

Obesità, Nutrizione e Stili di vita.

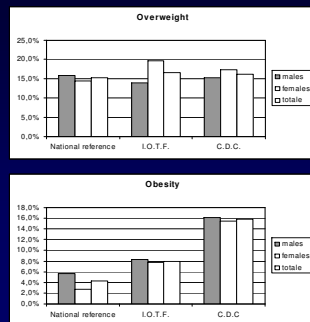
Trento 31 Marzo 2007

obesità nel bambino: epidemiologia e prevenzione

Claudio Maffei

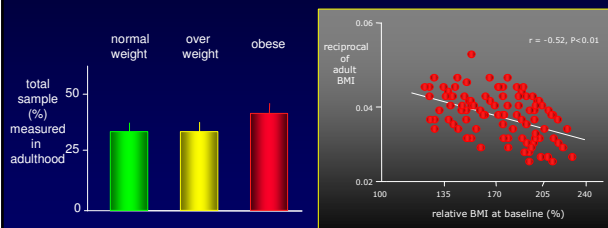
*Dipartimento Materno Infantile e Biologia-Genetica
Sezione di Pediatria - Università di Verona*

PREVALENCE OF OVERWEIGHT AND OBESITY IN 2-6-YEAR-OLD ITALIAN CHILDREN



Maffei C *et al.* *Obes Res.* 2006

persistence of obesity from childhood into adulthood



Maffei C *et al.* *J Clin Endocrinol Metab* 2002;87:71-76

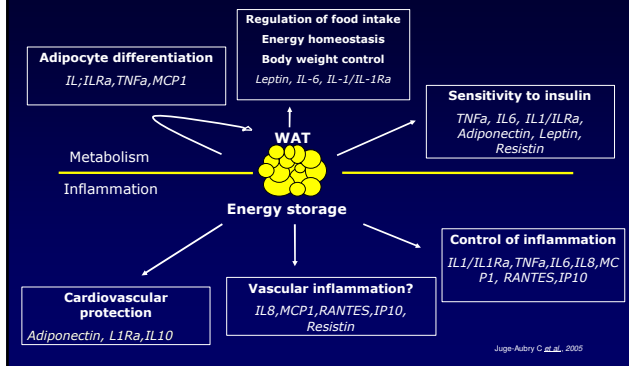
relation between obesity from childhood to adulthood and the metabolic syndrome: population based study

	non-obese adults*	obese adults	
		non-obese In childhood *	obese In childhood
men	2	4	12
women	0	3	9
total	2	7	21
Odds ratio	1	16	56

* BMI <27.7 m, <26.6 w.; * BMI <15.8 b, <15.6 g.

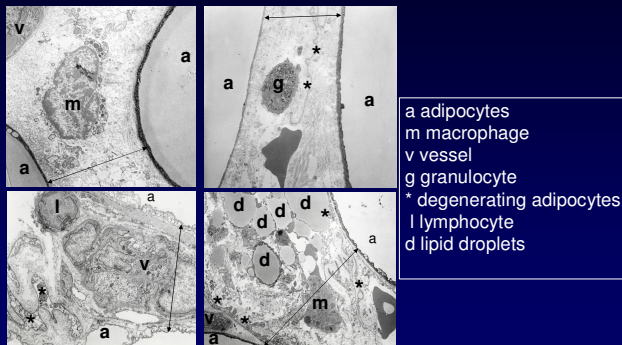
Erikson JG, et al. BMJ 1999;318:427-31

adipose tissue: a regulator of inflammation.

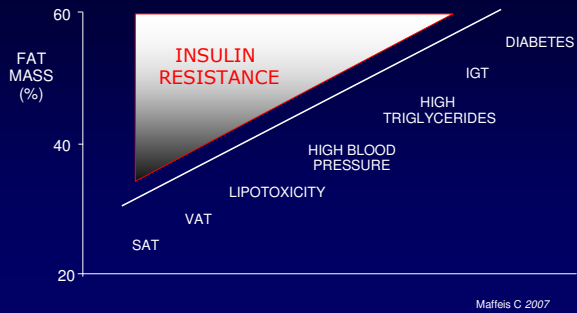


Obesity and Inflammation: Evidence for an Elementary Lesion

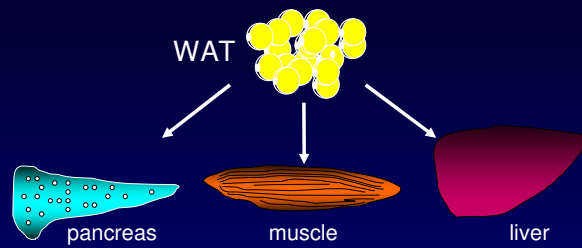
Electron microscopic features of subcutaneous adipose tissue in obese children.



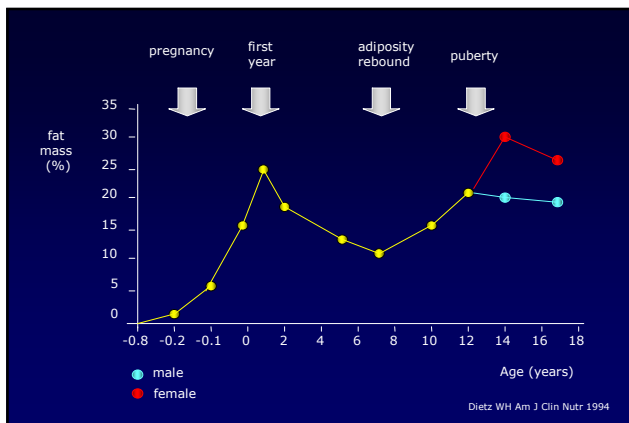
metabolic consequences of fat gain in children



the virtuous quartet



abnormalities in FA metabolism may result in inappropriate ectopic accumulation of lipids, which is involved in the development of insulin resistance

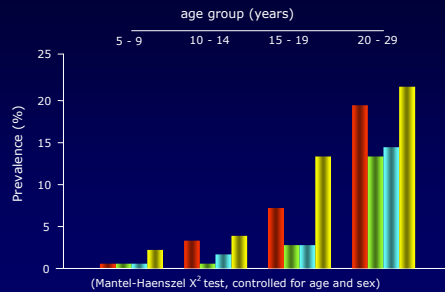


birth weight and type 2 diabetes in Pima Indian children and young adults



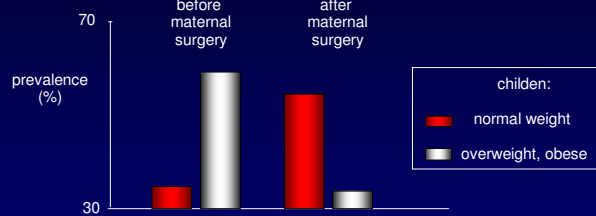
birth weight (kg)

- < 2.5
- 2.5 - 3.5
- 3.5 - 4.5
- > 4.5



Dabelea D et al. Diab Care 1999;22:944

large maternal weight loss from obesity surgery prevents transmission of obesity to children who were followed for 2 to 18 years



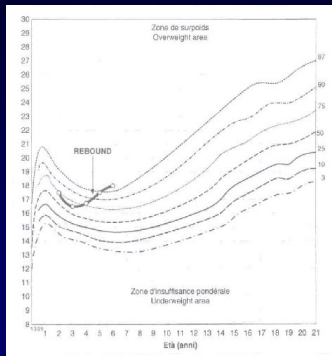
Kral JG et al. Pediatrics 2007

rapid weight gain during infancy and obesity in young adulthood in a cohort of African Americans

	Adjusted analysis		
	OR	95% CI	P
obese in young adulthood:			
rapid weight gain category (0 to 4 months):	5.22	1.55, 17.6	0.008
sex (F)	6.57	1.83, 23.5	0.004
birth weight (kg)	17.6	2.22, 140	0.007
gestational age (wk)	0.77	0.35, 1.68	0.5
firstborn status	2.33	0.54, 10.2	0.3
birth year	3.43	1.01, 11.7	0.049
maternal BMI (kg/m ²)	1.2	1.04, 1.39	0.013
maternal age (y)	0.93	0.83, 1.03	0.16
maternal education (y)	0.97	0.69, 1.37	0.9

Stettler N, et al. Am J Clin Nutr 2003

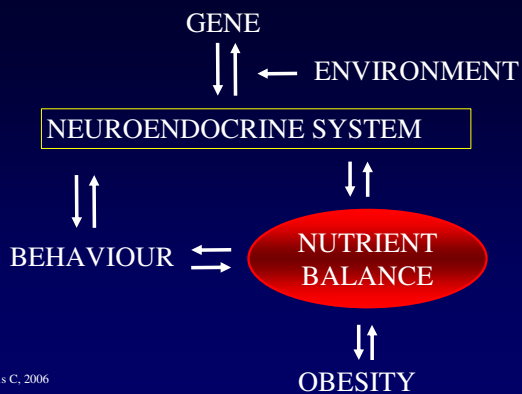
adiposity rebound



adequate sleep among adolescents is positively associated with health status and health-related behaviors

Independent variable:	OR (95% c.i.)
adequate sleep (higher vs lower)	
Dependent variable:	
Health responsibility (higher vs lower)	1.6 (1.2-2.2)
Stress management (higher vs lower)	7.6 (5.3-10.8)
Nutrition (higher vs lower)	3.0 (2.2-4.1)
Exercise (higher vs lower)	2.1 (1.6-3.0)
Body size (Non-overweight vs Overweight)	1.7 (1.3-2.4)

Chen MY, et al. BMC Public Health 2006



Maffei C, 2006

long-term weight loss maintenance

Definition: "individuals who have intentionally lost at least 10% of their body weight and kept it off at least one year".

20% of overweight individuals are successful weight losers.

THE NATIONAL WEIGHT CONTROL REGISTRY

diet + physical activity: 89%

diet: 10%

physical activity: 1%

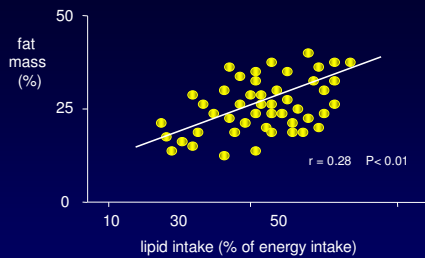
strategies very consistently reported:

consuming a low-calorie (1800 kcal/day), low-fat (25%) diet

doing high levels of physical activity (3000 kcal/week)

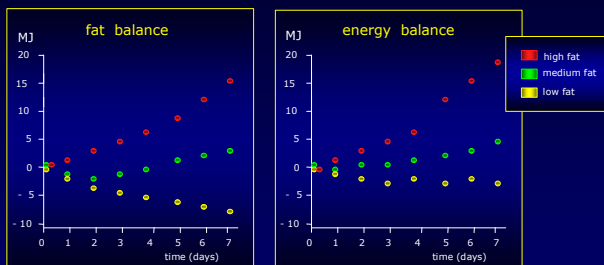
weighing themselves frequently

consuming breakfast daily



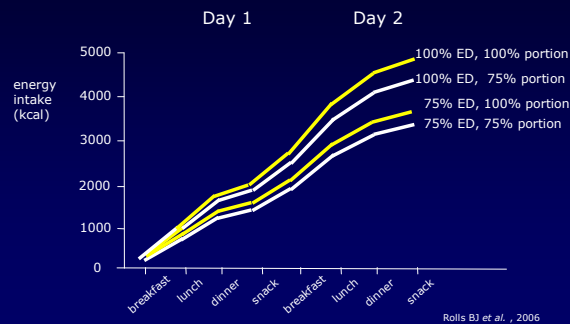
Kleeges RC *et al.* AJCN '94
Gazzaniga JM, *et al.* AJCN '93
Maffeis C *et al.* Int J Obes '96

covert manipulation of dietary fat and energy density: effect on substrate flux and food intake in men eating ad libitum

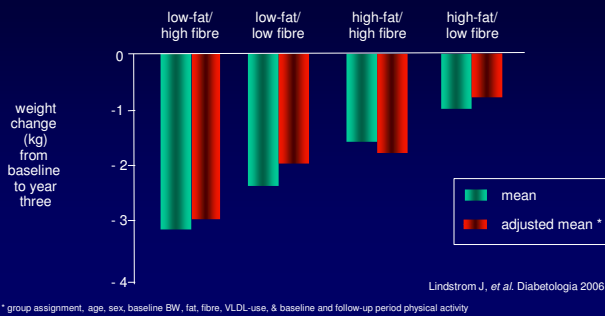


Stubbs RJ, *et al.* AJCN 1995; 62:316-29.

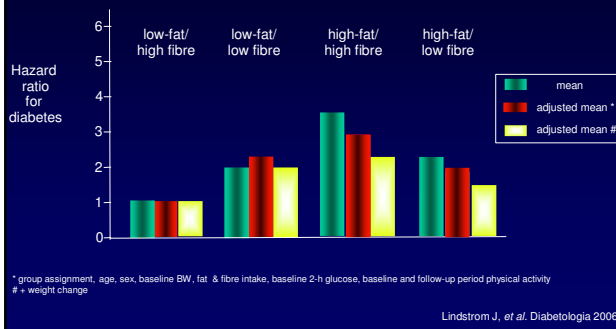
reduction in portion size and energy density of foods are additive and lead to sustained decreases in energy intake

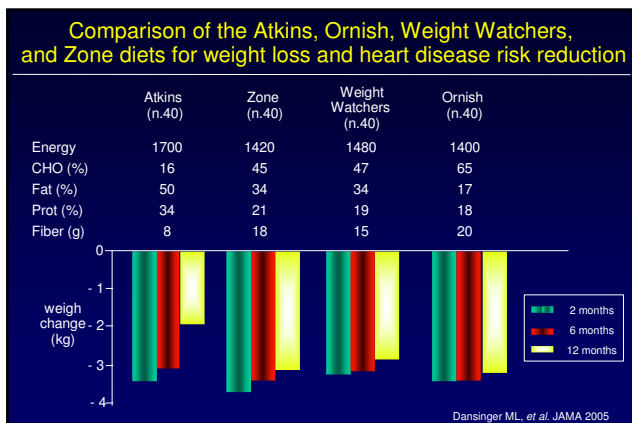


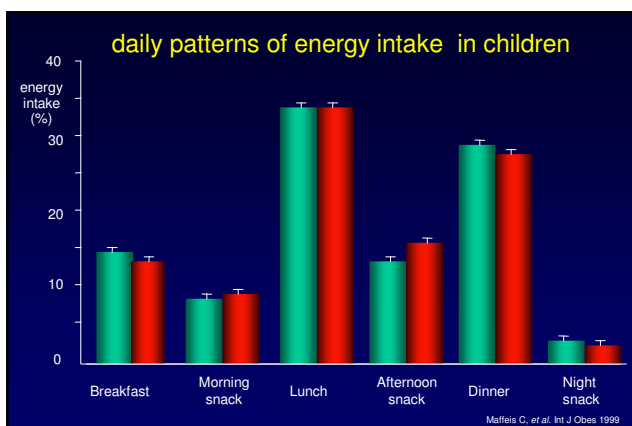
high-fibre, low-fat diet predicts long-term weight loss and decreased type 2 diabetes risk: the Finnish Diabetes Prevention Study

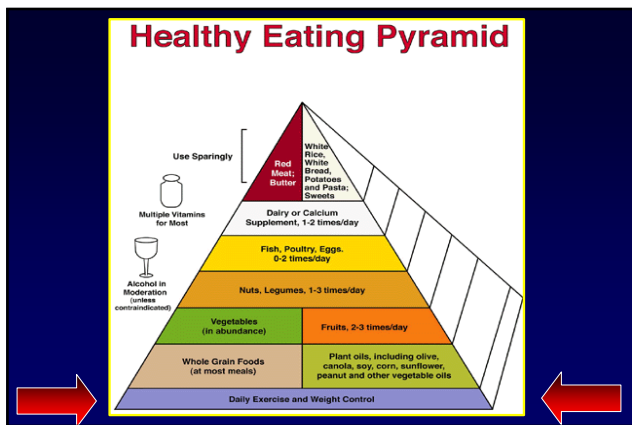


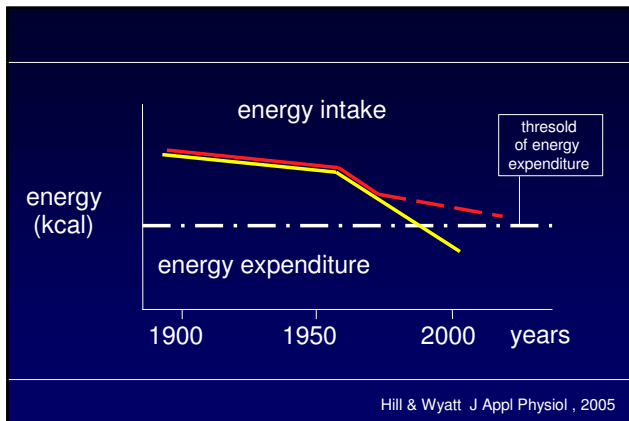
high-fibre, low-fat diet predicts long-term weight loss and decreased type 2 diabetes risk: the Finnish Diabetes Prevention Study

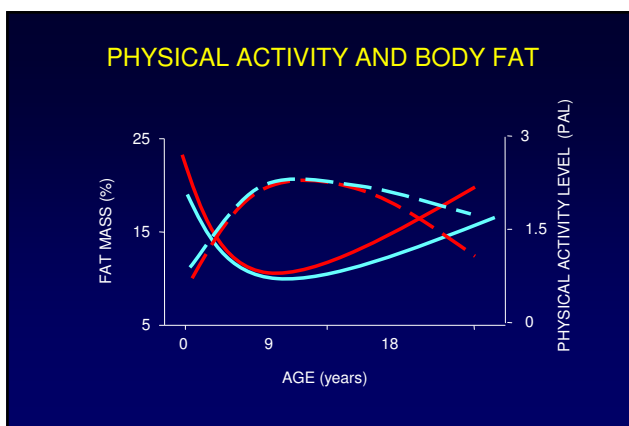


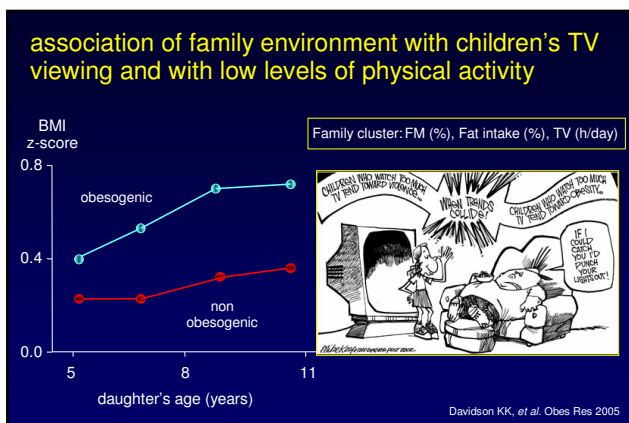




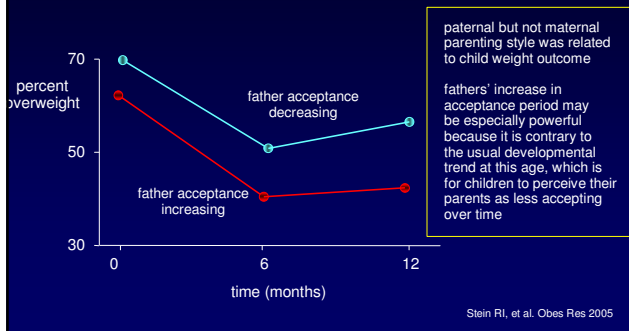




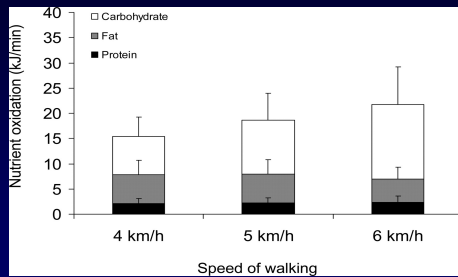




parents' obesity-related behaviors predict girls change in BMI

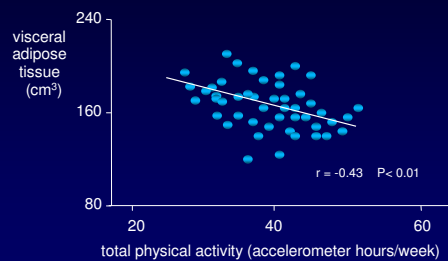


Nutrient oxidation measured during walking at speeds of 4, 5, and 6 km/h, respectively, in a group of obese prepubertal children



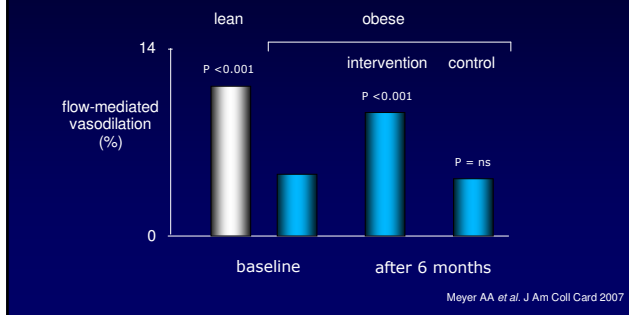
Maffei, C. et al. *J Clin Endocrinol Metab* 2005;90:231-236

visceral abdominal fat is correlated with whole-body fat and physical activity among 8-y-old children at risk of obesity

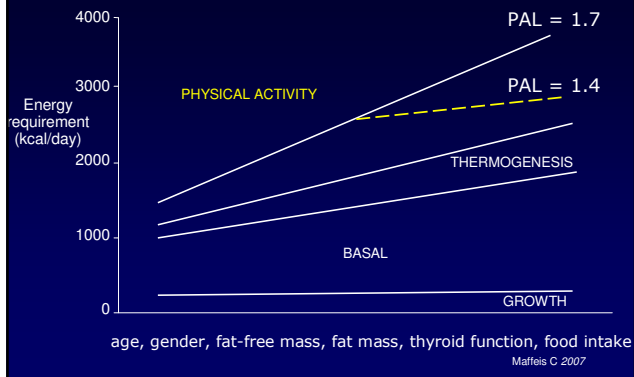


Saelens BE et al. *Am J Clin Nutr* 2007

improvement of early vascular changes and cardiovascular risk factors in obese children after a six-month exercise program



Recommended Dietary Allowances: are they appropriate?



Recommended Dietary Allowances: are they appropriate?

PAL = INDEX OF PHYSICAL ACTIVITY

= TOTAL ENERGY EXPENDITURE / BASAL ENERGY EXPENDITURE

= 1.7 SAFE LEVEL FOR WEIGHT MAINTENANCE IN ADULTS

Case 1: 10-year-old boy, BW= 30 kg, BMR: 1200 kcal/day
RDA: 2200 kcal/day. Estimated PAL: $2200/1200 = 1.8$

Case 2: 10-year-old boy, BW= 40 kg, BMR: 1400 kcal/day
RDA: 2200 kcal/day. Estimated PAL: $2200/1400 = 1.6$

Case 3: 10-year-old boy, BW= 25 kg, BMR: 1000 kcal/day
RDA: 2200 kcal/day. Estimated PAL: $2200/1000 = 2.2$

However, the mean PAL in 10-year-old boys is 1.5. Therefore, in all the three cases the RDA overestimate requirements and expose to fat gain.

Maffei C 2007

TAKE HOME MESSAGE

Approaching prevention and treatment of obesity in the single individual do not use the RDA to estimate energy requirements but use the factorial method.

Maffei C 2007
