

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Kulkarni N, Pierse N, Rushton L, Grigg J. Carbon in airway macrophages and lung function in children. *N Engl J Med* 2006;355:21-30.

SUPPLEMENT

METHODS

Activity assessment

Children completed their own questionnaire, which asked about time spent watching television, and amount of activity outdoors for more than 60 minutes during the last week and for a typical week. Metabolic (MET) and vigorous (VIG) activity scores were calculated as previously described (1;2). A longitudinally validated activity questionnaire was used to assess activities over previous year, apart from those done in physical education classes during school. Children completed details of frequency and duration of all activities that they had participated in for at least 10 times during the past year. An estimate of the average number of hours per week spent in each activity was then obtained. The hours/week estimate for each activity was then multiplied by the MET cost of that activity (expressed as MET and obtained from existing tables (3), in order to weight each activity by a crude estimate of its relative intensity. MET (hr/wk) for each activity were summed to determine a composite estimate over the past year. A higher score therefore indicates increased activity. One MET represents energy expenditure at rest (1 kcal/kg/hr). VIG was estimated by adding up the average hours of activity with METs ≥ 6 .

SUPPLEMENTARY REFERENCES

- (1) Aaron DJ, Kriska AM, Dearwater SR, et al. The epidemiology of leisure physical activity in an adolescent population. *Med Sci Sports Exerc* 1993; 25:847-853.
- (2) Kriska AM, Knowler WC, Laporte RE, et al. Development of questionnaire to examine relationship of physical activity and diabetes in Pima Indians. *Diabetes Care* 1990; 13:401-411.
- (3) Kriska AM, Caspersen CJ. Introduction to a Collection of Physical Activity Questionnaires. *A Collection of Physical Activity Questionnaires for Health-Related Research. Medicine & Science in Sports & Exercise* 1997;29[Suppl 5-9].

SUPPLEMENTARY TABLE 1

Supplementary Table 1. Comparison of characteristics of healthy children who did and did not produce sufficient airway macrophages for carbon analysis.			
	Sufficient macrophages (n = 64)	Insufficient macrophages (n = 50)	P value*
Age — yr	11.47± 2.34	10.6 ±1.92	0.06
MET hr/wk	39.93 ± 39.99	43.1 ± 59.1	0.86
VIG hr/wk	3.37 ± 4.72	3.27 ± 4.66	0.95
FEV ₁ % predicted	100.12 ± 11.06	97.74 ± 12.36	0.34
Primary modelled annual mean PM ₁₀ — µg/m ³			
Median	1.21	1.29	0.60
Range	0.1 to 2.71	0.08 to 2.09	

Plus – minus values are ± SD along with the mean

* By Mann-Whitney test

SUPPLEMENTARY TABLE 2

Supplementary Table 2. Association between demographic variables and airway macrophage carbon (μm^2) in healthy children.					
	Linear Regression			Spearman's	
	Coefficient	95% CI	P value	rho	P value
Age — yr	0.005	-0.02 to 0.03	0.69	0.08	0.54
Weight — kg	-0.001	-0.005 to 0.004	0.73	0.01	0.97
Height — cm	0.000	-0.004 to 0.005	0.89	0.07	0.58
Body Mass Index — kg/m^2	-0.006	-0.02 to 0.01	0.42	-0.04	0.74
Total MET-hr/wk*	0.001	-0.001 to 0.002	0.41	0.18	0.16
Total VIG-hr/wk [†]	0.007	-0.006 to 0.019	0.28	0.23	0.07
Last 7 days outdoor activity [‡] — days (n = 63)	-0.005	-0.03 to 0.02	0.70	-0.11	0.41
Typical week outdoor activity — days (n = 63)	-0.01	-0.04 to 0.02	0.54	-0.15	0.25
Salivary cotinine [§] — ng/ml	0.042	-0.13 to 0.21	0.62	0.05	0.69

Plus – minus values are \pm SD along with the mean and CI denotes confidence interval.

* MET – hr/wk = Average number of hours per week and intensity spent in leisure time activity.

[†]VIG –hr/wk = Average number of hours per week spent doing vigorous activity. The details for MET and VIG scores are given in the methods section.

[‡] Outdoor activity was considered if the child was physically active outdoors for at least a total of 60 minutes in a day.

[§] To convert to SI units (nmol/L) multiply by 5.68. Salivary cotinine values $<0.1\text{ng}/\text{ml}$ (lower limit of detection) were replaced by 0.05 for the purpose of analysis.