The health implications for young people from a lack of physical activity: the importance of creating positive behaviours at primary school in order to create positive habits for life.

Prof Brendon Noble FRSA, FRSB

bnoble@marjon.ac.uk

For Professor Andrew Edwards

University of St Mark & St John, Plymouth, UK

Background:

- In 1997, THE World Health Organization declared obesity a global epidemic with major health implications.
- The health implications of this epidemic are profound.
- Up to 80% of obese youth continue this trend into adulthood

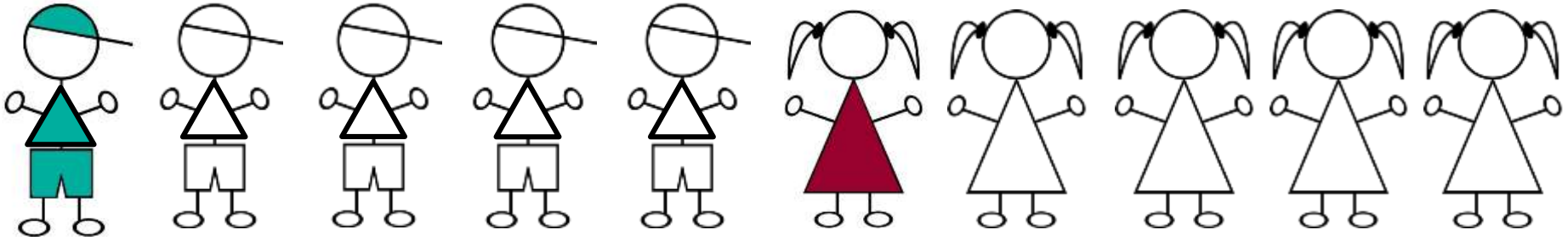
SO WHAT DOES THE OBESITY CRISIS LOOK LIKE ?

Public Health England

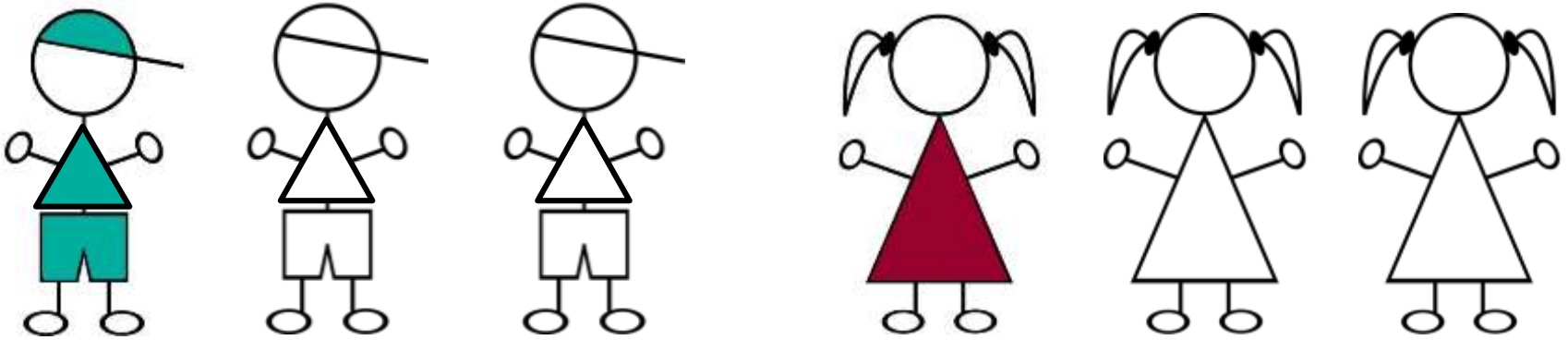
Prevalence of excess weight among children

National Child Measurement Programme 2014/15

One in five children in Reception is overweight or obese (boys 22.6%, girls 21.2%)



One in three children in Year 6 is overweight or obese (boys 34.9%, girls 31.5%)



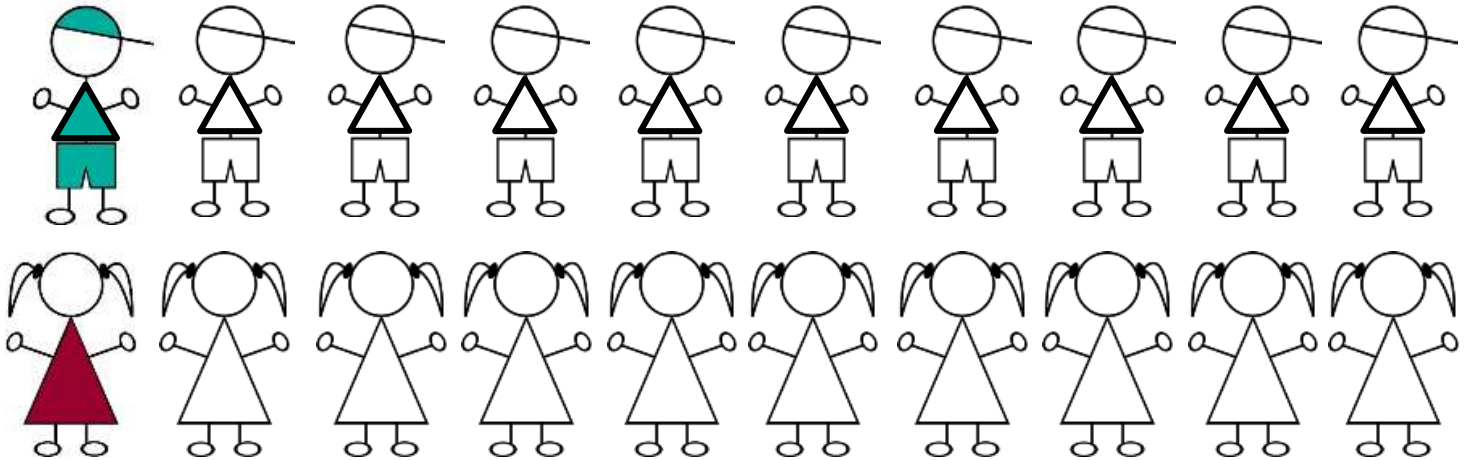
Child overweight (including obesity)/ excess weight: BMI ≥ 85th centile of the UK90 growth reference

Public Health England

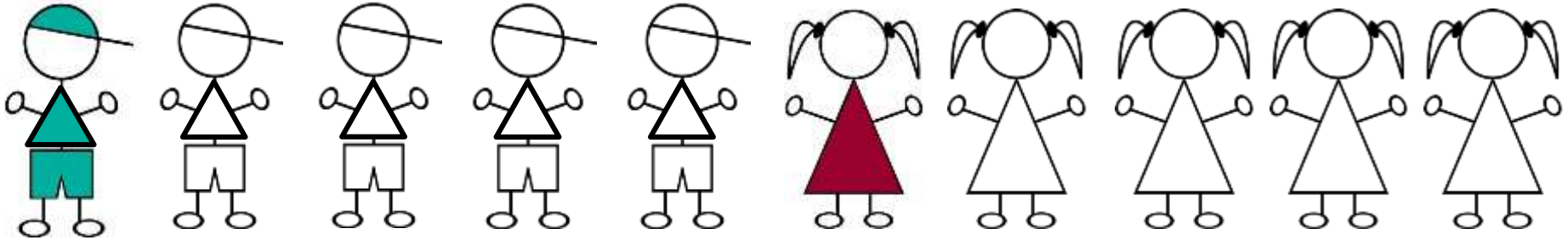
Prevalence of obesity among children

National Child Measurement Programme 2014/15

Around one in ten children in Reception is obese (boys 9.5%, girls 8.7%)



Around one in five children in Year 6 is obese (boys 20.7%, girls 17.4%)

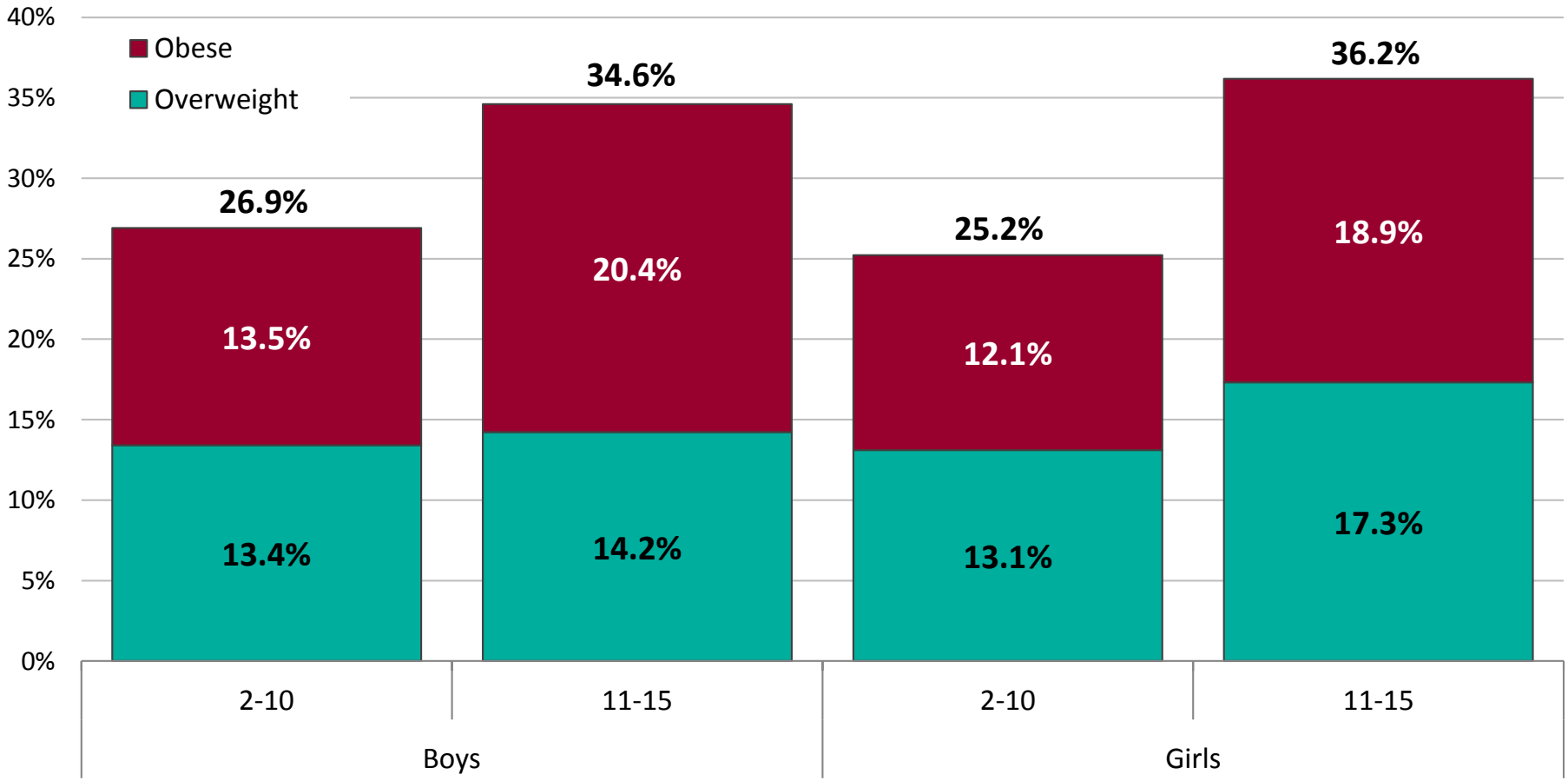


Child obesity: BMI ≥ 95th centile of the UK90 growth reference

Public Health England

Prevalence of overweight and obesity

Children aged 2-10 and 11-15 years; Health Survey for England 2012-2014



Child overweight BMI between ≥ 85th centile and <95th centile, child obesity BMI ≥ 95th centile of the UK90 growth reference.

SO WHAT ARE THE IMPLICATIONS OF THE OBESITY CRISIS?

Childhood related consequences of obesity

Obese children are more likely to be **ill**, be **absent from school** due to illness, experience **health-related limitations** and require **more medical care** than normal weight children

Wijga A, Scholtens S, Bemelmans W, de Jongste J, Kerkhof M, Schipper M, et al. Comorbidities of obesity in school children: a cross-sectional study in the PIAMA birth cohort. *BMC Public Health* 2010;10(1):184

Type 2 diabetes usually appears in adults, but recently more children in the UK are being diagnosed with the condition, some as young as seven

Diabetes UK. Diabetes in the UK (2012) Key statistics on diabetes

A recent review on childhood obesity and **obstructive sleep apnoea (OSA)** reported that the prevalence of OSA among obese children and adolescents could be as high as 60%

Narang I, Mathew JL. Childhood Obesity and Obstructive Sleep Apnea. *Journal of Nutrition and Metabolism* 2012;2012:8

The most common **orthopaedic problems** in children include tibia vara (Blount's Disease) and slipped capital femoral epiphysis resulting from the impact of increased weight on the developing skeletal system.

Daniels SR. Complications of obesity in children and adolescents. *Int J Obes (Lond)*. 2009;33(Suppl 1):S60-5. doi: 10.1038/ijo.2009.20

Recent findings from the Millennium Cohort Study suggest that childhood obesity may be associated **with emotional and behavioural problems** from a very young age, with obese boys at particular risk

WHO - Global Strategy on Diet, Physical Activity and Health

Later consequences of an unhealthy lifestyle during childhood
Childhood obesity is associated with a higher chance of premature death and disability in adulthood.

- Overweight / obese children are **more likely to stay obese** into adulthood and to develop noncommunicable diseases (NCDs) like diabetes and cardiovascular diseases at a younger age.

- For most NCDs resulting from obesity, the **risks depend partly on the age of onset** and on the duration of obesity.

- Obese children and adolescents suffer from both short-term and long-term health consequences.

WHO - Global Strategy on Diet, Physical Activity and Health

The most significant health consequences of childhood overweight and obesity, that often do not become apparent until adulthood, include:

cardiovascular diseases (mainly heart disease and stroke); diabetes;

musculoskeletal disorders, especially osteoarthritis; and

certain types of cancer (endometrial, breast and colon).

At least 2.6 million people each year die as a result of being overweight or obese.

SO WHAT ARE THE REASONS FOR THE OBESITY CRISIS?

The proportion of foods that children consumed from **restaurants and fast food** outlets **increased by nearly 300% between 1977 and 1996**

Proportion of foods consumed from restaurants and fast food outlets—
1977–1978 6.5%
1989–1991 16.7%
1994–1996 19.3%.
Money spent on foods away from home represented
25% of total food expenditures 1977–1978
40% of total food expenditures 1995
Students who reported eating at a fast food restaurant ≥ 3 times in the past week had energy intakes 40% and 37%, respectively, higher those who did not (11)

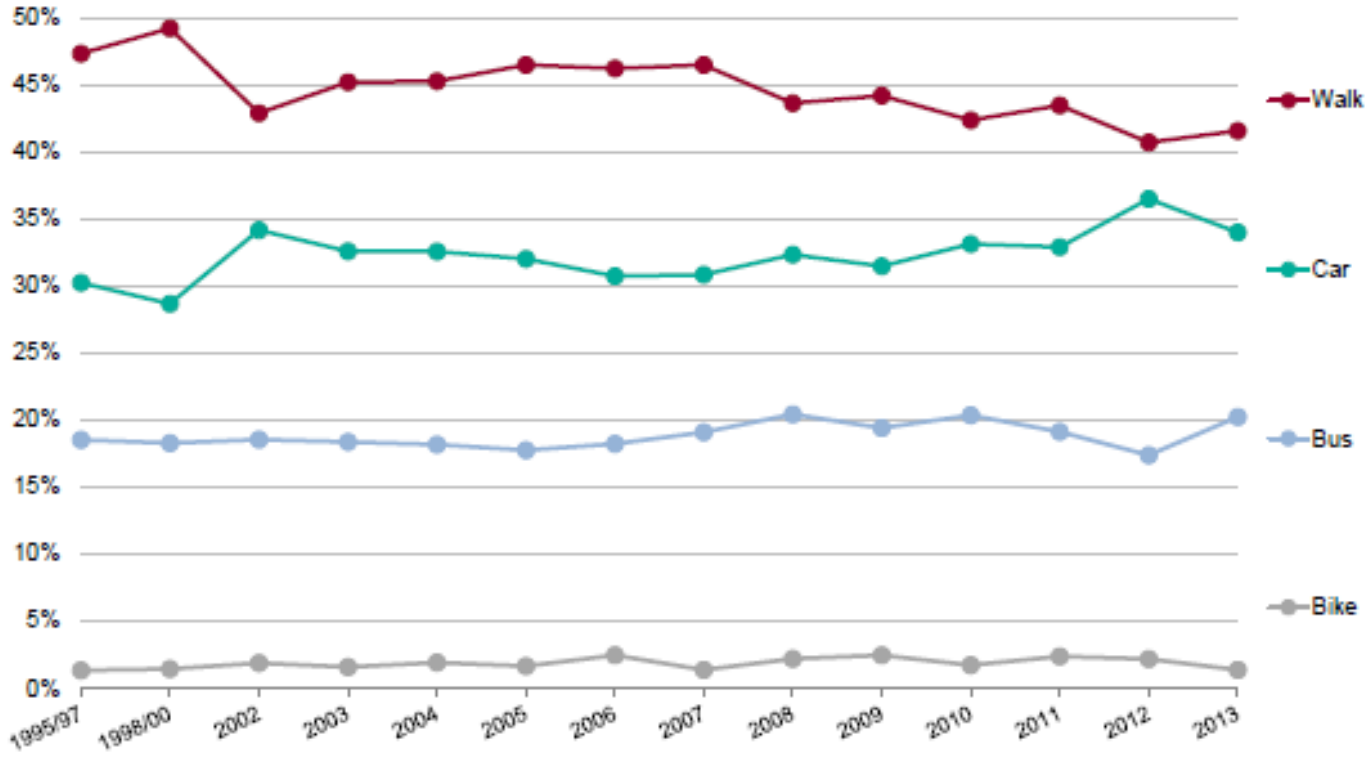
Table 3. **Trends in the dietary supply of fat**

Region	Supply of fat (g per capita per day)				
	1967 - 1969	1977 - 1979	1987 - 1989	1997 - 1999	Change between 1967 - 1969 and 1997 - 1999
World	53	57	67	73	20
North Africa	44	58	65	64	20
Sub-Saharan Africa[a]	41	43	41	45	4
North America	117	125	138	143	26
Latin America and the Caribbean	54	65	73	79	25
China	24	27	48	79	55
East and South-East Asia	28	32	44	52	24
South Asia	29	32	39	45	16
European Community	117	128	143	148	31
Eastern Europe	90	111	116	104	14
Near East	51	62	73	70	19
Oceania	102	102	113	113	11

[a] Excludes South Africa

Source: FAOSTAT, 2003.

Figure 7: Percentage of trips to and from school for children (aged 5–16 years) by main mode of transport, 1995/1997 to 2013, Great Britain



Source: National Travel Survey 2013
Data include trips of less than 50 miles only.

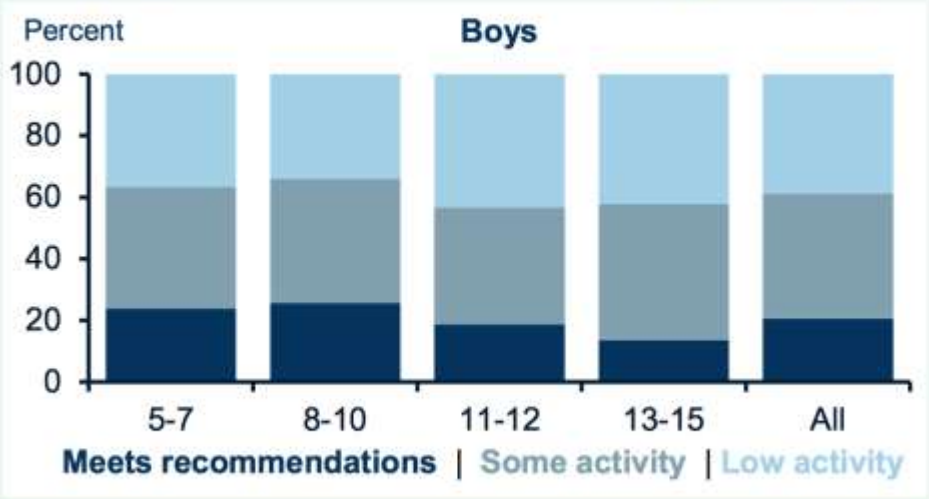
hscic Health & Social Care Information Centre

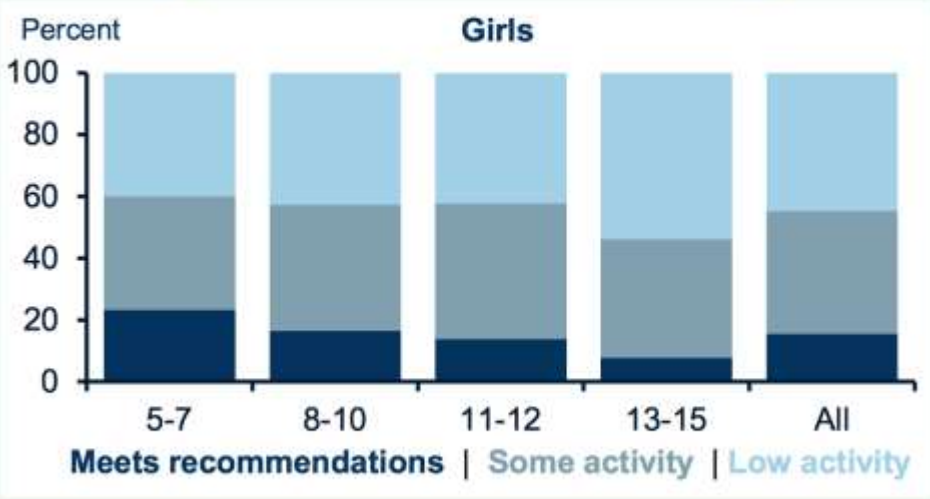
Statistics on Obesity, Physical Activity and Diet

England, 2016

Physical activity by age

The proportion of children meeting the physical activity guidelines decreases with age.

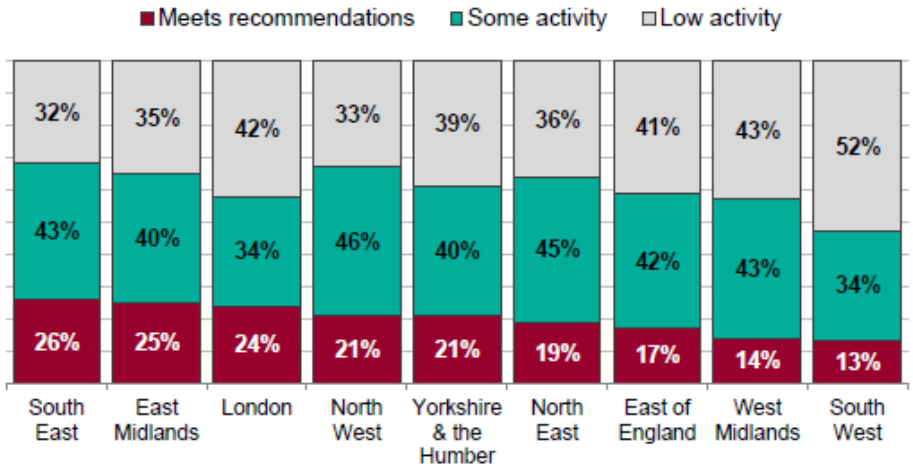




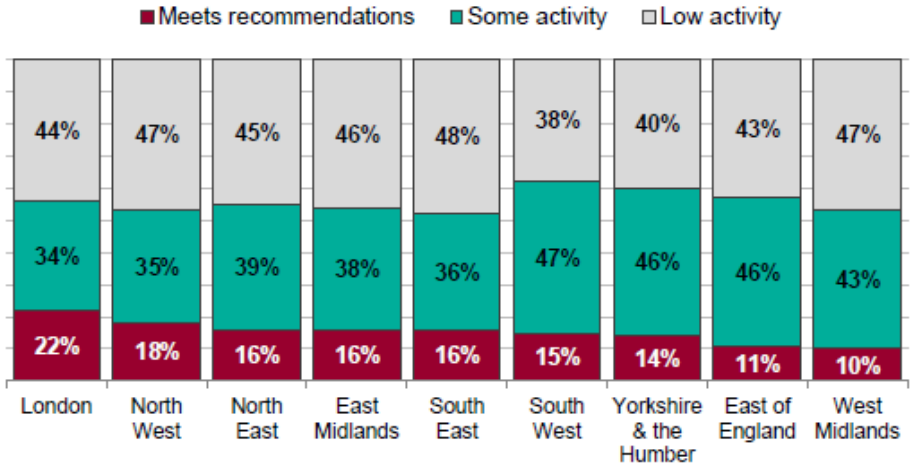
Meets recommendations = 60 minutes or more on all 7 days ; Some activity = 30-59 minutes on all 7 days

Figure 2: Age-standardised summary activity levels, by region and sex, 2012 (base: aged 5–15 years)

Boys



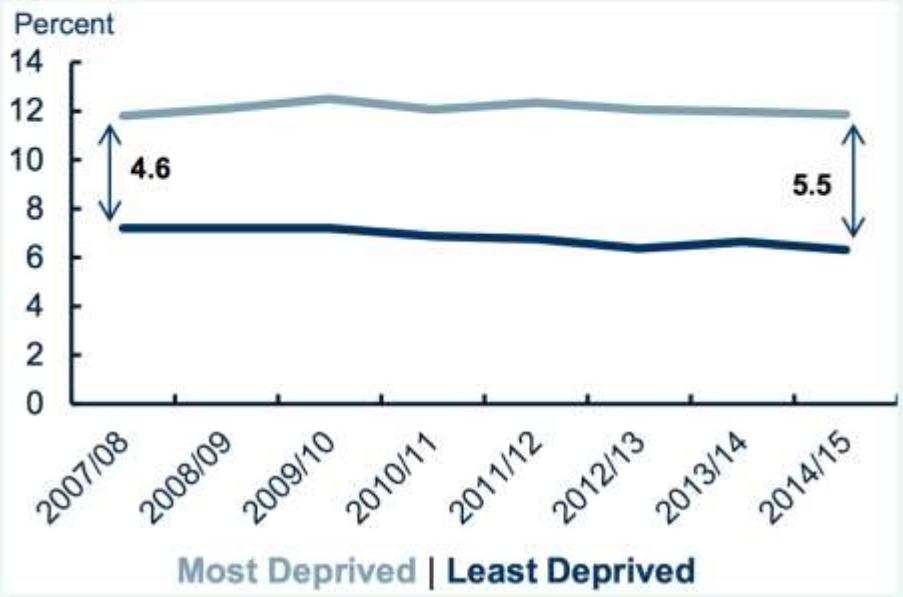
Girls



Source: Health Survey for England 2012 Report. Excludes walking and cycling to or from school*
Results for North East England are based on small sample sizes and should be used with caution.

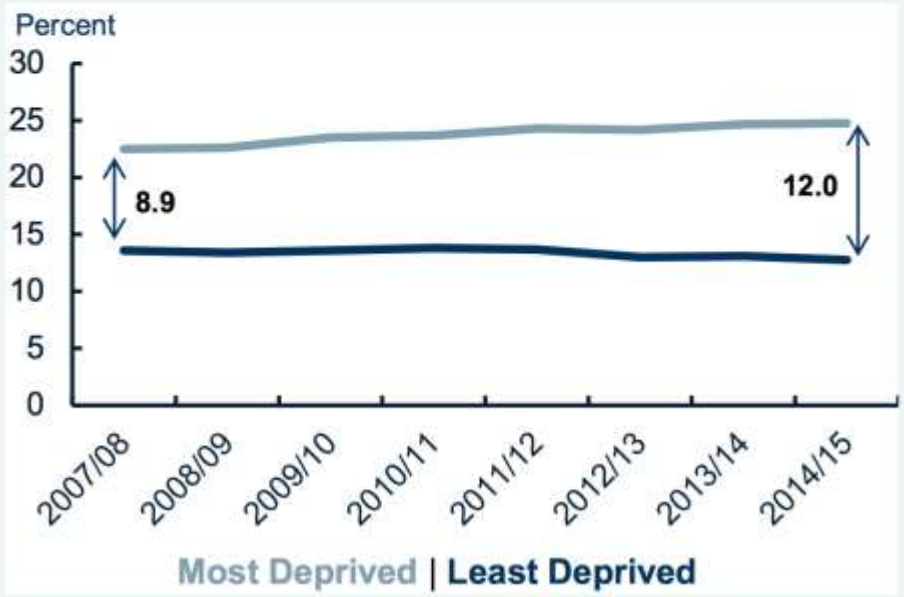
Reception year

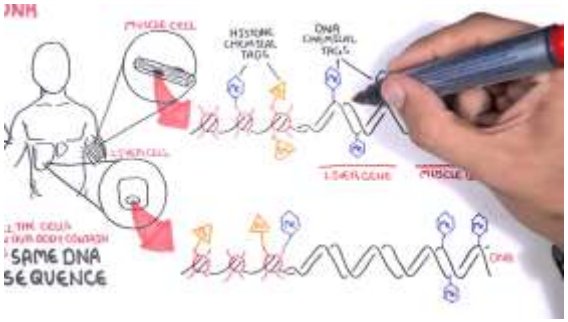
Between 2007/08 and 2014/15, the difference between obesity prevalence in the most and least deprived areas has **increased** from **4.6** to **5.5** percentage points.



Year 6

Between 2007/08 and 2014/15, the difference between the most and least deprived areas has **increased** from **8.9** to **12.0** percentage points.



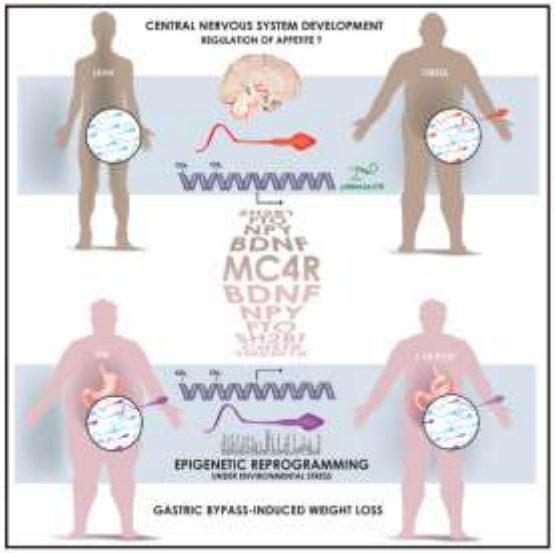


Short Article

Cell Metabolism

Obesity and Bariatric Surgery Drive Epigenetic Variation of Spermatozoa in Humans

Graphical Abstract



Authors

Ida Donkin, Soetkin Versteyhe, Lars R. Ingerslev, ..., Christopher T. Workman, Juleen R. Zierath, Romain Barrès

Correspondence

barres@sund.ku.dk

In Brief

Donkin et al. show that spermatozoa from obese men carry a distinct epigenetic signature compared to lean men, in particular at genes controlling brain development and function. The sperm methylome is dynamically remodeled after gastric-bypass-induced weight loss, notably at gene regions implicated in the central control of appetite.

Its not all set in our genes

- What the child eats and encounters might change their DNA forever.
- Including appetite control mechanisms etc
- What their parents do at home might change their propensity to become obese etc
- Every environmental input is important to the child's future health.

SO WHAT CAN DONE TO MITIGATE AGAINST THE OBESITY CRISIS?

EXERCISE

DIET

GENETIC BACKGROUND ?

HM Government

Childhood Obesity

A Plan for Action

August 2016

Will the government's new childhood obesity strategy have any effect?

After promises last year of 'draconian' action on high-sugar and high-fat foods, just-announced plans suggest obesity is not as much of a priority for Theresa May as it was for David Cameron

After promises last year of 'draconian' action on high-sugar and high-fat foods, just-announced plans suggest obesity is not as much of a priority for Theresa May as it was for David Cameron
Sarah Boseley

The Guardian

Saturday 20 August 2016 07.00 BST

the brief document published this week focused on just two things – reducing sugar consumption and increasing physical activity. There is not a word on advertising or price promotion. And instead of something "draconian", the focus is on voluntary action, apart from the sugar tax, which had already been announced.

- When children and adolescents participate in the recommended level of physical activity—at least 60 minutes daily—multiple health benefits accrue.

- Most youth, however, are not engaging in recommended levels of physical activity.

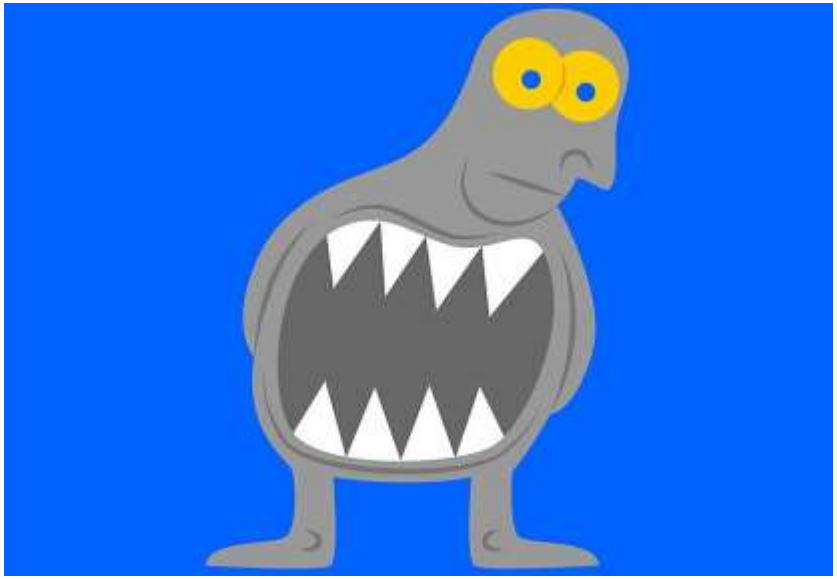
Is physical activity the solution?

No.

It takes 6hrs to metabolically burn the calories in a Big Mac, Fries and Cola.

Physical activity is <u>part of</u> the solution


Comeback Kids: Clinton Brings Them Home
Why Health Care Reform Is A Hard Sell
The White House's Race to Stop A Flu Pandemic
TIME
The Myth About Exercise
Of course it's good for you, but it won't make you lose weight. Why it's what you eat that really counts.
BY JOHN CLOUD



- SECONDARY BENEFITS

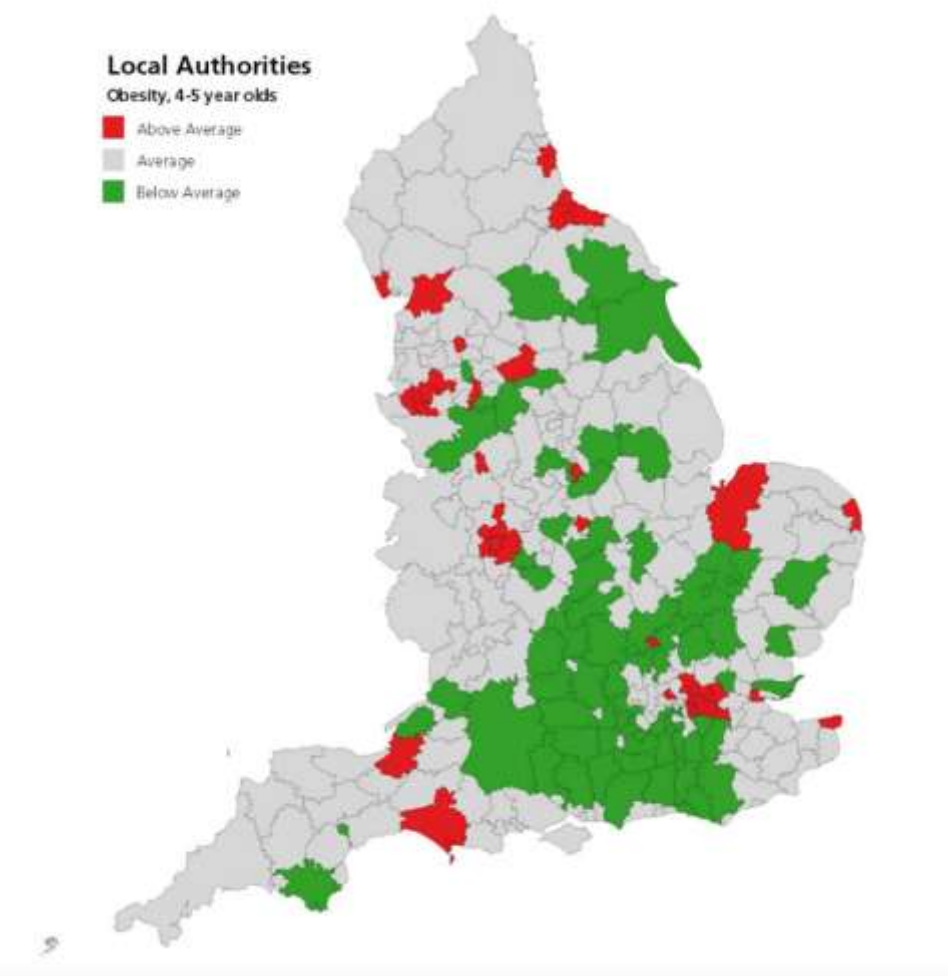
Centres for Disease Control and Prevention (2010). ***The association between school based physical activity, including physical education, and academic performance.***

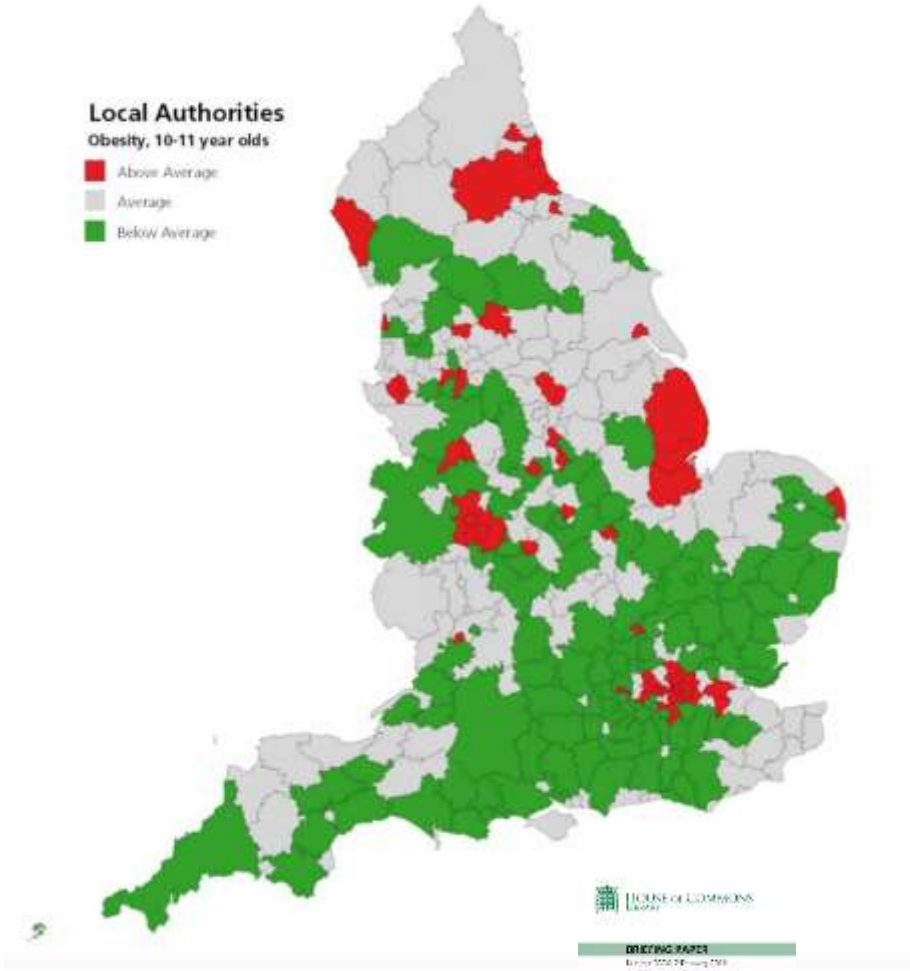
Across all 50 studies (reported in 43 articles), there were a total of 251 associations between physical activity and academic performance, representing measures of academic achievement, academic behaviour, and cognitive skills and attitudes.

What can schools do to increase physical activity?

- School-based physical education (increase time/breadth/quality experience?)
- Break time/recess (new equipment?)
- Classroom-based physical activity (incorporate movement. Standing desks?)
- Extracurricular physical activities (clubs and community partnerships?)

CHANGING THE MAP





Obesity Statistics

FINAL THOUGHTS

Government must not pass the sole burden for solving childhood obesity to schools and ought to do more via food and advertising regulation?

Primary schools are to be asked to provide at least 60 minutes of moderate to vigorous physical activity a day. This will be challenging among other requirement?.

Parents and carers are to be requested to ensure children do a further 30 minutes every day. That will be a big ask for some families?

Public Health England

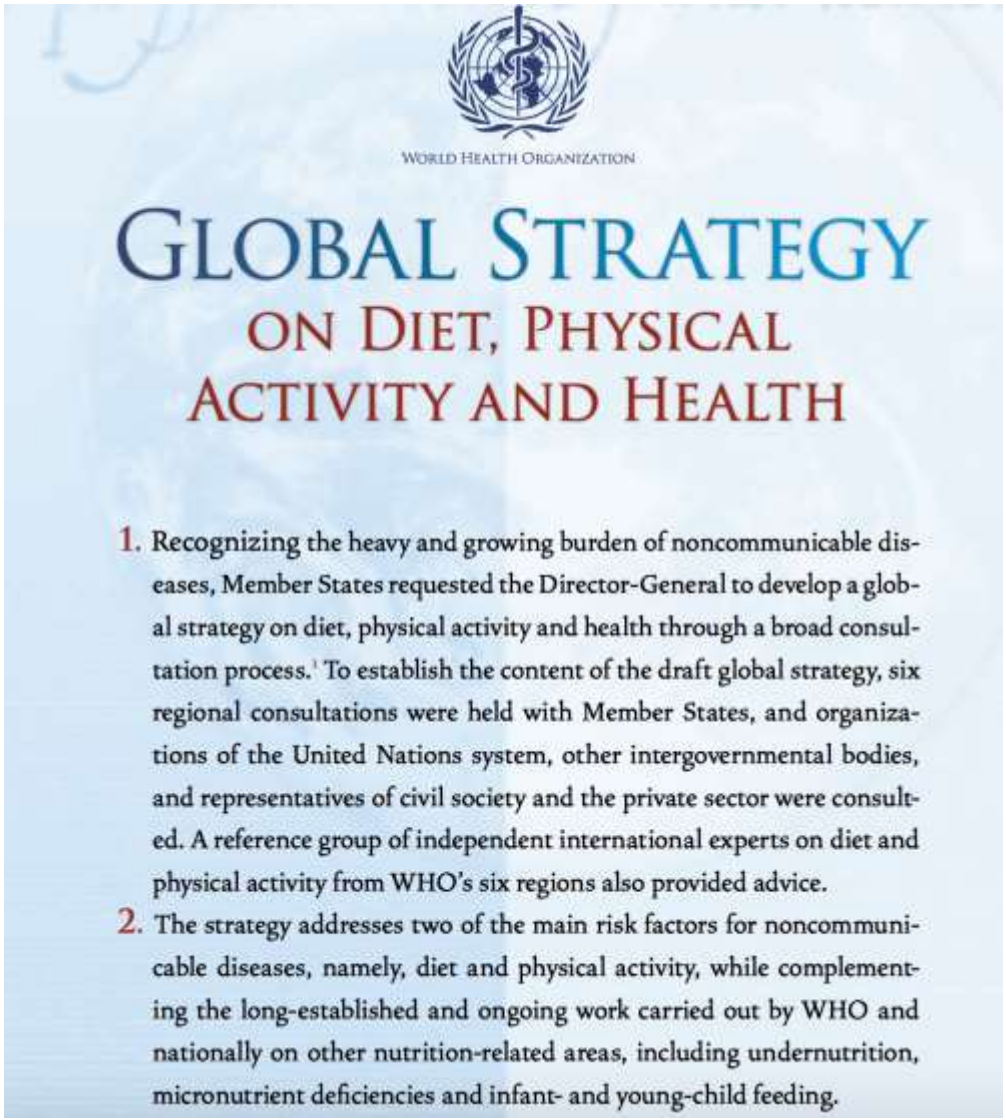
Data sources

- **Health Survey for England (HSE)**
- http://www.hscic.gov.uk/healthsurveyengland

- The HSE is a cross-sectional survey which samples a representative proportion of the population. The next report on the HSE 2015 is due to be published online in December 2016. The data should be available from the UK Data Archive in the spring following publication of the report.

- **National Child Measurement Programme (NCMP)**
- www.hscic.gov.uk/ncmp

- The NCMP is an annual programme that measures the height and weight of children in Reception (aged 4–5 years) and Year 6 (aged 10–11 years) in England. Although the NCMP only covers certain age groups, it includes the majority of children in those year groups. The participation rate in 2014/15 was 94%. The Health and Social Care Information Centre will report NCMP data for the 2015/16 school year in November 2016.



WORLD HEALTH ORGANIZATION

GLOBAL STRATEGY ON DIET, PHYSICAL ACTIVITY AND HEALTH

1. Recognizing the heavy and growing burden of noncommunicable diseases, Member States requested the Director-General to develop a global strategy on diet, physical activity and health through a broad consultation process.[1] To establish the content of the draft global strategy, six regional consultations were held with Member States, and organizations of the United Nations system, other intergovernmental bodies, and representatives of civil society and the private sector were consulted. A reference group of independent international experts on diet and physical activity from WHO's six regions also provided advice.
2. The strategy addresses two of the main risk factors for noncommunicable diseases, namely, diet and physical activity, while complementing the long-established and ongoing work carried out by WHO and nationally on other nutrition-related areas, including undernutrition, micronutrient deficiencies and infant- and young-child feeding.

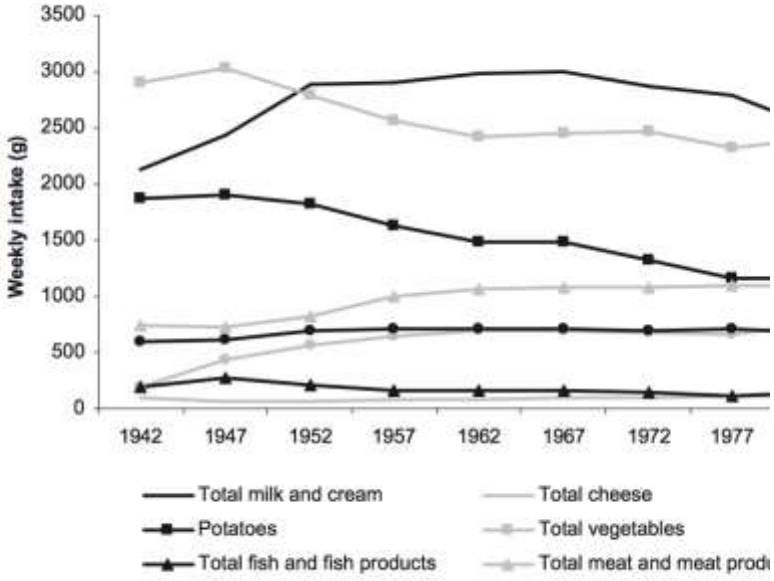
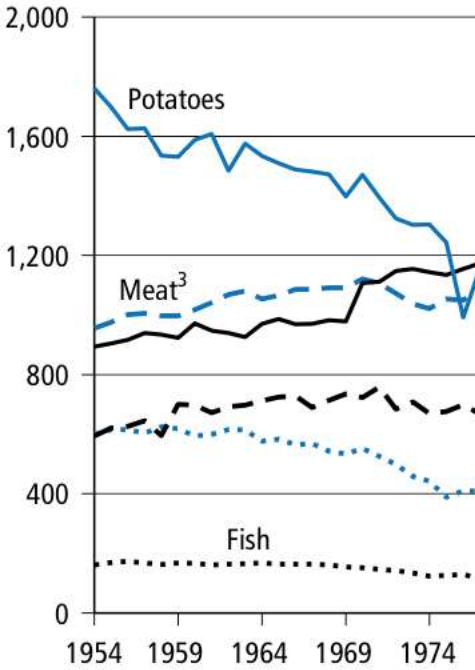


Figure 16 Trends in the household purchases of the major food groups 1940–2000 (Source: DEFRA 2007a).

Food consumption: by

United Kingdom[1]

Grams per person per week

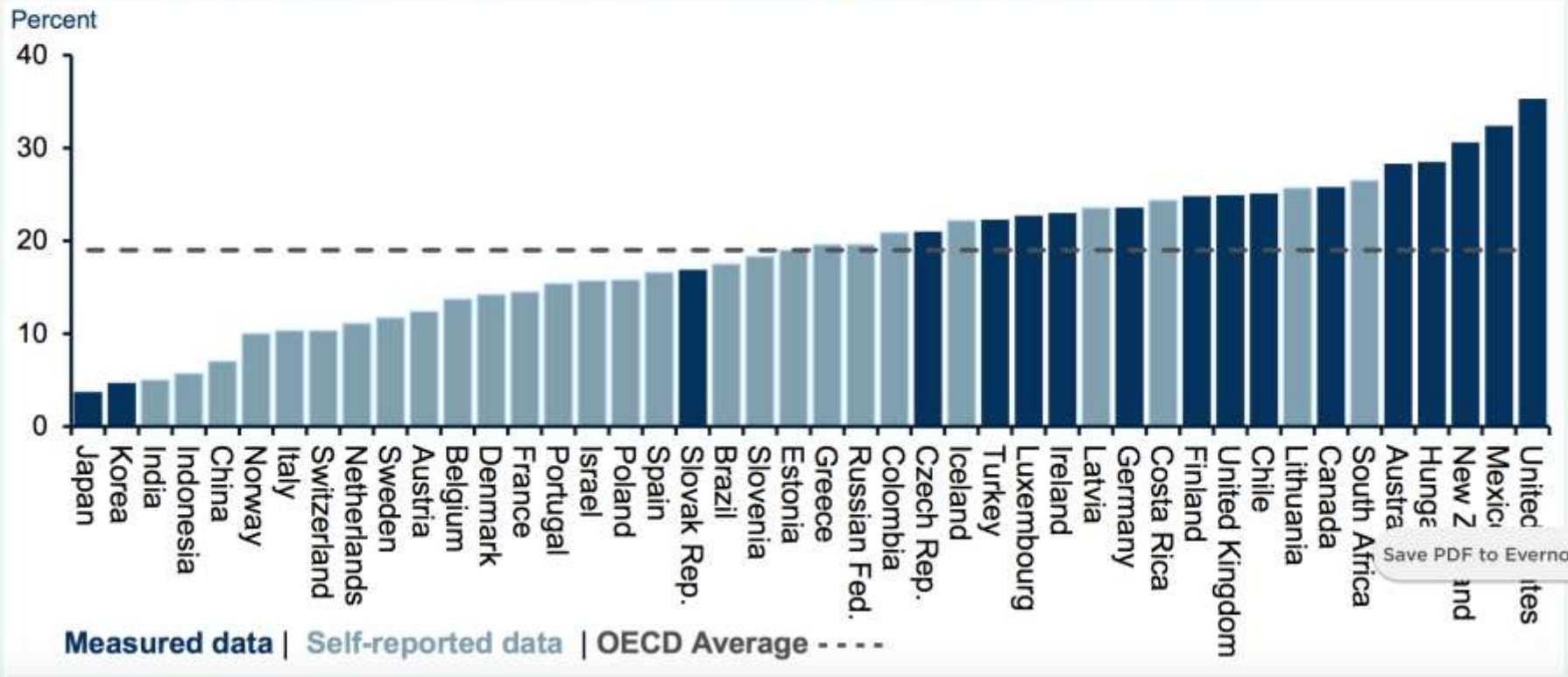


1 Great Britain data for 1954 to 1
2 Includes consumption of fresh a potatoes.
3 Includes consumption of carcass products.
4 Includes consumption of fresh a
5 Between 2001–02 and 2005–06

Source: Department for Environme

The UK reports an adult[1] obesity level of **25%**, 6 percentage points higher than the OECD average, but 10 percentage points lower than the USA which reports the highest adult obesity level.

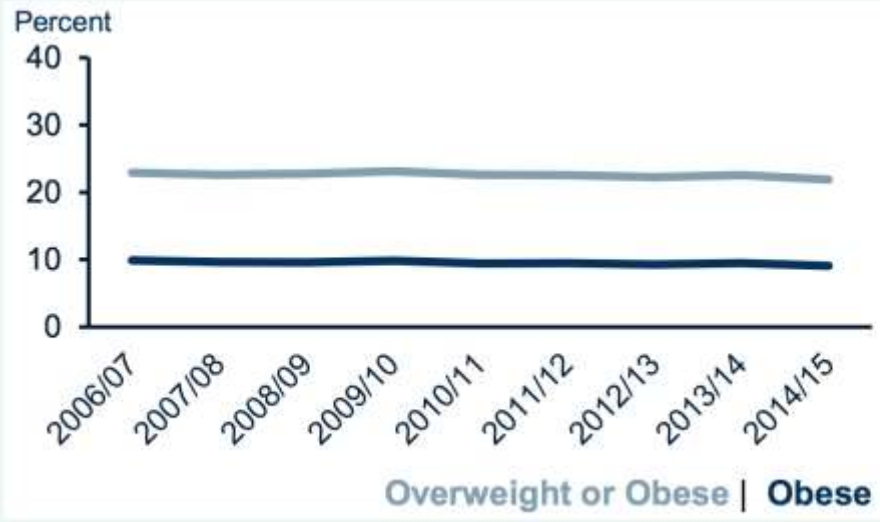
Japan and Korea both report an adult obesity level of **less than 5%**.



Reception year

9%
of children were **obese,** compared to 10% in 2006/07.

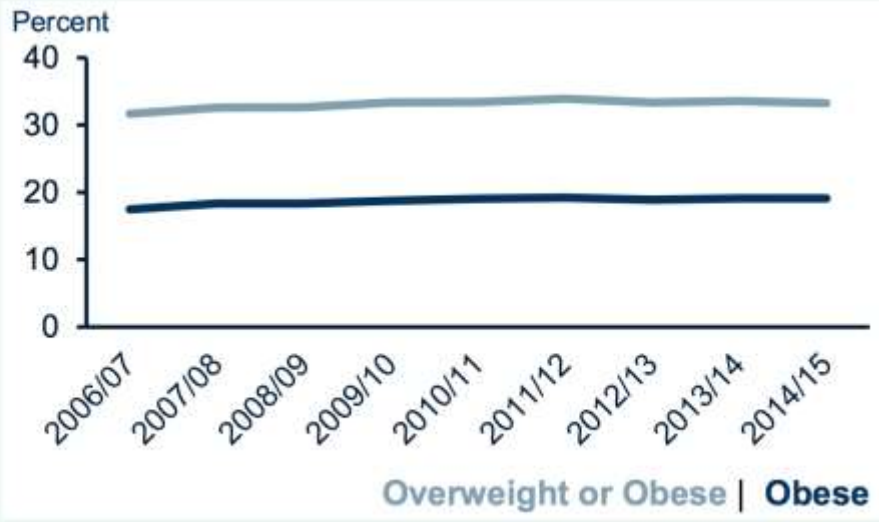
22%
of children were **obese or overweight,** compared to 23% in 2006/07.



Year 6

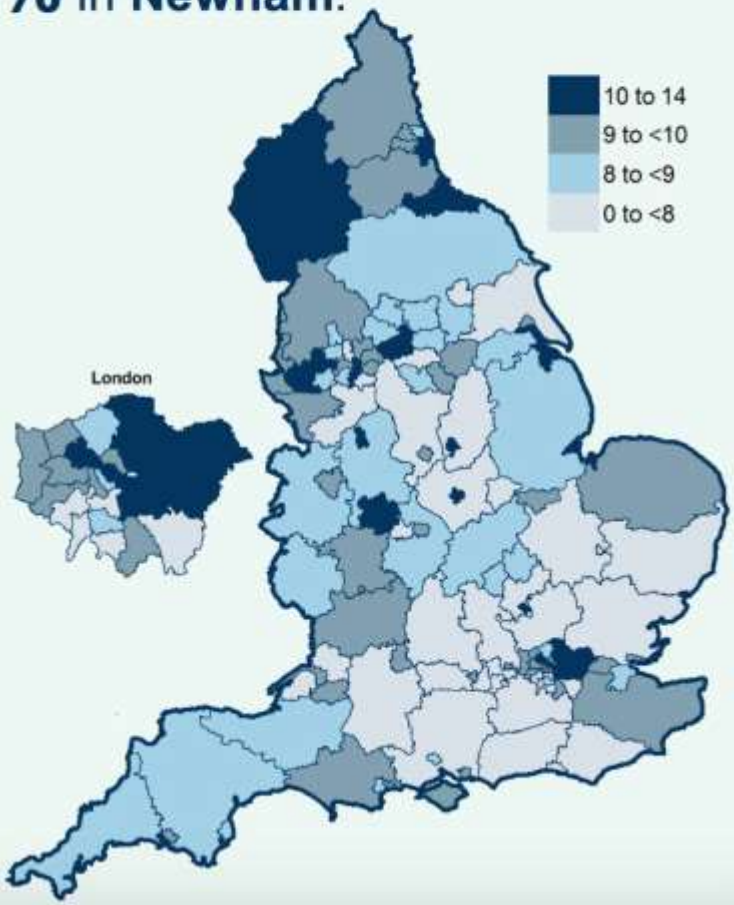
19%
of children were **obese,** compared to 18% in 2006/07[1].

33%
of children were **obese or overweight,** compared to 32% in 2006/07[1].



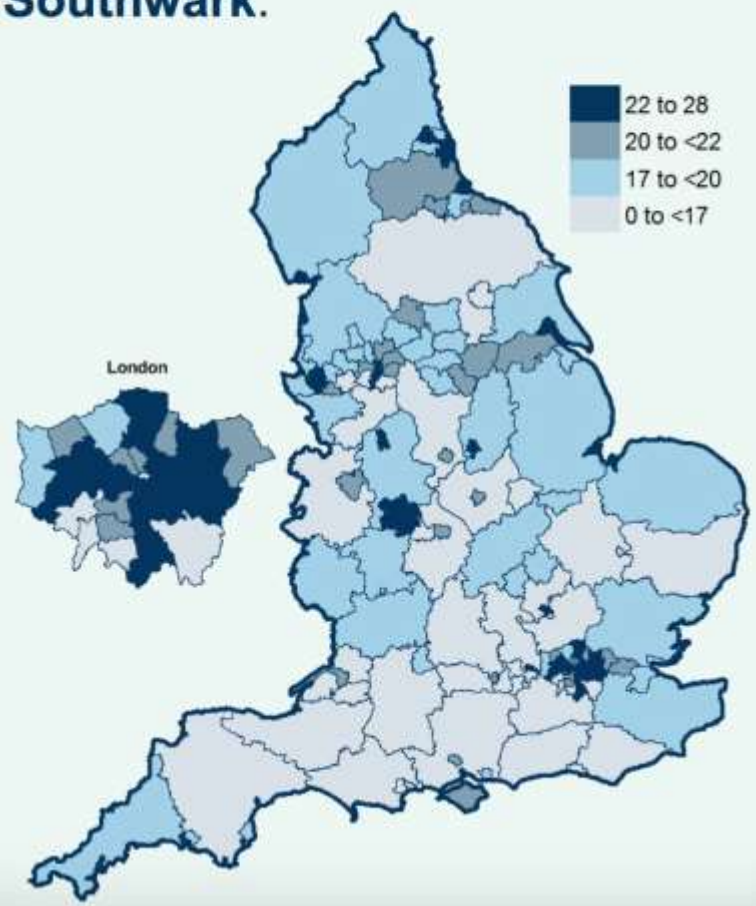
Reception year

Obesity prevalence ranged from **4%** in **Richmond upon Thames,** to **14%** in **Newham**.



Year 6

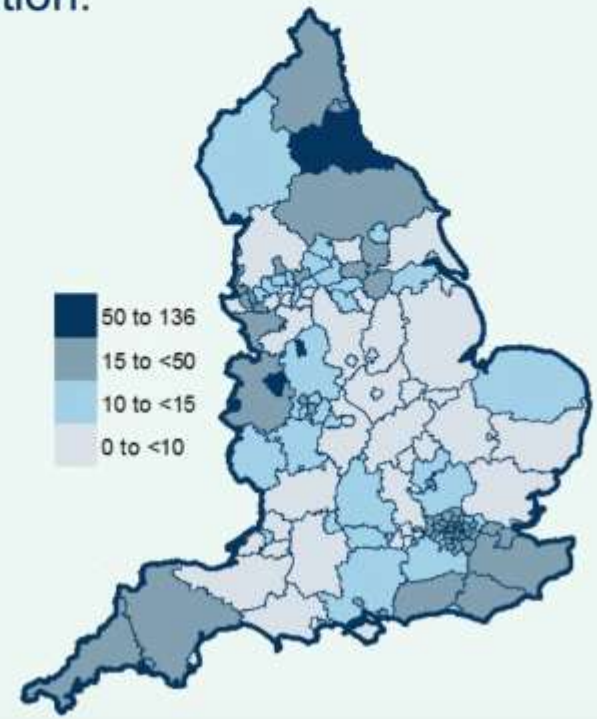
Obesity prevalence ranged from **11%** in **Richmond upon Thames**, to **28%** in **Southwark**.



Local Authority admissions per 100,000 population

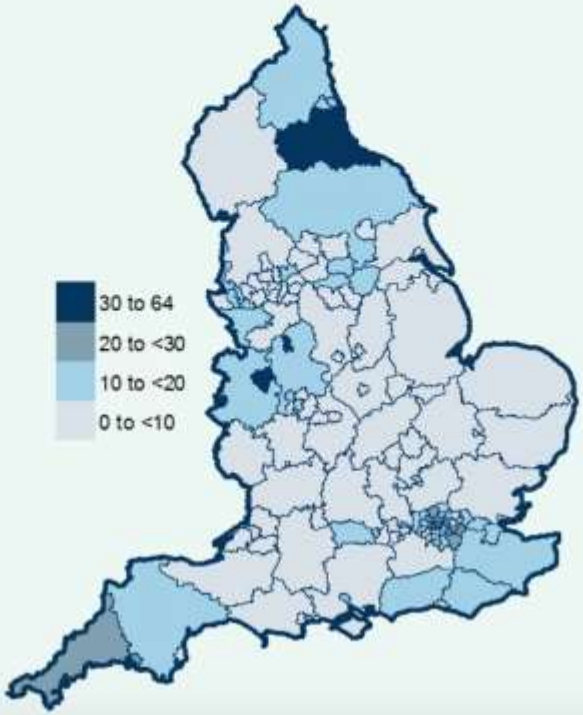
Obesity related admissions

Sunderland had the highest rate of admissions, with **135** per 100,000 population.

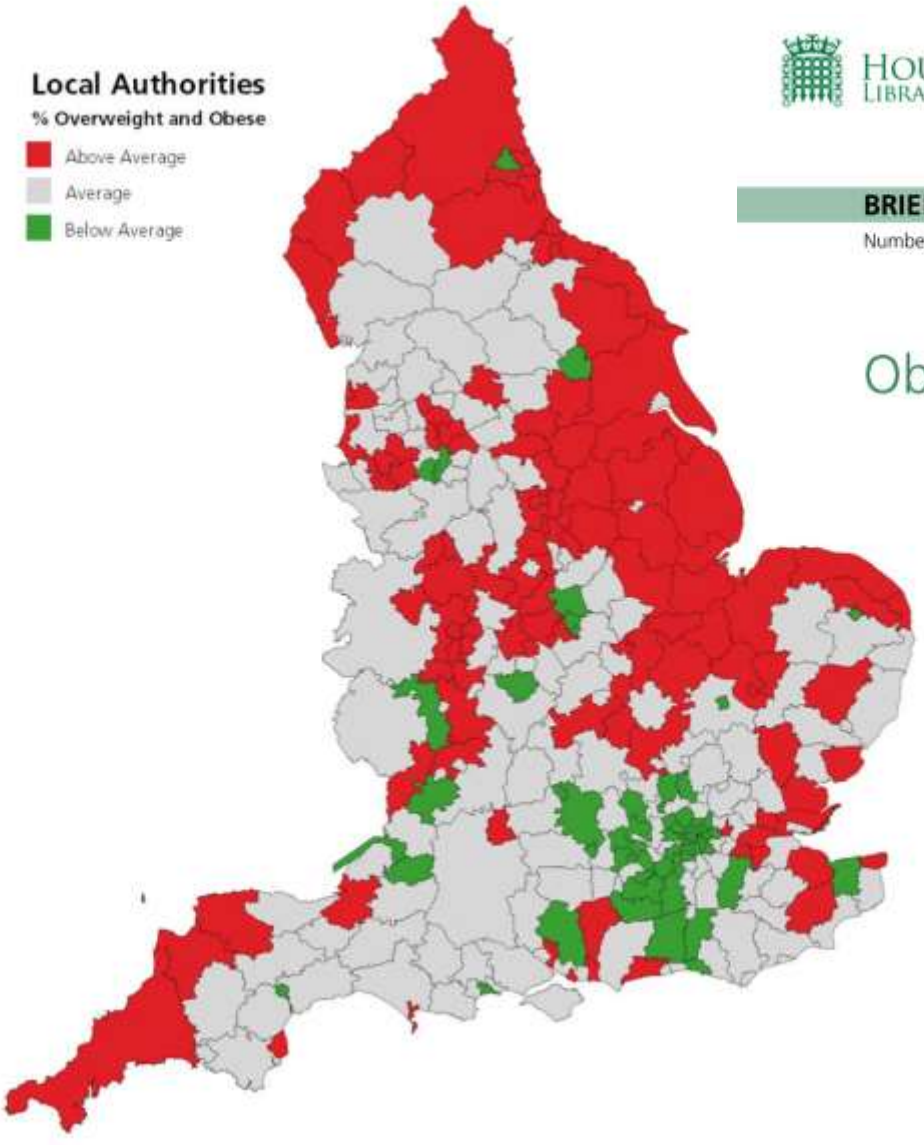


Bariatric surgery procedures

Sunderland had the highest rate of bariatric surgery, with **64** per 100,000 population.



Classification	BMI
Underweight	< 18.5
Normal weight	18.5 - 24.9
Overweight	25.0 - 29.9
Obese: Class I	30.0 - 34.9
Obese: Class II	35.0 - 39.9
Obese: Class III	40.0+



HOUSE OF COMMONS LIBRARY

BRIEFING PAPER

Number 3336, 2 February 2016

Obesity Statistics

Exercise is a Medicine

HOUSE OF COMMONS
LIBRARY

BRIEFING PAPER

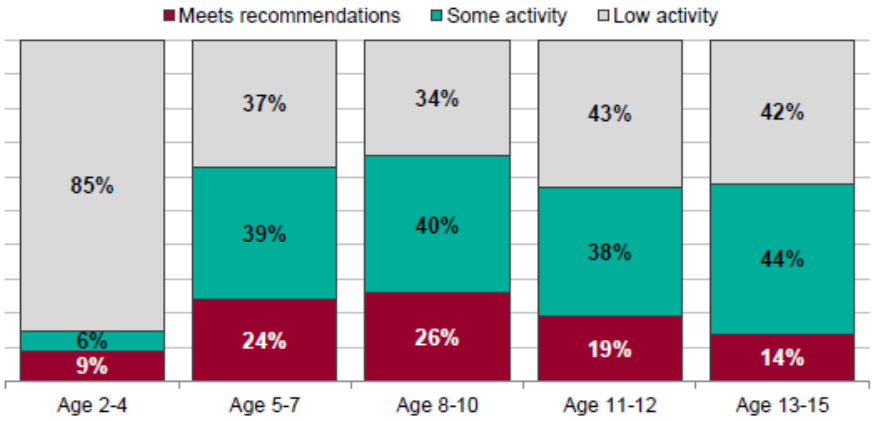
Number 3336, 2 February 2016

Obesity Statistics

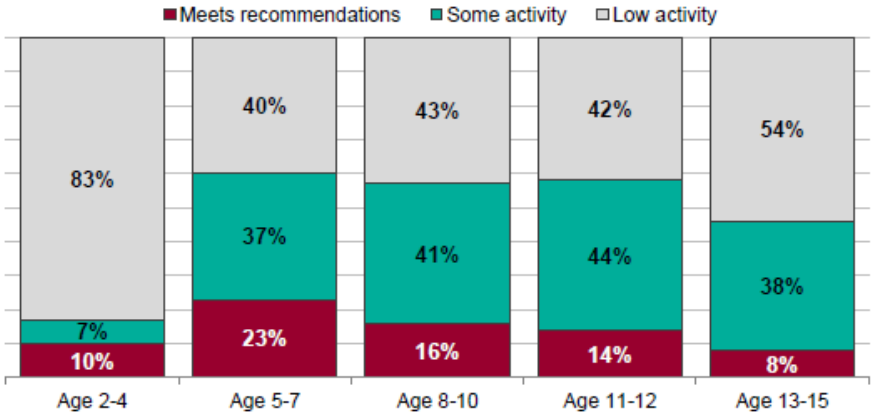
- There is a growing body of research focused on the association between school-based physical activity, including physical education, and academic performance among school-aged youth.

Figure 1: Proportion of children meeting government recommendations for physical activity, by age and sex, 2012 (base: aged 2–15 years)

Boys



Girls



Source: Health Survey for England 2012 Report.*
Excludes walking and cycling to/from school


PROMOTE INTAKE OF HEALTHY FOODS
1
PROMOTE PHYSICAL ACTIVITY
2
PRECONCEPTION AND PREGNANCY CARE
3
EARLY CHILDHOOD DIET AND PHYSICAL ACTIVITY
4
HEALTH, NUTRITION AND PHYSICAL ACTIVITY FOR SCHOOL-AGE CHILDREN
5
SCHOOL
WEIGHT MANAGEMENT
6
ENDING CHILDHOOD OBESITY

Implications for Policy

There are a number of policy implications stemming from this review:

There is substantial evidence that physical activity can help improve academic achievement (including grades and standardized test scores).

The articles in this review suggest that physical activity can have an impact on cognitive skills and attitudes and academic behaviour, all of which are important components of improved academic performance.

These include enhanced concentration and attention as well as improved classroom behaviour. Increasing or maintaining time dedicated to physical education may help, and does not appear to adversely impact, academic performance.

Complex issues which must be addressed in partnership, recognising the scale of the issues and the need to work together, not passing the buck!

Will the government's new childhood obesity strategy have any effect?

Whose responsibility is childhood obesity?