



Ethnicity, the built environment and physical activity in children from a deprived area of London: The PEACH Project

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Background

Prevalence of overweight and obesity is greater among adolescents from low socio-economic and minority ethnic backgrounds. An environment that encourages excess energy intake and reduced energy expenditure is widely considered to be a driving force behind this weight-gain. However, little is known about the habitual physical activity of children from minority ethnic populations, or how it is related to their neighbourhood environment.

Accelerometers measure levels of physical activity, but do not measure where this activity takes place. Global Positioning Systems (GPS) allow accurate mapping of the location of an individual. Integration of these two methods will enable identification of where around the school or home environment physical activity takes place.

Research Aims

- 1) To investigate the physical activity patterns of pupils from minority ethnic backgrounds in an area of high deprivation
- 2) To combine accelerometer and GPS data to measure how children utilise the built environment for physical activity

Methods

Four primary schools from Brent, London were recruited to participate in a pilot study for the PEACH Project. All pupils in year 6 (age 10-11 years; n=296) were eligible to participate. Consent was received from the parents/guardian of 187 children (61% consent rate)

Children wore an accelerometer (Actigraph GT1M) during waking hours for 7 days to measure habitual physical activity



and a GPS watch (Garmin foretrex 201) on four evenings to monitor where periods of activity occurred

Integrating Accelerometer and GPS Data



Figure 2. GPS and accelerometer results are displayed separately providing data on this participants activity intensity and route taken. At points 1 & 2 the participant slows down to cross major roads.

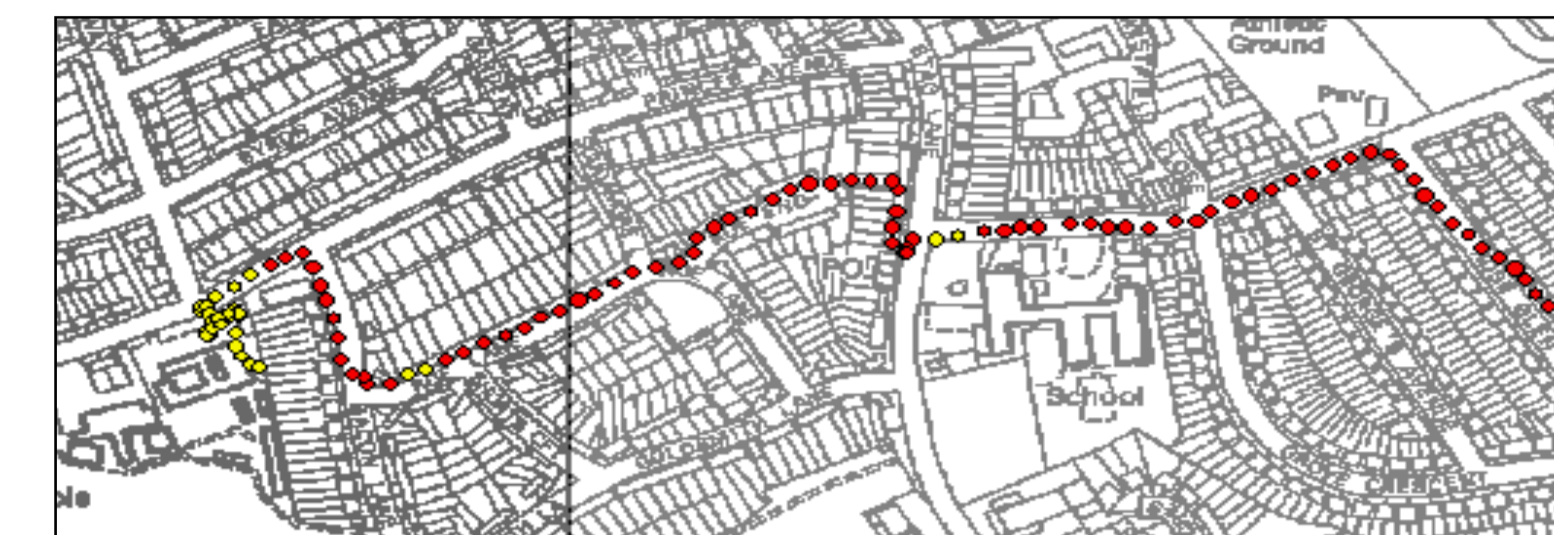


Figure 3 Combined GPS and accelerometer data using colour coding to provide a detailed account of this participants journey to school. This figure shows where the participant was walking (red) and where they moved more slowly when crossing roads and outside the school (yellow)

Results

As found in previous physical activity research, female participants were significantly ($p = 0.001$) less active than males across the whole sample. Among the female population Asian girls were significantly ($p = 0.004$) less active than girls from black and other ethnic groups (figure 1).

Accelerometer and GPS data were integrated to provide an objective measure of the volume and intensity of participant physical activity as well as where this activity took place. Figures 2 & 3 show one participants journey to school as an exemplar of how accelerometer and GPS data can be combined to quantify the level of physical activity during a journey.

Physical activity of female participants

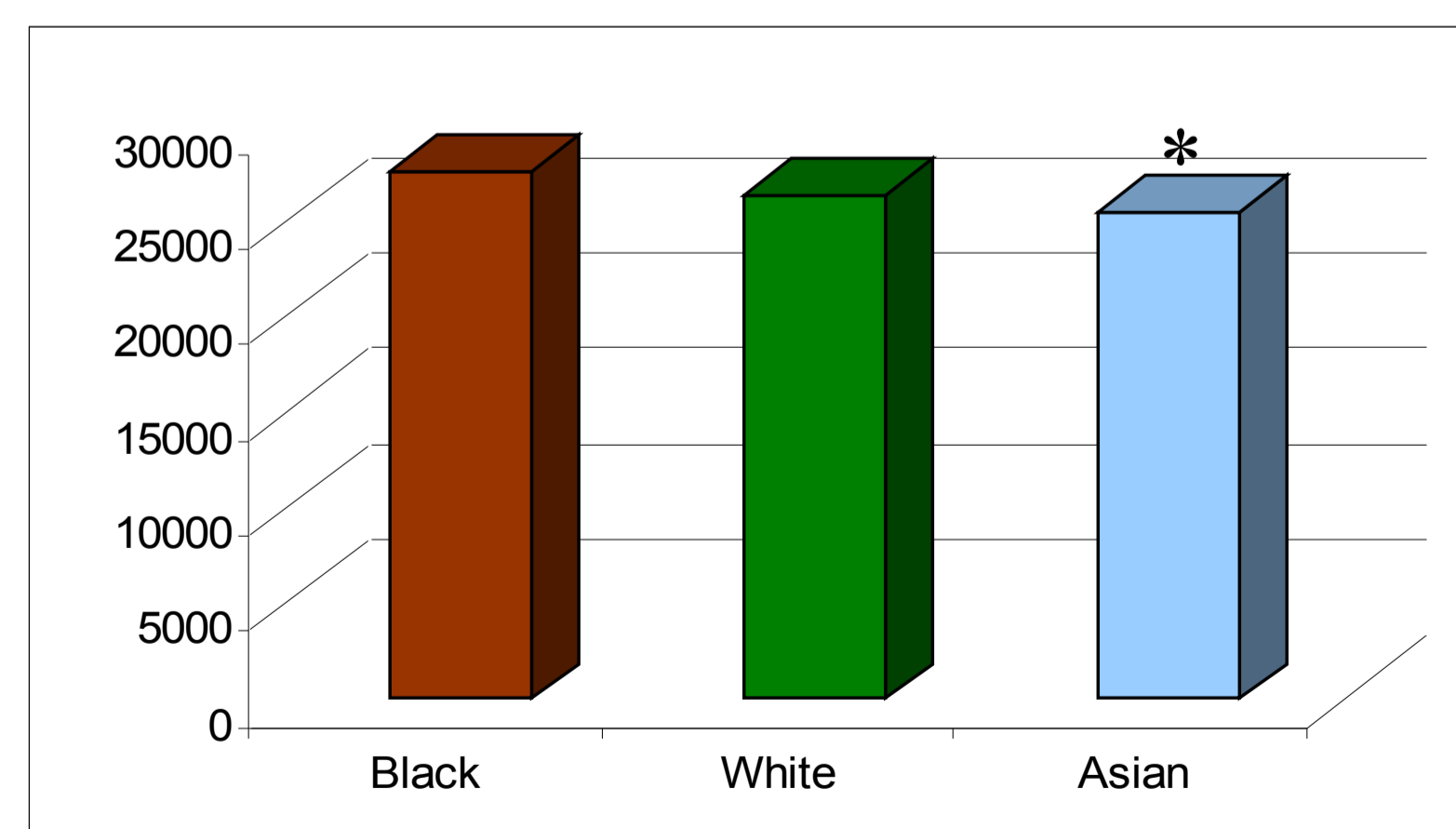


Figure 1. Mean daily counts from female participants
* Asian females significantly less active than black females $p=0.004$

Conclusions

- Asian females in the UK may be at significant risk of low levels of physical activity, making them a potentially important group for future intervention
- Combining accelerometer and GPS data enables the assessment of the volume and intensity of an activity across different locations
- Based on this pilot study, the PEACH Project will use these methods in a sample of 1307 children to investigate the relationship between the built environment and physical activity during the transition from primary to secondary school

