

The Community Guide (<https://www.thecommunityguide.org>)

## Systematic Review

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# Obesity: Behavioral Interventions that Aim to Reduce Recreational Sedentary Screen Time Among Children

Topic	<a href="#">Obesity</a>
Recommended (strong evidence)	
August 2014	
Audience	Children/Infants, Low-income Population, Parents/Caregivers
Setting	Community, Rural, School, Urban
Strategy	Community Organizing/Community-based, Counseling, Environmental Changes, Health Communication, Health Education, Multicomponent, Technology-based

## Summary of CPSTF Finding

The [Community Preventive Services Task Force \(CPSTF\)](#) [recommends](#) behavioral interventions to reduce recreational sedentary screen time among children ages 13 years and younger. Recreational screen time does not include school- or work-related use.

## Intervention

These interventions teach children behavioral self-management skills to help them start or maintain behavior change.

Behavioral screen time interventions are classified into two types:

1. Screen-time-only interventions focus on reducing recreational sedentary screen time.
2. Screen-time-plus interventions focus on reducing recreational sedentary screen time and increasing physical activity or improving diet.


Interventions use one or more of the following components:

- Classroom-based education
- Tracking and monitoring
- Coaching or counseling sessions
- Family-based or peer social support

Interventions also may include one or more additional components such as use of an electronic monitoring device to limit screen time, a TV Turnoff Challenge, screen time contingent on physical activity, or small media.

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## CPSTF Finding and Rationale Statement

Read the full [CPSTF Finding and Rationale Statement](#)  [PDF – 687 kB] for details including implementation issues, possible added benefits, potential harms, and evidence gaps.

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## Promotional Materials

### Community Guide News:

- [Community Preventive Services Task Force Recommends Behavioral Screen Time Interventions to Prevent Childhood Obesity](#)

### One Pager:

- [Behavioral Interventions to Reduce Screen Time Among Children](#)

### Community Guide in Action:

- [Mobilizing Funding Support to Battle Overweight and Obesity](#)
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- [Physical Activity: Social Support Interventions in Community Settings](#)
- [Health Equity: School-Based Health Centers](#)

## About The Systematic Review

The CPSTF finding is based on evidence from a Community Guide systematic review completed in 2008 (7 studies with 9 study arms, search period 1966–July 2007) combined with an updated search for evidence in 2013 (42 studies with 53 study arms, search period April 2007–June 2013).

The systematic review was conducted on behalf of the CPSTF by a team of specialists in systematic review methods, and in research, practice, and policy related to obesity prevention and control.

This finding updates and replaces the 2008 CPSTF findings on [Behavioral Interventions to Reduce Screen Time](#) [PDF - 202 kB] and [Mass Media Interventions to Reduce Screen Time](#) [PDF - 179 kB] and replaces the 2000 review on [Behavioral and Social Approaches to Increase Physical Activity: Classroom-Based Health Education to Reduce TV Viewing and Video Game Playing](#) [PDF - 234 kB].

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## Context

Childhood obesity has been positively associated with time spent watching TV (Marshall, et al. 2004, Tremblay, et al. 2011). In the United States, children ages 8–18 years report an average of 7 hours of screen time per day, of which 4.5 hours are spent watching TV content such as TV programs, DVDs, or movies, viewed on a TV, computer, cell phone, or other device (Rideout, et al. 2010). Children ages 5 years and younger spend an average of 2 hours per day with screen media (i.e., TV, DVDs, videos, video/computer games), of which approximately 1.5 hours are spent watching TV or videos (Rideout 2011).

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## Summary of Results

Detailed results from the systematic review are available in the [CPSTF Finding and Rationale Statement](#) [PDF - 687 kB].


The systematic review included 49 studies with 62 [study arms](#).

- Screen Time Outcomes
  - The amount of time spent on any screen decreased by a median of 26.4 minutes/day (34 study arms)
    - Screen-time-only interventions: median decrease of 82.2 minutes/day (11 study arms)
    - Screen-time-plus interventions: median decrease of 21.6 minutes/day (23 study arms)
- Physical Activity Outcomes
  - Accelerometer counts measured physical activity through a small monitor worn with a belt clip.
    - Screen-time-only interventions: no study arms
    - Screen-time-plus interventions
      - Screen time contingent on physical activity: median increase of 130.0 counts per day (3 study arms)
      - Screen time not contingent on physical activity: median increase of 66.0 counts per day (4 study arms)

- Screen time not contingent on physical activity: median increase of 3.6 counts per minute (3 study arms)
- Small, positive effects were reported for other physical activity outcomes (e.g., pedometer steps of physical activity, score on a fitness test, and duration of physical activity).
- Dietary Outcomes
  - Total energy intake (kcal/day)
    - Screen-time-only interventions: decrease of 75 calories/day (1 study arm)
    - Screen-time-plus interventions: decrease of 117.9 calories /day (5 study arms)
  - Small, positive effects were reported for other dietary outcomes (e.g., eating meals or snacking with the TV on, daily snack intake, sugar-sweetened beverage intake, and fruit and vegetable intake).
- Weight-Related Outcomes
  - Body mass index (BMI): median decrease of 0.09 kg/m<sup>2</sup> (15 study arms)
  - BMI Z-score: median decrease of 0.13 (14 study arms)
    - BMI Z-score is a standard deviation score that indicates how a child's BMI compares to the average for their age group and sex.
- Obesity Prevalence
  - Proportion of participants who are obese: median decrease of 2.3 percentage points (14 study arms)

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## Summary of Economic Evidence

Detailed results from the systematic review are available in the [CPSTF Finding and Rationale Statement](#)  [PDF - 687 kB].

The economic review included three models from two studies that were based on randomized controlled trials included in the effectiveness review. A general conclusion about cost-effectiveness could not be determined because results from this small body of evidence were mixed. Monetary values are reported in 2013 U.S. dollars.

### Intervention cost:

Intervention cost included the cost of measuring and tracking devices, staff time in counseling and education sessions, training, educational materials, and supplies.

- The cost per person per year was \$43 for a screen-time-plus intervention and \$248 for a screen-time-only intervention.

- The higher cost for the screen-time-only intervention was partially explained by the inclusion of an electronic monitoring device, a greater number of sessions, and labor costs associated with tracking and monitoring outcomes.

## Healthcare Cost and QALY:

Healthcare costs are avoided and quality-adjusted life years (QALYs) are saved when the intervention reduces illness and death associated with overweight-related diseases and conditions.

- The models used in both the screen-time-plus and screen-time-only studies drew from longitudinal data of U.S national surveys to estimate that each prevented case of overweight in adulthood would avert about \$4000 in healthcare costs and increase QALYs saved by 0.71.

## Cost-effectiveness:

Cost-effectiveness is measured as net cost (intervention cost minus healthcare cost avoided) per QALY saved. An intervention is considered cost-effective when cost-effectiveness is less than or equal to a conservative threshold of \$50,000 per QALY saved.

- Both studies evaluated the models based on a sensitivity analysis of key determinant variables of cost-effectiveness: size of intervention group; intervention effectiveness; transition of weight status to adulthood; intervention cost per person; and 50% relapse to overweight.
- Both studies modeled the screen-time-plus intervention, finding it to be cost-effective.
  - Cost per QALY saved ranged from \$7,500 to \$22,900 depending on assumptions made.
- One study modeled the screen-time-only intervention and found the intervention was not cost-effective.
  - Cost per QALY saved ranged from \$26,000 to \$115,000 depending on assumptions made.

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## Applicability

Based on results for interventions in different settings and populations, findings should be applicable to the following:

- The United States or other high- or medium-income countries
- Children ages 13 years and younger
- Males and females
- Different racial and ethnic populations
- All socioeconomic levels
- Normal weight, overweight, and obese populations
- Urban and suburban settings

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## Evidence Gaps

Additional research and evaluation are needed to answer the following questions and fill existing gaps in the evidence base.

- Which combinations of intervention components are most effective? Which components are critical to success?
- Are interventions effective with teens older than 13 years of age and with adults?
- Are interventions effective in rural settings?
- What are other benefits and implications of reduced screen time? For example, does a reduction in screen time mean other sedentary behaviors will be substituted (e.g., reading for leisure, listening to music, time spent on homework)? And, do reductions in screen time lead to other health benefits, such as improved sleep quality?

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## Study Characteristics

- Studies included randomized controlled trials (RCT) or group RCTs (37 studies), single group before-after studies (5 studies), before-after with a comparison group (4 studies), and a non-randomized trial (1 study).
- Studies were conducted in the United States (30 studies), Australia (6 studies), the United Kingdom (4 studies), Canada (2 studies), France (1 study), the Netherlands (1 study), New Zealand (1 study), Sweden (1 study), and Switzerland (1 study).
- Studies mostly targeted children ages 13 years and younger (46 studies). No studies targeted adolescents ages 14–18 years.
- Nine studies were conducted among populations with lower economic status. Of these, three studies targeted low-income African-American children, two studies targeted Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants, one study targeted Head Start program participants, and three studies targeted disadvantaged children.
- Six studies targeted overweight or obese populations.
- Family-based social support was the most common intervention component.
- Evaluated programs were most commonly implemented in schools (20 studies), and of these, 90% were screen-time-plus interventions.

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## Publications

[Buchanan LR, Rooks-Peck CR, Finnie RKC, et al. Reducing recreational sedentary screen time: a Community Guide systematic review. American Journal of Preventive Medicine. 2016;50\(3\):402-15.](#)

([https://www.thecommunityguide.org/sites/default/files/publications/obesity-AJPM-evrev-behavioral\\_0.pdf](https://www.thecommunityguide.org/sites/default/files/publications/obesity-AJPM-evrev-behavioral_0.pdf)).

[Community Preventive Services Task Force. Reducing children's recreational sedentary screen time: recommendation of the Community Preventive Services Task Force. American Journal of Preventive Medicine. 2016;50\(3\):416-8.](#)

(<https://www.thecommunityguide.org/sites/default/files/publications/obesity-AJPM-rec-behavioral.pdf>).

## Analytic Framework

[Analytic Framework](#)  [PDF - 126 kB]

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## Summary Evidence Table

[Summary Evidence Table - Effectiveness Review](#)  [PDF - 823 kB]

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## Summary Economic Evidence Table

[Summary Evidence Table - Economic Review](#)  [PDF - 114 kB]

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## Included Studies

*The number of studies and publications do not always correspond (e.g., a publication may include several studies or one study may be explained in several publications).*

### Screen-Time-Only

Birken CS, Maguire J, Mekky M, Manlhiot C, Beck CE, DeGroot J, et al. Office-based randomized controlled trial to reduce screen time in preschool children. *Pediatrics* 2012;130(6):1110-1115.

Epstein LH, Roemmich JN, Robinson JL, Paluch RA, Winiewicz DD, Fuerch JH, et al. A randomized trial of the effects of reducing television viewing and computer use on body mass index in young children. *Archives of Pediatrics & Adolescent Medicine* 2008;162(3):239-45.

Escobar-Chaves SL, Markham CM, Addy RC, Greisinger A, Murray NG, Brehm B. The Fun Families Study: intervention to reduce children's TV viewing. In: *Obesity* (Silver Spring, Md.); 2010. p. S99-101.

Ford BS, McDonald TE, Owens AS, Robinson TN. Primary care interventions to reduce television viewing in African-American children. *American Journal of Preventive Medicine* 2002;22(2):106-9.

Gorin A, Raynor H, Chula-Maguire K, Wing R. Decreasing household television time: a pilot study of a combined behavioral and environmental intervention. *Behavioral Interventions* 2006;21(4):273-280.

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Ni Mhurchu C, Roberts V, Maddison R, Dorey E, Jiang Y, Jull A, et al. Effect of electronic time monitors on children's television watching: pilot trial of a home-based intervention. *Preventive Medicine* 2009;49(5):413-7.

Otten JJ, Jones KE, Littenberg B, Harvey-Berino J. Effects of television viewing reduction on energy intake and expenditure in overweight and obese adults: a randomized controlled trial. *Archives of Internal Medicine*; 2009. p. 2109-15.

\*Robinson TN. Reducing children's television viewing to prevent obesity: a randomized controlled trial. *JAMA* 1999;282(16):1561-7.

Robinson TN, Borzekowski DL. Effects of the SMART classroom curriculum to reduce child and family screen time. *Journal of Communication* 2006;56(1):1-26.

Todd MK, Reis-Bergan MJ, Sidman CL, Flohr JA, Jameson-Walker K, Spicer-Bartolau T, et al. Effect of a family-based intervention on electronic media use and body composition among boys aged 8--11 years: a pilot study. *Journal of Child Health Care* 2008;12(4):344-58.

Zimmerman FJ, Ortiz SE, Christakis DA, Elkun D. The value of social-cognitive theory to reducing preschool TV viewing: A pilot randomized trial. *Preventive Medicine* 2012;54(3-4):212-8.

### Screen-Time-Plus

Branscum PW. Designing and evaluating an after-school social cognitive theory based comic book intervention for the prevention of childhood obesity among elementary aged school children. *Dissertation Abstracts International Section A: Humanities and Social Sciences* 2012;73(1-A):87.

Campbell KJ, Lioret S, McNaughton SA, Crawford DA, Salmon J, Ball K, et al. A parent-focused intervention to reduce infant obesity risk behaviors: A randomized trial. *Pediatrics* 2013;131(4):652-60.

Davison KK, Jurkowski JM, Li K, Kranz S, Lawson HA. A childhood obesity intervention developed by families for families: Results from a pilot study. *International Journal of Behavioral Nutrition and Physical Activity* 2013;10(3).

de Silva-Sanigorski AM, Bell AC, Kremer P, Nichols M, Crellin M, Smith M, et al. Reducing obesity in early childhood: results from Romp & Chomp, an Australian community-wide intervention program. *American Journal of Clinical Nutrition* 2010;91(4):831-40.

\*Dennison BA, Russo TJ, Burdick PA, Jenkins PL. An intervention to reduce television viewing by preschool children. *Archives of Pediatrics & Adolescent Medicine* 2004;158(2):170-6.

\*Epstein LH, Paluch RA, Gordy CC, Dorn J. Decreasing sedentary behaviors in treating pediatric obesity. *Archives of Pediatrics & Adolescent Medicine* 2000;154(3):220-6.

\*Epstein LH, Valoski AM, Vara LS, McCurley J, Wisniewski L, Kalarchian MA, et al. Effects of decreasing sedentary behavior and increasing activity on weight change in obese children. *Health Psychology* 1995;14(2):109-15.

Ezendam NP, Brug J, Oenema A. Evaluation of the web-based computer-tailored FATaintPHAT intervention to promote energy balance among adolescents: results from a school cluster randomized



trial. *Archives of Pediatrics & Adolescent Medicine* 2012;166(3):248-55.

French SA, Gerlach AF, Mitchell NR, Hannan PJ, Welsh EM. Household obesity prevention: take action—a group-randomized trial. *Obesity* 2011;19(10):2082-8.

Gentile DA, Welk G, Eisenmann JC, Reimer RA, Walsh DA, Russell DW, et al. Evaluation of a multiple ecological level child obesity prevention program: Switch what you do, view, and chew. *BMC Medicine* 2009;7:49.

Goldfield GS, Mallory R, Parker T, Cunningham T, Legg C, Lumb A, et al. Effects of open-loop feedback on physical activity and television viewing in overweight and obese children: a randomized, controlled trial. *Pediatrics* 2006(1):e157-66.

\*Gortmaker SL, Cheung LWY, Peterson KE, Chomitz G, Cradle JH, Dart H, et al. Impact of a school-based interdisciplinary intervention on diet and physical activity among urban primary school children: Eat well and keep moving. *Archives of Pediatrics & Adolescent Medicine* 1999;153(9):975-83.

\*Gortmaker SL, Peterson K, Wiecha J, Sobol AM, Dixit S, Fox MK, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet Health. *Archives of Pediatrics & Adolescent Medicine* 1999(4):409-18.

Hardy LL, King L, Kelly B, Farrell L, Howlett S. Munch and Move: evaluation of a preschool healthy eating and movement skill program. *International Journal of Behavioral Nutrition & Physical Activity* 2010;7:80.

Harrison M, Burns CF, McGuinness M, Heslin J, Murphy NM. Influence of a health education intervention on physical activity and screen time in primary school children: 'Switch Off-Get Active'. *Journal of Science and Medicine in Sport* 2006;9(5):388-94.

Jago R, Sebire SJ, Turner KM, Bentley GF, Goodred JK, Fox KR, et al. Feasibility trial evaluation of a physical activity and screen-viewing course for parents of 6 to 8 year-old children: Teamplay. *International Journal of Behavioral Nutrition and Physical Activity* 2013;10(31).

Johnson B, Kremer P, Swinburn B, de Silva-Sanigorski A. Multilevel analysis of the Be Active Eat Well intervention: environmental and behavioural influences on reductions in child obesity risk. *International Journal of Obesity* 2012;36(7):901-7.

Jouret B, Ahluwalia N, Dupuy M, Cristini C, Negre-Pages L, Grandjean H, et al. Prevention of overweight in preschool children: results of kindergarten-based interventions. *International Journal of Obesity* 2009;33(10):1075-83.

Lloyd JJ, Wyatt KM, Creanor S. Behavioural and weight status outcomes from an exploratory trial of the Healthy Lifestyles Programme (HeLP): a novel school-based obesity prevention programme. *BMJ Open* 2012;2(3).

Marcus C, Nyberg G, Nordenfelt A, Karpmyr M, Kowalski J, Ekelund U. A 4-year, cluster-randomized, controlled childhood obesity prevention study: STOPP. *International Journal of Obesity* 2009;33(4):408-17.

- O'Connor T, Hilmers A, Watson K, Baranowski T, Giardino A. Feasibility of an obesity intervention for paediatric primary care targeting parenting and children: Helping HAND. *Child: Care, Health and Development* 2013;39(1):141-9.
- Patrick K, Calfas KJ, Norman GJ, Zabinski MF, Sallis JF, Rupp J, et al. Randomized controlled trial of a primary care and home-based intervention for physical activity and nutrition behaviors: PACE+ for adolescents. *Archives of Pediatrics & Adolescent Medicine* 2006;160(2):128-36.
- Puder JJ, Marques-Vidal P, Schindler C, Zahner L, Niederer I, Burgi F, et al. Effect of multidimensional lifestyle intervention on fitness and adiposity in predominantly migrant preschool children (Ballabeina): cluster randomised controlled trial. *BMJ* 2011;343:d6195.
- Riggs NR, Sakuma K-LK, Pentz MA. Preventing risk for obesity by promoting self-regulation and decision-making skills: Pilot results from the PATHWAYS to health program (PATHWAYS). *Evaluation Review* 2007;31(3):287-310.
- Robinson TN, Killen JD, Kraemer HC, Wilson DM, Matheson DM, Haskell WL, et al. Dance and reducing television viewing to prevent weight gain in African-American girls: the Stanford GEMS pilot study. *Ethnicity and Disease* 2003;13(1 SUPPL. 1):S1.
- Robinson TN, Matheson DM, Kraemer HC, Wilson DM, Obarzanek E, Thompson NS, et al. A randomized controlled trial of culturally tailored dance and reducing screen time to prevent weight gain in low-income African American girls: Stanford GEMS. *Archives of Pediatrics & Adolescent Medicine* 2010;164(11):995-1004.
- Roemmich JN, Gurgol CM, Epstein LH. Open-loop feedback increases physical activity of youth. *Medicine and Science in Sports and Exercise* 2004(4):668-73.
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- Salmon J, Jorna M, Hume C, Arundell L, Chahine N, Tienstra M, et al. A translational research intervention to reduce screen behaviours and promote physical activity among children: Switch-2-Activity. *Health Promotion International* 2011;26(3):311-21.
- Sanigorski AM, Bell AC, Kremer PJ, Cuttler R, Swinburn BA. Reducing unhealthy weight gain in children through community capacity-building: results of a quasi-experimental intervention program, Be Active Eat Well. *International Journal of Obesity* 2008;32(7):1060-7.
- Shapiro JR, Bauer S, Hamer RM, Kordy H, Ward D, Bulik CM. Use of text messaging for monitoring sugar-sweetened beverages, physical activity, and screen time in children: A pilot study. *Journal of Nutrition Education and Behavior* 2008;40(6):385-91.
- Spring B, Schneider K, McFadden HG, Vaughn J, Kozak AT, Smith M, et al. Multiple behavior changes in diet and activity: a randomized controlled trial using mobile technology. *Archives Internal Medicine*

2012;172(10):789-96.

Spruijt-Metz D, Nguyen-Michel ST, Goran MI, Chou CP, Huang TT. Reducing sedentary behavior in minority girls via a theory-based, tailored classroom media intervention. *International Journal of Pediatric Obesity* 2008;3(4):240-8.

Taveras EM, Gortmaker SL, Hohman KH, Horan CM, Kleinman KP, Mitchell K, et al. Randomized controlled trial to improve primary care to prevent and manage childhood obesity: the High Five for Kids study. *Archives of Pediatrics & Adolescent Medicine* 2011;165(8):714-22.

Tucker S, Lanningham-Foster L, Murphy J, Olsen G, Orth K, Voss J, et al. A school based community partnership for promoting healthy habits for life. *Journal of Community Health* 2011;36(3):414-22.

Warren JM, Henry CJ, Lightowler HJ, Bradshaw SM, Perwaiz S. Evaluation of a pilot school programme aimed at the prevention of obesity in children. *Health Promotion International* 2003;18(4):287-96.

Whaley SE, McGregor S, Jiang L, Gomez J, Harrison G, Jenks E. A WIC-based intervention to prevent early childhood overweight. *Journal of Nutrition Education and Behavior* 2010;42(3, Suppl):S47-51.

\* Identified in the Original Search Period (1966-July 2007)

### Included Studies – Economic Review

*The number of studies and publications do not always correspond (e.g., a publication may include several studies or one study may be explained in several publications).*

Dalziel K, Segal L, Mortimer D. Risk Factor Study – How to reduce the burden of harm from poor nutrition, tobacco smoking, physical inactivity and alcohol misuse: cost-utility analysis of 9 multi-risk factor interventions: Monash University, Centre for Health Economics; 2005.

Wang LY, Yang Q, Lowry R, Wechsler H. Economic analysis of a school-based obesity prevention program. *Obesity Research* 2003;11(11):1313-24.

### Economic Studies Linked with the Effectiveness Review

Gortmaker SL, Peterson K, Wiecha J, Sobol AM, Dixit S, Fox MK, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet Health. *Arch Pediatr Adolesc Med* 1999(4):409-418.

Robinson TN. Reducing children's television viewing to prevent obesity: a randomized controlled trial. *JAMA* 1999;282(16):1561-7.

## Search Strategies

### Search Strategy - Effectiveness Review

This literature search was performed to provide a systematic review of the literature to the Guide to Community Preventive Services. The purpose of the search was to review the literature on the

effectiveness of reduced screen time for obesity prevention and control.

For the updated search, the following five bibliographic databases were searched between April 2007 and June 2013, using the search terms listed below.

- CINAHL
- Cochrane
- Embase (EBSCO)
- Medline (OVID)
- PsycINFO

The databases searched covered publications in medical and social sciences, behavioral sciences, and nursing and allied health. The types of documents retrieved by the search included journal articles, books, book chapters, reports, and conference papers.

Following are search strategies specific for Medline. Search terms and search strategies were adjusted to each database, based on controlled and uncontrolled vocabularies and search software.

### **Medline (OVID)**

1. ("screen time" or "screen use" or "screen usage").tw.
2. television/
3. video games/
4. (vcr or dvd\$).tw.
5. ((television or tv) adj (view\$ or watch\$)).tw.
6. ((view\$ or watch\$) adj (television or tv)).tw.
7. ((video game\$ or videogame\$) adj play\$).tw.
8. (play\$ adj (video game\$ or videogame\$)).tw.
9. or/1-8
10. 9 and health education/
11. 9 and "health education".tw.
12. 9 and exp health promotion/
13. 9 and intervention studies/
14. 9 and exp health behavior/
15. 9 and life style/
16. 9 and interventions\$.mp.
17. 9 and (trial\$ or study or studies).mp.
18. 9 and program evaluation/
19. 9 and pc.fs.
20. or/10-19
21. 20 and (exp overweight/ or exp obesity/ or body mass index/ or skinfold thickness/ or waist-hip ratio/ or bmi.tw. or obes\$.tw. or weight\$.hw,tw. or body fat.tw. or overweight.mp.)
22. 20 and (physical activity.tw. or motor activity/ or exercise\$.mp. or physical fitness/ or physical fitness/ or "physical education and training"/ or exp sports/)
23. 20 and (diet\$ or nutrition\$ or food\$).hw,tw.

24. 20 and ((reduc\$ or restrict\$ or decreas\$ or limit\$) and (television or video\$ or screen)).mp.
25. or/21-24
26. (computers/ or user-computer interface/ or attitude to computers/ or internet.mp.) and (exp child/ or adolescent/ or exp adult/)
27. 26 and health education/
28. 26 and "health education".tw.
29. 26 and intervention studies/
30. 26 and exp health behavior/
31. 26 and life style/
32. 26 and intervention\$.mp.
33. 26 and (trial\$ or study or studies).mp.
34. 26 and program evaluation/
35. 26 and pc.fs.
36. 26 and exp health promotion/
37. or/27-36
38. 37 and (exp overweight/ or exp obesity/ or body mass index/ or skinfold thickness/ or waist-hip ratio/ or bmi.tw. or obes\$.tw. or weight\$.hw,tw. or body fat.tw. or overweight.mp.)
39. 37 and (physical activity.tw. or motor activity/ or exercise\$.mp. or physical fitness/ or "physical education and training"/ or exp sports/)
40. 37 and (diet\$ or nutrition\$ or food\$).hw,tw.
41. 37 and ((reduc\$ or restrict\$ or decreas\$ or limit\$) and (computer\$ or internet\$)).mp.
42. or/38-41
43. exp mass media/ or "mass media".tw. or billboard\$.tw. or exp serial publications/
44. 43 and ((reduc\$ or restrict\$ or decreas\$ or limit\$) and (television or video\$ or screen or computer\$ or internet)).mp.
45. 44 and (exp overweight/ or exp obesity/ or body mass index/ or skinfold thickness/ or waist-hip ratio/ or bmi.tw. or obes\$.tw. or weight\$.hw,tw. or body fat.tw. or overweight.mp.)
46. 44 and (physical activity.tw. or motor activity/ or exercise\$.mp. or physical fitness/ or "physical education and training"/ or exp sports/)
47. 44 and (diet\$ or nutrition\$ or food\$).hw,tw.
48. or/45-47
49. 25 or 42 or 48
50. limit 49 to (English language and yr="2007 -Current") 5739

## Search Strategy - Economic Review

Two bibliographic databases (EconLit and CRD-York) were searched during January 2014, using the search strategies listed below. The years of publication searched were 1966–2014. The databases searched covered publications in economics and evidence-based medicine. The types of documents searched in the databases included journal articles, systematic reviews, economic evaluations, books, book chapters, reports, dissertations, and conference papers.

### Database: CRD-York NHS EED NHS EED

CRD assessed economic evaluation

Date Searched: 1/23/2014

Results: 20

### Search Strategy:

((tv or television or videogame\* or video game or dvd\* or video games or screen time or screen usage or screen use or vcr) AND (obese or obesity or fat or body mass or waist or overweight or skinfold or weight\* or bmi or obeseness )) and ((Economic evaluation:ZDT and Bibliographic:ZPS) OR (Economic evaluation:ZDT and Abstract:ZPS)) IN NHSEED FROM 1966 TO 2014

### Database: EconLit (EBSCOHost)

Date Searched: 1/23/2014

Results: 187

### Search Strategy:

S3

S1 AND S2

(187)

S2

( television or "video game" or "video games" or "screen time" or "screen usage" or vcr or dvd or dvds or "screen use" )

Limiters - Published Date: 19660101-20141231

S1

(diet\* or nutrition\* or food\* or obese or obesity or waist or exercise or fitness or skinfold or fat or overweight or weight or "body mass" or bmi or overweight or "physical education" or sports)

Limiters - Published Date: 19660101-20141231

Search modes - Boolean/Phrase

## Review References

American Academy of Pediatrics. 2001. American Academy of Pediatrics. Children, adolescents, and television. *Pediatrics* 107: 423-26

Marshall SJ, Biddle SJ, Gorely T, Cameron N, Murdey I. Relationships between media use, body fatness and physical activity in children and youth: a meta-analysis. *Int J Obes Relat Metab Disord* 2004;28: 1238-46.

Rideout V. Zero to Eight: Children's Media Use in America. Common Sense Media; 2011.

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## Considerations for Implementation

The following considerations are drawn from studies included in the evidence review, the broader literature, and expert opinion.

- Family-based social support was the most common intervention component. This highlights the importance of family and parental support in changing sedentary screen time behavior among children.
  - Family-based social support, in combination with electronic monitoring devices, was found to be highly effective, especially in screen-time-only studies. Electronic monitoring devices, which allowed users to set time limits for TV, DVD, and/or videogame use, were distributed across all settings and usually installed at home by parents.
- Availability of electronic monitoring devices for various digital media has increased in recent years. For example, parents can limit screen time through low-cost apps that can be installed on mobile devices, and some cable providers and e-readers offer time controls.
- Many studies incorporated intervention materials into regular classroom curricula, and most U.S. programs trained existing classroom teachers to deliver the intervention. The review identified competing demands of other school subjects as a barrier to implementation. Teachers have suggested integrating the intervention into existing curricula (Salmon, et al. 2011).

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## Crosswalks

### Healthy People 2020



Healthy People 2020 includes the following objectives related to this CPSTF recommendation.

- [Heart Disease and Stroke, Objective 1 \(HDS-1\): \(Developmental\) Increase overall cardiovascular health in the U.S. population \(https://www.healthypeople.gov/2020/topics-objectives/topic/heart-disease-and-stroke/objectives#4547\)](https://www.healthypeople.gov/2020/topics-objectives/topic/heart-disease-and-stroke/objectives#4547)
- [Nutrition and Weight Status, Objective 10 \(NWS-10\): Reduce the proportion of children and adolescents who are considered obese \(https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives#4924\)](https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives#4924)
- [Nutrition and Weight Status, Objective 11 \(NWS-11\): \(Developmental\) Prevent inappropriate weight gain in youth and adults \(https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives#4929\)](https://www.healthypeople.gov/2020/topics-objectives/topic/nutrition-and-weight-status/objectives#4929)

- [Physical Activity, Objective 8 \(PA-8\): Increase the proportion of children and adolescents who do not exceed recommended limits for screen time \(https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity/objectives#5086\)](https://www.healthypeople.gov/2020/topics-objectives/topic/physical-activity/objectives#5086) 

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