

Prevalence of Physical inactivity and Elevated Sedentary time worldwide

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Description

High levels of physical activity and low sedentary behavior are protective factors for several negative health outcomes during adolescence, including cardiovascular risk factors and mental health-related outcomes. Specifically, the association between physical activity and health outcomes changes according to the intensity of physical activity, with higher intensities as moderate and, especially, vigorous presenting stronger associations with cardiovascular health. However, the prevalence of physical inactivity (insufficient levels of moderate-to-vigorous physical activity) and elevated sedentary time is high worldwide, with approximately 80% of adolescents being classified as inactive and more than 30% spending in excess of 3h/day of sitting time. In addition, physical activity levels decline throughout adolescence, while sedentary behavior increases. Most previous intervention studies to promote physical activity in young people have focused on leisure-time physical activity or in school settings. These interventions have had limited effect on physical activity behaviour and faced implementation challenges. Active travel to school may have the potential to increase overall physical activity to recommend levels and could be a complementary strategy. Beyond the potential impact on habitual physical activity levels, active travel to school is also aligned to strategies aiming to decrease the use of motorized transport, contributing to reductions of greenhouse gas emissions and also different health outcomes due to the consequential reductions in air pollution.

Device-Measured Physical Activity and Sedentary Behavior

Previous research investigating the association between active travel to school and device-measured physical activity and sedentary behavior has been mostly cross-sectional. Prospective studies investigating the association between change in school travel mode and device-measured physical activity and sedentary behavior have found a change of passive to active travel to school was positively associated with change in MVPA and inversely associated with after-school sedentary time. However, the association between change in school travel mode and different intensities of physical activity is still lacking, especially in multi-country studies, considering that travel mode

to school varies by country. The investigation of the association between changes in active travel to school and intensities of physical activity can help the comprehension of how changes in active transportation could change the dynamics of physical activity as a whole, having in mind that there may be compensatory effects in other domains. Sex, age, and weight status are cross-sectionally and prospectively associated with device-measured physical activity. Consequently, it is possible that changes in active travel to school could have a greater contribution to changes in device-measured physical activity in the specific groups with lower physical activity practice, as among girls, older adolescents and adolescents with overweight/obesity.

Reported Predominant Travel Mode

Active travel to school was assessed in different studies through questions asking about mode and duration of travel to school. To harmonize different studies, in the studies that allowed the participants to select more than one travel mode mixed transportation, we considered the reported predominant travel mode and classified travel to school as either active walking or cycling or passive e.g. by bus, car, public transport or motorcycle depending of the survey in both waves of each study. To harmonize data processing ICAD reanalyzed accelerometer data using 60 second epochs during daytime 6 am–11 pm. Non-wear time was considered as 60 min of consecutive zeros with tolerance of 2 min of non-zero epochs. Also, aiming to minimize missing data, we adopted the cutoff point of 500 minutes per day as a valid day of measurement and a minimum of one valid weekday per week. We conducted a sensitivity analysis only including participants with at least three valid accelerometer days, including at least one weekend day at both time points, aiming to test if the inclusion of participants with less valid days changed the results. To classify intensities of physical activity, we used the cutoff points. A detailed description of how physical activity measures were pooled has been described previously. We used the difference between baseline and follow-up in min/day of SED, moderate MPA, vigorous VPA and MVPA as our indicators. We also categorized MVPA using the cutoff point of an average of 60 min/d over the valid days.