

Obesity Prevention and Control: Supporting Healthier Snack Foods and Beverages Sold or Offered Combined with Physical Activity Interventions in Schools

Community Preventive Services Task Force Finding and Rationale Statement Ratified October 2018

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CPSTF Finding and Rationale Statement

Context

Consuming a healthy diet and participating in regular physical activity can build stronger bones and muscles, help control weight, and reduce the risk of developing health conditions such as heart disease, type 2 diabetes, high blood pressure, and osteoporosis (U.S. Department of Health and Human Services and U.S. Department of Agriculture 2015; 2018 Physical Activity Guidelines Advisory Committee, 2018). In the United States, the percentage of children and adolescents affected by obesity has more than tripled in the past 40 years (Fryar et al., 2014). Data from 2015–2016 show that nearly one in five school age children and adolescents (6 to 19 years) in the United States has obesity (Hales et al., 2017).

Consuming more energy than the body needs for healthy functioning and growth can lead to excess weight gain (Hill et al., 2012). Many factors contribute to excess weight gain such as consumption of high-calorie, low-nutrient foods and beverages, inadequate physical activity, short sleep duration, genetics, and metabolism (U.S. Department of Health and Human Services 2016, 2018a). When addressing obesity, a comprehensive approach should be considered such as the [Whole School, Whole Community, Whole Child](https://www.cdc.gov/healthyyouth/wsccl/) [https://www.cdc.gov/healthyyouth/wsccl/] (WSCC) model, which involves schools, parents, caregivers, community organizations, and healthcare providers (U.S. Department of Health and Human Services 2018b, 2018c).

Most U.S. children ages 5 to 18 years attend school for an average of six to seven hours a day during the school year (National Center for Education Statistics, 2010). This gives schools a chance to offer students nutritious foods and beverages and opportunities for physical activity. While there are many approaches available to schools, this CPSTF finding focuses on the combination of interventions that provide students healthier snack foods and beverages and interventions that increase the amount of physical activity students get during the school day.

Intervention Definition

Healthy eating interventions combined with physical activity interventions in schools aim to improve student health by implementing (1) interventions to support healthier foods and beverages sold or offered, with (2) physical activity interventions.

- 1) **Interventions supporting healthier snack foods and beverages sold or offered in school** are designed to provide healthier foods and beverages* that will be consumed by students, limit access to less healthy foods and beverages, or both. Interventions must include one or more of the following components:
 - Food and beverage policies that require foods and beverages sold during the school day, outside of school meal programs, meet established nutritional standards or guidelines. These are often referred to as “competitive foods and beverages” because they are sold in competition with school meal programs, and are available through in-school fundraisers, à la carte options, vending machines, school stores, and snack bars.
 - Celebration rules or policies that encourage healthy foods and beverages be served during classroom celebrations, parties, and special events
 - Rules or policies that encourage nonfood items as alternative rewards for academic achievement
- 2) **Physical activity interventions** engage students in physical activity each day. Interventions must include one or more of the following components:

- Physical education classes that engage students in physical activity
- School policies or practices that provide opportunities for physical activity during the school day (i.e., physical activities for students such as recess and classroom breaks)
- Large-scale environmental changes that provide or improve space, facilities, or equipment to make physical activity easy and appealing (e.g., renovating a school playground)

Interventions also may include one or more of the following:

- Healthy food and beverage marketing strategies
- Educational programs that address nutrition or build knowledge and skills needed to maintain physically active lifestyles
- Addition of small-scale equipment to promote physical activity (e.g., jump ropes, balls, cones, team vests, pedometers)
- Staff involvement
- Family and community engagement

*Healthier foods and beverages include fruits, vegetables, whole grains, low-fat or fat-free dairy, lean meats, beans, eggs, nuts, and items that are low in saturated fats, salt, and added sugars, and have no trans fats. Less-healthy foods and beverages include those with more added sugars, fats, and sodium.

CPSTF Finding (October 2018)

The Community Preventive Services Task Force (CPSTF) finds insufficient evidence to determine the effectiveness of combining interventions that increase the availability of healthier snack foods and beverages sold or offered with physical activity interventions in schools. Evidence was inconsistent for dietary, physical activity, and weight-related outcomes.

The CPSTF recommends the following related interventions in school settings:

Healthy Eating Interventions Combined with Physical Activity Interventions

- [Meal or Fruit and Vegetable Snack Interventions Combined with Physical Activity Interventions in Schools](https://www.thecommunityguide.org/findings/obesity-prevention-control-meal-fruit-vegetable-snack-interventions-combined-physical-activity-interventions-schools)
[<https://www.thecommunityguide.org/findings/obesity-prevention-control-meal-fruit-vegetable-snack-interventions-combined-physical-activity-interventions-schools>]

Healthy Eating Interventions Alone

- [Meal or Fruit and Vegetable Snack Interventions to Increase Healthier Foods and Beverages Provided by Schools](https://www.thecommunityguide.org/findings/obesity-meal-fruit-vegetable-snack-interventions-increase-healthier-foods-beverages-schools)
[<https://www.thecommunityguide.org/findings/obesity-meal-fruit-vegetable-snack-interventions-increase-healthier-foods-beverages-schools>]
- [Multicomponent Interventions \(Meal or Fruit and Vegetable Snack Interventions + Healthier Snack Foods and Beverages\) to Increase Availability of Healthier Foods and Beverages in Schools](https://www.thecommunityguide.org/findings/obesity-multicomponent-interventions-increase-availability-healthier-foods-and-beverages)
[<https://www.thecommunityguide.org/findings/obesity-multicomponent-interventions-increase-availability-healthier-foods-and-beverages>]

Physical Activity Interventions

- [Enhanced School-based Physical Education](https://www.thecommunityguide.org/findings/physical-activity-enhanced-school-based-physical-education) [https://www.thecommunityguide.org/findings/physical-activity-enhanced-school-based-physical-education]

Rationale

Basis of Finding

The CPSTF finding is based on evidence from a systematic review of four studies (search period 1990–July 2017).

Three studies reported weight-related outcomes. Of these, two studies reported favorable findings (one group non-Randomized Control Trial [RCT] measured Body Mass Index z-score [BMIz]; one single group, before-after study measured obesity prevalence and overweight prevalence); and one study reported unfavorable results (a group RCT measured BMIz). It was not possible to calculate an effect estimate because of too few studies or inconsistent measures, thus, findings were summarized narratively.

Two of the four studies included in the review (group non-RCTs) reported dietary behaviors. They found inconsistent findings for fruit and vegetable consumption. One study reported no intervention effect; the other reported favorable findings for normal weight students and no change for students with overweight or obesity. The studies found similarly inconsistent results for sugar-sweetened beverage consumption. One study reported no intervention effect; the other reported favorable decreases. For low nutrient foods (i.e., high-energy dense, low nutrient foods such as chips or candy), one study reported a favorable intervention effect and the other reported no intervention effect.

Three of the included studies reported physical activity outcomes. Two studies reported favorable findings (one group non-RCT, and one group RCT), and one study (group non-RCT) reported no change in physical activity.

Applicability and Generalizability Issues

Applicability was not assessed because the CPSTF did not have enough information to determine if the intervention works.

Data Quality Issues

Study designs included group non-RCTs (2 studies), a group RCT (1 study), and a single group, before-after (1 study). The most common limitation was attributed to sampling methods.

Dietary outcomes were based on self-reported data, physical activity outcomes were measured or self-reported, and weight-related outcomes were directly measured by trained staff. Common limitations of self-reported dietary data included participants forgetting about consumption of specific foods or beverages, inaccurately estimating portion sizes, and inadvertently or intentionally failing to report specific items (Grandjean, 2012). Studies addressed these limitations by using age-appropriate, validated instruments.

Other Benefits and Harms

One postulated benefit is student enjoyment of the intervention.

While no potential harms of the intervention were identified in the included studies, postulated harms include body dissatisfaction or dieting behavior and overexertion from physical activity. Included studies were examined for measures of body dissatisfaction, dieting behaviors, or similar outcomes. One study asked students if they had ever tried to lose weight and found the intervention did not lead to dieting behaviors (Elinder et al., 2012).

Economic Evidence

An economic review was not done for this intervention because the CPSTF did not have enough information to determine if the intervention works.

Other Considerations

The Federal government has guidance documents to assist program planners. The U.S. Department of Agriculture has [Smart Snacks](https://www.fns.usda.gov/school-meals/tools-schools-focusing-smart-snacks) [https://www.fns.usda.gov/school-meals/tools-schools-focusing-smart-snacks] standards—required nutrition standards for foods and beverages sold outside of the school meal program. While the included studies did not evaluate Smart Snacks standards, three of the studies had intervention components that aligned with the standards and included improvements to vending machine options or school snacks. These studies replaced sodas, caffeinated beverages, and unhealthy foods with healthier beverages and foods that met a set of nutritional guidelines. Smart Snacks are included in the healthy eating intervention approaches promoted by the Centers for Disease Control and Prevention’s (CDC) [School Nutrition Environment Framework](https://www.cdc.gov/healthyschools/nutrition/pdf/School_Nutrition_Framework_508tagged.pdf) [https://www.cdc.gov/healthyschools/nutrition/pdf/School_Nutrition_Framework_508tagged.pdf].

The [Comprehensive School Physical Activity Program Framework](https://www.cdc.gov/healthyschools/physicalactivity/cspap.htm) [https://www.cdc.gov/healthyschools/physicalactivity/cspap.htm], promoted by the CDC, outlines how to address physical education and physical activity within schools. Studies included in this review used various physical activity interventions. Examples included increasing the amount of physical education class time dedicated to moderate or vigorous physical activity, offering physical activity breaks during academic classes, or purchasing large-scale activity equipment such as spinning bikes or strength training equipment.

The CPSTF suggests programs evaluate the effectiveness of approaches used within the School Nutrition Environment Framework and Comprehensive School Physical Activity Program Framework and measure similar outcomes to build the evidence base.

Evidence Gaps

Additional research and evaluation are needed to determine if these combined interventions are effective, and to fill existing gaps in the evidence base.

- How effective are these interventions across different populations, including students with disabilities?
- How effective are the different approaches to improving snack foods and beverages (e.g., changing vending machines, giving nonfood items as a reward)?
- What is the best way to measure the combined effect of these two intervention approaches and which approaches drive results?
- What other physical activity opportunities could be combined with snack food and beverage interventions?
- Do students find the healthier foods and beverages schools offer appealing?
- Do interventions lead to body dissatisfaction? If so, future interventions should address body image and promote a healthy relationship with food.
- What are the best measures for dietary intake, physical activity, and weight-related outcomes? Increased consensus on definitions would improve comparability and the ability to synthesize evidence.
- Do interventions lead to other benefits (e.g., academic achievement) or harms (e.g., overexertion from physical activity)?

- How do interventions affect families when children bring intervention messages of healthier eating and active living home?

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Disclaimer

The findings and conclusions on this page are those of the Community Preventive Services Task Force and do not necessarily represent those of CDC. Task Force evidence-based recommendations are not mandates for compliance or spending. Instead, they provide information and options for decision makers and stakeholders to consider when determining which programs, services, and policies best meet the needs, preferences, available resources, and constraints of their constituents.

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