

# Sitting out physical activity

## Children's sedentary behaviour, health and the family environment



Centre for Diet and Activity Research  
A UKCRC Public Health Research Centre of Excellence

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Fully referenced and linked at  
[www.cedar.iph.cam.ac.uk/resources/evidence](http://www.cedar.iph.cam.ac.uk/resources/evidence)

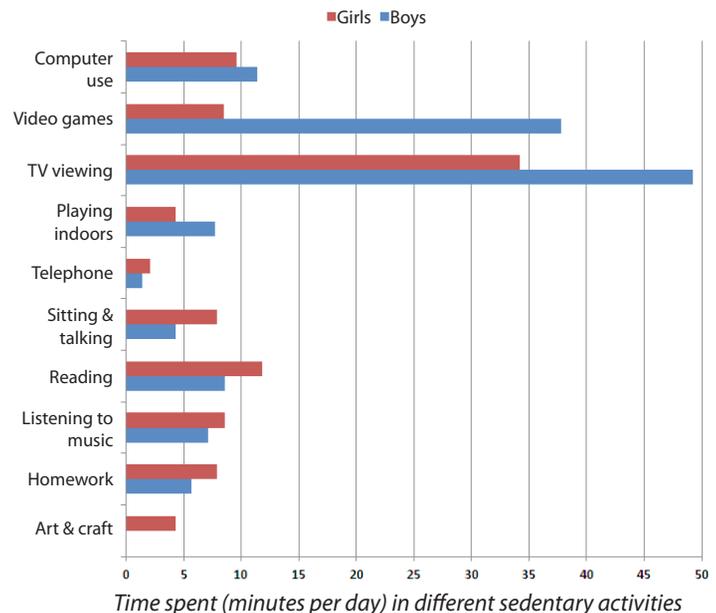
We know that physical activity in children has health benefits, and recently there has been an increasing focus on sedentary behaviour as a possible health risk. So how much do we really know about the impact of too much sitting, and what role does the family have in tackling it?

### What do we mean by sedentary behaviour?

Sedentary behaviour is formally defined as any waking activity characterized by an energy expenditure of less than or equal to 1.5 metabolic equivalents in a sitting or reclining posture. This is often simplified as activities that occur whilst sitting or lying down.

A lot of attention has been given to TV viewing or other screen-based behaviours, such as video gaming. In fact, children engage in a wide range of sedentary behaviours, such as doing homework, travelling by car and reading, with notable differences between boys and girls.

Data from the SPEEDY study shows that at age 10 children accumulated over 7 hours of sedentary time on average each day across a range of activities. Sedentary time also increases with age - by around 10 minutes a day each year between the ages of 10 and 14.



### How is it related to overall physical activity?

Sedentary behaviours do not occur in isolation from each other or from other health behaviours; they coexist within broader lifestyles that may promote or harm wellbeing. A recent systematic review indicated that the correlation between physical activity and sedentary behaviour in children is weak. In other words, it is entirely possible for children to do enough moderate and vigorous physical activity, but still accumulate high levels of sedentary behaviour.

SPEEDY data showed that children who engage in high levels of screen-viewing are likely to have poor diets, including insufficient consumption of fruits and vegetables.

### Sedentary behaviour in children - does it matter?

UK guidelines recommend that all children and young people should minimise the amount of time spent being sedentary for extended periods.

This broad guidance reflects the emerging nature of evidence on this topic. Weaknesses in study design and methodology limit current understanding of the risk that sedentary behaviour poses to mental and physical health, and whether a threshold (duration) exists above which risk is substantially increased.

It is also unclear whether all sedentary behaviours pose the same risk as each other.

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### Brief in brief

- Sedentary behaviour research has focused largely on screen time, but in fact it encompasses a wide range of behaviours and settings.
- The impact of sedentary behaviour on health in young people, independent of physical activity, is unclear and requires more research looking at individuals over time.
- Changes in the family and home environment, including parental behaviours, may be a route to reducing sedentary behaviours in children.

There is some evidence that individuals who engage in high levels of sedentary behaviour during childhood maintain this pattern of behaviour into adolescence and even adulthood, though this relationship varies for different types of behaviour and weakens as the duration of follow-up increases. Nonetheless, this suggests that the effects of interventions to change sedentary behaviour during childhood may persist into later life.

### Sedentary behaviour and the family environment

Much of the research concerned with understanding what influences sedentary behaviour in children has focused on TV viewing or screen-based activities. Whilst this gives a limited picture of total sedentary behaviour, review evidence suggests that older children, those of non-white ethnicity and those from lower socioeconomic status families are more likely to have higher levels of screen-based sedentary behaviour.

Unfortunately, most of these studies are cross-sectional: they provide only a snapshot in time, and cannot tell us anything about changes in behaviour or cause and effect. At CEDAR we used objective measurement in the SPEEDY study to assess changes in children's overall sedentary time between academic year 5 and 6. Sedentary time increased in all groups, with some differences in the amount of increase:

Larger increase in sedentary time	Smaller increase in sedentary time
Children from families of higher socioeconomic status	Children with siblings
Children whose mother and/or father reported higher levels of TV viewing or computer use	Boys who participated in sport, or visited the park
Girls whose parents restricted outside play	

Also in the SPEEDY study, the presence of electronic media in the bedroom was found to be associated with higher levels of screen-based behaviour, though the association was weak. Interestingly, no clear pattern of association was identified between bedroom media and overall sedentary time.

Consistent with our observational findings, evidence from intervention studies shows that programmes which involve parents can be effective in reducing sedentary behaviour, particularly amongst pre-school aged children. Regardless of the study setting (e.g. home, school or community) it appears that the greater the level of parental involvement the more likely it is that a programme will be effective in changing behaviour.

A future Evidence Brief will look at the school environment and its influence on physical activity and sedentary behaviour in the CEDAR-led **Creating Active School Environments (CASE)** study [www.cedar.iph.cam.ac.uk/case](http://www.cedar.iph.cam.ac.uk/case)

### Implications for policy and future research

- Further research is required to understand the impact of sedentary behaviours on health and inform the development of public health recommendations.
- Future research should use longitudinal data wherever possible and seek to identify the shared and unique determinants of different types of sedentary behaviour.
- Changing features of the home environment and parental behaviours is a promising route to changing sedentary behaviours in children. Interventions should focus beyond just reducing screen activity.



### References and resources

- A fully linked and referenced version of this Evidence Brief can be found at [www.cedar.iph.cam.ac.uk/resources/evidence](http://www.cedar.iph.cam.ac.uk/resources/evidence)
- Atkin et al (2013) *Determinants of change in children's sedentary time*. PLOS One <http://goo.gl/qkltu7>
- Klitsie T et al (2013) *Children's sedentary behaviour: descriptive epidemiology and associations with objectively-measured sedentary time*. BMC Public Health. [www.ncbi.nlm.nih.gov/pubmed/24274070](http://www.ncbi.nlm.nih.gov/pubmed/24274070)
- Start Active Stay Active - A report on physical activity for health from the four home countries' Chief Medical Officers. Department of Health, 2011. <http://goo.gl/mSVJ1p>
- *How healthy behaviour supports children's wellbeing*. Public Health England, 2013 [www.gov.uk/government/publications/how-healthy-behaviour-supports-childrens-wellbeing](http://www.gov.uk/government/publications/how-healthy-behaviour-supports-childrens-wellbeing)



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