

This is a pre-copy-editing, author produced PDF of an article accepted for publication in *Medicine & Science in Sports & Exercise* following peer review. The definitive publisher-authenticated version - Ojiambo, Robert, Budd, Hannah, Easton, Chris, Fudge, Barry, Thairu, Kihumbu, Reilly, John J. and Pitsiladis, Yannis P. (2008) Objective measurement of physical activity in Kenyan children using accelerometry, *Medicine & Science in Sports & Exercise*, 2008, 40 (Supplement 1 5), S.203.is available online at <http://dx.doi.org/10.1249/01.mss.0000322337.83243.16>

Objective Measurement Of Physical Activity In Kenyan Children Using Accelerometry: 1401: Board #140 May 28 11:00 AM - 12:30 PM

Ojiambo, Robert; Budd, Hannah; Easton, Chris; Fudge, Barry; Thairu, Kihumbu; Reilly, John J.; Pitsiladis, Yannis P. FACSM

Medicine & Science in Sports & Exercise . 40(5) Supplement 1:S203-S204, May 2008.

doi: 10.1249/01.mss.0000322337.83243.16

Author Information

¹University of Glasgow, Glasgow, United Kingdom. ²Moi University, Eldoret, Kenya.

Email: r.ojiambo.1@research.gla.ac.uk

(No relationships reported)

Proposed non-genetic explanations for the success of east African runners in international athletics include running long distances to school as children. For example, Kenyan elite runners tend to originate from small villages in rural areas where physical activity levels are thought to be higher than in towns.

PURPOSE: To objectively measure habitual physical activity levels in urban and rural Kenyan children from the region of Nandi, which is known to be the origin of many elite runners.

METHODS: Habitual physical activity levels in 15 rural (10.87±4.05 years, mean age±s.d.) and 12 urban (9.58±4.12 years) Kenyan children were assessed by uniaxial accelerometry for 3 consecutive days. The epoch duration was set at 1 s and re-integrated to 60 s epoch using the device software. Physical activity levels were calculated using cut offs for sedentary, light and moderate to vigorous physical activity (MVPA) developed by Reilly et al. (Obes Res 11: 1155-8, 2003) and Puyau et al. (Obes Res 10: 150-7, 2002).

RESULTS: There were no significant differences in height, weight or waking hours between rural and urban children. Urban children had a significantly greater body mass index than rural children (19.58±2.93 vs 14.95±1.92 kg/m² P<0.01). There were no significant differences in average accelerometer counts between rural and urban children (808±252 vs 698±207 counts/min; P=0.22) or in the time spent in sedentary activity (534±86 vs 556±77 min). The time spent in light activity was significantly shorter (114±31 vs 141±43 min; P<0.01) and the time spent in MVPA was significantly longer (46±31 vs 22±13 min; P<0.05) in the rural children when compared to the urban children. MVPA in rural children accounted for approximately 6% of all monitored time with MVPA accounting for only 3% of all monitored time in urban children.

CONCLUSIONS: Rural children in the Nandi region of Kenya spend significantly more time doing MVPA compared to urban children. This may reflect the rural

African lifestyle (e.g. cattle herding) and the necessity to travel long distances to school by walking or running and may account for the lower BMI in rural compared to urban children.

This work was supported in part by ActiGraphTM, Fort Walton Beach, Florida, USA