

Weekend screen time linked to poorer bone health in teen boys

Body fat distribution may help protect girls' bones at this age, suggest researchers

Weekend screen time is linked to poorer teen bone health—but only in boys, reveals research published in the online journal *BMJ Open*.

The apparent lack of impact of leisure screen time on teen girls' bone health may be explained by their different body fat distribution, suggest the researchers.

They base their findings on participants in the Tromsø Fit Futures Study in Norway, which involved 961 of the region's 15-17 year old school pupils in 2010-11 (first wave) and 688 (66%) of this original group two years later in 2012-13 (second wave).

At both time periods, the teens were quizzed in detail about their lifestyles, including how much time they spent on their computers or watching TV/DVDs at the weekend and outside of school hours during the week; how much they smoked and drank; and what they ate, collected by food frequency questionnaires to gauge calcium and soft drink intake—factors known to affect bone mineral density.

They were also asked about their average weekly levels of physical activity in the preceding year, which was graded into sedentary; at least 4 hours walking, cycling or formal exercise; at least 4 hours of recreational sports; and hard training/competitive sport several times a week.

The bone mineral density was assessed at the hip, top of the thigh bone (femoral neck), and the whole skeleton, and their vitamin D level was measured from blood samples. Height and weight measurements (BMI) were also taken.

The analyses showed that boys spent more time in front of any screen than girls, averaging around 5 hours a day at the weekend and just under 4 hours during the week. The equivalent figures for girls were 4 hours at weekends and just over 3 hours during the week.

While more time spent in front of a screen at the weekend was linked to lower levels of physical activity, one in five girls and one in four boys, who whiled away more than 4 hours on Saturdays and Sundays on screen time, also said they clocked up more than 4 hours a week on hard training or competitive sports.

Lower bone mineral density was linked to weekend screen time, but was only significant among boys, among whom bone mineral density was lower at all the sites tested. Among girls, the positive association was only evident for the femoral neck.

After taking account of potentially influential factors, such as age, the degree of sexual maturity, and weekday screen time, the association strengthened for boys.

Two to 4, or more than 6 hours, in front of a screen were linked to statistically significant reductions of bone mineral density at the femoral neck compared with boys clocking up fewer than 2 hours of screen time daily at the weekend.

But boys who spent 4 to 6 hours in front of a screen tended to have higher than expected bone mineral density levels.

The opposite was true of girls among whom 4-6 hours of weekend screen time daily was associated with higher bone mineral density, even though they took less exercise than those who said they spent less time in front of a screen.

All these trends persisted when the assessments were repeated after two years.

"These conflicting results may be related to different factors, as the relationship between fat and bone varies with age and hormones," say the researchers.

This is an observational study so no definitive conclusions can be drawn about cause and effect.

But the researchers conclude: "Our study suggests persisting associations of screen based sedentary activities on bone health in adolescence. This detrimental association should therefore be regarded as of public health importance."