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Public Health Strategies for Preventing and Controlling Overweight and Obesity in School and Worksite Settings

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

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Public Health Strategies for Preventing and Controlling Overweight and Obesity in School and Worksite Settings

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

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Summary

Reducing morbidity and mortality related to overweight and obesity is a public health priority. Various interventions in school and worksite settings aim to maintain or achieve healthy weight. To identify effective strategies for weight control that can be implemented in these settings, the Task Force on Community Preventive Services (Task Force) has conducted systematic reviews of the evidence on nutrition, physical activity, combinations of these interventions, and other behavioral interventions (e.g., cognitive techniques such as self-awareness and cue recognition).

Task Force recommendations are based on evidence of effectiveness, which is defined in this report as achieving a mean weight loss of ≥ 4 pounds, measured ≥ 6 months after initiation of the intervention program. The Task Force recommends multicomponent interventions that include nutrition and physical activity (including strategies such as providing nutrition education or dietary prescription, physical activity prescription or group activity, and behavioral skills development and training) to control overweight and obesity among adults in worksite settings. The Task Force determined that insufficient evidence existed to determine the effectiveness of combination nutrition and physical activity interventions to prevent or reduce overweight and obesity in school settings because of the limited number of qualifying studies reporting noncomparable outcomes. This report describes the methods used in these systematic reviews; provides additional information regarding these recommendations; and cites sources for full reviews containing details regarding applicability, other benefits and harms, barriers to implementation, research gaps, and economic data (when available) regarding interventions.

Background

On the basis of conservative estimates, 65% of adults are overweight or obese (1), a relative increase of 61% during 1991–2000 (2). Despite a conservative definition of overweight in children based on the 95th percentile for age- and

sex-adjusted body mass index (BMI), a measure intended to be more specific than sensitive, $\geq 16\%$ of children aged 6–19 years in the U.S. population are considered overweight (1–3). Overall, the prevalence of childhood overweight has tripled over the previous 2 decades (4), and the prevalence of overweight among certain ethnic minority groups is even higher. Approximately 22% of Mexican American children aged 6–19 years are overweight, and for non-Hispanic black children aged 6–19 years, approximately 21% are overweight (3). A study of a limited number of American Indian children indicated that 30% were overweight (5).

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Obesity is associated with increased risk for cardiovascular disease; diabetes; certain forms of cancer, depression, discrimination and weight-related bias; and various other physical, psychological, and social morbidities (6–9). A linear relation was reported between BMI and mortality risk based on an observational cohort of approximately 1 million persons followed for 14 years (10). In the Nurses' Health Study, a linear relation was reported between BMI and mortality risk among women; the lowest risk for all-cause mortality occurred among women with a BMI 15% below average with stable weight over time (11). An analysis of National Health and Nutrition Examination Survey (NHANES) data (12) indicated that, relative to being normal weight (BMI 18.5 to <25.0), being obese (BMI ≥ 30.0) resulted in excess deaths in the United States in 2000, primarily among persons with a BMI ≥ 35.0 . The same analysis reported excess deaths among underweight (BMI <18.5) persons, but overweight (BMI 25.0 to <30.0) was not associated with excess mortality (12).

Healthy People 2010 objectives pertinent to overweight and obesity prevention and control have been documented (Table 1) (13). Interventions in school and worksite settings to reduce overweight and obesity might affect multiple objectives.

School and worksite settings are both locations where children or adults spend substantial time, and these settings provide ample opportunities for nutrition and physical activity interventions. A substantial proportion of daily calories are consumed in these settings, and both sites frequently have existing facilities that can support regular physical activity among students and employees, potentially reducing obesity and overweight in addition to providing other benefits.

School sites offer multiple advantages for implementation of efforts to prevent and control overweight by affording continuous and intensive contact with the majority of children

and adolescents in the United States (14). School programs can capitalize on existing (although often constrained) resources and tools to develop student knowledge, attitudes, and skills essential for healthy lifestyles. School curricula, personnel, policy interventions, and changes in the physical environment (e.g., making healthier choices available in cafeterias and vending machines) have the potential to promote healthful dietary practices and regular physical activity (15). *Guide to Community Preventive Services (Community Guide)* recommendations for increasing physical activity include recommendations applicable to schools (16).

Worksites provide access to 65% of the population aged ≥ 16 years (17), which makes them ideal settings to implement strategies for reducing the prevalence and burden of overweight and obesity. Similar to schools, worksites allow access to employees in a controlled environment through existing channels of communication and social support networks. Opportunities for environmental and policy change to foster healthy dietary practices and increase activity (18) are readily available. For example, worksites can provide easier access to stairwells than to elevators and adopt policies that provide employees with exercise breaks during working hours. The incentive for ongoing support of weight maintenance and other health promoting activities in worksites is substantial, given that such programs might translate into cost savings for employers (19,20).

Introduction

The Task Force on Community Preventive Services (Task Force) leads work on the *Community Guide*, a resource that includes multiple systematic reviews, each focusing on a public health topic. *Community Guide* development is supported by 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*, the recommendations presented in this report were developed by the Task Force and are not necessarily the recommendations of DHHS or CDC.

This report is one in the series of systematic reviews developed for the *Community Guide*; it provides an overview of the process used by the Task Force to select and review evidence and summarizes recommendations regarding interventions to prevent or control overweight and obesity. This report provides guidance to state and local health departments, state and local education agencies and school systems, government policymakers, employers, and others interested in or responsible for reducing the prevalence of overweight and obesity. A full report on the recommendations (including discussions of applicability; additional benefits; potential harms; existing

TABLE 1. *Healthy People 2010* goals and objectives related to overweight and obesity*

Objective	Baseline	Target
19-1: Increase the proportion of adults that are at a healthy weight [§]	42% [†]	60%
19-2: Reduce the proportion of adults who are obese [¶]	23% [†]	15%
19-3: Reduce the proportion of children and adolescents who are overweight or obese**	11%	5%

* Goal: Promote health and reduce chronic disease associated with diet and weight. **Source:** 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.

[†] Estimates are age-adjusted to the 2000 U.S. standard population.

[§] A body mass index (BMI) ≥ 18.5 and <25.0.

[¶] Adults having a BMI ≥ 30.0 .

** Overweight or obese children and adolescents are at or above the sex and age-specific 95th percentile of BMI, based on the revised CDC growth charts for the United States (<http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>).

barriers to implementation; costs, cost benefit, and cost effectiveness of the interventions; and remaining research questions) and additional information concerning the review findings are scheduled for publication on the *Community Guide* website (<http://www.thecommunityguide.org>). The report will include interventions in community and health-care system settings and those in school and worksite settings.

The review of the evidence on effectiveness of community approaches to reducing overweight and obesity in school and worksite settings complements reviews by the U.S. Preventive Services Task Force and the *Guide to Clinical Preventive Services (Clinical Guide)*. The *Clinical Guide* provides information on 1) screening and interventions for childhood overweight (21), 2) effectiveness of routine counseling to promote physical activity in primary care settings (22), 3) behavioral counseling to promote a healthy diet (23), and 4) screening and counseling of adults for obesity and overweight (24). Detailed information regarding the *Clinical Guide* is available (<http://www.ahrq.gov>). Both the *Clinical Guide* and the *Community Guide* present evidence on effectiveness for options for weight control across primary care and community settings. Additional information regarding the Task Force and the *Community Guide* and links to published reports are available (<http://www.thecommunityguide.org>).

Methods

The methods used by the *Community Guide* for conducting systematic reviews and linking evidence to recommendations have been described (25). As with each review, a multidisciplinary systematic review development team (review team), with support from a consultation team,[†] conducts a review consisting of the following steps:

- developing a conceptual approach to organize, group, and select the interventions;
- systematically searching for and retrieving evidence;
- assessing the quality of and summarizing the strength of evidence of effectiveness;

- assessing cost and cost-effectiveness data (when available) for recommended interventions;
- identifying issues of applicability and barriers to implementation (when available) for recommended interventions;
- summarizing information regarding other benefits or harms potentially resulting from the intervention; and
- identifying and summarizing research gaps.

For each setting in which a review of interventions to prevent overweight and obesity was completed, the review team developed an analytic framework to indicate the relation of interventions to relevant intermediate outcomes (e.g., knowledge, attitudes, and beliefs), diet- and physical activity-related behaviors, and the relations between improvements in dietary consumption and physical activity and weight control. In this review, the review team considered only weight-related variables as recommendation outcome measures, indicating intermediate outcomes (e.g., change in diet or physical activity levels) in the analytic framework for their explicative value. In the school setting, determination of a meaningful weight change in studies of children was assessed based on the intervention goal and study population characteristics on a study-by-study basis. Among adults in worksite settings, a 4-pound minimum weight loss standard was used as a measure of success, based on expert consensus and supporting studies indicating that modest weight loss is associated with improvements in lipid profiles (26), metabolic syndrome (27), and hypertension (28) and might be of particular benefit to persons with visceral overweight or obesity (i.e., deposition of fat in vital organs, especially the liver).

To be considered for inclusion in the reviews of effectiveness, studies had to include multiple characteristics.

- Description of a primary intervention with participants recruited or enrolled from the school (including preschool) or worksite setting.
- Publication in English during 1966–2001.
- Interventions related to diet, physical activity, or combinations thereof, with sufficient detail to meet *Community Guide* standards.
- Common weight-related measures as outcomes (e.g., BMI, body weight, and anthropometric measures).
- Control measurement between or within groups (either with baseline and follow-up [before and after] measurements or by using control groups).
- Subjects followed for at least 6 months from the beginning of the intervention to assess weight loss maintenance (Box).

To identify additional studies, manual searches were performed of reference lists from identified reports, extant systematic reviews (certain reviews available through the Cochrane

[†] The review team directs the review, in conjunction with a group of consultants. For these reviews, the members of the review team were David L. Katz, MD, Meghan O'Connell, MPH, Ming-Chin Yeh, PhD, Haq Nawaz, MD, Yale Prevention Research Center, New Haven, Connecticut; Laurie M. Anderson, PhD, Coordinating Center for Health Information and Services, CDC, Atlanta, Georgia. Consultants were Kelly Brownell, PhD, Department of Psychology, Yale University, New Haven, Connecticut; Michael Bracken, PhD, Yale University School of Medicine, New Haven, Connecticut; Deanna Hoelscher, PhD, University of Texas–Houston School of Public Health, Texas; Anjali Jain, MD, Department of Pediatrics, University of Chicago Children's Hospital, Illinois; Neal Kohatsu, MD, California Department of Public Health, Sacramento; Nancy Berger, MPH, Connecticut Department of Public Health, Hartford.

BOX. Computerized databases used to identify studies of interventions

- Medline[®] (National Library of Medicine, National Institute of Health, Bethesda, Maryland) — <http://www.ncbi.nlm.nih.gov/PubMed>
- Embase — <http://www.ovid.com/site/catalog/DataBase/903.jsp>
- HealthStar — <http://www.nlm.nih.gov/services/igm.html>
- PsycINFO — <http://www.dialogclassic.com> (requires ID/Password account) <http://www.apa.org/psycinfo/products/psycinfo.html>
- Cochrane Library — <http://www.cochrane.org/reviews/clibintro.htm#databases>

Library), review reports, and reports written by researchers in the field.

Each candidate study was evaluated by two independent reviewers by using a standardized abstraction form and was assessed for suitability of study design and threats to validity. Study designs were characterized as greatest, moderate, or least suitable, based on the number of quality limitations, and study execution was characterized as good, fair, or limited, based on the number of threats to validity (29).

Effect sizes for each outcome of interest were obtained from all studies meeting the minimum quality criteria (qualifying studies). Net effects were derived, when appropriate, by calculating the difference between the changes observed in the intervention and comparison groups relative to the respective baseline levels. Individual effect sizes were calculated as follows:

- For studies with before-and-after measurements of weight in intervention and concurrent comparison groups, effect size = $\Delta I - \Delta C$
- For studies with post measurements of weight only in intervention and comparison groups, effect size = $I_{\text{post}} - C_{\text{post}}$
where I_{post} = intervention group post measurement and C_{post} = the control group post measurement.
- For studies with before-and-after measurements of weight, with no comparison group, effect size = $I_{\text{post}} - I_{\text{pre}}$,
where I_{post} = the intervention group post measurement and I_{pre} = the intervention group baseline measure.
- Where study outcomes were reported in comparable metrics (e.g., BMI or weight in pounds), effect sizes were plotted on graphs and pooled effects were calculated. Pooled effect size = $\Sigma(\text{individual effect size} \cdot n) / N$, where n = sample size of individual study and N = sum of n of all individual studies included in the analysis.

The Task Force uses systematic reviews to evaluate the evidence of intervention effectiveness and makes recommendations based on the findings of the reviews. The strength of each recommendation is based on the evidence of effectiveness (i.e., an intervention is recommended on the basis of either strong or sufficient evidence of effectiveness) (25). 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.

A finding of insufficient evidence to determine effectiveness means that the review team was not able to determine whether the intervention was effective. This finding is critical to identify areas of uncertainty and continuing research needs. In contrast, sufficient or strong evidence of ineffectiveness would lead to a recommendation against use of the intervention.

Results

The Task Force findings in this report were based on the systematic review and evaluation of qualifying studies, all of which had good or fair quality of execution. In the worksite studies, effectiveness was defined as achievement of a mean weight loss of ≥ 4 pounds across studies (pooled effect size) measured at ≥ 6 months into the intervention program. Among growing children in school settings, no single standard for meaningful weight loss exists because a successful intervention might be one that prevents weight gain, allowing children to normalize their BMI by growing into their weight (i.e., getting taller without adding weight). Therefore, determination of a meaningful weight change in studies of children was assessed in relation to the intervention goal and study population characteristics on a study-by-study basis.

Interventions for Preventing and Controlling Overweight and Obesity in School Settings

From the initial search for interventions in the school setting, 44 studies were considered (30–73); of these studies, six did not meet inclusion criteria (31,46,47,52,67,71). The remaining 38 candidate studies were retained for full review; of these studies, 28 (30,33–43,45,49,51,54,56,58–60,62,64,66,68–70,72,73) were excluded on the basis of methodologic limitations. The remaining 10 studies were considered qualifying studies and form the basis of the Task Force findings reported (32,44,48,50,53,55,57,61,63,65).

The Task Force determined that insufficient evidence existed to determine the effectiveness of all reviewed

interventions in school settings among children and adolescents: combinations of nutrition and physical activity, physical activity interventions alone, nutrition interventions alone, and behavioral interventions with or without a nutrition or physical activity focus. The most frequent reasons for insufficient evidence were that no studies or only a limited number of studies with comparable outcomes were identified (Table 2). No studies of interventions conducted among college students were identified (Table 2).

Interventions for Preventing and Controlling Overweight and Obesity in Worksite Settings

From the initial search, 35 studies of interventions in the worksite setting were considered (74–108); four studies did not meet inclusion criteria (79,80,91,99); and the remaining 31 candidate studies were retained for full review. Of these studies, 11 were excluded because of quality limitations (75,76,78,82,86,93,94,96,104,105,107); the remaining 20 were considered qualifying studies (74,77,81,83–85,87–90,92,95,97,98,100–103,106,108).

On the basis of sufficient evidence from seven studies (74,81,85,95,101,106,108) with comparable outcomes, the Task Force recommended worksite interventions in which nutrition and physical activity to control overweight or obesity were combined. Frequently, employed intervention strategies were didactic nutrition education (81,85,95,101,106,108), aerobic or strength training exercise prescription (74,81,85,95), training in behavioral techniques (81,85,95,106,108), providing self-directed materials (74,85,95), specific dietary prescription (74), and group or supervised exercise (101,106,108).

Two studies that met the quality criteria for a *Community Guide* economic review provided cost-effectiveness analyses of worksite interventions to prevent and control overweight and obesity (80,109). On the basis of the findings of these two studies, the cost is <\$1 per employee per year to engage 1% of the population at risk in onsite programs for weight loss.

The Task Force determined that insufficient evidence existed to determine the effectiveness of single-component worksite interventions focused on nutrition, physical activity, or other behavioral intervention among adults. This determination was made because of a limited number of studies with comparable outcomes (Table 2). Summary tables of studies in these reviews are scheduled to be available on the *Community Guide* website (<http://www.thecommunityguide.org/obese>) in 2006.

Conclusions and Use of Recommendations

Employing components of each category of intervention evaluated (physical activity, nutrition, combinations of the two, and other behavioral interventions) might contribute to reducing the prevalence of overweight and obesity and subsequent obesity-related morbidity and mortality. Because the multiple components of the studies on which recommendations have been based could not be evaluated separately, the effects of specific intervention components could not be determined.

School-Based Interventions

In the literature search for the review of school-based interventions, an insufficient number of studies (according to *Community Guide* rules of evidence) were identified that had methodologic quality on which to base recommendations. The literature used for this review included studies initiated before the age- and sex-adjusted BMI standards for children (currently the gold standard) were established in the late 1990s. In addition, in these qualifying studies, various outcome measures were used; therefore, comparisons across studies were hampered.

Barriers to school-based overweight and obesity intervention research pose formidable challenges. The stigma attached to overweight makes the assessment of weight among children a difficult concern for school officials and parents and raises ethical concerns regarding the potential stigmatization of children.

When planning future interventions aimed at weight control outcomes, considering interventions that produced modest but positive changes in weight-related measures might be useful. These interventions are 1) including nutrition and physical activity components in combination (32,44,48,53,61,65,67); 2) allotting additional time to physical activity during the school day (32,50,57); 3) including noncompetitive sports (e.g., dance) (50); and 4) reducing sedentary activities, especially television viewing (44,55).

Internet use and playing video games seem conceptually similar and worth addressing in future evaluations. Further research regarding the value of college- and university-based interventions, involving parents in school-based interventions, and the effect of school environmental and policy changes on weight-related outcomes are all warranted.

TABLE 2. Recommendations from the Task Force on Community Preventive Services on school and worksite interventions to prevent and control overweight and obesity

Target population/ Intervention type	Task Force findings	Intervention description	Results
School settings			
Aged ≤ 12 yrs			
Combination intervention with nutrition, physical activity, and behavioral components.	Insufficient evidence to determine effectiveness.*	The majority of interventions involved teacher-led, classroom-based education to increase fitness and improve nutrition by using activities designed to be fun. In the majority of studies, teachers were trained to implement the program, enhance existing physical education curricula, and describe a behavioral component (e.g., by using modeling of desired behaviors, behavioral rehearsal, and goal specification). One study incorporated lessons into existing classroom curriculum; one involved reducing television viewing; one included food service modification; and one was reinforced by community activities (e.g., health fairs). Parents were involved in varying degrees.	Six qualifying studies reported dissimilar outcomes (e.g., BMI, [†] skinfold thickness, and weight change in pounds). One study reported statistically significant weight loss.
Physical activity interventions.	Insufficient evidence to determine effectiveness.	Interventions included increasing physical activity in school and outside of school. Programs were led by trained classroom and physical education teachers. Activities included walking, exercise classes, and aerobic dance.	Two qualifying studies did not report comparable outcomes. Effects on weight status were not statistically significant.
Nonnutrition or physical activity behavioral intervention.	Insufficient evidence to determine effectiveness.	An 18-lesson, 6-month classroom curriculum to reduce television, videotape, and video game use. Teachers received training. Students were challenged to refrain from watching television for 10 days and then to limit viewing to 7 hours per week. Newsletters were sent to parents to help students stay within budgeted time, and each household received an electronic television time manager to monitor each member's television viewing. Parents, children, and teachers were unaware that the primary outcome was change in adiposity.	One qualifying study demonstrated limited decreases in weight.
Aged 13–17 yrs			
Combination intervention with nutrition, physical activity, and behavioral components.	Insufficient evidence to determine effectiveness.	Classroom curriculum focused on nutrition, physical activity, and smoking prevention. A guide book was provided for the teachers; a students' workbook and a health passport were used to record health-related measurements. Students' families were visited at home by the health team at least twice during the academic year.	One qualifying study demonstrated limited decreases in BMI.
Physical activity interventions.	Insufficient evidence to determine effectiveness.	NA [§]	No qualifying studies were identified.
Nonnutrition or physical activity behavioral intervention.	Insufficient evidence to determine effectiveness.	NA [§]	No qualifying studies were identified.
Aged ≤ 17 yrs			
Nutrition interventions.	Insufficient evidence to determine effectiveness.	NA [§]	No qualifying studies were identified.
Aged ≥ 18 yrs			
All interventions.	Insufficient evidence to determine effectiveness.	NA [§]	No qualifying studies were identified.

TABLE 2. (Continued) Recommendations from the Task Force on Community Preventive Services on school and worksite interventions to prevent and control overweight and obesity

Target population/ Intervention type	Task Force findings	Intervention description	Results
Worksite settings			
Combination nutrition and physical activity interventions.	Recommended. Sufficient evidence of effectiveness. [¶]	Interventions included various combinations of nutrition education, specific dietary prescription, aerobic and strength training prescription, behavioral techniques for skills development, group support and counseling, financial incentives, on-site exercise facilities, or use of self-help resources. Other less common intervention components incorporated into successful programs included general health education and health-risk assessment, explicit focus on overall lifestyle change, use of nutritional software for education or self monitoring, group exercise, and home-based exercise.	Seven qualifying studies provided adequate data for analysis. Each study demonstrated results in the desired direction. Mean weight loss was 4.4–26.4 pounds. Pooled effect size was a weight loss of 4.9 pounds. Results of intervention studies with longer-term follow-up suggest that weight regain is common and might be expected to have occurred in the studies with shorter follow-up. Preponderance of data that could not be pooled because of inconsistent outcome measures consistently demonstrated desirable intervention effects on weight status.
Other: behavioral intervention without nutrition and/or physical activity prescription/focus.	Insufficient evidence to determine effectiveness because of a limited number of studies.	Interventions did not have specific focus on nutrition or physical activity and included health-risk assessment with feedback and education, behavioral counseling, and incentives. In one study, wellness counselors delivered a seven-stage program to establish trust in the counselor, build strategies, increase successes, process ambivalence, deal with resistance, negotiate agreement, and deal with denial.	Three qualifying studies indicated that desirable change in weight status was reported in two studies.
Physical activity interventions.	Insufficient evidence to determine effectiveness.	Interventions included combinations of moderate intensity home-based exercise prescription or supervised classes or training for at least 20 minutes, 3 times per week; general health education classes for increased awareness of health concerns; provision of an on-site fitness facility; self monitoring with daily activity logs; and interaction with wellness counselors.	Four qualifying studies measured change in weight; pounds were used as the unit of measure. Each study demonstrated desirable results. Weight loss was 3.3–4.7 pounds. Pooled effect size was a weight loss of 4.4 pounds. One additional study also indicated desirable effects on weight status.
Nutrition interventions.	Insufficient evidence to determine effectiveness.	In one intervention, nutritional software programs were used to educate and track dietary intake. The other study compared a reduced-fat and -sugar diet with an increased complex carbohydrate diet and with a reduced-fat only diet.	Two qualifying studies reported desirable effects on weight status but did not report comparable outcome measures.

* Insufficient evidence to determine effectiveness means that a determination could not be made as to whether the intervention works. A determination of insufficient evidence assists in identifying 1) areas of uncertainty regarding an intervention's effectiveness and 2) specific continuing research needs.

† Body mass index.

§ Not applicable.

¶ Sufficient evidence of effectiveness is determined according to criteria in the *Community Guide* rules of evidence. **Source:** Briss PA, Zaza S, Pappaioanou M, et al. Developing an evidence-based Guide to Community Preventive Services—methods: The Task Force on Community Preventive Services. *Am J Prev Med* 2000;18(Suppl 1):35–43.

Worksite-Based Interventions

The Task Force recommends combination nutrition and physical activity programs. The literature supports an emphasis on interventions combining instruction in healthier eating with a structured approach to increasing physical activity in the worksite setting. Evidence of effectiveness of workplace efforts to control overweight and obesity might encourage employers to provide such programs. Program cost-effectiveness data might also increase employer interest. Reviews of cost effectiveness of these interventions to reduce overweight and obesity are available on the *Community Guide* website (<http://www.thecommunityguide.org/obese>).

Studies of primary obesity prevention are lacking. Research needs to be conducted to determine the effect of weight-related outcomes of worksite-based environmental change (e.g., making stairs more accessible and modifying the nutritional environment by providing easy, ubiquitous access to affordable, healthful foods). Creative worksite interventions coupled with other interventions (e.g., weight loss programs in community supermarkets or recreational facilities and providing pedestrian or bicycling alternatives to driving) warrant study. Worksite interventions directed toward adolescents alone or in concert with adults, in worksites where both can be targeted (e.g., supermarkets and other retail outlets), also warrant study.

The definition of effectiveness was based exclusively on achievement of weight loss; therefore, certain studies in the review might have resulted in positive change in other outcomes (e.g., dietary intake and exercise) not included in this report. A 4-pound minimum weight loss standard was used as a measure of success; however, evidence is lacking to determine categorically how much weight loss over what period yields the greatest health benefit. Finally, given the frequency of weight rebound after short-term weight loss, additional research is needed regarding the most effective means of maintaining initial success.

Certain effective strategies for preventing and controlling overweight and obesity over the short-term have been identified for worksite settings; interventions in school-settings require further evaluation. New data on interventions in scientific literature since 2001 are scheduled to be included in periodic updates to these systematic reviews. Multiple additional programmatic, policy, and research efforts are needed to control and reverse obesity trends and achieve the healthy weight goals of *Healthy People 2010* (13).

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Task Force on Community Preventive Services

September 1, 2005

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