

Predictors of overweight and physical activity during the school day

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Study

➤ **Research Questions:**

- What are the correlates of PA at school?
- Is school-day PA related to childhood overweight or obesity (OWOB)?

➤ **Sample:**

- 32 primary/secondary class groups
- Initial n=851, complete data n=671 (boys/girls)
- Aged 7-16yrs

➤ **Outcome measures:**

- Age, Gender, Deprivation (school and home)
- Overweight or obese (>85th and >95th percentiles for BMI)
- Accelerometers recorded 9:15 am - 3:15 pm: (i) Total PA
(ii) Minutes MVPA

Energy expenditure calculations

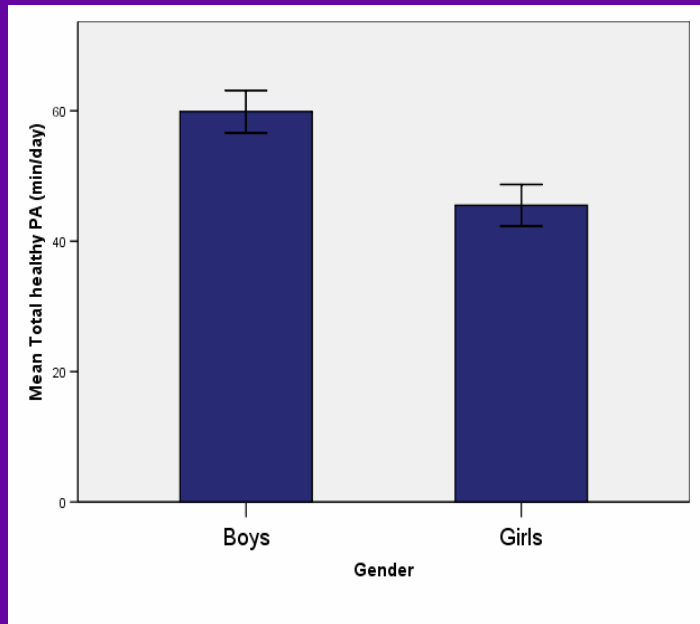
- Accelerometer output = counts (c)
- Total PA = total c normalised by body weight (cn)
- Using equation from Work Energy Theorem:
$$1 \text{ } cn = \text{kcal} / (\text{body weight}^2 \times 0.0191)$$

E.g. for a 40 kg child:

$$1 \text{ } cn = \text{kcal} / (1600 \times 0.0191)$$

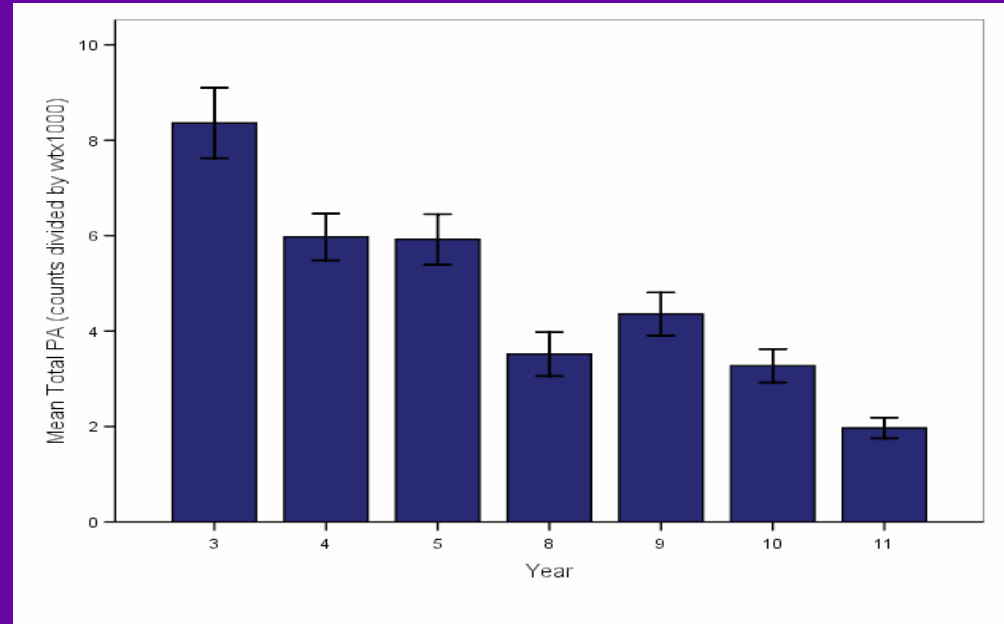
$$1 \text{ } cn = 30.56 \text{ kcal}$$

Findings: (i) Boys school-day PA > girls (ii) School-day PA ↓ with age



Boys vs. girls:

Minutes MVPA ($P < 0.001$)

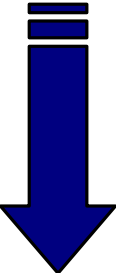


Age:

Total PA by Yr group ($P < 0.001$)

Findings: deprivation least important of variables for school day PA

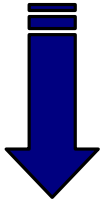
➤ Linear regression for Total PA

	Variables	+ve / -ve impact	p
	Strongest		
	Age (yrs)	-ve	<0.001
	BMI (kg/m ²)	-ve	<0.001
	PE day	+ve	<0.001
	Weather prohibiting outdoor exercise	-ve	<0.001
	Female gender	-ve	<0.001
	Weakest	Deprivation (home NH)	-ve

➤ Variables explained ~55% variance in total school-day PA

Findings: school-day PA important for OWOB

➤ Logistic regression for OWOB

	Variables	+ve / -ve impact	OR (95% CI)	p
Strongest  Weakest	Total PA (cn)	-ve	0.672 (0.608 to 0.742)	<0.001
	Female gender	-ve	0.674 (0.469 to 0.968)	0.033
	Age (yrs)	-ve	0.787 (0.727 to 0.852)	<0.001
	Deprivation (home)	NS	1.096 (0.542 to 2.217)	0.798

- 1 unit increase in total PA at school → ↓ likelihood OWOB by ~1/3
- For 40 kg child, equates to just ~ 15 minutes MPA per school day (at 3 METs)

Limitations & unanswered Qs

- Single day of measurement
- PA outside school?
- Diet?

Current research

- ~600 SoT children randomly selected from primary/secondary schools (aged 5-16 yrs)
- Outcome measures
 - Socio-demographics
 - BMI (normal weight, overweight, obese)
 - Physical activity (7d accelerometry)
 - Detail on times of PE/break
 - ‘Obesogenicity’ of the school environment:
 - Quality of PE provision, functionality of indoor/outdoor play space, school ethos, physical activity/nutritional policy, etc
 - Focus groups/questionnaires for children