

Each extra hour per day spent watching TV, using the internet or playing computer games during Year 10 is associated with poorer grades at GCSE at age 16, according to research from the University of Cambridge. In a study published in the open access *International Journal of Behavioral Nutrition and Physical Activity*, researchers also found that pupils doing an extra hour of daily homework and reading performed significantly better than their peers. However, the level of physical activity had no effect on academic performance.

The link between physical activity and health is well established, but its link with academic achievement is not yet well understood. Similarly, although greater levels of sedentary behavior -- for example, watching TV or reading -- have been linked to poorer physical health, the connection to academic achievement is also unclear.

To look at the relationship between physical activity, sedentary behaviors and academic achievement, a team of researchers led by the Medical Research Council (MRC) Epidemiology Unit at the University of Cambridge studied 845 pupils from secondary schools in Cambridge shire and Suffolk, measuring levels of activity and sedentary behavior at age 14.5 years and then comparing this to their performance in their GCSEs the following year. This data was from the ROOTS study, a large longitudinal study assessing health and wellbeing during adolescence led by Professor Ian Goodyear at the Developmental Psychiatry Section, Department of Psychiatry, University of Cambridge.

The researchers measured objective levels of activity and time spent sitting, through a combination of heart rate and movement sensing. Additionally the researchers used self-reported measures to assess screen time (the time spent watching TV, using the internet and playing computer games) and time spent doing homework, and reading for pleasure.

The team found that screen time was associated with total GCSE points achieved. Each additional hour per day of time spent in front of the TV or online at age 14.5 years was associated with 9.3 fewer GCSE points at age 16 years -- the equivalent to two grades in one subject (for example from a B to a D) or one grade in each of two subjects, for example. Two extra hours was associated with 18 fewer points at GCSE.

Screen time and time spent reading or doing homework were independently associated with academic performance, suggesting that even if participants do a lot of reading and homework, watching TV or online activity still damages their academic performance.

The researchers found no significant association between moderate to vigorous physical activity and academic performance, though this contradicts a recent study which found a beneficial effect in some academic subjects. However, both studies conclude that engaging in physical activity does not damage a pupil's academic performance. Given the wider health and social benefits of overall

physical activity, the researchers argue that it remains a public health priority both in and out of school.

As well as looking at total screen time, the researchers analyzed time spent in different screen activities. Although watching TV, playing computer games or being online were all associated with poorer grades, TV viewing was found to be the most detrimental.

As this was a prospective study (in other words, the researchers followed the pupils over time to determine how different behaviors affected their academic achievement) the researchers believe they can, with some caution, infer that increased screen time led to poorer academic performance.

"Spending more time in front of a screen appears to be linked to a poorer performance at GCSE," says first author Dr. Kirsten Corder from the Centre for Diet and Activity Research (CEDAR) in the MRC Epidemiology Unit at the University of Cambridge. "We only measured this behavior in Year 10, but this is likely to be a reliable snapshot of participants' usual behavior, so we can reasonably suggest that screen time may be damaging to a teenager's grades. Further research is needed to confirm this effect conclusively, but parents who are concerned about their child's GCSE grade might consider limiting his or her screen time."

Unsurprisingly, the researchers found that teenagers who spent their sedentary time doing homework or reading scored better at GCSE: pupils doing an extra hour of daily homework and reading achieved on average 23.1 more GCSE points than their peers. However, pupils doing over four hours of reading or homework a day performed less well than their peers -- the number of pupils in this category was relatively low (only 52 participants) and may include participants who are struggling at school, and therefore do a lot of homework but unfortunately perform badly in exams.

Dr. Esther van Sluijs, also from CEDAR, adds: "We believe that programmes aimed at reducing screen time could have important benefits for teenager's exam grades, as well as their health. It is also encouraging that our results show that greater physical activity does not negatively affect exam results. As physical activity has many other benefits, efforts to promote physical activity throughout the day should still be a public health priority."

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