

GPS AND GIS FOR ASSESSMENT OF PHYSICAL ACTIVITY BEHAVIOUR OF CHILDREN WITHIN THE URBAN ENVIRONMENT

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ABSTRACT (word count = 296)

Background: The urban built environment influences the physical activity levels of children. Currently, knowledge of which environmental factors affect activity behaviour among children, and how they do so, is not clearly understood. Traditional analysis methods provide only limited insight, since they are unable to accurately determine exactly where children are active.

Aim: To obtain better insight into the urban locations where children are physically active by using both Global Positioning System (GPS), ActiGraph accelerometers and Geographic Information Systems (GIS) technologies.

Methods: Approximately 90 school children (aged 7-11 years) from 5 cities in the Netherlands participated in the study for a maximum of 7 days. The locations and intensity of their activities were recorded by GPS and accelerometer, and by 7-day physical activity diary. A spatial analysis of the children's activities was conducted by use of GPS track data together with geographical information concerning aspects of the physical environment (e.g. land type, land-use, buildings, and playgrounds).

Results: Preliminary results indicate that the children spent a mean of 1.8 hours per 24-hour period outdoors, and that 26.7% of this time was spent in areas containing natural vegetation. Despite that the amount of time spent near public playgrounds and the school playground was relatively low (mean 4.6 minutes, range 0-13 minutes per 24 hours), the mean activity levels during these periods were higher than in any of the other investigated areas. Information on activity levels and actual distances walked by children for various purposes (e.g. travelling to school) will be presented.

Conclusions: These findings provide better insight into the question where within the urban environment do children spend their time and where they are physically active. Also, the use of GPS technology, in conjunction with GIS, appears to be an insightful and promising addition to this field of research.