Does too much time at the computer lead to lower bone mineral density in adolescents?

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Results of a study presented today at the World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases, showed that in boys, higher screen time was adversely associated to bone mineral density (BMD) at all sites even when adjusted for specific lifestyle factors.

The skeleton grows continually from birth to the end of the teenage years, reaching peak bone mass – maximum strength and size– in early adulthood. Along with nutritional factors, physical activity can also greatly impact on this process. There is consequently growing concern regarding the possible adverse effects of sedentary lifestyles in youth on bone health and on obesity.

The Norwegian study explored the hypothesis that greater computer use at weekends is associated with lower BMD. The data was obtained from 463 girls and 484 boys aged 15–18 years in the Tromsø region of Norway. The students participated in the Fit Futures study from 2010–2011 which assessed more than 90% of all first year high school students in the region.

BMD at total hip, femoral neck and total body was measured by DXA (dual-energy X-ray absorptiometry). Lifestyle variables were collected by self-administered questionnaires and interviews, including questions on time per day during weekends spent in front of the television or computer, and time spent on leisure time physical activities. The associations between BMD and screen time were analyzed in a multiple regression model that included adjustment for age, sexual maturation, BMI, leisure time physical activity, smoking, alcohol, cod liver oil and carbonated drink consumption.

Not surprisingly, the researchers found that boys spent more time in front of the computer than girls. As well as high screen time being adversely associated to BMD, in boys screen time was also positively related to higher body mass index (BMI) levels. In contrast to the boys, girls who spent 4–6 hours in front of the computer, had higher BMD than counterparts who spend less than 1.5 hours screen time each day – and this could not be explained by adjustments for the different parameters measured.

Lead author of the study Dr Anne Winther, Arctic University of Norway, Tromsø, stated, "Bone mineral density is a strong predictor of future fracture risk. Our findings for girls are intriguing and definitely merit further exploration in other studies and population groups. The findings for boys on the other hand clearly show that sedentary lifestyle during adolescence can impact on BMD and thus compromise the acquisition of peak bone mass. This can have a negative impact in terms of osteoporosis and fracture risk later in life."

According to the International Osteoporosis Foundation (IOF), approximately one in five men over the age of fifty worldwide will suffer a fracture as a result of osteoporosis. Very low levels of awareness about osteoporosis risk and bone health in males has prompted IOF to focus on osteoporosis in men as a key World Osteoporosis Day theme in 2014.

More information: OC 49 Leisure time computer use and adolescent bone health: findings from the Tromsø study–Fit Futures. A. Winther, E. Dennison, O. A. Nilsen, R. Jorde, G. Grimnes, A. S. Furberg, L. A. Ahmed, N. Emaus. Osteoporos Int. Vol 25, Suppl. 2, 2014

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