

Supplementary data 1: Review of studies of Adiponectin levels in Children

Mean age (y) or range	Population	Inverse association with BMI/obesity ?	First author	Year	Ref
1 & 2	65 SGA children 20 AGA children	No	Iniguez	2004	(18)
5.4 5.9	32 pre-pubertal SGA children 37 pre-pubertal AGA children	only among SGA	López-Bermejo	2004	S1
5 & 10	83 Pima Indian children	Yes	Stefan	2002	(31)
6 to 9	51 obese children + 51 controls	Yes	Valle	2005	S2
<i>"Pre-pubertal"</i>	34 obese prepubertal children + 20 controls	Yes	Gil Campos	2004	S3
8.6 10.5 10.6	51 SGA children 17 short AGA children 24 obese AGA children	only among SGA	Cianfarani	2004	(19)
3 to 17	135 obese children 200 controls	Yes	Bottner	2004	(35)
6 to 18	500 children aged 6-18 years	Only in girls, and in boys >15y	Tsou	2004	(33)
8 to 13	100 obese boys	No association with % body fat (BMI not reported)	Ogawa	2005	S4
8 to 16	40 children with type 2 diabetes and 73 mainly obese children	Yes	Cruz	2004	(13)
10 to 19	230 children	Yes	Huang	2004	S5
12.7	30 children (several obese)	Yes	Nemet	2003	S6
~13	439 obese, 31 overweight, and 20 non- obese children	Yes	Weiss	2004	(12)
13.3	26 obese adolescents + 23 controls	Yes	Bacha	2004	(32)
12 to 21	46 African American and 40 White children – several obese	Yes	Degawa	2003	S7

AGA: appropriate (birthweight) for gestational age; SGA: small for gestational age

Additional References for Supplementary data 1

- S1. Lopez-Bermejo A, Casano-Sancho P, Fernandez-Real JM, Kihara S, Funahashi T, Rodriguez-Hierro F, Ricart W, Ibanez L. Both intrauterine growth restriction and postnatal growth influence childhood serum concentrations of adiponectin. *Clin Endocrinol (Oxf)* 61:339-46, 2004
- S2. Valle M, Martos R, Gascon F, Canete R, Zafra MA, Morales R. Low-grade systemic inflammation, hypoadiponectinemia and a high concentration of leptin are present in very young obese children, and correlate with metabolic syndrome. *Diabetes Metab* 31:55-62, 2005
- S3. Gil-Campos M, Canete R, Gil A. Hormones regulating lipid metabolism and plasma lipids in childhood obesity. *Int J Obes Relat Metab Disord. Suppl* 3:S75-80, 2004
- S4. Ogawa Y, Kikuchi T, Nagasaki K, Hiura M, Tanaka Y, Uchiyama M. Usefulness of serum adiponectin level as a diagnostic marker of metabolic syndrome in obese Japanese children. *Hypertens Res* 28:51-7, 2005
- S5. Huang KC, Lue BH, Yen RF, Shen CG, Ho SR, Tai TY, Yang WS. Plasma adiponectin levels and metabolic factors in nondiabetic adolescents. *Obes Res* 12:119-24, 2004
- S6. Nemet D, Wang P, Funahashi T, Matsuzawa Y, Tanaka S, Engelman L, Cooper DM. Adipocytokines, body composition, and fitness in children. *Pediatr Res* 53:148-52, 2003
- S7. Degawa-Yamauchi M, Dilts JR, Bovenkerk JE, Saha C, Pratt JH, Considine RV. Lower serum adiponectin levels in African-American boys. *Obes Res* 11:1384-90, 2003

Supplementary data 2: Truncal fat mass in the ALSPAC cohort at age 9y

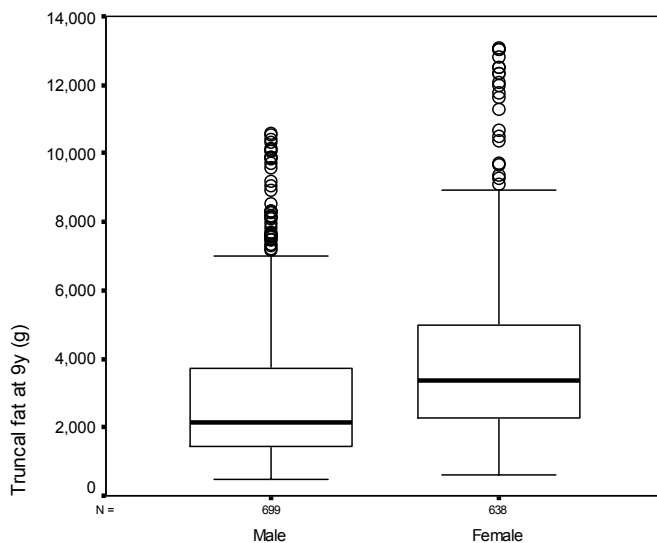
Methods

At age 9.9 (+/- 0.33) years all children were invited to attend for a 3-hour hands-on assessment. Height was measured with shoes and socks removed using a Harpenden stadiometer (Holtain Ltd, Crymych, Pembrokeshire, UK). Weight was measured using a Tanita TBF 305 body fat analyser and weighing scales (Tanita UK Ltd, Yewsey, Middlesex, UK). Total fat (FM), central fat and lean mass (LM) were measured using a Lunar Prodigy DXA scanner (GE Medical Systems Lunar, Madison, WI, USA). The scans were visually inspected and realigned where necessary. Trunk fat mass (TFM) was estimated using the automatic region of interest that included chest, abdomen and pelvis. Valid scans were available for analysis in 765 of the 839 children with adiponectin values.

Results

Girls had 56% greater truncal fat than boys (Fig. S-1).

Figure S-1: Boxplots of Truncal fat in boys and girls (line = median; box = inter-quartile range; whiskers = data within 1.5 box lengths; outliers > 1.5 box lengths from top of box).



Boys (but not girls; Fig S-2) showed an inverse U-shaped association between

adiponectin (at 8y) and truncal fat mass (at 9y) (quadratic term = $-6.73 \text{ E-}08 \pm 2.59 \text{ E-}08$; $p=0.0097$). Therefore, with increasing truncal fat mass, boys start to show an inverse association between adiponectin (as seen in girls and in adults).

Figure S-2: Curve fitting plots of adiponectin vs. truncal fat in boys and girls.

