

# What is the relationship between screen time and adiposity in children?

## Conclusion

Strong and consistent evidence in both children and adults shows that screen time is directly associated with increased overweight and obesity. The strongest association is with television screen time.

## Grade: Strong

Overall strength of the available supporting evidence: Strong; Moderate; Limited; Expert Opinion Only; Grade not assignable For additional information regarding how to interpret grades [click here](#).

## Evidence Summary Overview

The 2005 DGAC reviewed this question and found a strong relationship between screen time and body weight in children (HHS/USDA, 2005). For this reason, the 2010 DGAC conducted a NEL review to examine only systematic reviews and meta-analyses. One 2004 meta-analysis (Marshall, 2004) was identified that examined the relationship between screen time (television viewing and video game or computer use) and body weight. This study found a significant relationship between screen time in the form of TV viewing and body fatness. However, much of the variance in body fatness could be explained by factors other than TV viewing. There was no association between body weight and video game or computer use.

## Evidence summary paragraphs:

### *Systematic Review and Meta-Analyses (1)*

**Marshall SJ et al, 2004** (positive quality) conducted a meta-analysis to investigate associations between television (TV) viewing, video or computer game use and body fatness and physical activity. Computerized databases were searched to identify studies published on or after 1985 for studies that examined TV viewing, computer and video game use and body fatness in subjects who were under 18 years of age. Data were extracted by one reviewer using a structured form and were checked for accuracy by a second reviewer. All analyses were conducted using the Pearson correlation coefficient effect size, and where data other than Pearson coefficients were presented in primary studies, standard transformations were applied to estimate the Pearson correlation. The final sample included 30 studies, with a total of 44,707 subjects. These studies were conducted in United States, Canada, Belgium, Japan, Australia, China, France, Germany, Mexico and the United Kingdom. The relationship between TV viewing and body fatness was significant, with a sample-weighted effect size of 0.066 (95% CI = 0.056 to 0.078;  $P < 0.05$ ). However, 99% of the variance in body fatness could be explained by factors other than TV viewing. There was a non-significant (NS) relationship between computer or video game use and adiposity (0.070; 95% CI = -0.048 to 0.188). The authors concluded that a statistically significant relationship exists between TV viewing and body fatness among children and youth, although it is likely to be too small to be of substantial clinical relevance.

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Author, Year, Study Design, Class, Rating	Participants	Methods: Diet Assessment; Adiposity Measurement	Outcomes
Marshall SJ, Biddle SJ et al, 2004  Study Design: Meta-analysis  Class: M  Rating: 	N=30 studies, with a total of 44,707 subjects.  Studies were conducted in United States, Canada, Belgium, Japan, Australia, China, France, Germany, Mexico and the United Kingdom.	Computerized databases were searched to identify studies published on or after 1985 for studies that examined TV viewing, computer and video game use, and body fatness in subjects who were under 18 years of age. Data were extracted by one reviewer using a structured form and were checked for accuracy by a second reviewer. All analyses were conducted using the Pearson correlation coefficient effect size, and where data other than Pearson coefficients were presented in primary studies, standard transformations were applied to estimate the Pearson correlation.	The relationship between TV viewing and body fatness was significant, with a sample-weighted effect size of 0.066 (95% CI = 0.056 to 0.078; P<0.05).  However, 99% of the variance in body fatness could be explained by factors other than TV viewing.  There was a non-significant relationship between computer or video game use and adiposity (0.070; 95% CI = -0.048 to 0.188).

### Research Design and Implementation Rating Summary

For a summary of the Research Design and Implementation Rating results, [click here](#).

### Worksheets

 [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 Oct; 28\(10\): 1,238-1,246. Review.](#)