

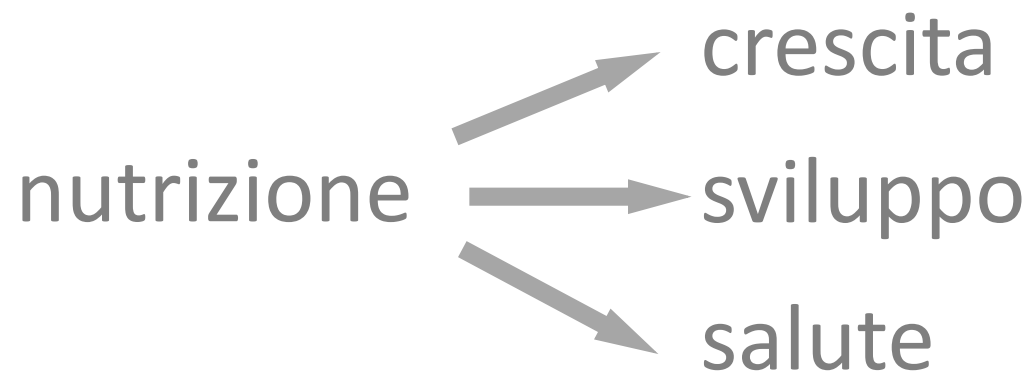
Nutrizione ed età evolutiva

Prof. Claudio Maffeis

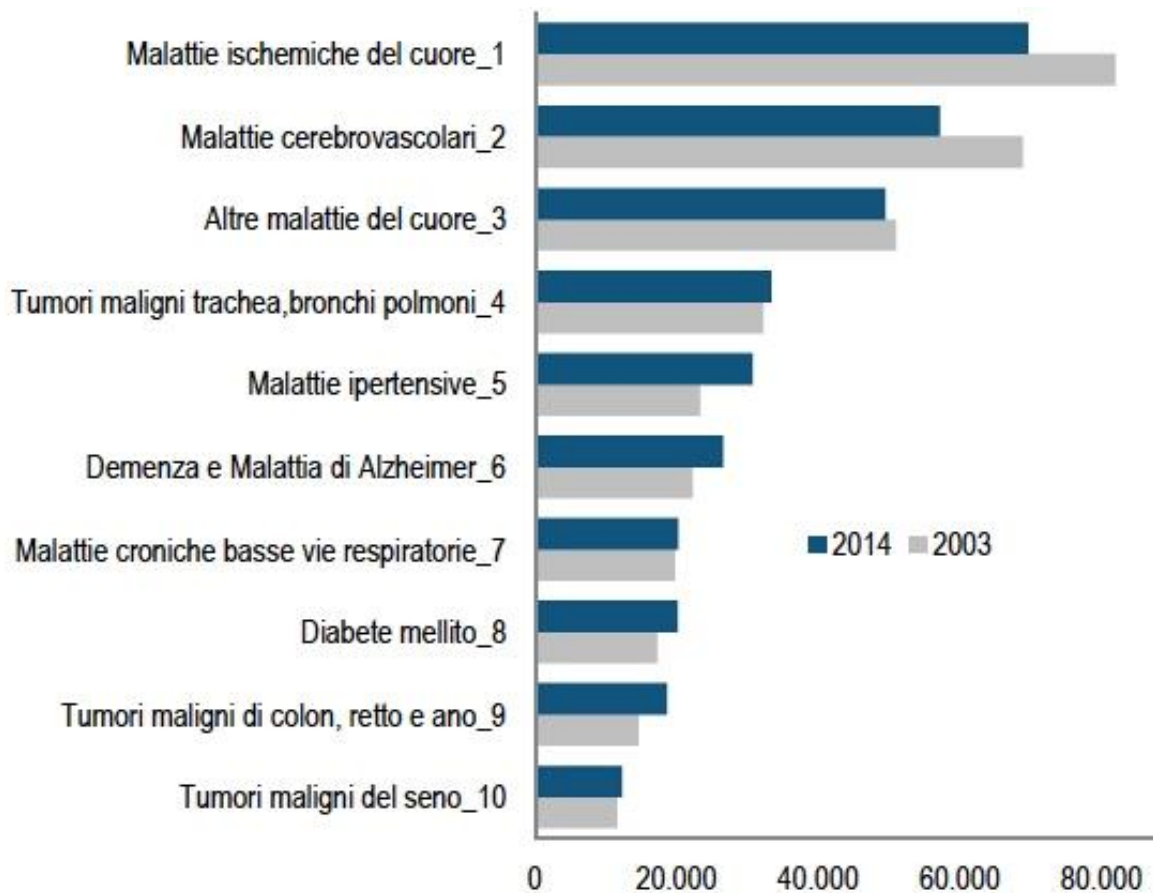
UOC Pediatria ad Indirizzo Diabetologico
e Malattie del Metabolismo
Centro Regionale Diabetologia Pediatrica

Università e Azienda Ospedaliera Universitaria Integrata
Verona

E mail: claudio.maffeis@univr.it



NUMERO DI DECESSI PER LE 10 PRINCIPALI CAUSE DI MORTE IN ITALIA. Anni 2003 e 2014

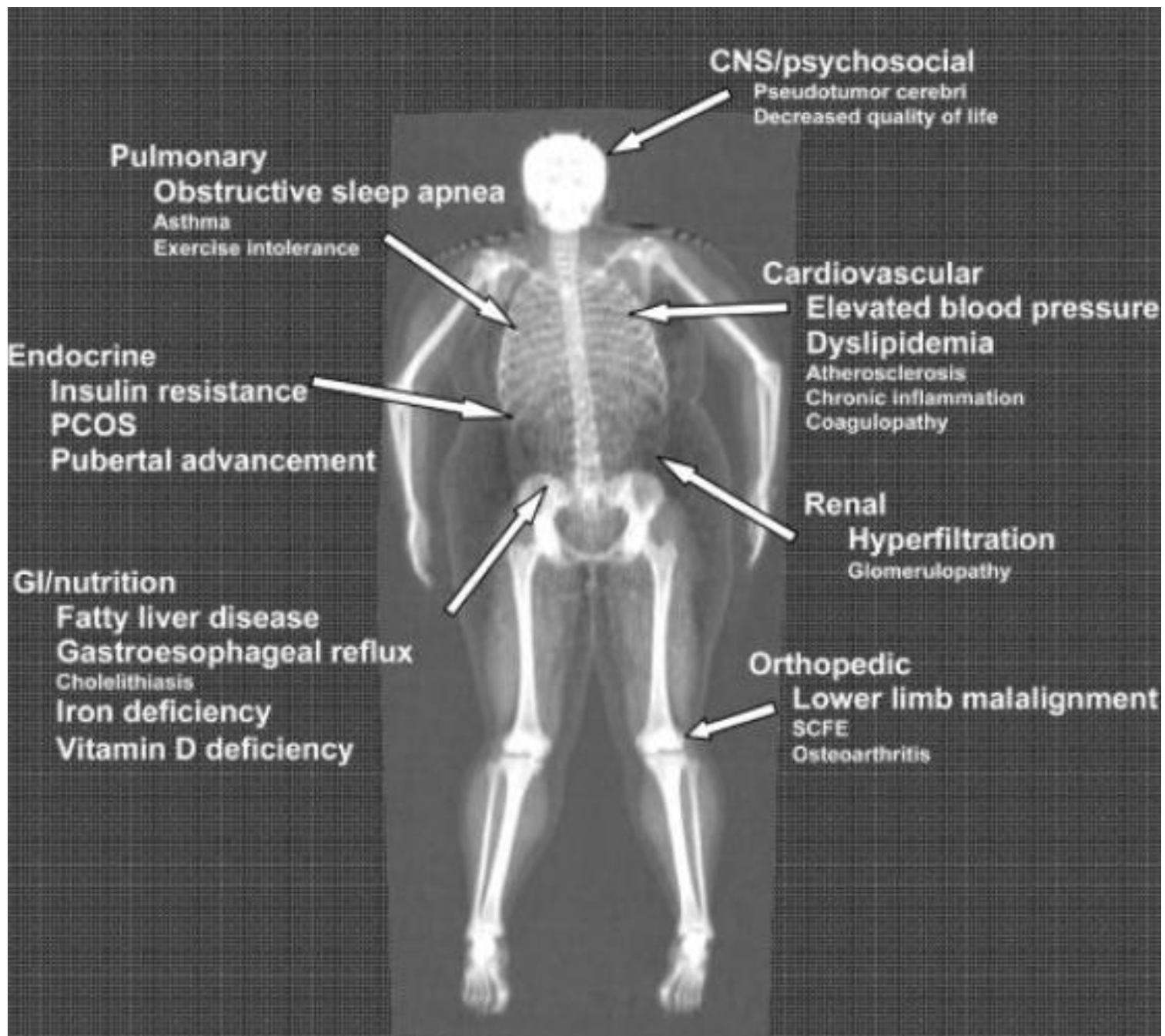


Indagine Okkio alla Salute

Prevalenza obesità bambini 8-9 anni

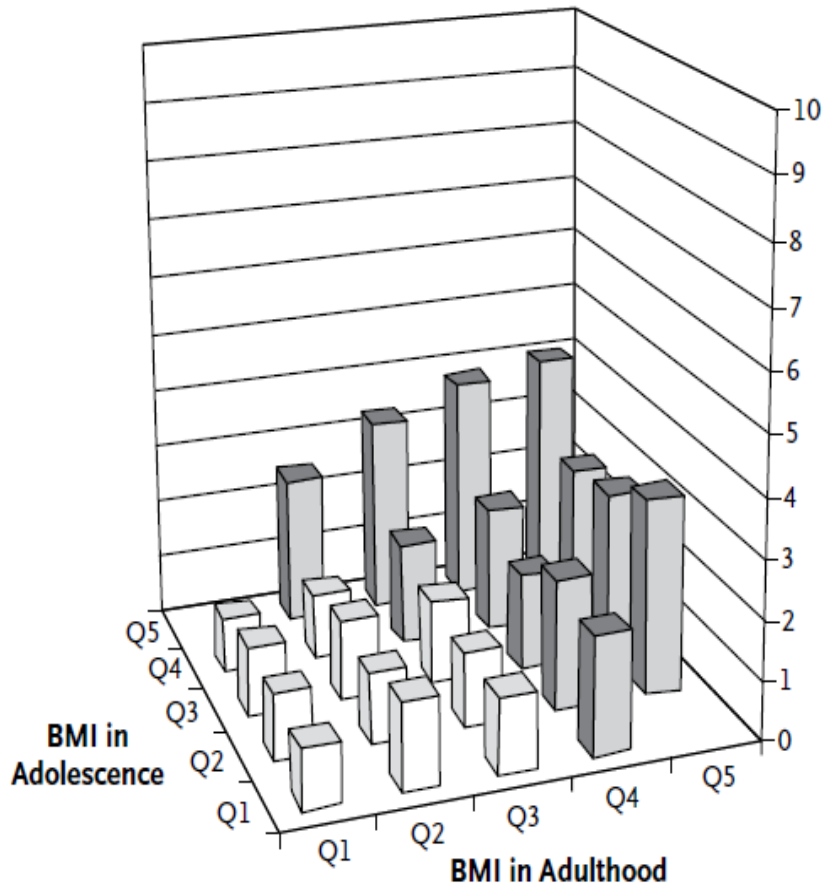


■ minore uguale 25 ■ maggiore di 25 e minore 35 ■ maggiore uguale 35

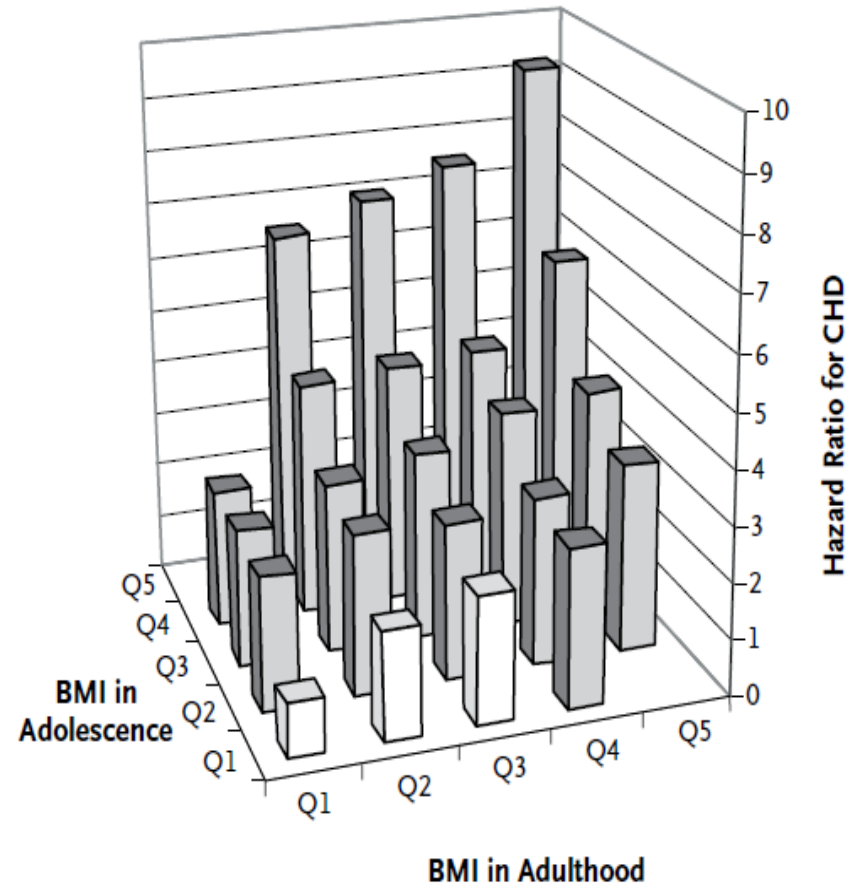


Adolescent BMI Trajectory and Risk of Diabetes versus Coronary Disease

A Diabetes

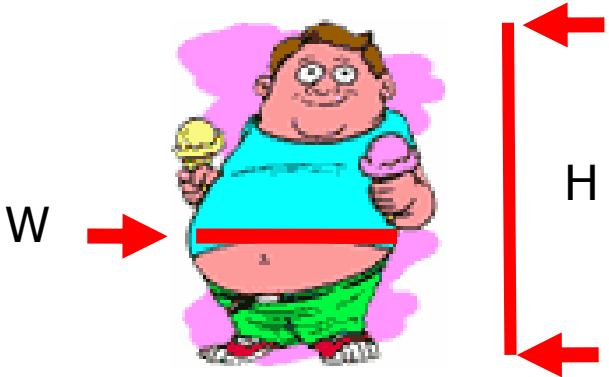


B CHD



Odds ratio to have the metabolic syndrome in subjects with a W/Hr >0.5 within normal-weight, overweight, and obese BMI categories

Childhood Obesity Group of the Italian Society of Pediatric Endocrinology & Diabetology



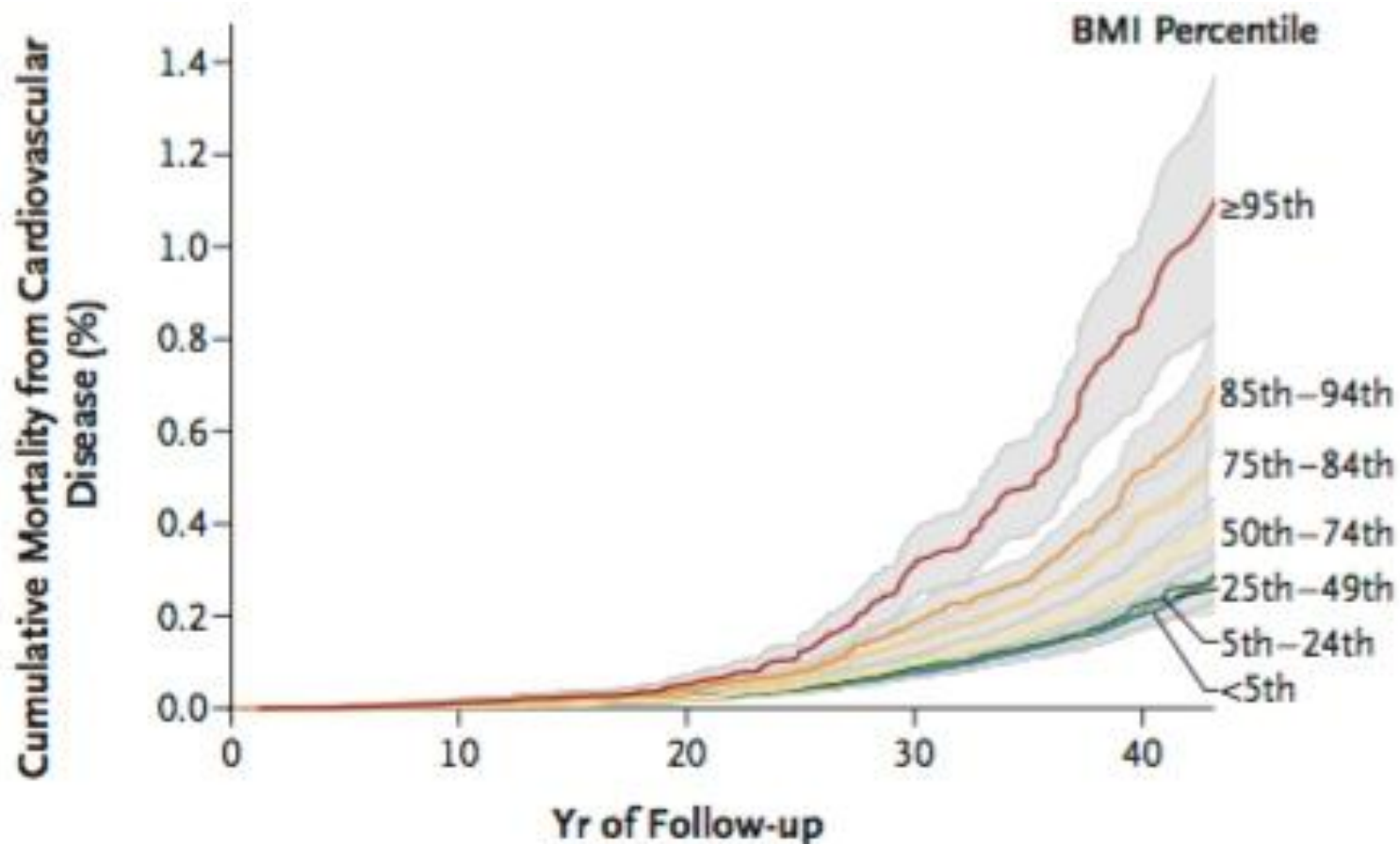
Metabolic syndrome

Risk to develop metabolic syndrome

Independent variables	Metabolic syndrome		OR (95% CI)
	No	Yes	
Normal weight with W/Hr <0.5	938	22	1
Normal weight with W/Hr >0.5	13	1	4.01 (0.49-32.97)
Over weight with W/Hr <0.5	132	10	3.34 (1.52-7.37) *
Over weight with W/Hr >0.5	72	16	8.16 (3.87-17.23) **
Obese with W/Hr >0.5	208	67	12.11 (7.08-20.71) **

W/Hr = waist/height ratio * P < .05. ** P < .001.

Body-Mass Index in 2.3 Million Adolescents and Cardiovascular Death in Adulthood



No. at Risk

Participants at risk	1,712,018	1,042,018	540,636	160,145
Cumulative person-yr	17,201,301	30,718,320	38,472,521	41,926,636
Cumulative cardiovascular deaths	185	609	1,577	2,676

JAMA | US Preventive Services Task Force | **RECOMMENDATION STATEMENT**

Screening for Obesity in Children and Adolescents

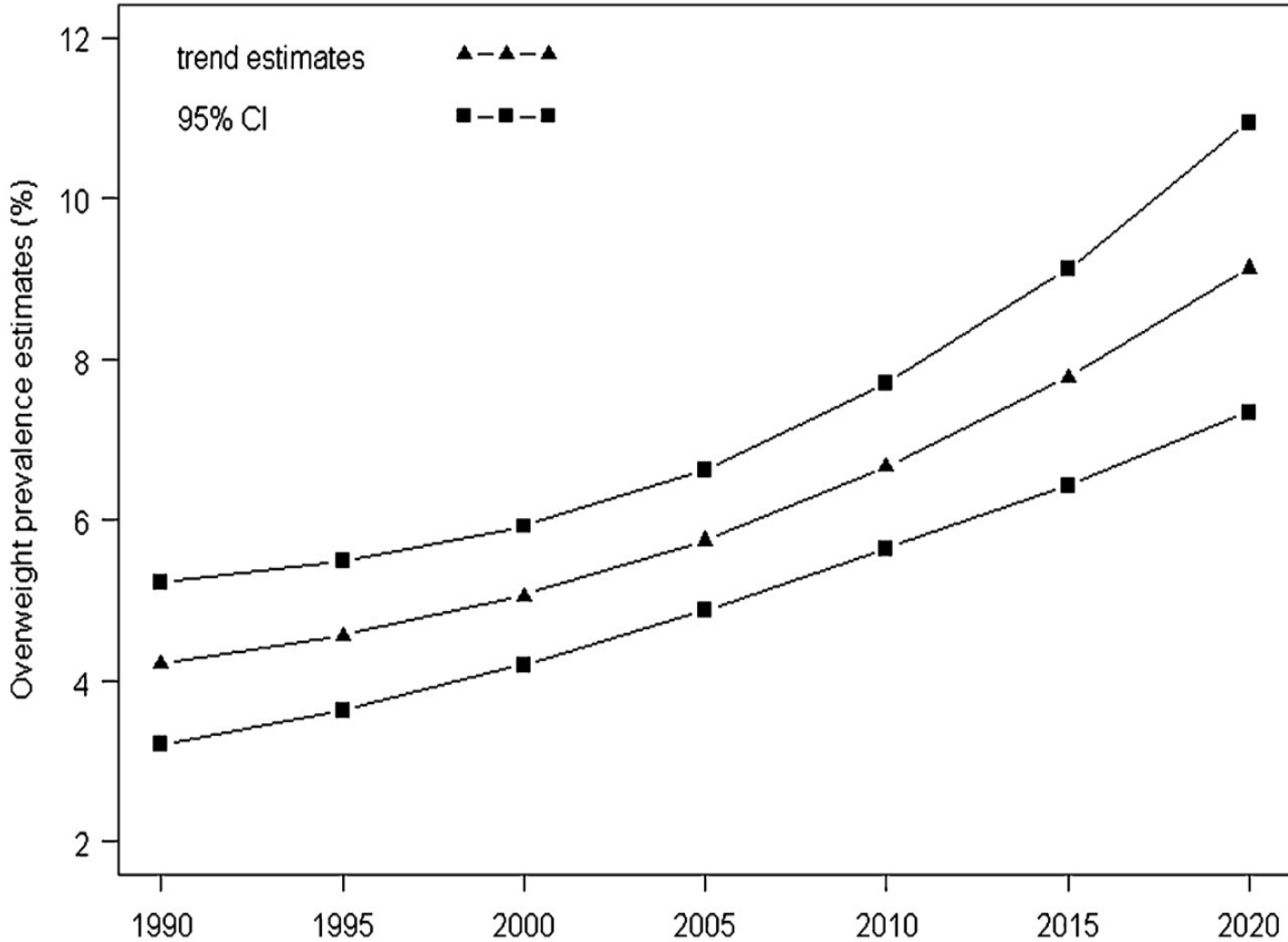
US Preventive Services Task Force Recommendation Statement

US Preventive Services Task Force

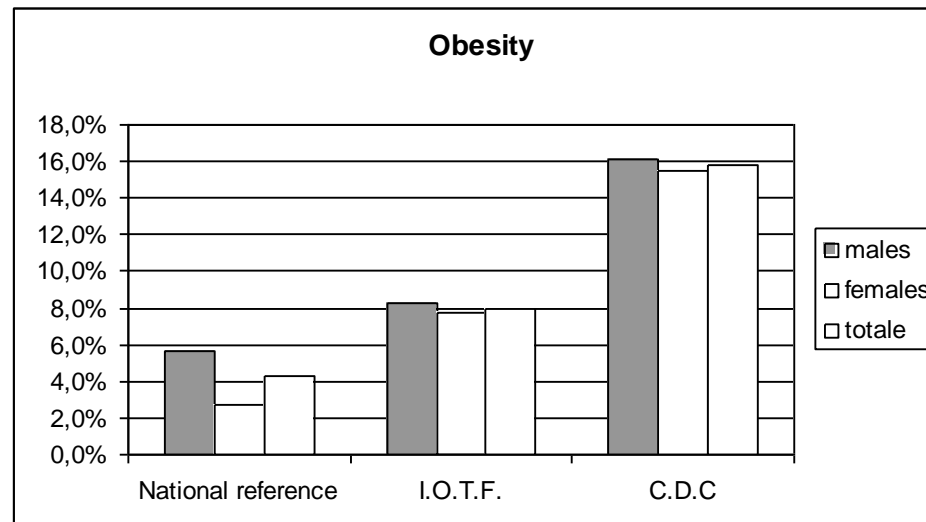
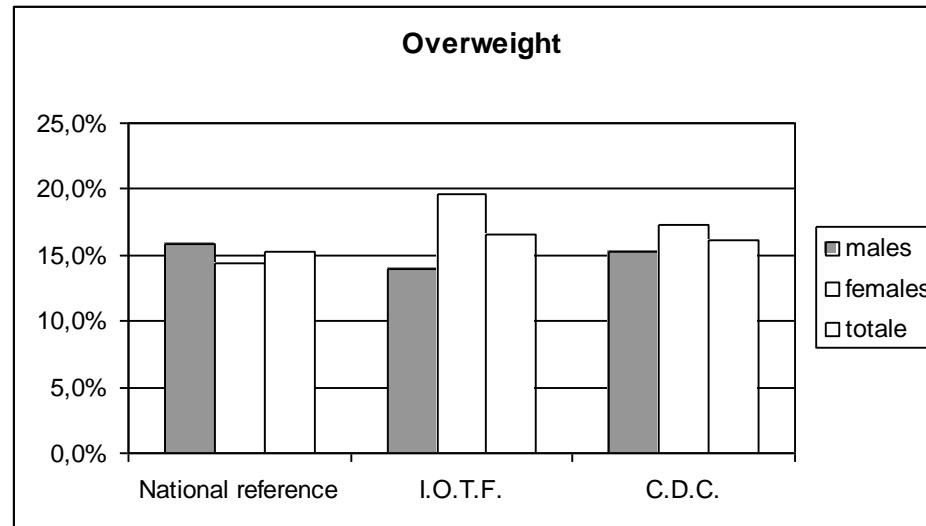
CONCLUSIONS AND RECOMMENDATION The USPSTF recommends that clinicians screen for obesity in children and adolescents 6 years and older and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status. (B recommendation)

JAMA. 2017;317(23):2417-2426. doi:[10.1001/jama.2017.6803](https://doi.org/10.1001/jama.2017.6803)

global prevalence and trends of overweight and obesity among preschool children.

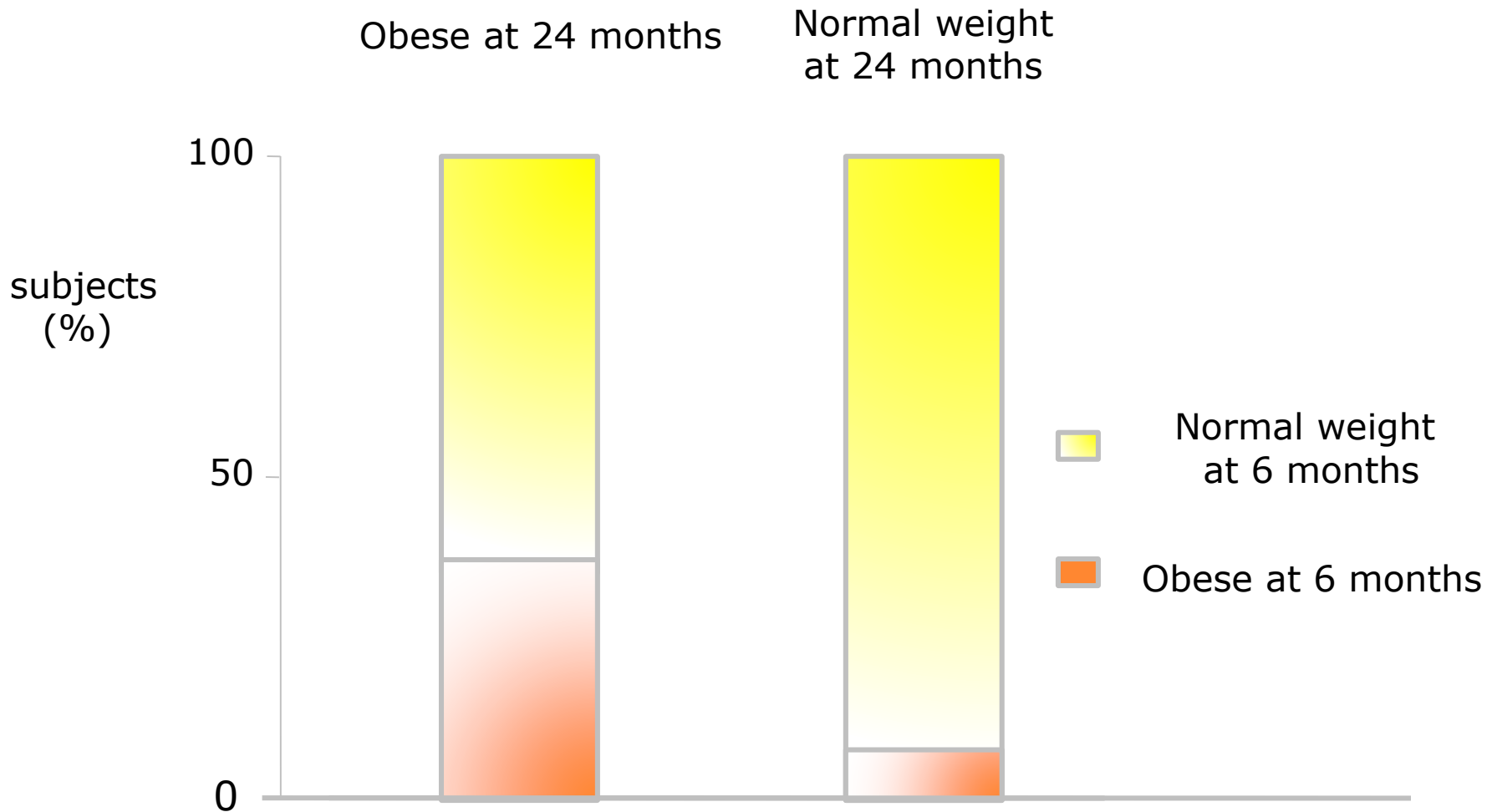


Prevalence of overweight and obesity in 2-6-year-old Italian children



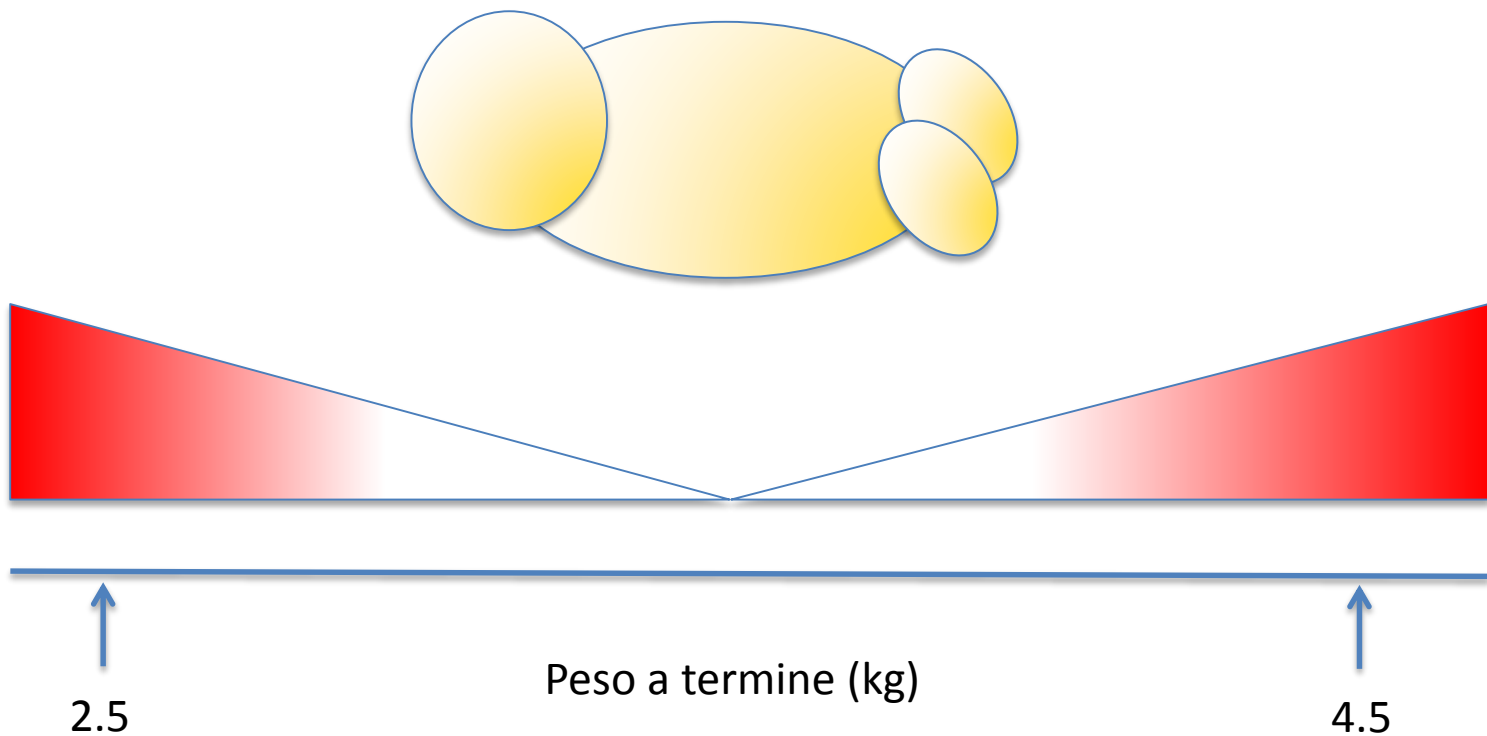
Infant obesity: are we ready to make this diagnosis?

Risk of obesity at age 6 months, given obese status at age 24 months

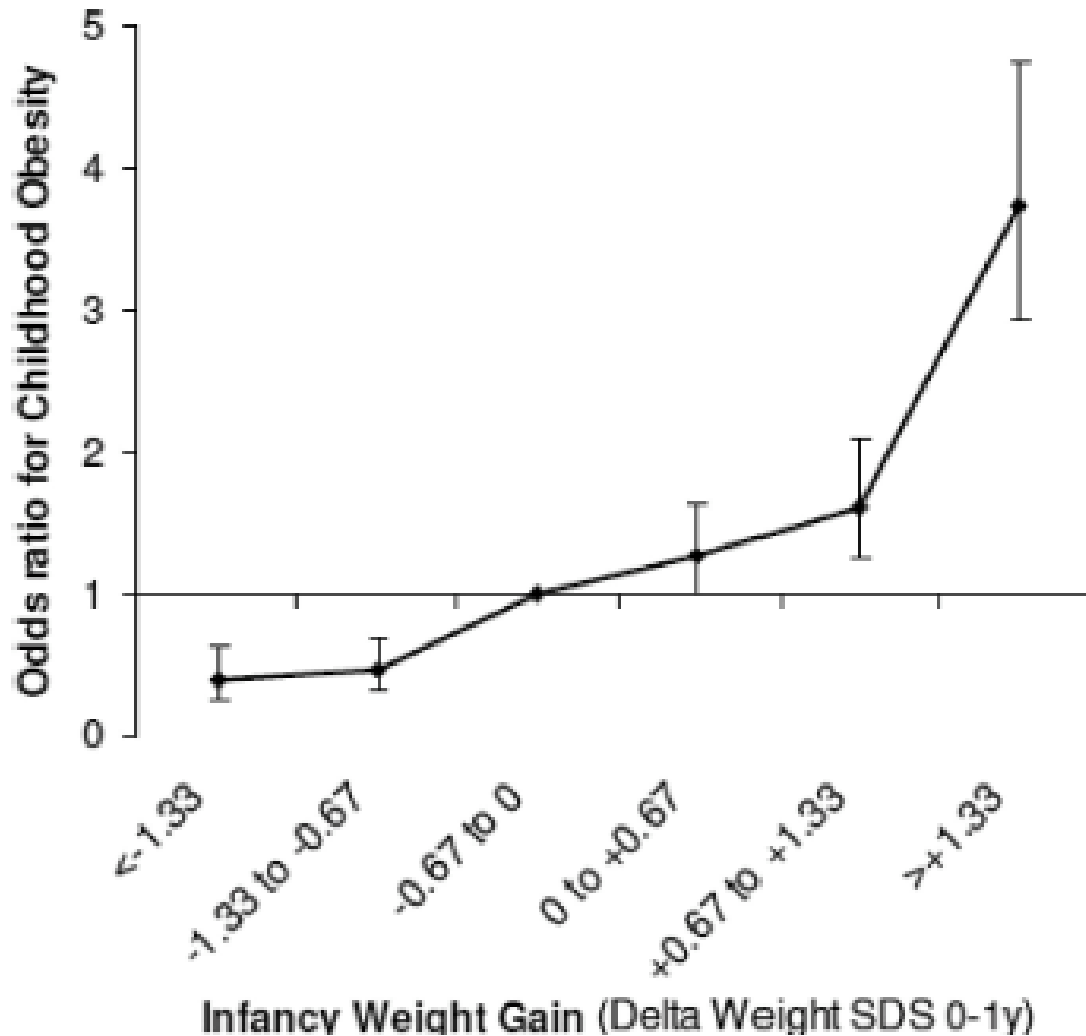


Fattori di rischio di obesità

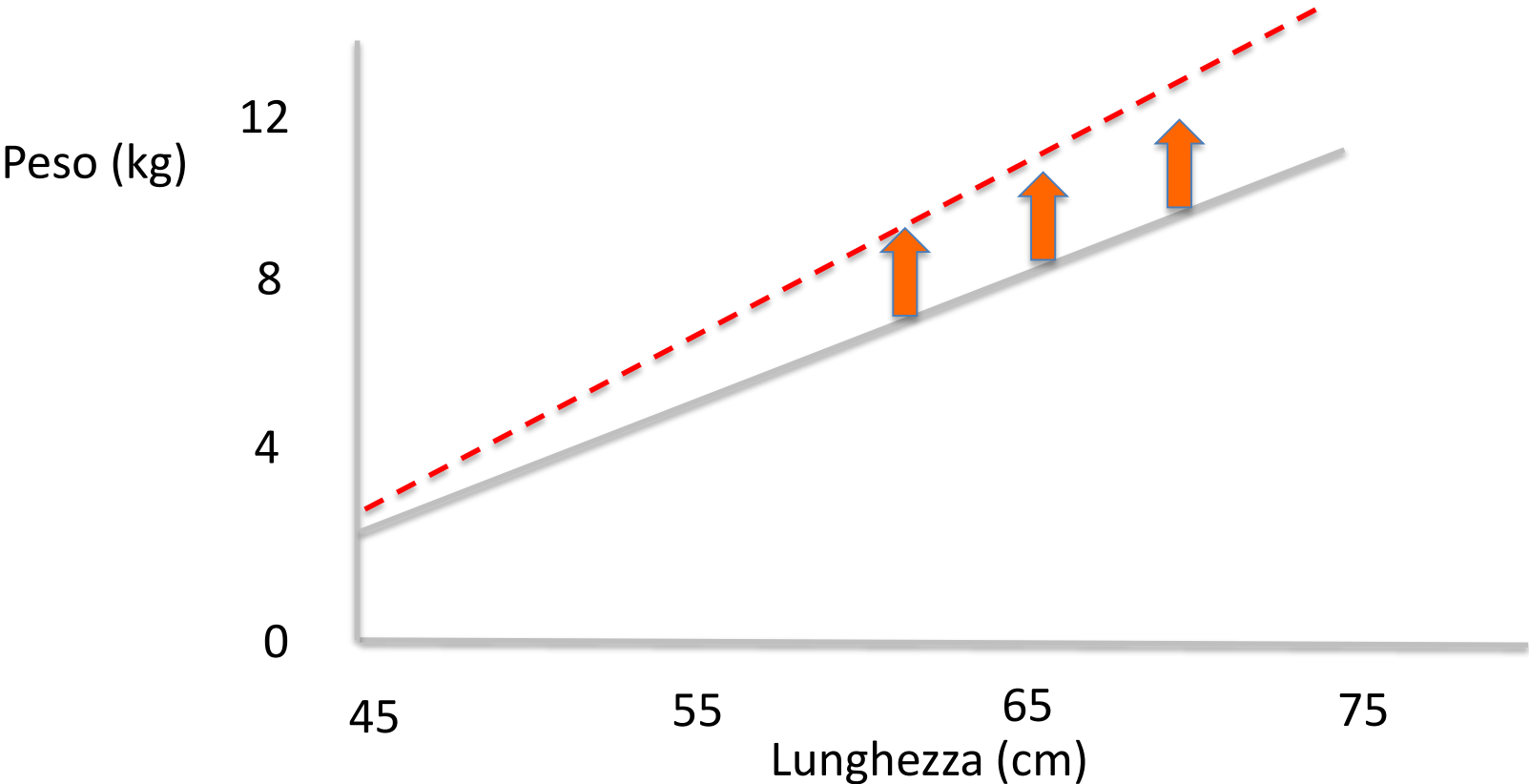
Peso alla nascita



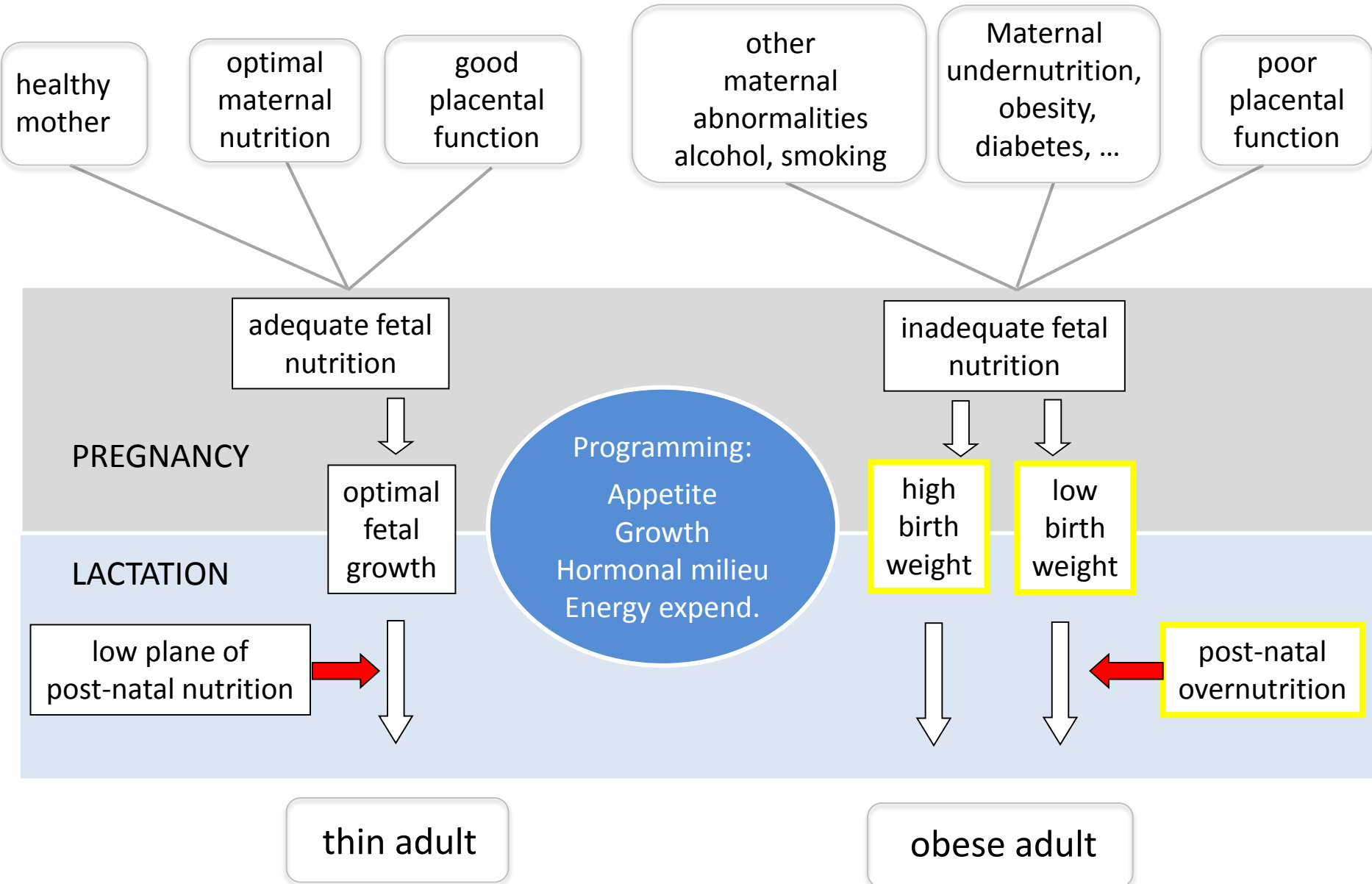
Odds ratio for childhood obesity by infant weight gain between 0 and 1 year adjusted for sex, age, a weight



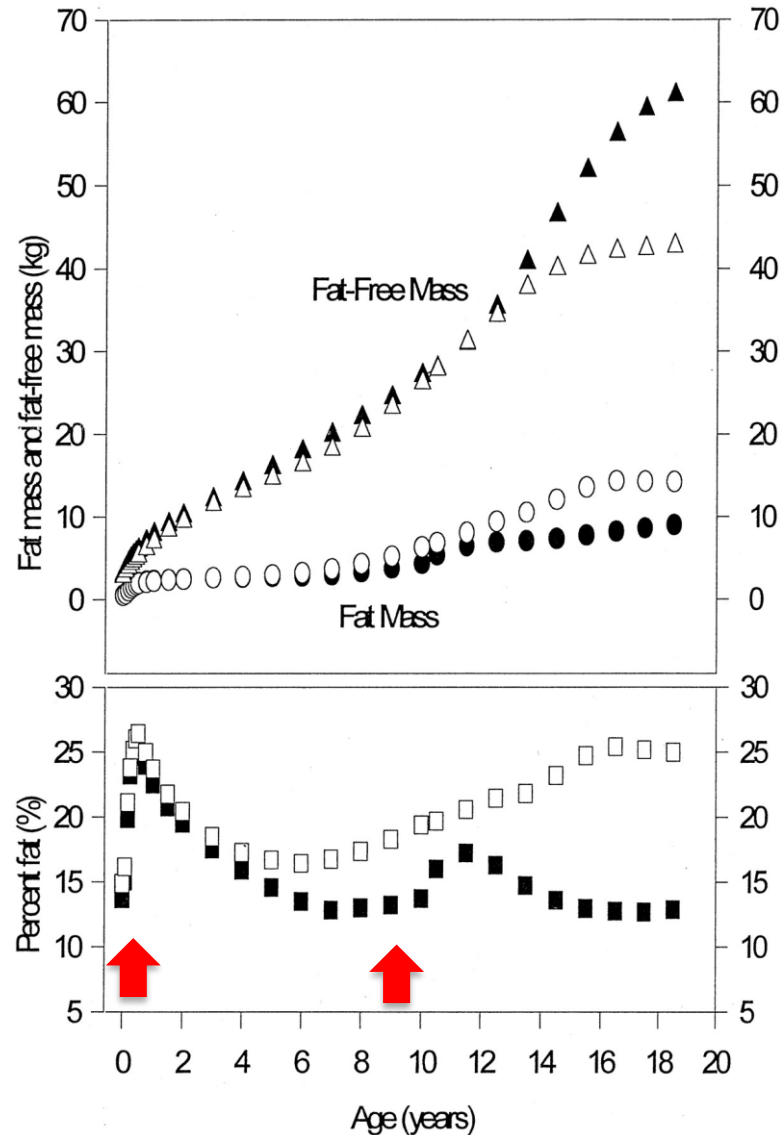
Velocità di crescita primo anno



fetal & perinatal programming



estimates of FFM, FM, and FM percent in European-American boys (closed symbols) and girls (open symbols) from infancy through early adulthood

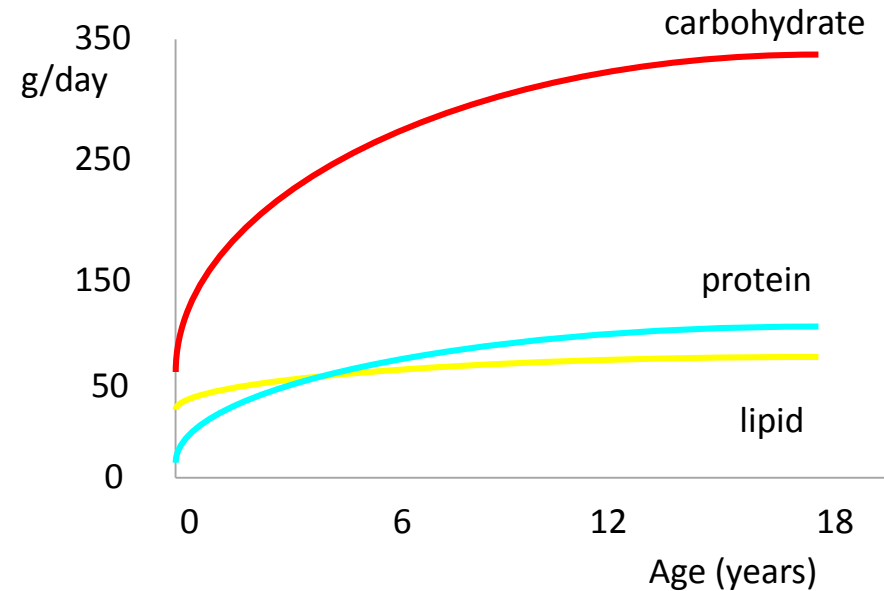
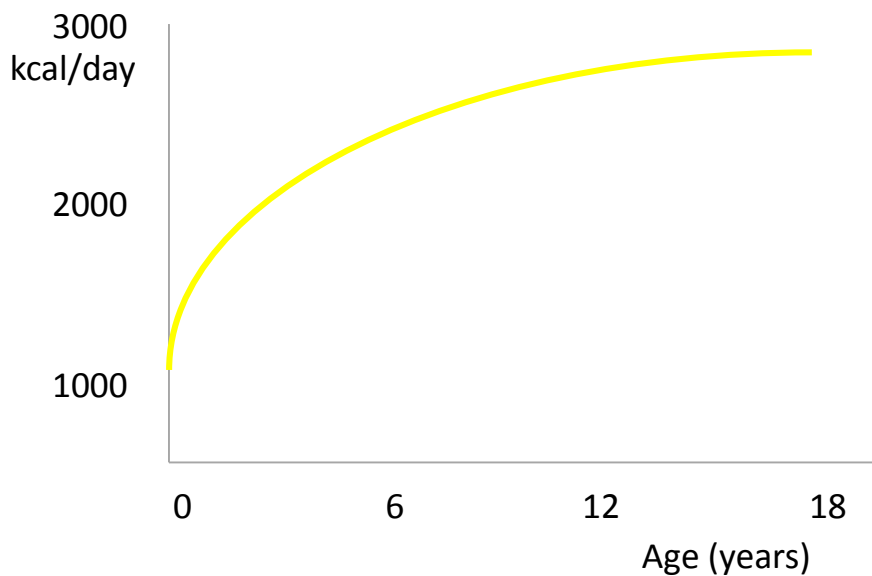


energy and nutrient requirements

energy



nutrients



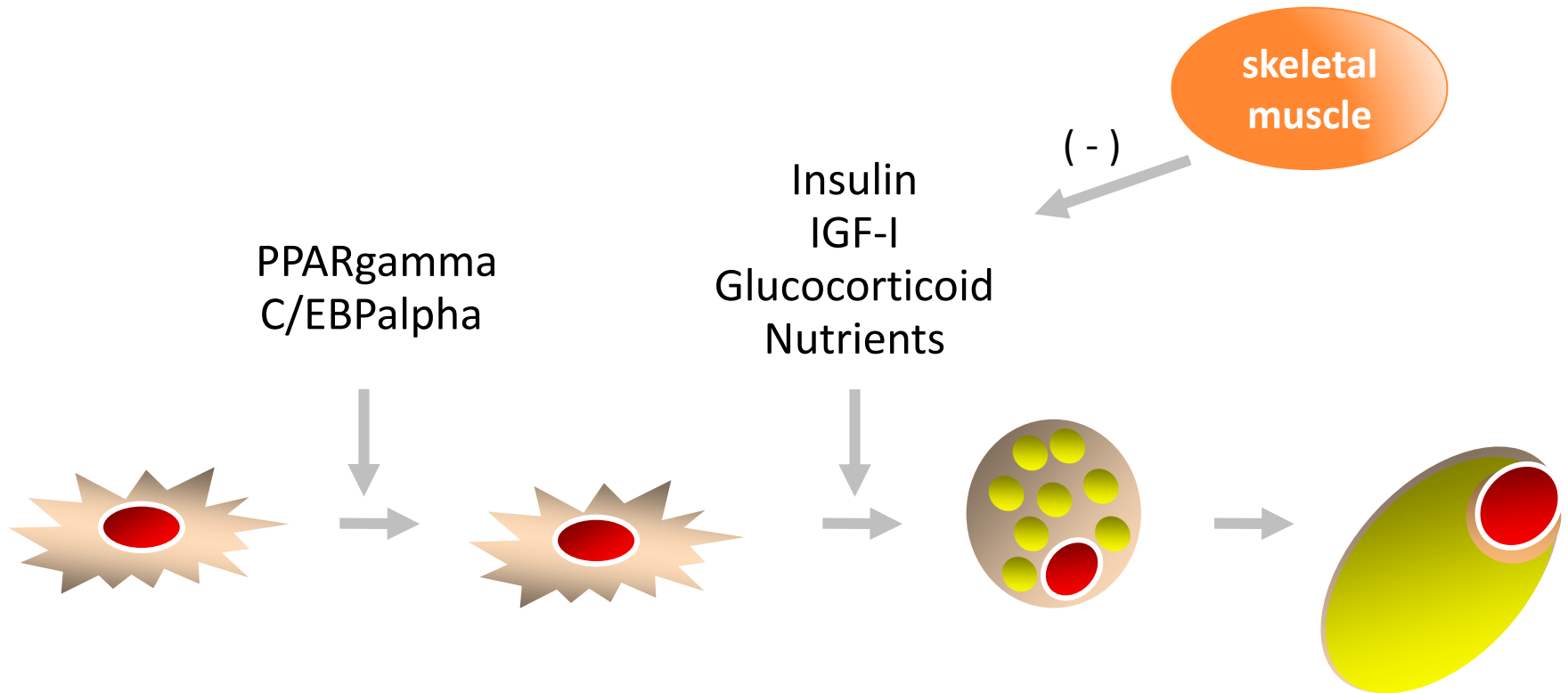
adipocyte differentiation

multipotent
mesenchymal
stem cell

determined
unipotential
preadipocyte

immature
multilocular
adipocyte

mature
adipocyte





S I N U

SOCIETÀ ITALIANA
DI NUTRIZIONE UMANA



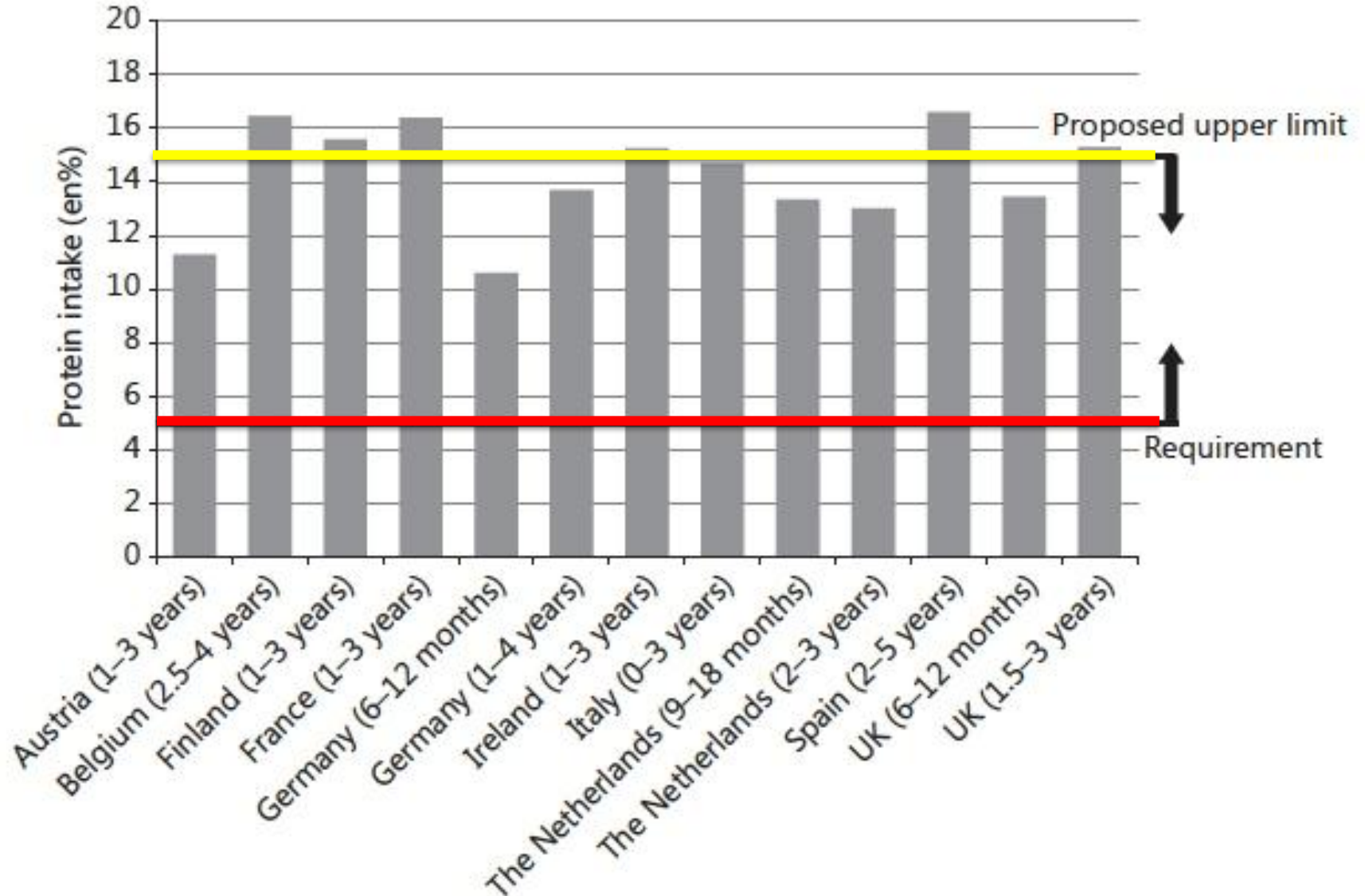
LARN

Livelli di Assunzione di Riferimento
di Nutrienti ed energia
per la popolazione italiana
IV Revisione



Nutritional Challenges and Opportunities during the Weaning Period and in Young Childhood

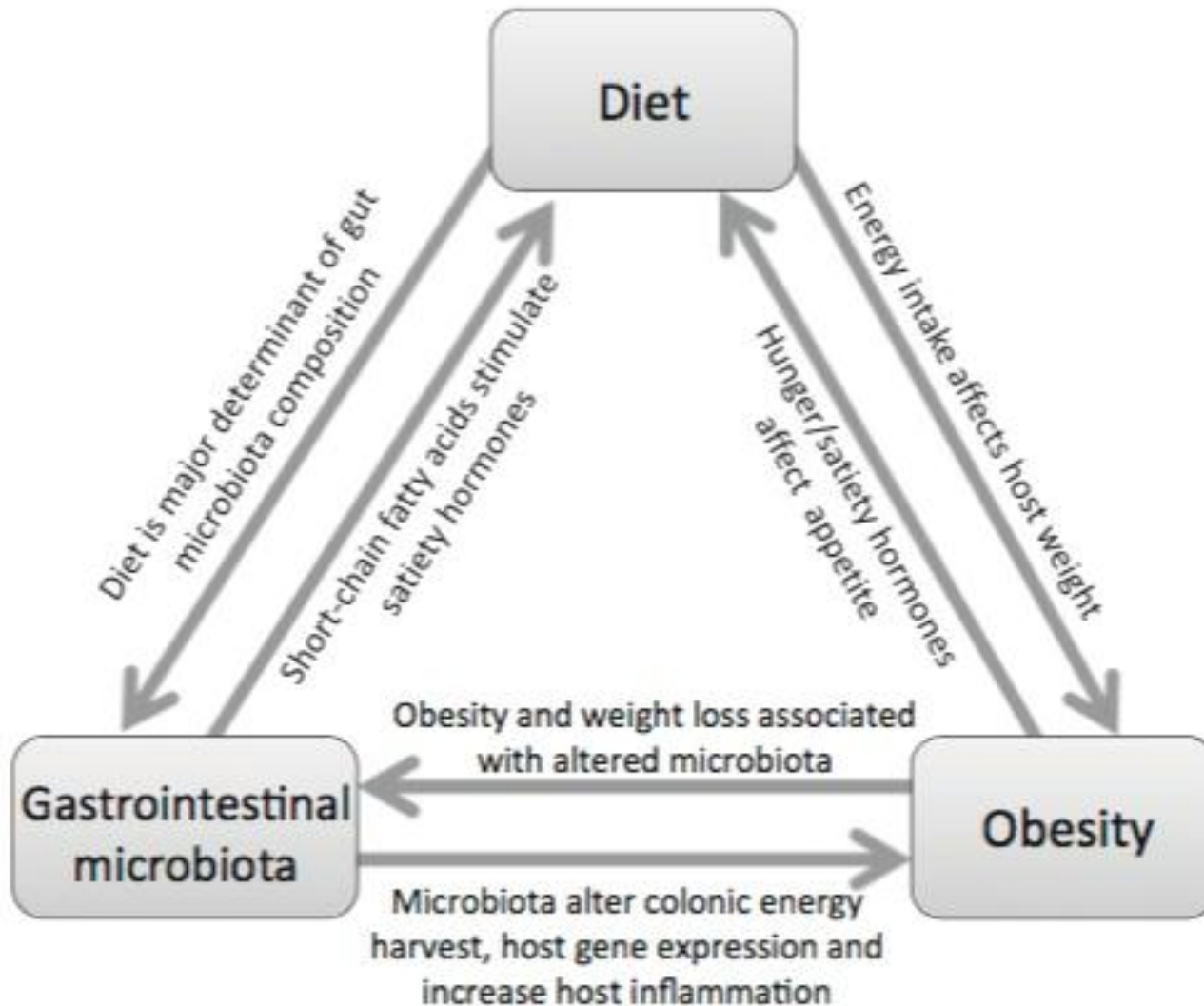
Protein intake



LARN 2014 lipidi

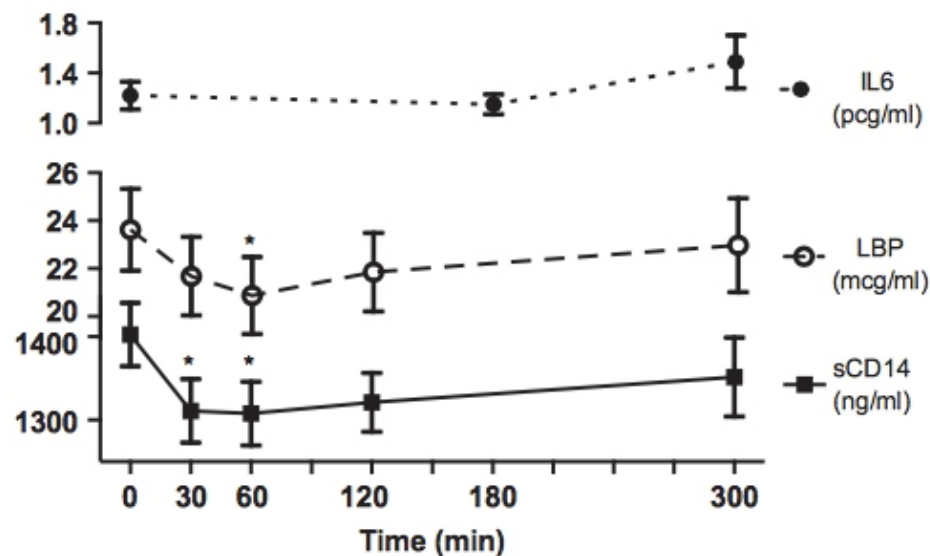
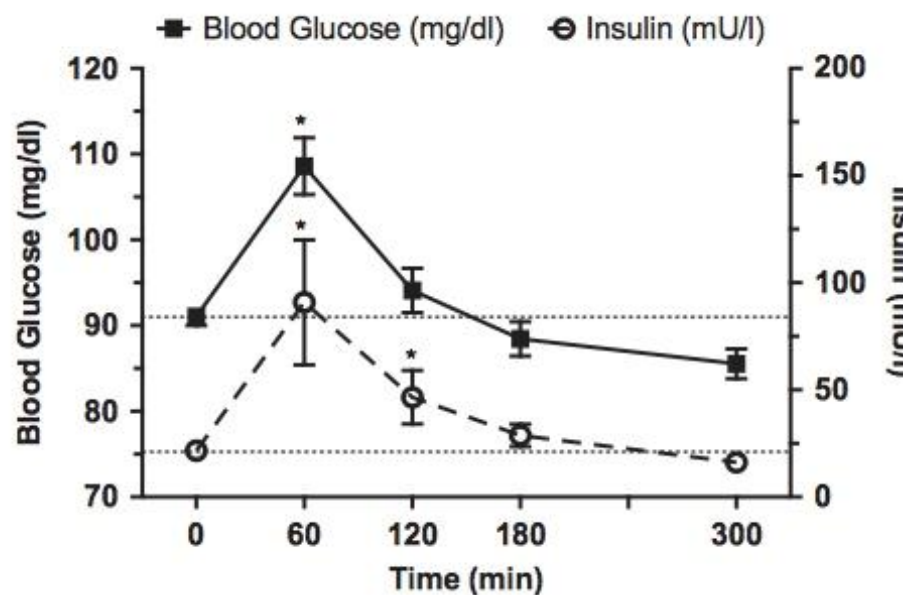
Età (anni)		Obiettivo nutrizionale per la prevenzione	Livello adeguato di assunzione	Intervallo di riferimento per l'assunzione di nutrienti
0,5 – 1	<p>Lipidi totali</p> <p>SFA</p> <p>PUFA</p> <p>PUFA n-6</p> <p>PUFA n-3</p> <p>Ac. grassi trans</p>	<p>< 10% En.</p> <p>Il meno possib.</p>	<p>40% En.</p> <p>EPA-DHA 250 mg + DHA 100 mg</p>	<p>5-10% En.</p> <p>4-8% En.</p> <p>0,5-2% En.</p>
1 – 17	<p>Lipidi totali</p> <p>SFA</p> <p>PUFA</p> <p>PUFA n-6</p> <p>PUFA n-3</p> <p>Ac. grassi trans</p>	<p>< 10% En.</p> <p>Il meno possib.</p>	<p>EPA-DHA 250 mg +1-2 aa. + DHA 100 mg</p>	<p>1-3 aa. 35-40% En.</p> <p>>4aa. 20-35% En.</p> <p>5-10% En.</p> <p>4-8% En.</p> <p>0,5-2% En.</p>

Related mechanisms involved in the interactions among dietary intake, the gastrointestinal microbiota, and obesity



SHORT COMMUNICATION

High-fat meal, systemic inflammation and glucose homeostasis in obese children and adolescents

A Morandi¹, E Fornari¹, F Opri¹, M Corradi¹, M Tommasi¹, R Bonadonna² and C Maffei¹

Carboidrati

Grado di polimerizzazione	Sottogruppo	Componenti	Digeribilità
Zuccheri	Monosaccaridi	Glucosio, galattosio, fruttosio	+
	Disaccaridi	Saccarosio, maltosio, lattosio	+
	Polialcoli	Sorbitolo, mannitolo, xilitolo, lattitolo, eritritolo, ecc.	+/-
Oligosaccaridi	Malto-oligosaccaridi	Maltodestrine	+
	Altri oligosaccaridi	FOS, GOS, oligosaccaridi da legumi, polidestrosio	
Polisaccaridi	Glicogeno	Glicogeno	+
	Amido	Amilosio, amilopectina	+
	Amido resistente	RS1, RS2, RS3, RS4	
	Polisaccaridi non amidacei (fibra alim.)	Cellulosa, emicellulose, pectine, Gomme, inulina	

Added Sugars and Cardiovascular Disease Risk in Children

A Scientific Statement From the American Heart Association

	Age, y	n*	Added Sugars, teaspoons†							
			Mean (SE)‡	5% (SE)	10% (SE)	25% (SE)	50% (SE)	75% (SE)	90% (SE)	95% (SE)
Boys	1–3	774	9.4 (0.31)	3.1 (0.17)	4.1 (0.19)	5.9 (0.24)	8.6 (0.29)	12.0 (0.39)	15.7 (0.51)	18.2 (0.62)
	4–8	1001	15.7 (0.56)	6.5 (0.31)	7.9 (0.34)	10.9 (0.41)	14.8 (0.53)	19.6 (0.70)	24.6 (0.91)	28.1 (1.07)
	9–13	850	21.5 (0.46)	5.9 (0.30)	8.0 (0.31)	12.5 (0.36)	19.3 (0.43)	27.9 (0.62)	37.9 (0.91)	44.8 (1.19)
	14–18	808	24.6 (0.74)	7.3 (0.39)	9.7 (0.43)	14.7 (0.53)	22.2 (0.69)	31.9 (0.95)	42.8 (1.36)	50.2 (1.73)
Girls	1–3	715	8.4 (0.27)	2.7 (0.17)	3.5 (0.20)	5.2 (0.23)	7.7 (0.28)	10.8 (0.33)	14.3 (0.41)	16.7 (0.45)
	4–8	894	14.3 (0.37)	5.7 (0.27)	7.1 (0.30)	9.7 (0.33)	13.4 (0.37)	17.9 (0.44)	22.6 (0.57)	25.9 (0.68)
	9–13	867	17.8 (0.44)	6.0 (0.29)	7.7 (0.31)	11.2 (0.35)	16.3 (0.42)	22.7 (0.55)	29.8 (0.77)	34.7 (0.96)
	14–18	727	17.5 (0.54)	5.8 (0.34)	7.5 (0.37)	10.9 (0.43)	16.0 (0.52)	22.4 (0.65)	29.5 (0.90)	34.3 (1.10)

*Number of people in sample.

†One teaspoon of added sugars equals the same amount of total sugars as 1 teaspoon (4 g) of table sugar (sucrose).

‡Standard errors ($df=32$).

Data derived from Usual Dietary Intakes: Food Intakes, US Population, 2007–2010.²⁰

CONCLUSIONS

Our comprehensive review of the available evidence found that associations with increased CVD risk factors are present at levels far below US children's current added sugars consumption levels. Current evidence supports the associations of added sugars with increased energy intake, increased adiposity, increased central adiposity, and increased dyslipidemia, all of which are demonstrated CVD risk factors. Importantly, the introduction

of added sugars can be harmful to children's health. The current review can make an important contribution to the development of public health policies to establish a national strategy for making

RACCOMANDAZIONI

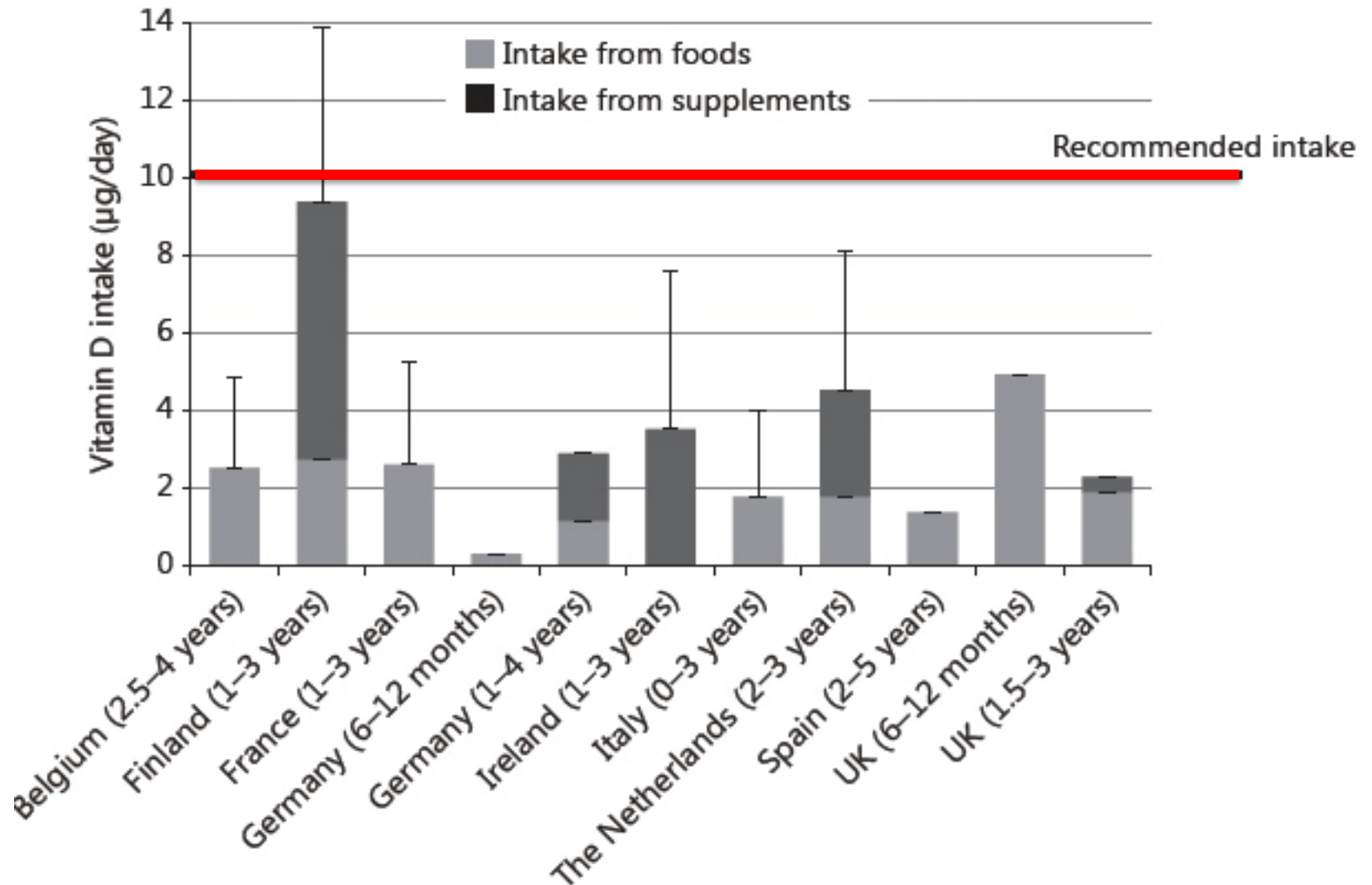
1. < 8 once di bevanda zuccherata/settimana
2. < 25 g (100 kcal; 6 zucchiaini da the di zucchero/die)
3. No zucchero aggiunto prima dei 2 anni di età

LARN 2014 carboidrati e fibra

Obiettivo nutrizionale per la prevenzione		Intervallo di riferimento per l'assunzione di macronutrienti
Carboidrati totali	Prediligere alimenti a basso GI Limitare gli alimenti in cui la riduzione del GI è ottenuta aumentando il contenuto di fruttosio o lipidi	45-60% energia totale
Zuccheri	< 15% dell'energia totale Limitare uso del fruttosio come dolcificante (anche bevande contenenti sciroppo di mais)	nd
Fibra alimentare	Preferire cibi naturalmente ricchi in fibra (cereali integrali, legumi, frutta, verdura)	8,4 g/1000 kcal (assunzione adeguata)

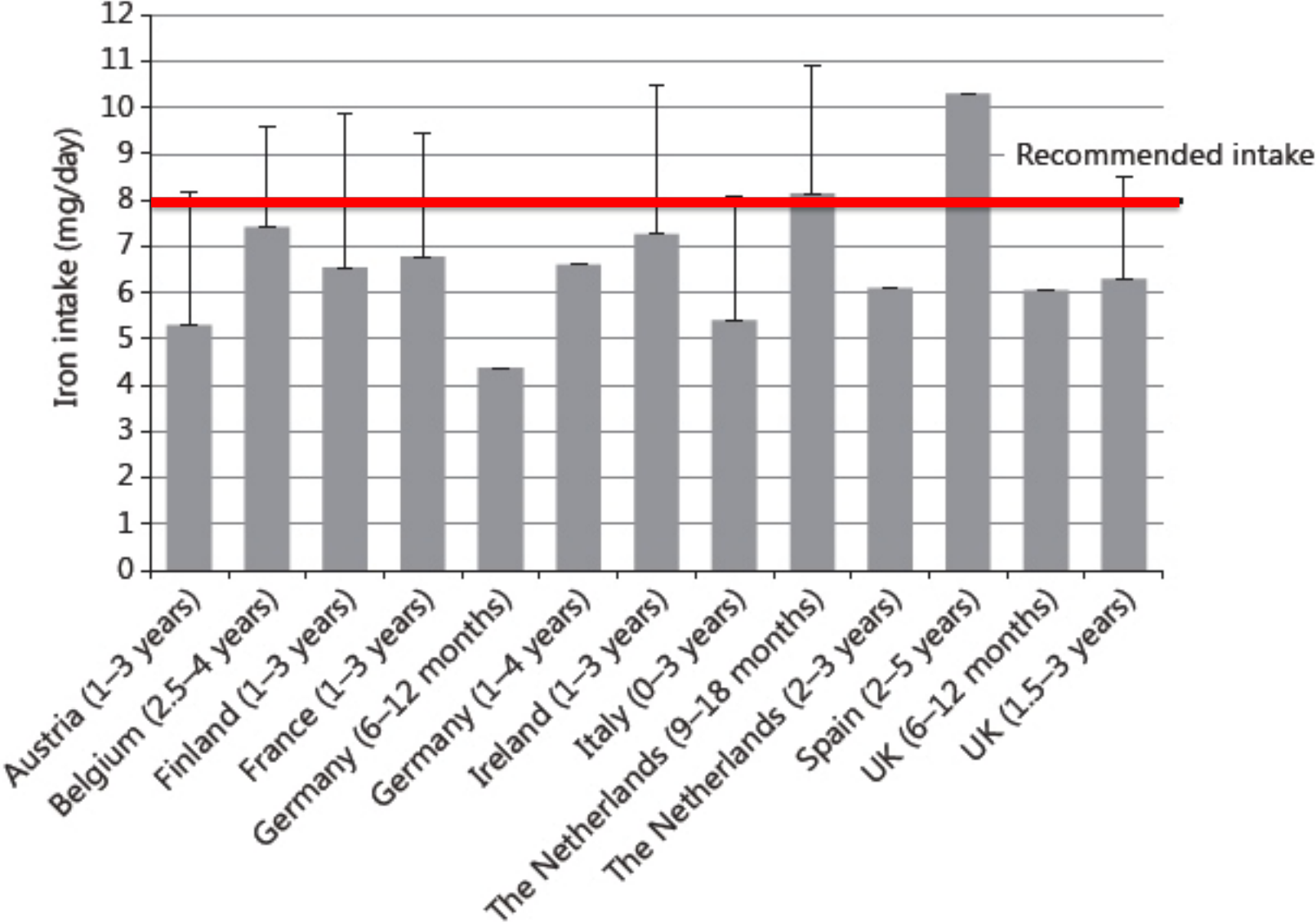
Nutriente	Assunzione raccomandata	Assunzione adeguata	Livello massimo tollerabile
Vitamina D			
Lattante	-	10 ug (400 UI)	40 ug (1600 UI)
1 – 3 anni	15 ug (600 UI)	-	65 ug (2600 UI)
Ca			
Lattante	-	260 mg	nd
1 – 3 anni	600 mg	-	nd
Na			
Lattanti	-	400 mg	nd
1 – 3 anni	-	700 mg	nd
Fe			
Lattanti	11 mg	-	nd
1 – 3 anni	8 mg	-	nd
Zn			
Lattanti	3 mg	-	nd
1 – 3 anni	5 mg	-	7 mg

Vitamin D intake



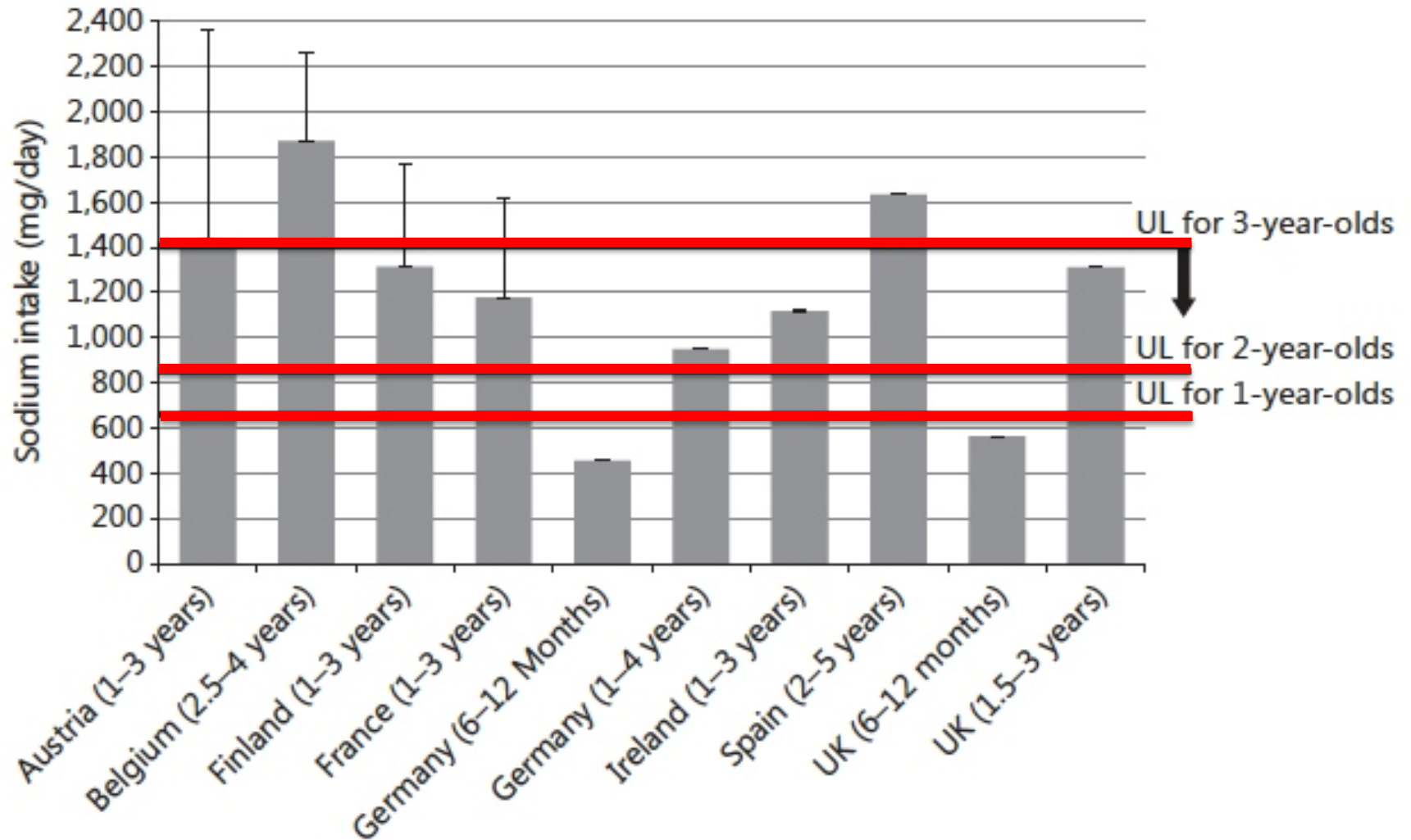
Nutritional Challenges and Opportunities during the Weaning Period and in Young Childhood

iron intake

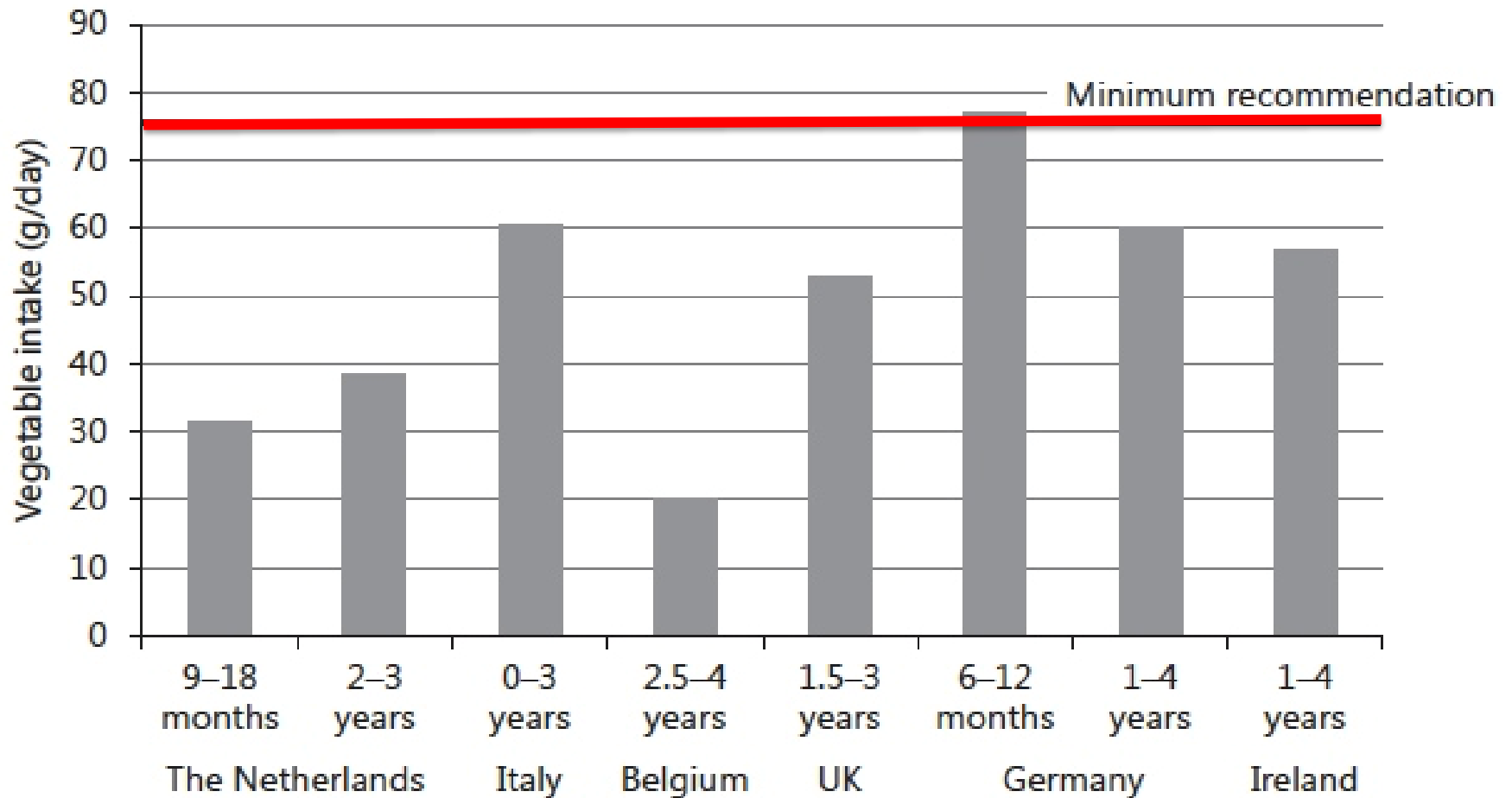


Nutritional Challenges and Opportunities during the Weaning Period and in Young Childhood

Sodium intake



Vegetable intake



Obesity

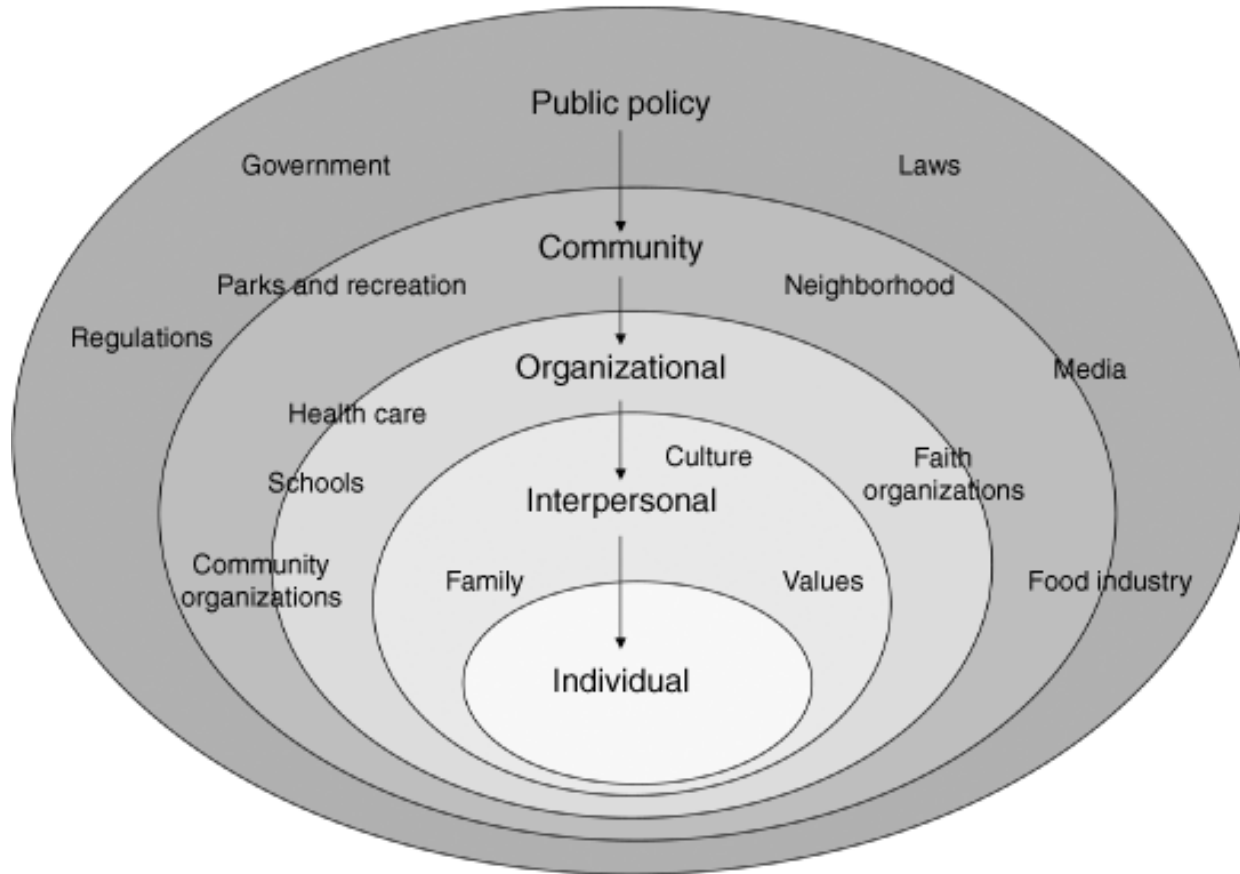
“.... Obesity is a chronic, relapsing, neurochemical disease that occurs in genetically susceptible people.

Obesity may be conceptualized as an epidemiological disease with food as an agent that acts on the host to produce disease.

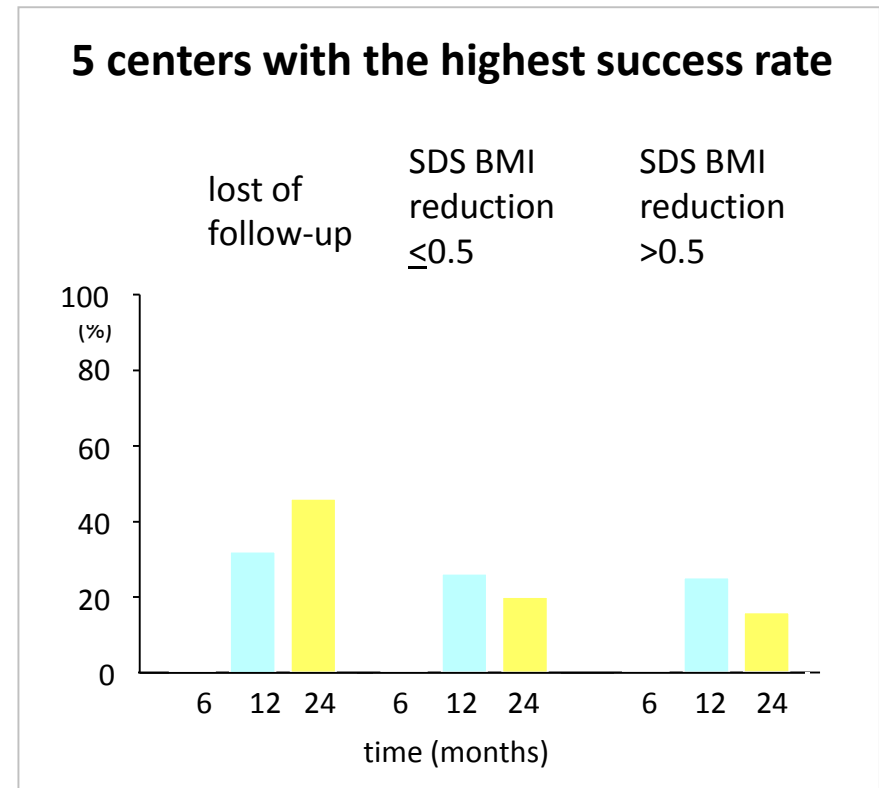
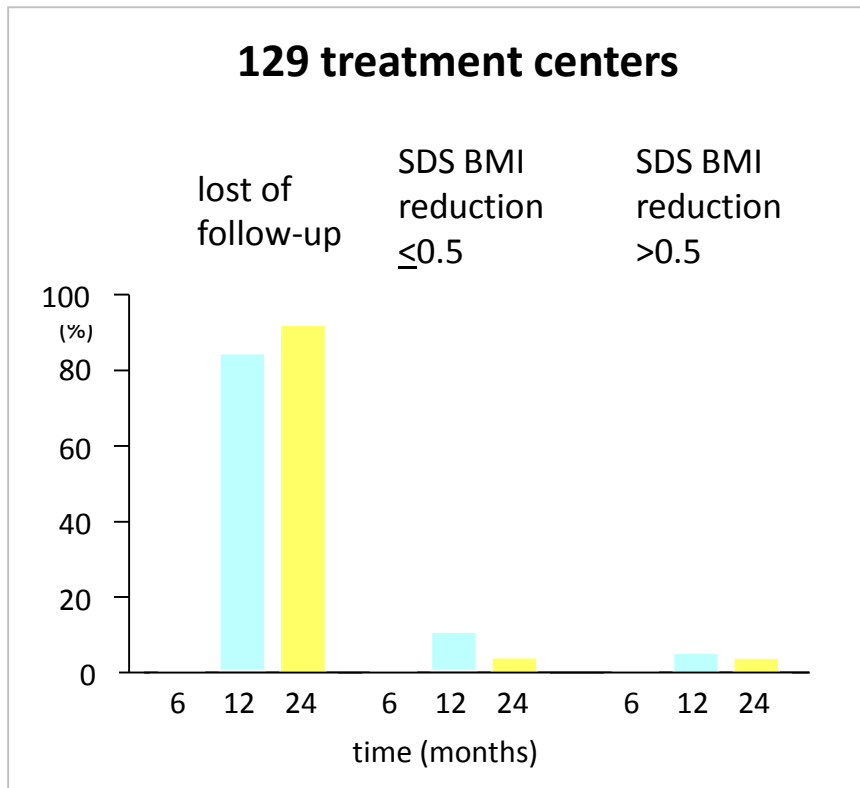
As with most treatments for weight loss, a plateau is reached when the body's neurochemical counter regulatory systems counterbalance the weight loss...”

Current treatment do not cure obesity and thus are only palliative. In particular, diets do not cure obesity.

The Socioecological Framework



Two-year Follow-up in 21,784 Overweight Children and Adolescents With Lifestyle Intervention





Percorso Diagnostico Terapeutico Assistenziale (PDTA)

per il trattamento integrato dell'obesità pediatrica

GRUPPO DI LAVORO

RETE VENETA OBESITA'

Promotore: Regione Veneto, DGR n. 2707 del 29 dicembre 2014.

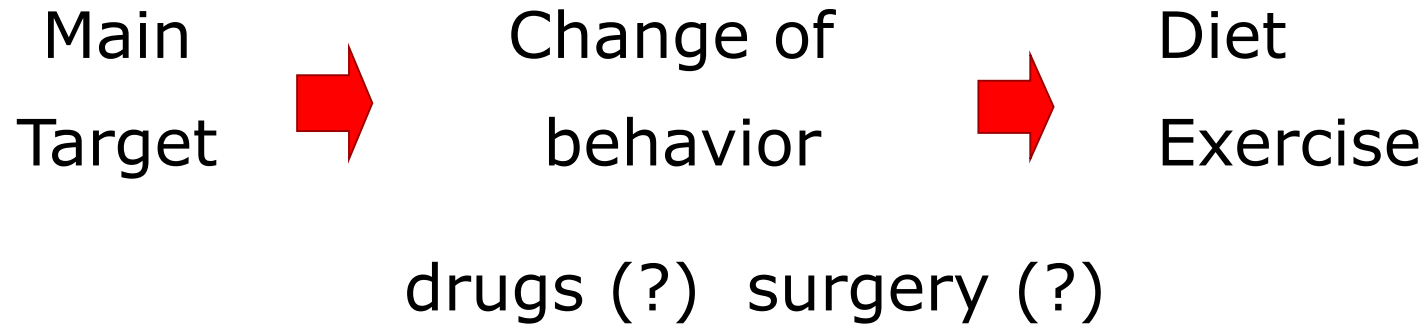
Coordinatore area pediatrica: Prof. Claudio Maffeis

U.O.C. di Pediatria ad indirizzo Diabetologico e Malattie del Metabolismo, AOUI Verona

Gruppo di Lavoro: Andrea Cattarozzi¹, Mattia Doria², Elena Fornari³, Nella Greggio⁴, Roberto Mattei⁵, Anita Morandi³, Beatrice Moro⁶, Francesco Oteri⁷, Paola Peverelli⁸, Franco Pisetta⁹.

1. U.O.C. di Pediatria, Ospedale SS. Giovanni e Paolo, Venezia, ULSS 12
2. Pediatra di Libera Scelta, responsabile CESPES, Chioggia (VE)
3. U.O.C. di Pediatria ad indirizzo Diabetologico e Malattie del Metabolismo, AOUI Verona
4. Clinica Pediatrica, Azienda Ospedaliera Padova
5. U.O.C. di Pediatria, Ospedale di Adria (RO) ULSS 19
6. U.O.C. di Pediatria, Ospedale S.Bortolo, Vicenza, ULSS 6
7. U.O.C. di Pediatria, Ospedale di Castelfranco Veneto (TV), ULSS 8
8. U.O.C. di Pediatria, Ospedale S.Martino, Belluno, ULSS 1
9. Pediatra di Libera Scelta, presidente FIMP regione Veneto, Padova

Childhood and Adolescence Obesity: Principles of Treatment

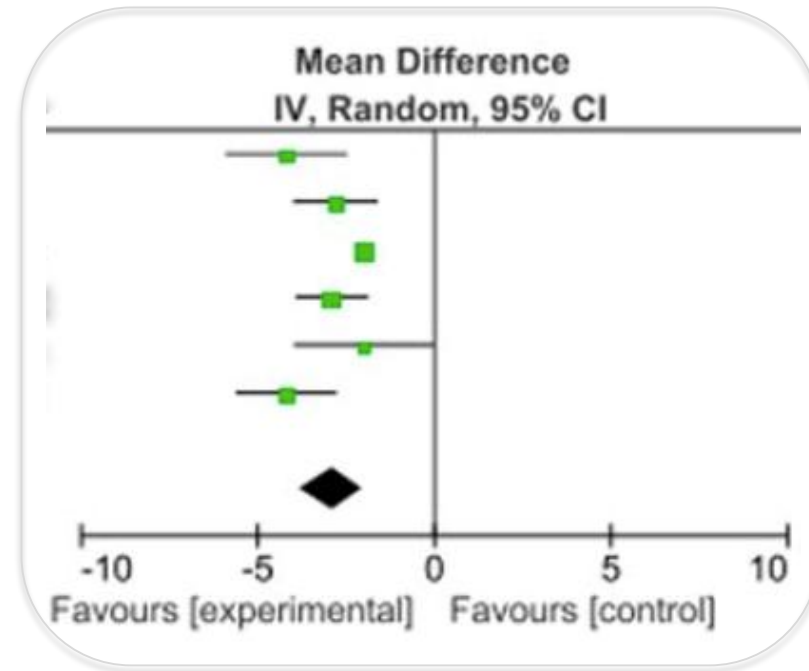
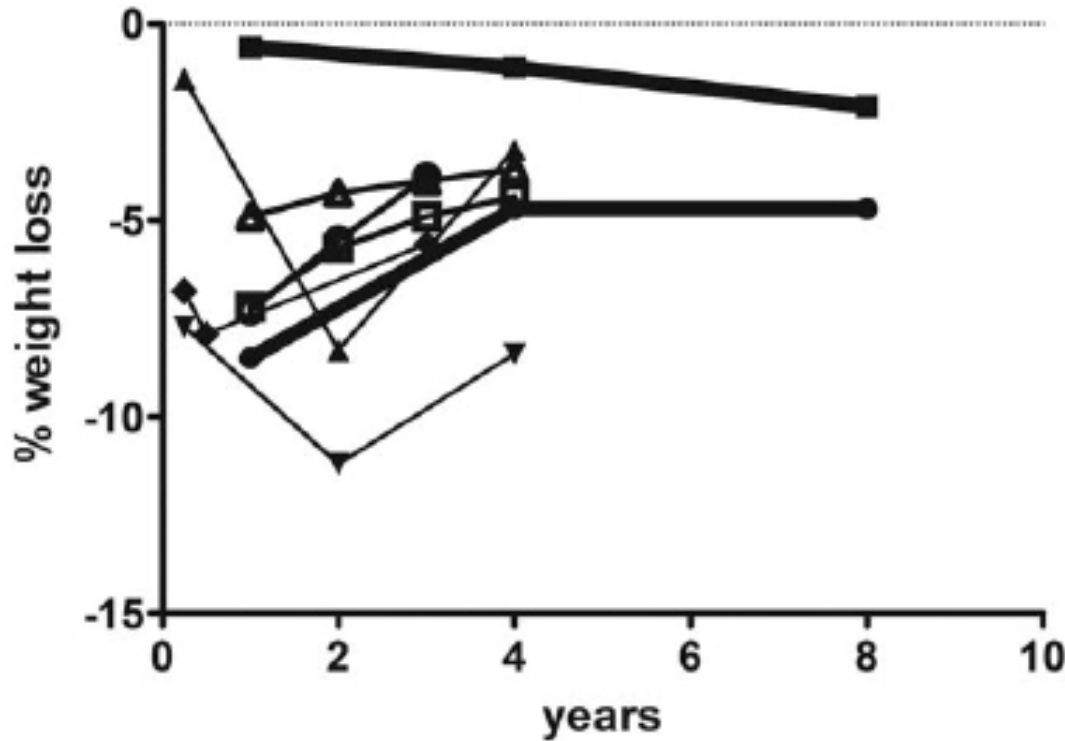


Open questions:

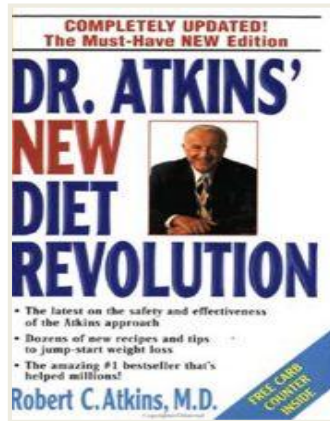
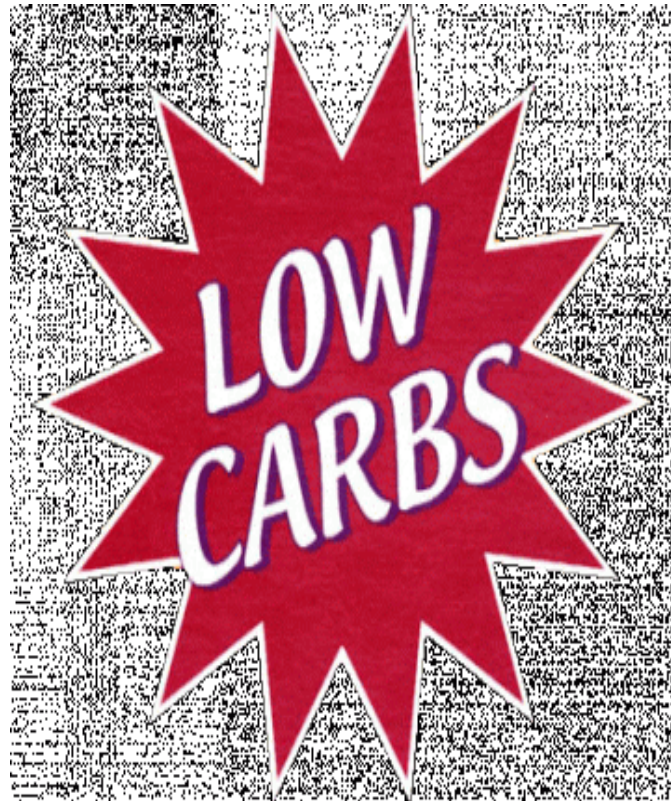
- Motivation
- Adherence
- Efficacy
- Maintenance

The Long-Term Effect of Energy Restricted Diets for Treating Obesity

Weight loss course



Thickness of the lines approximates the weight of the study based on number of subjects.



DIETA MEDITERRANEA



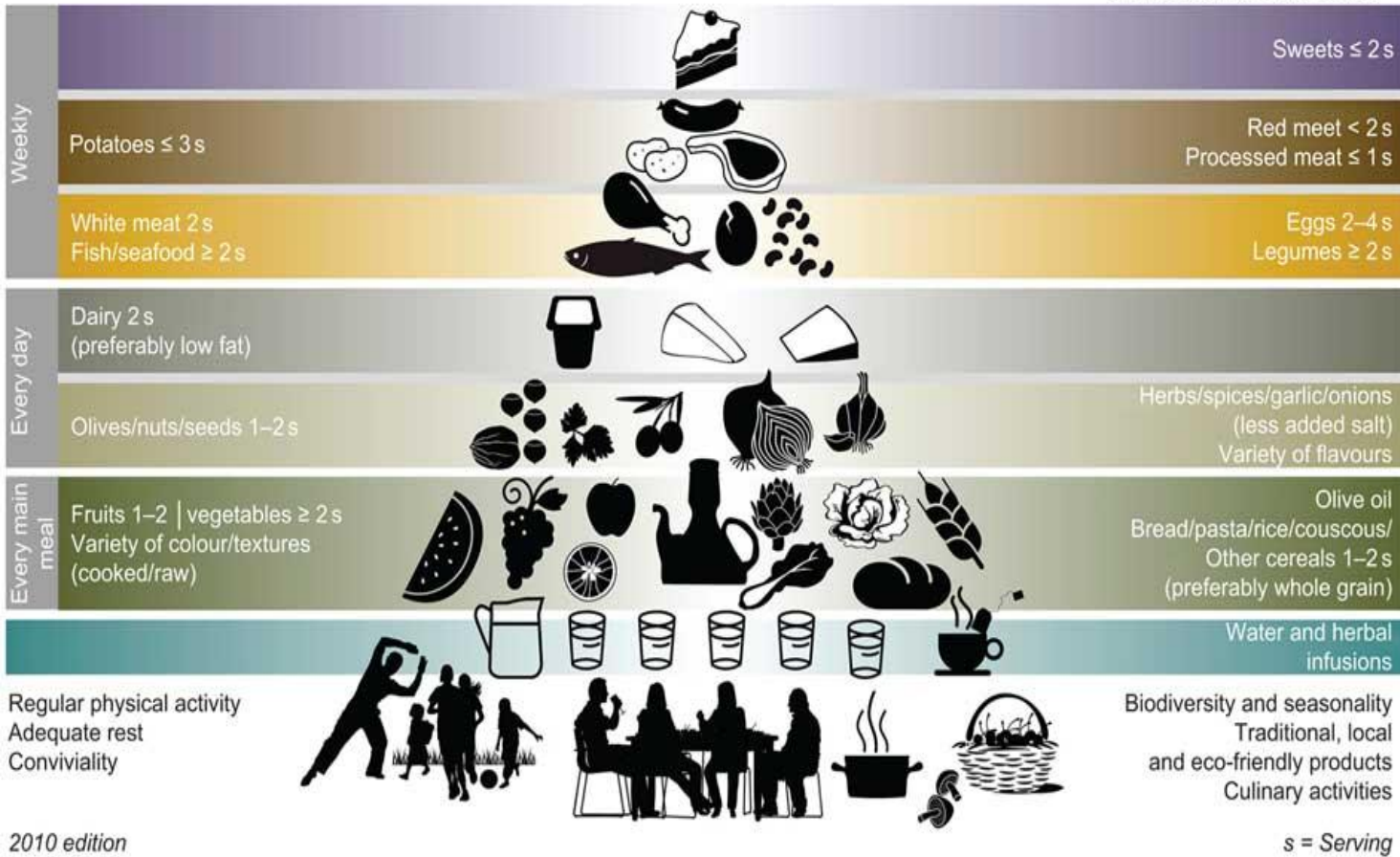
PORZIONI VARIETA' NUMERO E COMPOSIZIONE PASTI

Mediterranean diet pyramid: a lifestyle for today
guidelines for adult population

Serving size based on frugality
and local habits



Wine in moderation
and respecting social beliefs



© 2010 Fundacion dieta mediterranea the use and promotion
of this pyramid is recommended without any restriction



Fundación
Dieta Mediterránea

ICAF
International Commission on the
Anthropology of Food and Nutrition



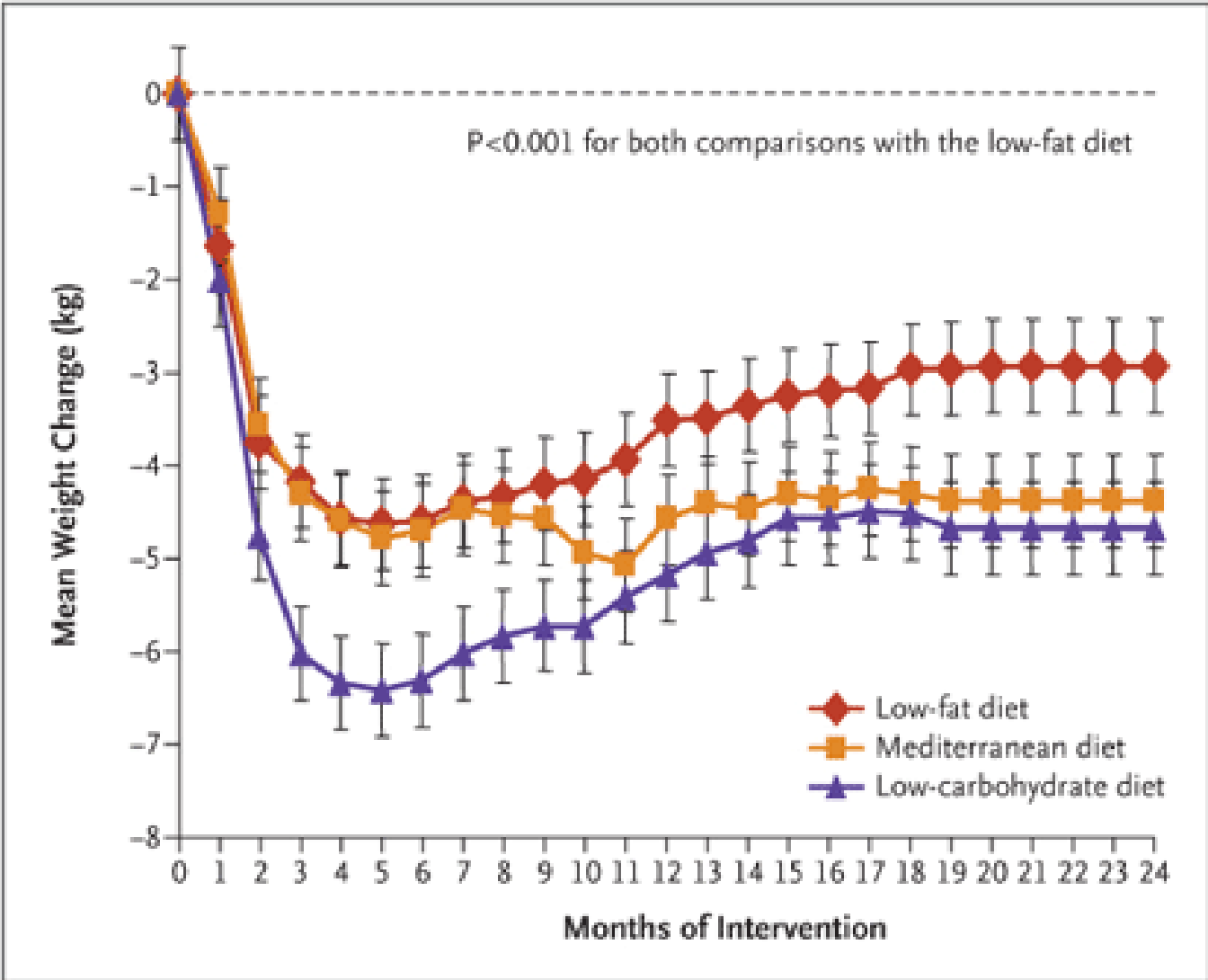
Ciiscam



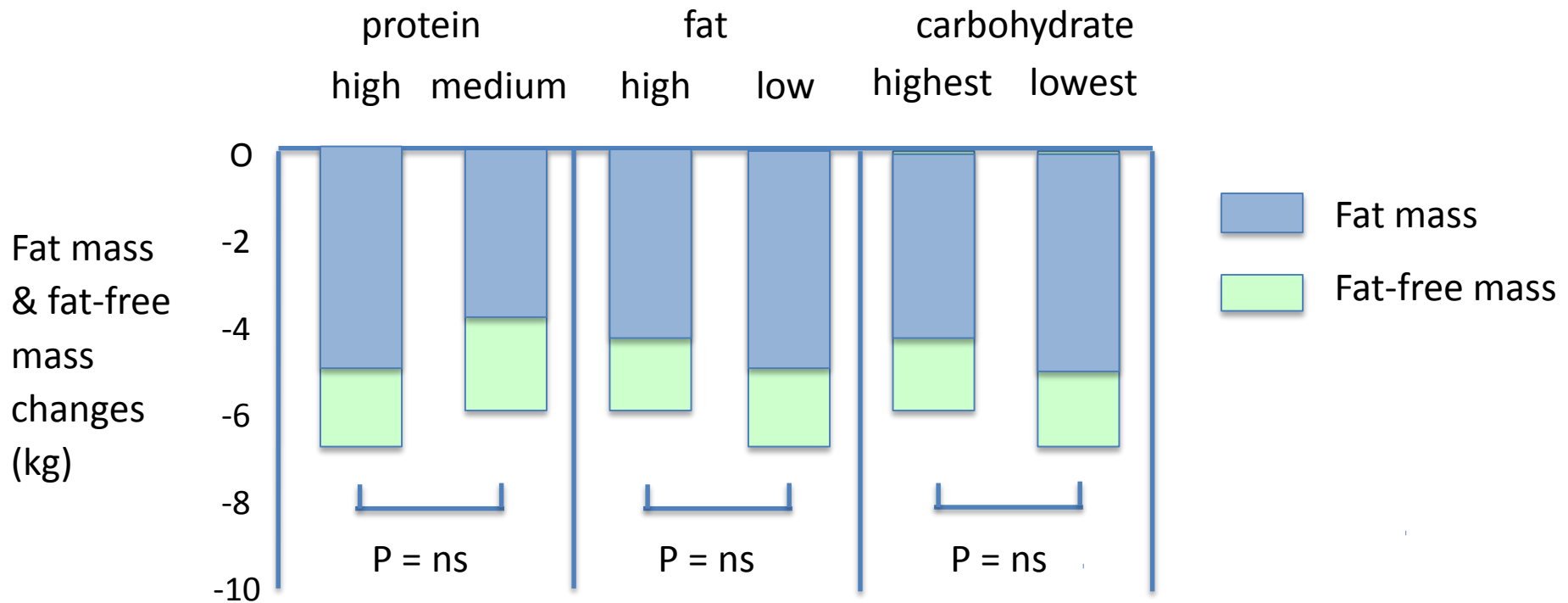
Predimed
Prevencción con Dieta Mediterránea



Weight Loss with a Low-Carbohydrate, Mediterranean, or Low-Fat Diet

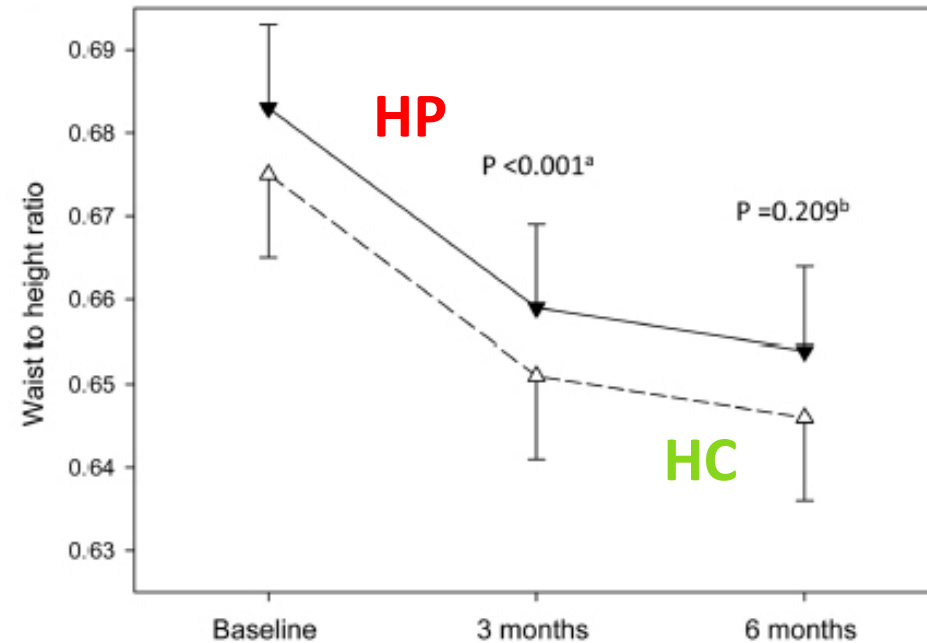
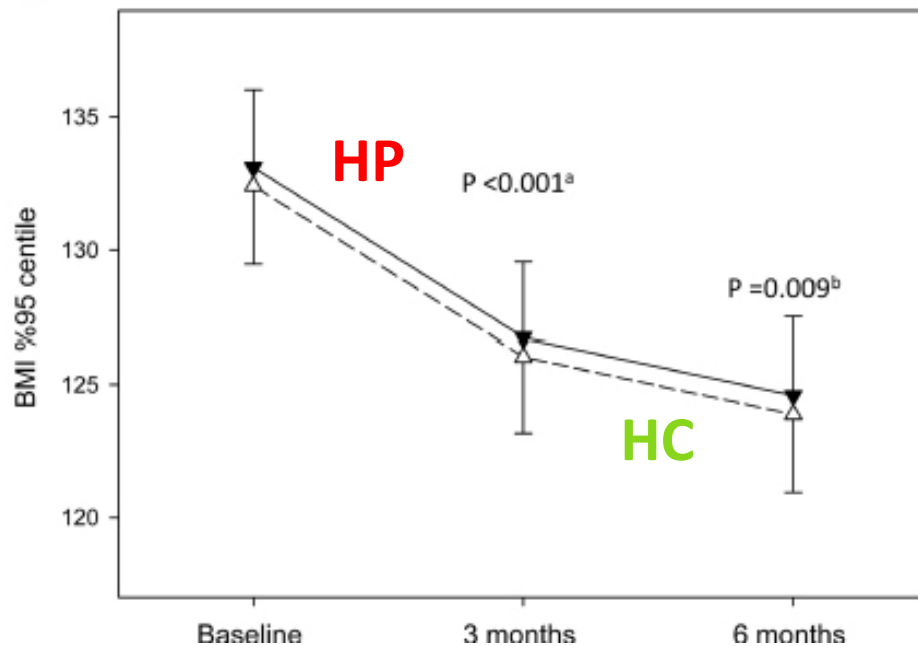


Fat mass and fat-free mass changes induced by 4 diets with different macronutrient composition. The POUNDS LOST trial



Optimal Macronutrient Content of the Diet for Adolescents With Prediabetes: RESIST a Randomised Control Trial

Glycemic status and anthropometry by dietary group.



HP diet: CHO 40%, Protein 30%, Fat 30%

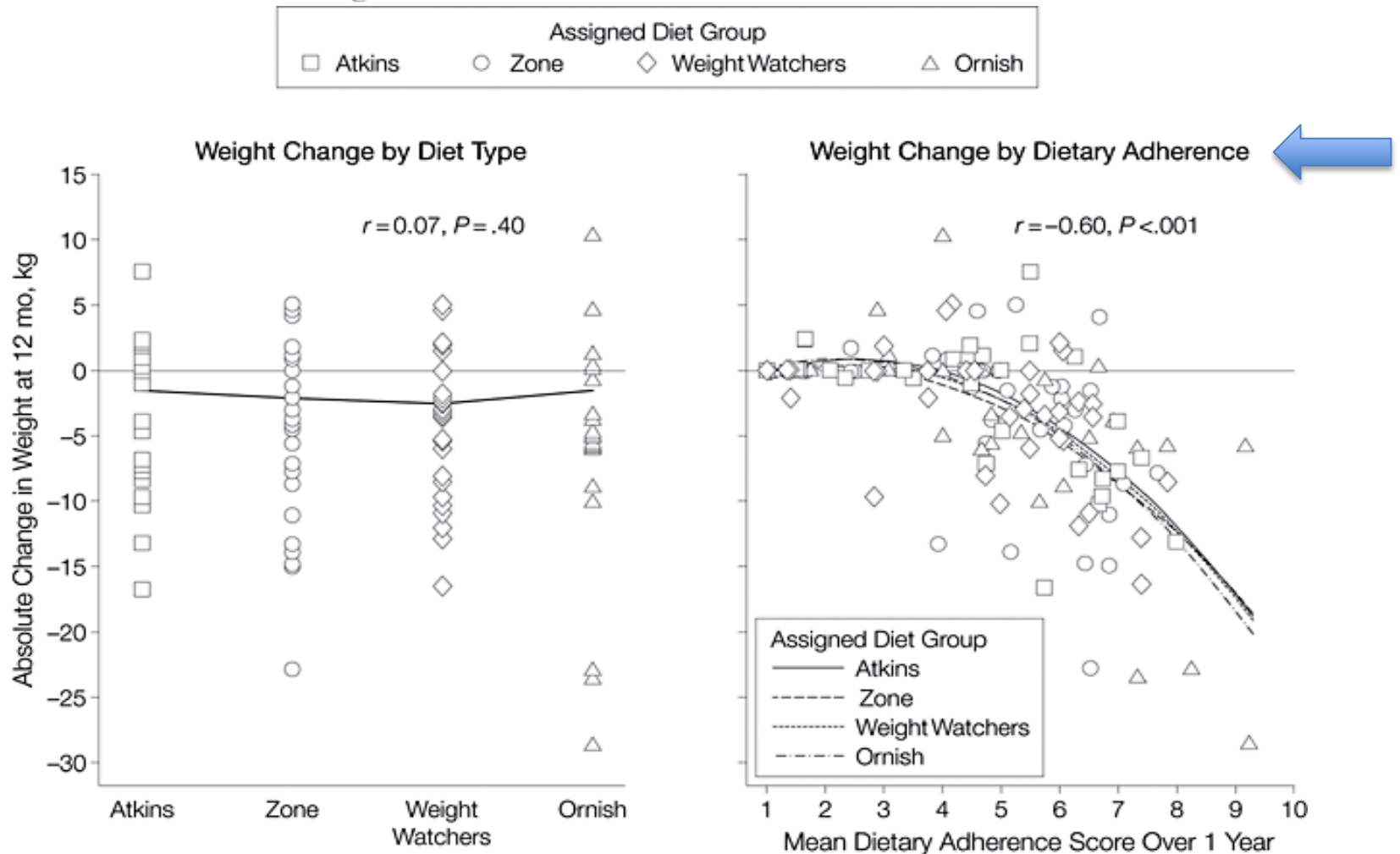
HC diet: CHO 55%, Protein 15%, Fat 30%

Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction

A Randomized Trial

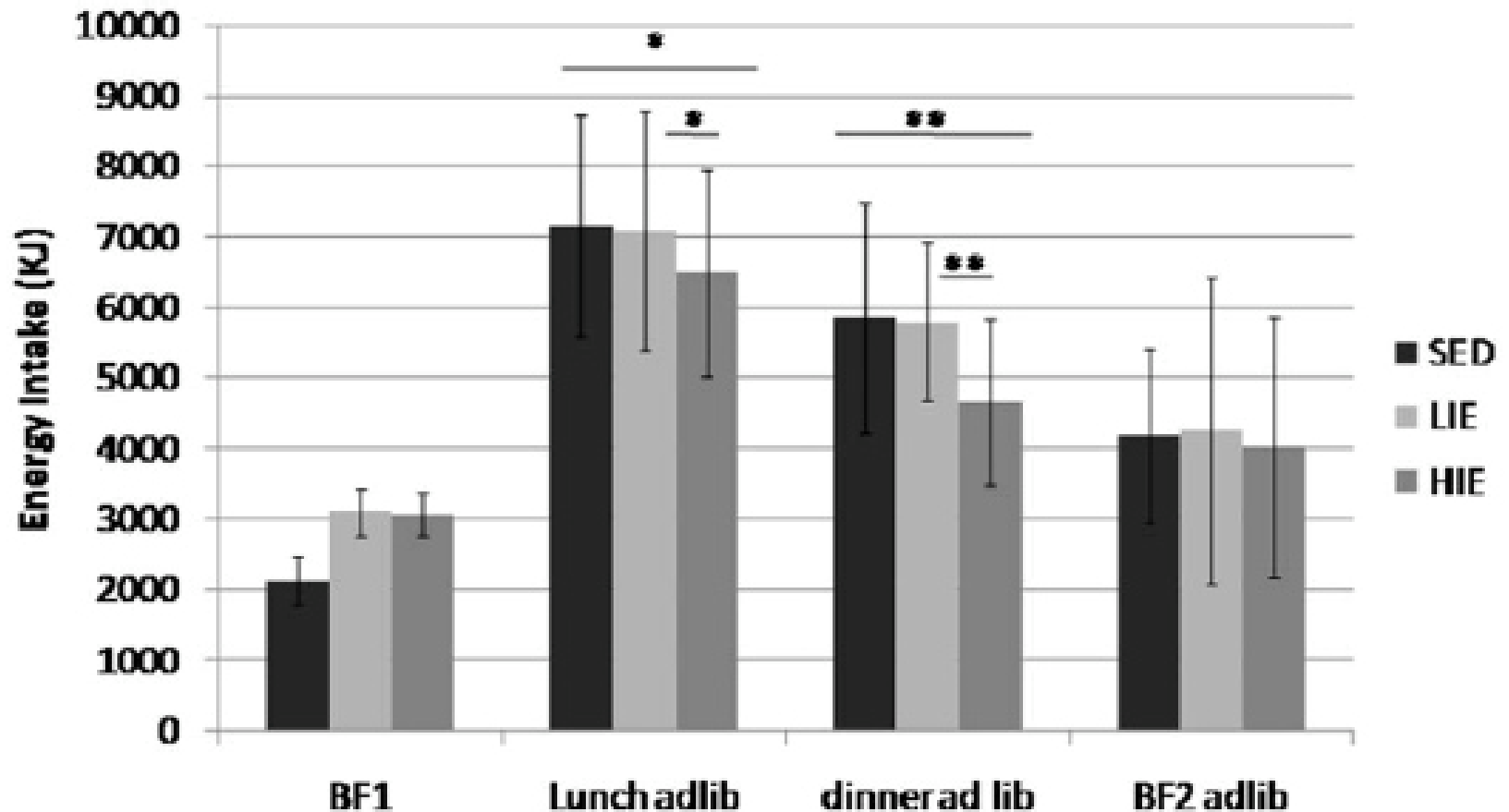


Michael L. Dansinger, MD

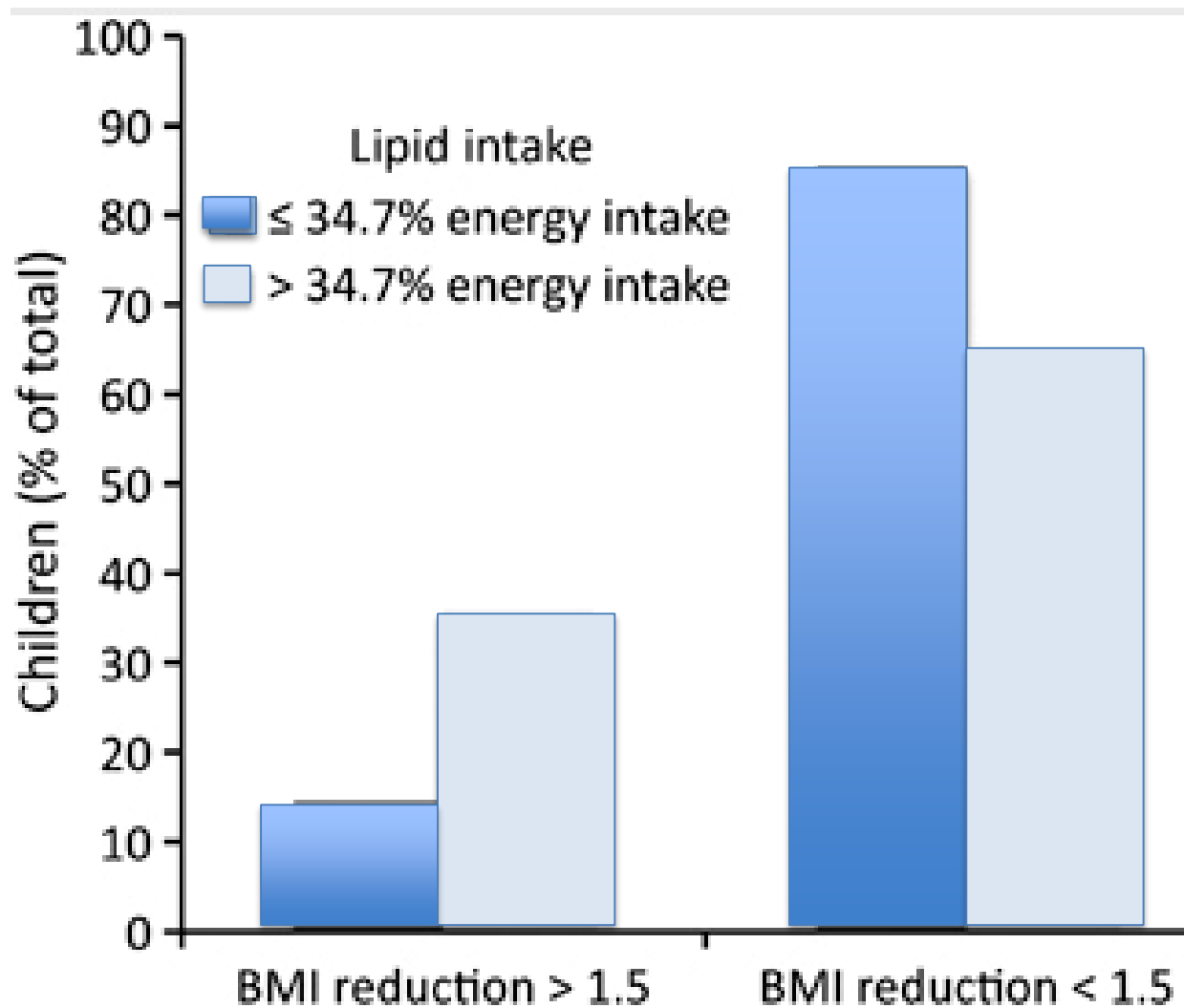


The 24-h Energy Intake of Obese Adolescents Is Spontaneously Reduced after Intensive Exercise: A RCT in Calorimetric Chambers

Energy consumption (KJ) distribution between meals for each experimental session (SED: sedentary; LIE: Low-Intensity Exercise; HIE: High-Intensity exercise).



Diet macronutrient composition reported before treatment predicts BMI change in obese children: the role of lipids



Conclusioni

Le abitudini nutrizionali acquisite nell'infanzia sono fondamentali per una composizione corporea ottimale e per la prevenzione delle malattie croniche non trasmissibili

L'obesità è la patologia nutrizionale più comune nel bambino e nell'adolescente

La prevenzione ed il trattamento nutrizionale dell'obesità hanno come obiettivo l'aderenza alla dieta mediterranea insieme ad una pratica dell'attività motoria aderente alle raccomandazioni

