

# Accelerometer-measured physical activity and sedentary time among children and their parents in the UK before and after COVID-19 lockdowns: a natural experiment

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## Publication

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## Abstract

### Background

Restrictions due to the coronavirus disease 2019 (COVID-19) pandemic reduced physical activity provision for both children and their parents. Recent studies have reported decreases in physical activity levels during lockdown restrictions, but these were largely reliant on self-report methods, with data collected via unrepresentative self-report surveys. The post-pandemic impacts on children's activity levels remain unknown. A key question is how active children become once lockdown restrictions are lifted.

### Methods

Active-6 is a repeated cross-sectional natural experiment. Accelerometer data from 1296 children aged 10–11 and their parents were collected in 50 schools in the Greater Bristol area, UK in March 2017–May 2018 (pre-COVID-19 comparator group), and compared to 393 children aged 10–11 and parents in 23 of the same schools, collected in May–December 2021. Mean minutes of accelerometer-measured moderate-to-vigorous physical activity (MVPA) were derived for weekdays and weekend and compared pre- and post-lockdown via linear multilevel models.

### Results

After adjusting for seasonality, accelerometer wear time and child/parent demographics, children's mean weekday and weekend MVPA were 7.7 min (95% CI: 3.5 to 11.9) and 6.9 min (95% CI: 0.9 to 12.9) lower in 2021 than in 2018, respectively, while sedentary time was higher by 25.4 min (95% CI: 15.8 to 35.0) and 14.0 min (95% CI: 1.5 to 26.5). There was no evidence that differences varied by child gender or household education. There was no significant difference in parents' MVPA or sedentary time, either on weekdays or weekends.

### Conclusions

Children's MVPA was lower by 7–8 min/day in 2021 once restrictions were lifted than before the pandemic for all groups, on both weekdays and weekends. Previous research has shown that there is an undesirable age-related decline in children's physical activity. The 8-min difference reported here would be broadly comparable to the decline that would have previously been expected to occur over a three-year period. Parents' physical activity was similar to pre-pandemic levels. Our results suggest that despite easing of restrictions, children's activity levels have not returned to pre-pandemic levels. There is an urgent need to understand why these changes have occurred and how long they are maintained.

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