

Reducing Children's Recreational Sedentary Screen Time

Recommendation of the Community Preventive Services Task Force

Community Preventive Services Task Force

Task Force Finding

The Community Preventive Services Task Force recommends behavioral interventions to reduce recreational sedentary screen time among children aged 13 years and younger. This finding is based on strong evidence of effectiveness in reducing recreational sedentary screen time, increasing physical activity, improving diet, and improving or maintaining weight-related outcomes. Evidence includes studies of interventions that focus only on reducing recreational sedentary screen time (screen-time-only) and studies that focus on reducing recreational sedentary screen time and improving physical activity or diet (screen-time-plus). Limited evidence was available to assess the effectiveness of these interventions among adults.

Definition

Behavioral interventions that aim to reduce recreational (i.e., neither school- nor work-related) sedentary screen time teach behavioral self-management skills to initiate or maintain behavior change.

Behavioral screen time interventions are classified into two types:

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

Screen-time-only and screen-time-plus interventions teach behavioral self-management skills through one or more of the following components:

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- classroom-based education;
- tracking and monitoring;
- coaching or counseling sessions; or
- family-based or peer social support.

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

Screen-time-only and screen-time-plus interventions were stratified by intensity. Intensity was based on the presence of an electronic monitoring device to limit screen time and the number of interactions. Interactions could be in person, by phone, or computer-tailored. Personal interactions were conducted by the researcher or other trained professional implementing the intervention. Computer-tailored interactions consisted of computer-generated feedback based on individual input. High-intensity interventions included an electronic monitoring device or at least three interactions. Low-intensity interventions include no more than two interactions.

Basis of Finding

The Task Force finding of strong evidence of effectiveness is based on evidence from a Community Guide systematic review completed in 2008 (seven studies with nine study arms; search period, 1966 through July 2007) combined with an updated search for evidence in 2013 (42 studies with 52 study arms; search period, April 2007 through June 2013). Of the 49 included studies, 12 evaluated screen-time-only interventions (14 study arms) and 37 evaluated screen-time-plus interventions (48 study arms). The follow-up period for all studies ranged from just less than 1 month to 4 years (median=6 months).

Among studies included in the review, two targeted adults specifically and two targeted families (i.e., parents and children). No included studies looked at adolescents aged 14–18 years. Given the limited evidence on adults and lack of evidence for adolescents, the remainder of

this recommendation is based on data for children aged ≤ 13 years, including child data from the two family studies.

Recreational sedentary screen time was assessed by TV time alone or by composite screen time. Composite screen time is the sum of TV viewing and at least one other form of screen time, such as video game playing or computer use. Physical activity and nutrition were assessed using multiple outcome measures. Weight was assessed by BMI, BMI for age and sex percentile, BMI z-score, body fat percentage, or obesity prevalence.

Evidence indicates that behavioral screen time interventions are effective in reducing recreational sedentary screen time (47 study arms); improving physical activity (42 study arms); improving diet (37 study arms); and improving or maintaining weight status (38 study arms). These interventions reduce obesity prevalence (11 study arms) and disparities in weight status between children of high and low SES (four study arms).

Applicability

Included studies were conducted in the U.S. (30 studies); Australia (six studies); the United Kingdom (four studies); Canada (two studies); France (one study); the Netherlands (one study); New Zealand (one study); Sweden (one study); and Switzerland (one study). Studies were conducted in schools (20 studies); homes (eight studies); communities (six studies); primary care clinics (four studies); research institutes (five studies); and in multiple settings (four studies). Interventions were effective regardless of country or setting. Of the 25 studies that reported degree of urbanization, 19 were conducted in urban or suburban settings, five were conducted in mixed urban–rural settings, and one was conducted in a rural setting.

Behavioral screen time interventions were found to be effective among children aged ≤ 13 years (47 studies). Only two studies in the review targeted adults, and no studies targeted adolescents aged > 13 years. All studies demonstrated effectiveness among male and female participants, with participants equally likely to be female (median, 50.7%) or male (median, 49.4%). Forty-five studies that reported racial distribution showed intervention effectiveness in all groups: white (median, 67%; 20 studies); black (median, 16%; 14 studies); Hispanic (median, 17%; 11 studies); Asian/Pacific Islander (median, 6%; ten studies); American Indian or Alaska Native (median, 8%; three studies); and other (median 7%; seven studies).

Interventions were effective in low-income populations (nine studies) and targeted low-income African American children (three studies); Special Supplemental

Nutrition Program for Women, Infants, and Children participants (two studies); Head Start program participants (one study); and disadvantaged children (three studies). Studies that targeted overweight or obese populations (six studies) also were shown to be effective.

Five studies performed stratified analyses to examine the effectiveness of behavioral screen time interventions on SES disparities (analysis did not account for potential ceiling effect phenomenon or regression toward the mean). Four studies examined the impact of interventions on weight-related outcomes, and three of these showed greater reductions (e.g., BMI, obesity prevalence) in low-income populations compared with high-income populations.

Considerations for Implementation

Important considerations when selecting one of these interventions are time, resources, intensity, and deliverer. Although both screen-time-only and screen-time-plus interventions are effective, screen-time-only interventions showed greater reductions in TV viewing and composite screen time compared with screen-time-plus interventions. Intervention intensity appeared important for screen-time-only studies, but was not as important among screen-time-plus studies.

Family-based social support was the most common intervention component. This highlights the importance of family and parental support in changing children's sedentary screen time behavior. Family-based social support, combined 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, or video game 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 installed on mobile devices, and some cable providers and e-readers offer time controls. These types of devices might be more successful among younger children than adolescents, as parents' ability to limit their child's sedentary screen time by any method is likely to diminish as children get older.

Schools were the most common setting for included studies. Most school interventions (90%) were screen-time-plus. Many programs incorporated intervention materials into regular classroom curricula, and most U.S. programs trained existing classroom teachers to deliver the intervention. One barrier to implementation was competing demands of other school subjects.¹ Interviewed teachers reported not having enough time

to deliver all the intervention lessons; the teachers suggested integrating the program into existing curricula.

Among the included studies were two large-scale, community-wide, multi-setting interventions conducted in Australia. A screen-time-plus intervention targeting children aged 0–5 years and their families was implemented in school, community, and primary care clinic settings. Components included a TV Turnoff Challenge, tracking and monitoring, family-based social support, coaching and counseling, environmental changes, classroom-based education, and mass media.

Technology is evolving rapidly, and evidence about the impact of newer technologies such as tablets or smartphones rarely was reported in the body of evidence in this review. Thus, the extent to which these mobile devices are associated with increased sedentary behavior and obesity is unknown, as are the effects of changes in their use. The number of studies using mobile devices is increasing, and the literature should be monitored.

Information From Other Advisory Groups

Advisory groups have similar recommendations to limit children's screen time. The American Academy of Pediatrics recommends no more than 2 hours per day of quality screen time for children aged 2 years and older and none for children younger than 2 years.² IOM also recommends no more than 2 hours per day of screen time for children.³

Evidence Gaps

Although evidence shows the effectiveness of behavioral interventions to reduce recreational sedentary screen time, important research questions remain. Future studies should examine

- which combinations of components are most effective;
- which components are critical to success;
- the effect of program intensity and duration on key outcomes (e.g., does a low-intensity, 1-year intervention show greater effectiveness than a high-intensity, 3-month intervention?); and

- how long intervention effects last after an intervention stops.

Behavioral interventions aimed at reducing sedentary screen time should be applicable in most populations, though more research is needed on

- the varying effectiveness of interventions by age group and degree of urbanization;
- middle and high school-aged adolescents; and
- adult populations, which may require a different intervention approach.

In addition, studies should consider degree of urbanization. Most included studies were implemented in urban or suburban settings. The success of similar interventions in rural settings, where the barriers to physical activity are different, should be explored.

Does the importance of hypothesized mechanisms for the relationship between screen time and weight (which include food and drink advertising, eating while watching TV, and displacement of physical activity) change depending on the form of screen media being used? For example, does eating while watching TV have a stronger association with weight than being exposed to digital advertising on a mobile device, which is often tailored to individuals?

Researchers should consider other benefits and implications of reduced screen time as well. For example, when screen time decreases, do other sedentary behaviors increase (e.g., reading for leisure, arts and crafts, listening to music)? And do reductions in screen time lead to other health benefits, such as improved sleep quality and duration?

References

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