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Objectively-measured physical activity of children in the Gateshead Millennium Study

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Level of habitual physical activity might be an important determinant of fatness in UK children⁽¹⁾. The Gateshead Millennium study is a birth cohort of 1029 children in north-east England born between June 1999 and May 2000⁽²⁾. Between October 2006 and December 2007 the children were involved in a follow-up study looking at various measures of physical activity, growth and nutrition.

Physical activity was measured objectively in the cohort using Actigraph GT1M accelerometers (Actigraph LLC, Pensacola, FL, USA) worn on an elastic belt around their waist. The children were asked to wear the accelerometer during waking hours for 7 d, excluding water-based activities. Parents were asked to record in a simple diary the times when the belt was worn. Information from the accelerometer was analysed to ascertain time spent in moderate-vigorous physical activity (MVPA) using published cut-offs⁽³⁾.

Of 606 accelerometers given out, eighteen were lost, twenty-five were not worn, thirty-one were returned without diaries, one child was ill throughout and ten suffered a software malfunction, leaving 521. Of the 521, nine were worn for <3 d and excluded from the analysis leaving 512 (84%; 260 boys and 252 girls). The accelerometers were worn for an average of 10.8 h/d and for 6 d. The median time spent daily in MVPA was 26 (interquartile range (IQR) 18–37) min and children spent an average of 3.9 (IQR 2.6–5.8) % of their time in MVPA. Boys took part in more MVPA (28 (IQR 19–41) min/d) than girls (25 (IQR 16–35) min/d; $P=0.004$) and consequently spent a greater percentage of their time in MVPA (4.2 v. 3.8; $P=0.007$). Only twenty-six of 260 boys (10%) and eight of 252 girls (3%) averaged >60 min/d spent in MVPA (Figure). There was a distinct effect ($P<0.001$) of season on the amount of daily MVPA, with spring and summer recording more than autumn and winter (30 min v. 21 min). The most activity was recorded in June (32 min/d), closely followed by July (31 min/d), and the least in January (19 min/d).

It was found that the majority (93%) of children in the study do not currently meet the health recommendation of 60 min spent in MVPA daily, even during the summer holidays (August), and this factor is likely to increase their risk of excessive fatness. Developing strategies to increase physical activity in children of this age-group should be a public health priority.

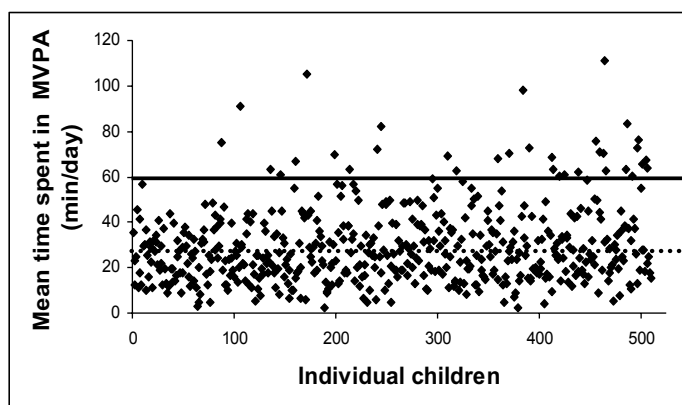


Figure. Scatterplot of daily MVPA. (—), The current UK health recommendation (60 min/d); (.....), median time achieved by this sample (26 min/d).

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1. Ness AR, Leary SD, Mattocks C *et al.* (2007) *PLoS Med* **4**, e97.
2. The Gateshead Millennium Study Team (2008) The Gateshead Millennium Study. www.ncl.ac.uk/gms/
3. Puyau MR, Adolph AL, Vohra FA & Butte NF (2002) *Obes Res* **10**, 150–157.