

The Research File



Summary from the Canadian Fitness and Lifestyle Research Institute and ParticipACTION

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After school Patterns of Outdoor Physical Activity in Children: The Peach Project

National surveillance of children's physical activity has consistently shown that children's level of physical activity remains below recommended levels deemed acceptable for healthy growth and development. Since learnt behaviors (good or bad) which are established in early childhood have the potential to be tracked into adulthood; and given the serious health implications of an inactive lifestyle, every effort needs to be made to identify determinants of physical activity in children. The role of the physical environment in influencing children's activity has been the subject of much attention in recent years. Increasingly, studies have shown a link between time spent outdoors and physical activity in children.¹ What is lacking, however, is a more detailed description of which environmental factors may be conducive to children's activity outdoors. This edition of the research file will summarize the findings of a study by Cooper et al. In their study, Cooper and colleagues explore the use of global positioning system (GPS) and accelerometers as an objective measure of outdoor physical activity during the after school period.¹



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Methods

Sixth grade students were recruited from 23 urban primary schools in Southwest England. Participants (n=1010) were instructed to wear both an accelerometer on their waistband/belt and a GPS receiver on their wrist. The GPS device was only to be turned on after school, and children were asked to wear both devices for four consecutive school days.¹ Data from both accelerometer and GPS were recorded at 10 second epochs and were combined (when both records were available).¹ Combined accelerometer and GPS data was categorized as time spent 'outdoors', whereas times where only accelerometer was available was considered to be time spent 'indoors' (the reason being that GPS network signals are lost when the child enters a building).¹

Results

Time spent after school

According to the authors, children's outdoor time was peaked immediately after school, was highest between 3:30 and 4:00 pm and declined in the evening.¹ Gender differences in time spent outdoors were small, with girls spending slightly less time outdoors than boys (this difference was not statistically significant).¹ Seasonal variations were also found, with less time spent outdoors during the winter months (may be explained by decreased hours of daylight and/or poorer weather).¹

On average children spent 40 minutes outside after school each day, with the highest average time outdoors spent within the first hour after school (approx 14 minutes).¹ Moreover, more than half of the children (51%) recorded less than 30 minutes outdoors.

Fewer children had higher recorded outdoor times, for example; 25% of children recorded 30-60 minutes, 14% recorded 60-90 minutes and 10% recorded over 90 minutes of daily activity outdoors.¹

Time spent outdoors was significantly higher during the summer than in the winter (approx. 50 minutes compared to 32 minutes respectively).¹ During the summer, fewer children (40%) recorded less than 30 minutes of daily outdoor activity compared to in the winter (64%); conversely, more children spent over 90 minutes in the summer than in the winter (14% vs. 4%).¹

GPS-Time outdoors and physical activity

The ability to record both GPS and accelerometer data uniquely allows investigators to describe both the frequency and the pattern of physical activity where traditionally researchers have only obtained overall measures of physical activity and time spent outdoors exclusively.¹ Interestingly, data in this study showed decreased levels of both indoor and outdoor physical activity in the evenings, albeit the levels of physical activity remained higher for outdoor activity than for indoor (2-3 times higher).¹ The above mentioned relationship of increased activity outdoors compared to indoors was evident year round; however, outdoor activity was subject to seasonal variation, whereas indoor activity remained relatively constant.¹ In addition, after conducting a number of regression analyses involving different models (accounting for potential confounders), time spent outdoors was a significant predictor of physical activity irrespective to gender, season and hour.¹

References:

1. Cooper, AR., Page, AS., Wheeler, BW., Hillsdon, M., Griew, P., Jago, R. (2010). Patterns of GPS measured time outdoors after school and objective physical activity in English children: the PEACH project. *International Journal of Behavioral Nutrition and Physical Activity*. Vol. 7:31.

What have we learned?

Objective measures (e.g., accelerometers) have allowed for accurate measures of overall physical activity. More recently, advances in technologies (e.g., GPS) have allowed researchers to take a step further and describe not only the frequency but the patterns of activity. This is particularly useful when measuring outdoor play as it may facilitate identification of environment factors that may impede activity outdoors. Findings from this study suggest a strong correlation between physical activity and time spent outdoors with marked seasonal differences.¹ Similar to previous studies, the period after school was identified as an important time for children's physical activity.¹

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