decision prompts to encourage use of stairs (n = 6)	See point-of-decision prompts in informational approaches to increasing physical activity		
Transportation policy and infrastructure changes to promote nonmotorized transit	Pending		
Urban planning approaches, including zoning and land use, neighborhood and street design, and cluster development	Pending		

* A determination that evidence is insufficient should not be regarded as evidence of ineffectiveness. A determination of insufficient evidence assists in identifying a) areas of uncertainty regarding an intervention's effectiveness and b) specific continuing research needs. In contrast, evidence of ineffectiveness leads to a recommendation that the intervention not be used.

tion policies and infrastructure changes to promote nonmotorized transit and urban planning approaches [e.g., zoning and land use]) are under way and will be included in a subsequent report. Summary tables of the reviews of economic evidence are available at <<http://www.thecommunityguide.org>> (accessed August 13, 2001).

USING THE RECOMMENDATIONS IN COMMUNITIES

Physical inactivity and dietary patterns are second only to tobacco use as a leading cause of preventable death in the United States (11). Physical inactivity is also a leading contributor to morbidity and disability. In the United States, the majority of persons do not achieve the recommended amounts of physical activity. Communities can help increase levels of physical activity among persons of all ages and thereby address this serious public health problem. The Task Force recommendations 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.

The Task Force recommendations can be used to support communitywide campaigns, point-of-decision prompts to encourage using stairs, school-based physical education, social support interventions in community settings, individually adapted health behavior change, and creation of or enhanced access to places for physical activity combined with informational outreach activities. Certain recommendations are multicomponent and involve different types of interventions. For example, communitywide campaigns usually involve a combination of mass media messages and other strategies, including community health fairs, work site risk factor screenings, and group educational sessions. Creating or enhancing access to places for physical activity (e.g., biking or walking trails) is also strongly recommended. In selecting and implementing interventions, communities are encouraged to develop comprehensive programs that include activities suitable for their local resources, population characteristics, and settings.

Choosing interventions that are well-matched to local needs and capabilities, and then carefully implementing those interventions, are vital steps for increasing physical activity. In setting priorities for selecting interventions to meet local objectives, recommendations and other evidence provided in the *Community Guide* should be considered in combination with local information, including resource availability, administrative structures, and economic and social environments of organizations and practitioners.

Information regarding applicability can be used to assess the extent to which the intervention might be useful in a particular setting or for a population. Although sparse, economic information, to be provided in the full report in 2002, might be useful in identifying intervention resource requirements and interventions that meet public health goals more efficiently than other available options. After considering local goals and resources, using strongly recommended or recommended interventions should be given implementation priority.

Certain recommended or strongly recommended interventions had minimal to moderate (although consistent) behavior change scores. Readers should remember that the interventions were targeted at groups of persons rather than single persons. Because the largest public health benefit in physical activity interventions comes from

having populations of sedentary persons become more active rather than already active persons becoming more active, the interventions, if widely implemented, could create substantial public health benefits.

ADDITIONAL INFORMATION REGARDING THE *COMMUNITY GUIDE*

Community Guide topics are prepared and released as each is completed. The findings from systematic reviews concerning vaccine-preventable diseases, tobacco use prevention and reduction, motor-vehicle occupant injury, and diabetes have already been published. A compilation of systematic reviews will be published in book form. Additional information regarding the Task Force, the *Community Guide*, and a list of published articles is available on the Internet at <<http://www.thecommunityguide.org>> (accessed August 13, 2001).

References

1. Lee IM, Hsieh CC, Paffenbarger RS Jr. Exercise intensity and longevity in men: the Harvard Alumni Health Study. *JAMA* 1995;273:1179–84.
2. Paffenbarger RS Jr, Hyde RT, Wing AL, Lee IM, Jung DL, Kampert JB. Association of changes in physical-activity level and other lifestyle characteristics with mortality among men. *N Engl J Med* 1993;328:538–45.
3. Paffenbarger RS Jr, Kampert JB, Lee IM, Hyde RT, Leung RW, Wing AL. Changes in physical activity and other lifeway patterns influencing longevity. *Med Sci Sports Exerc* 1994;26:857–65.
4. Blair SN, Kohl HW 3rd, Barlow CE, Paffenbarger RS Jr, Gibbons LW, Macera CA. Changes in physical fitness and all-cause mortality: a prospective study of healthy and unhealthy men. *JAMA* 1995;273:1093–8.
5. Bouchard C, Shephard RJ, Stevens T, eds. Physical activity, fitness, and health: international proceedings and consensus statement. In: *Proceedings of the 1992 International Conference on Physical Activity, Fitness, and Health*. Champaign, IL: Human Kinetics Publisher, 1994.
6. CDC. Physical activity trends—United States, 1990–1998. *MMWR* 2001;50:166–9.
7. US Department of Health and Human Services. *Healthy people 2010* (conference ed in 2 vols) Washington, DC: US Department of Health and Human Services, 2000.
8. Briss PA, Zaza S, Pappaioanou M, et al., and the Task Force on Community Preventive Services. Developing an evidence-based *Guide to Community Preventive Services*—methods. *Am J Prev Med* 2000;18(1 Suppl):35–43.
9. US Department of Health and Human Services. *Physical activity and health: a report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for Chronic Disease Prevention and Health Promotion, 1996.
10. Zaza S, Wright-De Agüero LK, Briss PA, et al. and the Task Force on Community Preventive Services. Data collection instrument and procedure for systematic reviews in the *Guide to Community Preventive Services*. *Am J Prev Med* 2000;18(1 Suppl):44–74.
11. McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA* 1993;270:2207–12.

All *MMWR* references are available on the Internet at <<http://www.cdc.gov/mmwr/>>. Use the search function to find specific articles.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites.

MMWR

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format and on a paid subscription basis for paper copy. To receive an electronic copy on Friday of each week, send an e-mail message to listserv@listserv.cdc.gov. The body content should read *SUBscribe mmwr-toc*. Electronic copy also is available from CDC's World-Wide Web server at <http://www.cdc.gov/mmwr/> or from CDC's file transfer protocol server at <ftp://ftp.cdc.gov/pub/Publications/mmwr/>. To subscribe for paper copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800.

Data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the following Friday. Address inquiries about the *MMWR* Series, including material to be considered for publication, to: Editor, *MMWR* Series, Mailstop C-08, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (888) 232-3228.

All material in the *MMWR* Series is in the public domain and may be used and reprinted without permission; citation as to source, however, is appreciated.