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Fracture risk in children; Traumatic fractures in association with physical activity, bodyweight and screen time

Background: Fractures are common in children and can cause growth problems, long-term complications and decrease physical activity. Studying potential risk factors for fractures in children might reveal relevant targets for national and international injury prevention programs.

Aim: To investigate physical activity (PA) in Dutch children with fractures with regards to the Dutch PA norm. Secondly, the Body Mass Index and the amount of screen time were investigated in children with fractures.

Methods: A multi-centre cross sectional cohort study was performed at the Emergency Department of the Radboud University Medical Center and Canisius Wilhelmina Hospital, The Netherlands. All patients 4-18 years who visited the ED with a fracture from November 2017 through November 2018 received a validated questionnaire.

Results: In total 177 respondents were included (18% response rate). 45.8% of the children achieved the PA norm. In 12–18 year olds 37% achieved the norm and in 4-12 year olds 53% ($p<0.05$). Of the study population 9% ($n=16$) were overweight, while 11.8% ($n=21$) were underweight. The daily amount of screen time was 3.5 hours ($SD\pm2.8$), boys and older children averaged higher amounts, respectively 4.0 and 4.9 hours per day ($p<0.01$ and $p<0.001$). In 57.1% ($n=101$) the traumas were sports related. Sports traumas occurred most frequently in 12–18 year olds ($p<0.001$).

Discussion: Children with fractures achieve the PA norm equally frequently compared with the general Dutch pediatric population (46% versus 43%). This study displays that PA and sports could increase fracture risk in 12–18 year olds. Being underweight might be a risk factor for fractures and being overweight protective for fractures. Screen time was not identified as a factor in children's fracture risk. Lastly, the trauma mechanism is highly dependent on national preferences in sports and age.