

4<sup>^</sup>  
Edizione

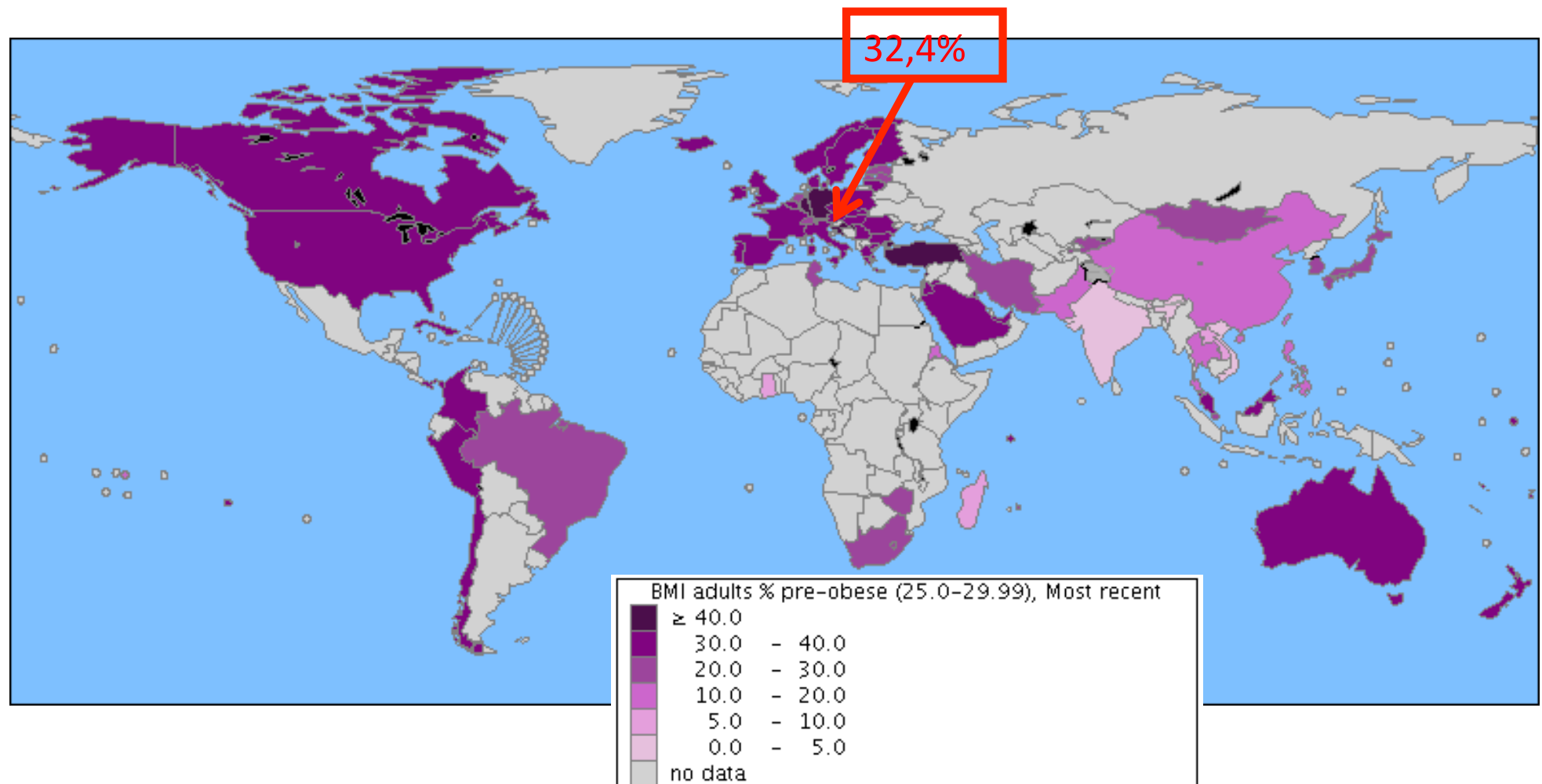
**CORSO DI 2° LIVELLO**  
**PER L'ORGANIZZAZIONE E LA GESTIONE**  
**DI UN AMBULATORIO DEGLI STILI DI VITA**

14•15  
Maggio 2016  
Frascati (RM)

## Modelli alimentari

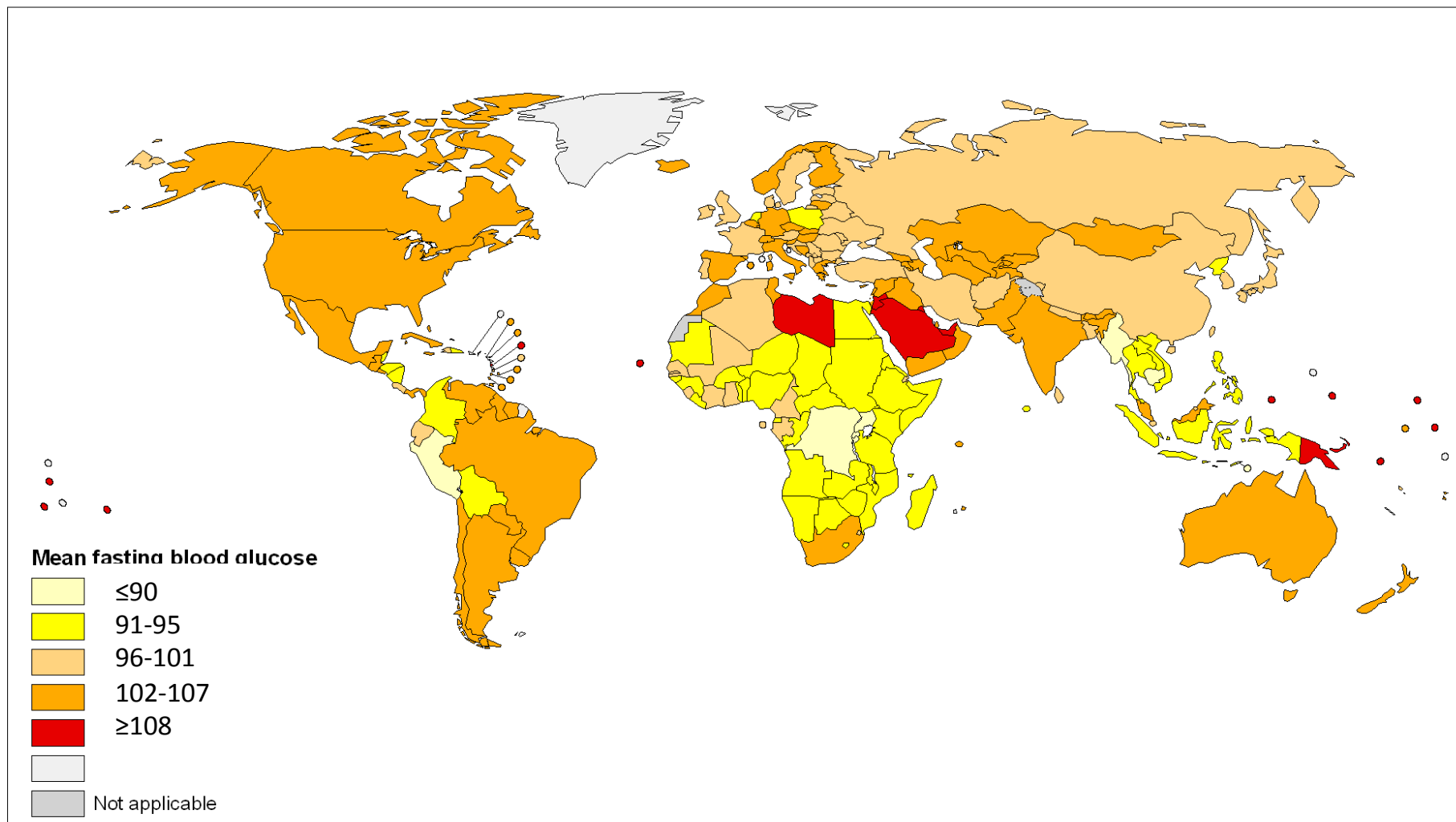
Franca Marangoni  
Nutrition Foundation of Italy

# BMI adults % pre-obese (25.0-29.99)



© Copyright World Health Organization (WHO), 2012. All Rights Reserved

## Mean fasting blood glucose (mg/dL) , ages 25+, age standardized Males, 2008



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

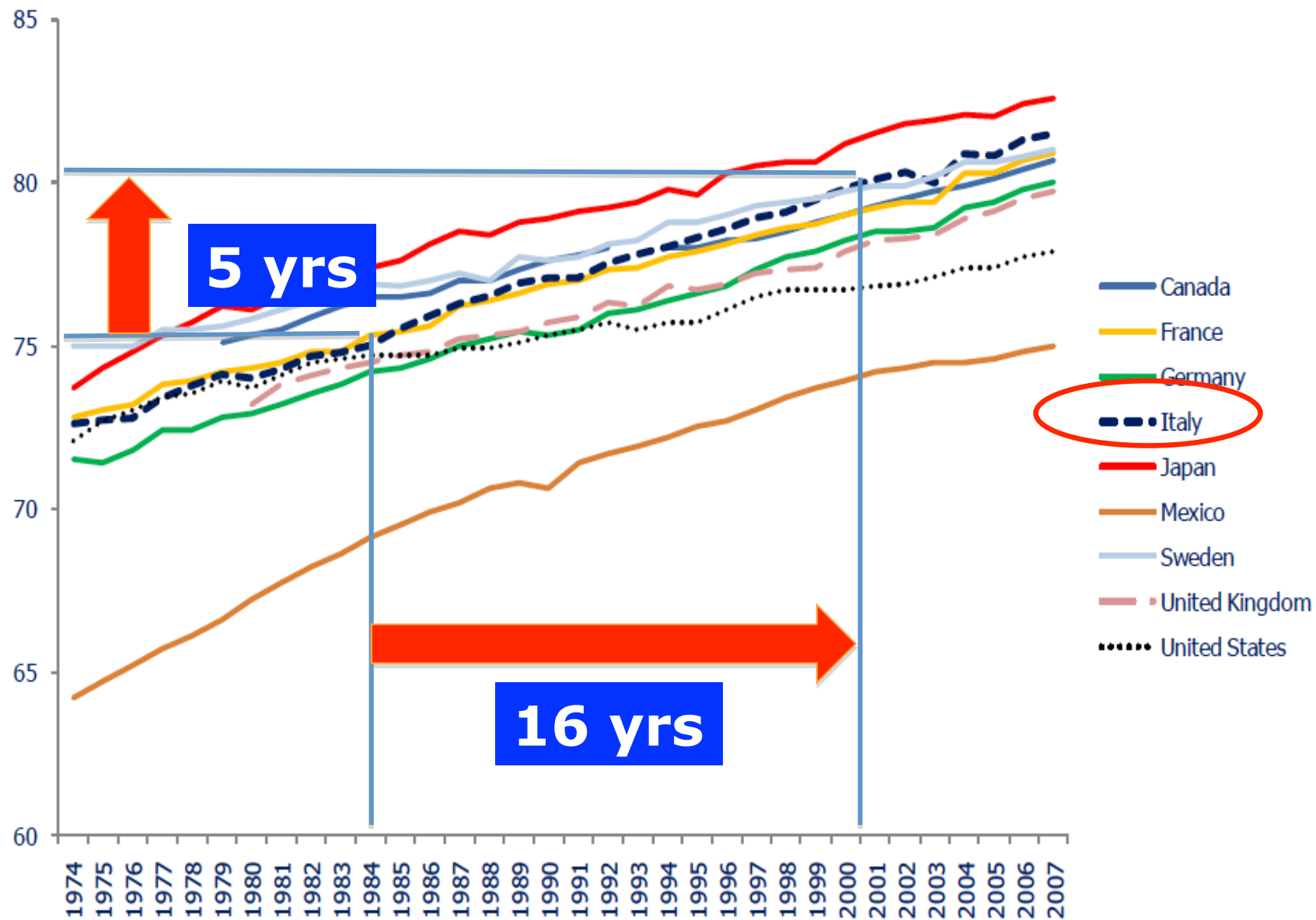
Data Source: World Health Organization  
Map Production: Public Health Information  
and Geographic Information Systems (GIS)  
World Health Organization



**World Health  
Organization**

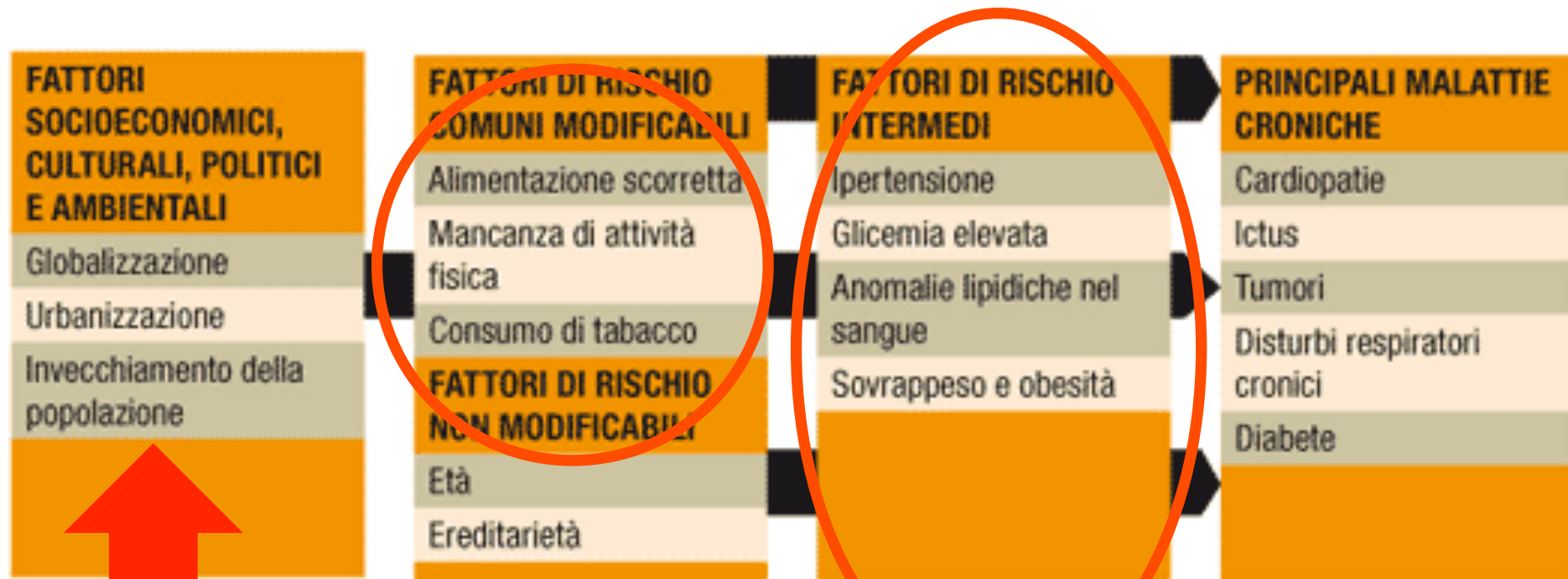
© WHO 2011. All rights reserved.

# An ongoing process...



OECD Life expectancy at birth

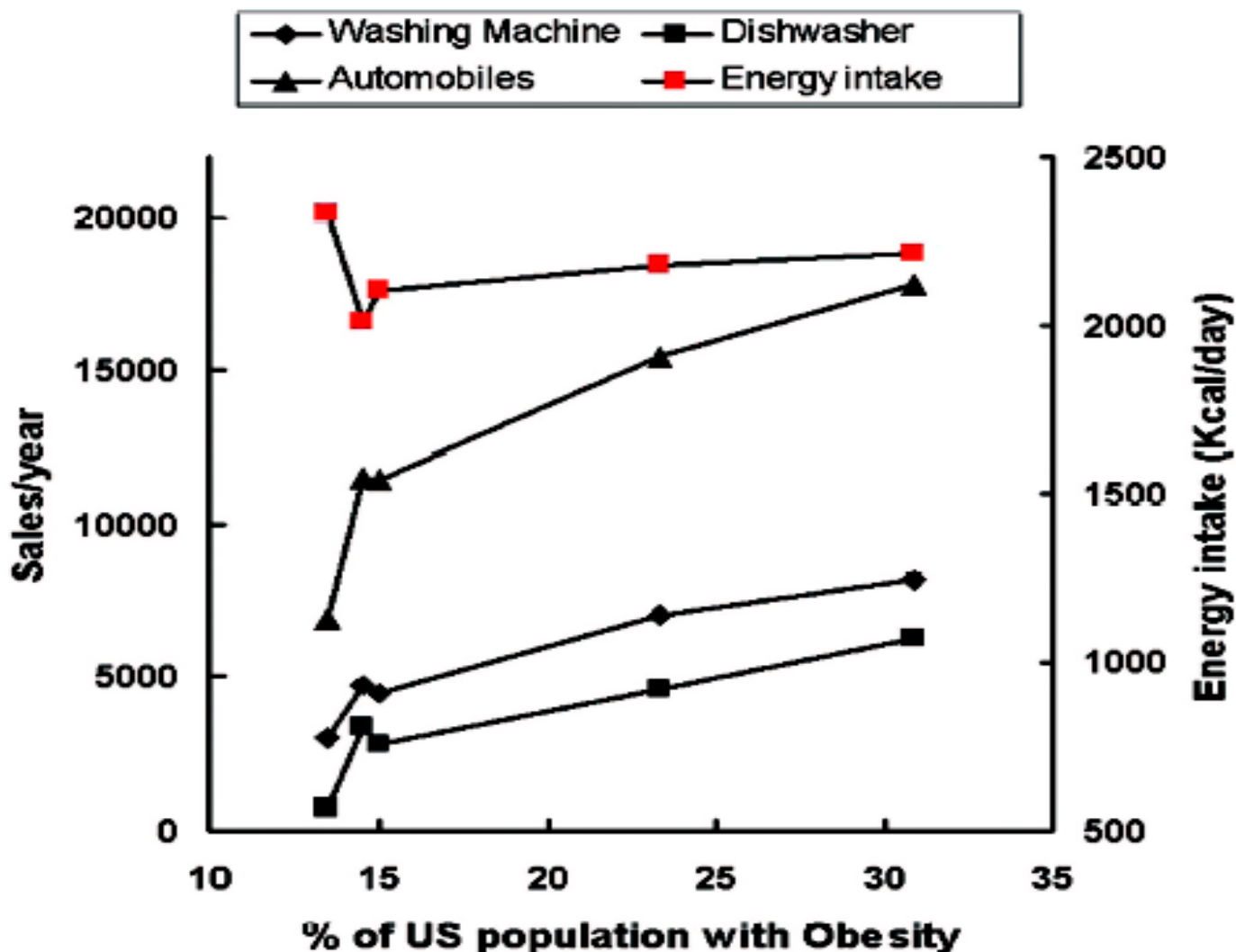
# Cause delle malattie croniche



Fonte: Oms

Centro Nazionale di Epidemiologia, Sorveglianza e Promozione della Salute

# Energy intake from the NHANES data and sales of domestic machines versus obesity rates in the US.



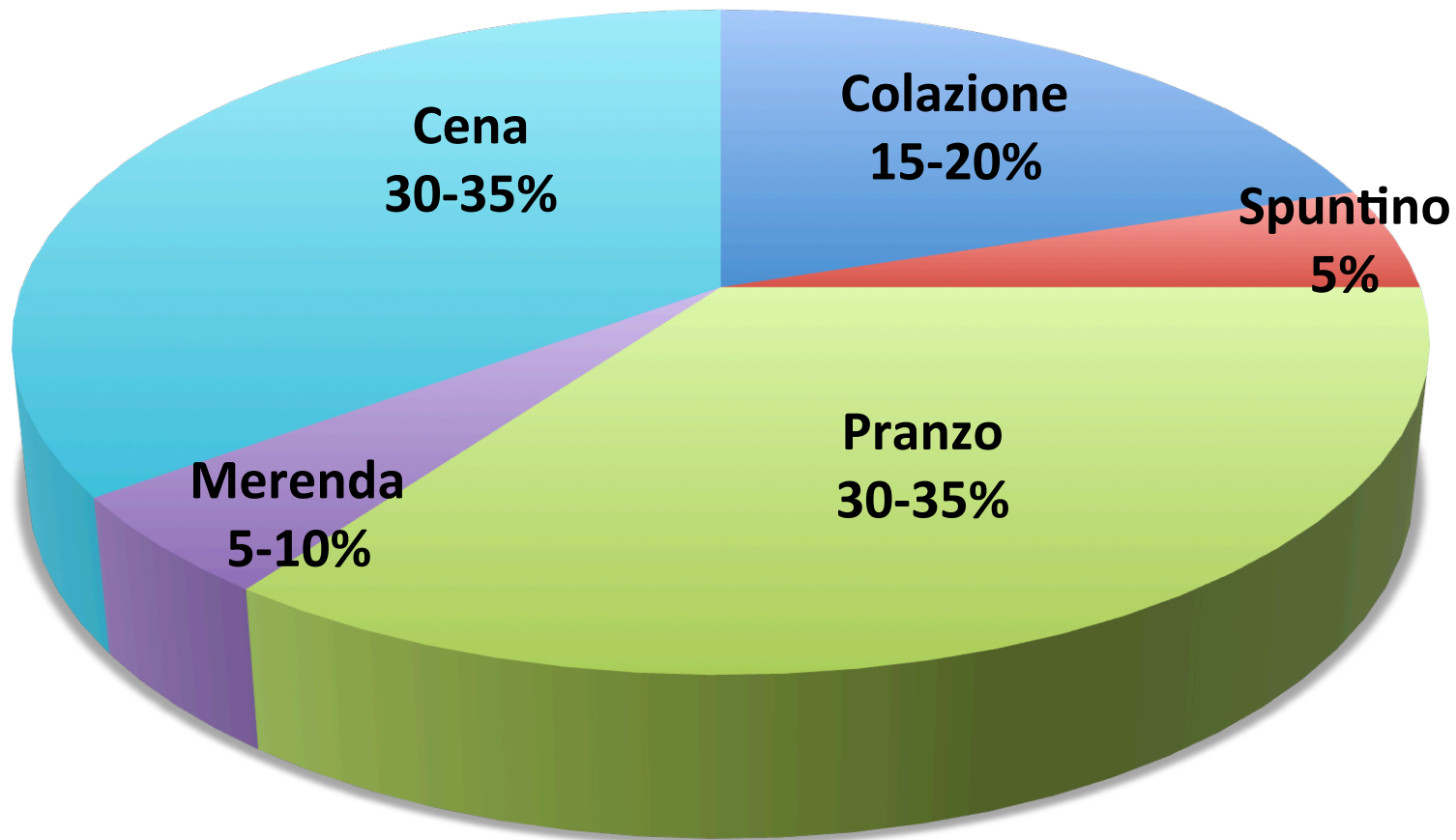
Levine JA et al, ATVB 2006

# Ripartizione dell'energia in nutrienti (LARN 2014: [http://www.sinu.it/html/pag/tabelle\\_larn\\_2014\\_rev.asp](http://www.sinu.it/html/pag/tabelle_larn_2014_rev.asp))

- **Proteine** 0,9g/kg/die (15-20%)
- **Lipidi** <20-35 %
  - ✓ Saturi <10 %
  - ✓ Monoinsaturi 10 %
  - ✓ Polinsaturi 5-10 %
    - ✓ N-6 4-8%
    - ✓ N-3 0,5-2%  
(AI EPA+DHA 250 mg)
  - ✓ Colesterolo <300 mg
- **Carboidrati** 45-60 %
  - ✓ Zuccheri <15%
- **Fibre** 25g-12,6-16,7 g/1000 kcal
- **Sale** < 6 g/die
- **Acqua** 2-2,5 litri/die



# Suddivisione percentuale delle calorie nell'arco della giornata



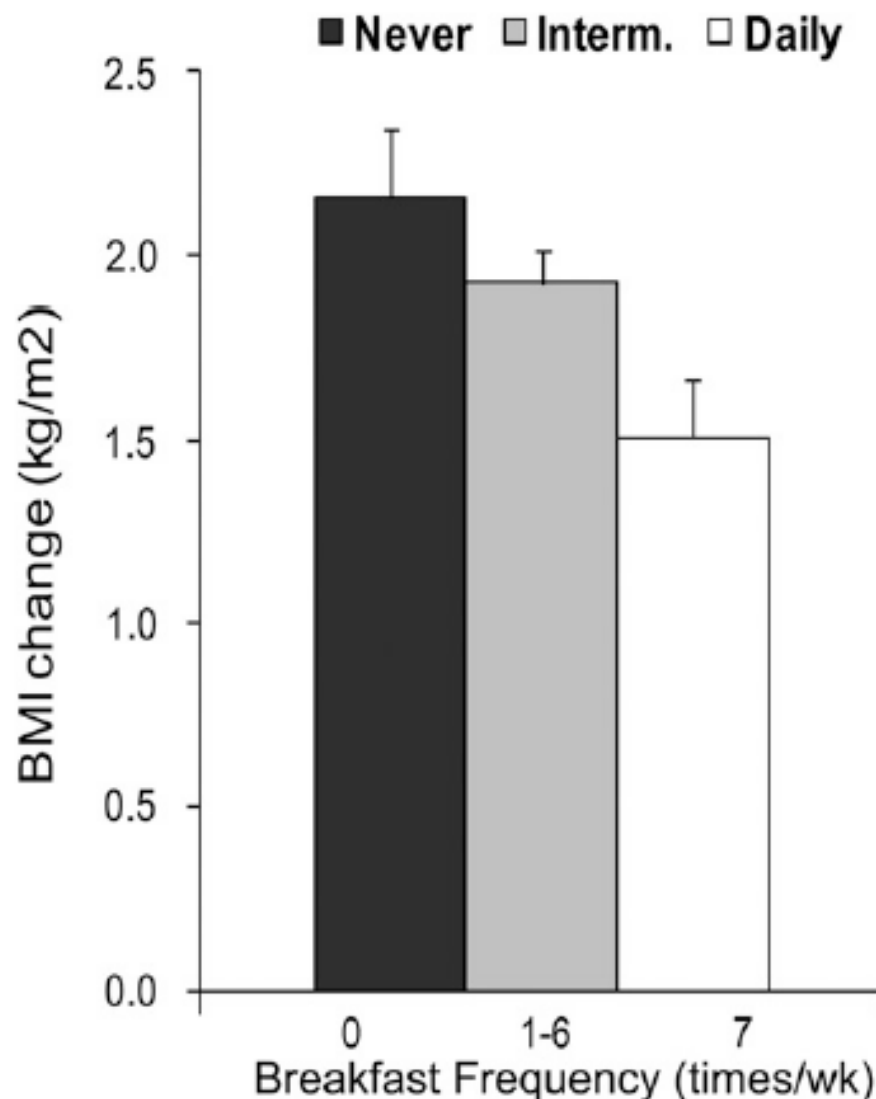
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**FIGURE 1** Association between change in BMI and change in breakfast frequency in 2216 adolescent boys and girls from the Project Eating Among Teens cohort study. Data are means  $\pm$  SEM adjusted for baseline BMI, baseline breakfast frequency, age, and gender. Adapted with permission from (20).

**FIGUR**  
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permission from (7).

## ffect ildren<sup>1-4</sup>

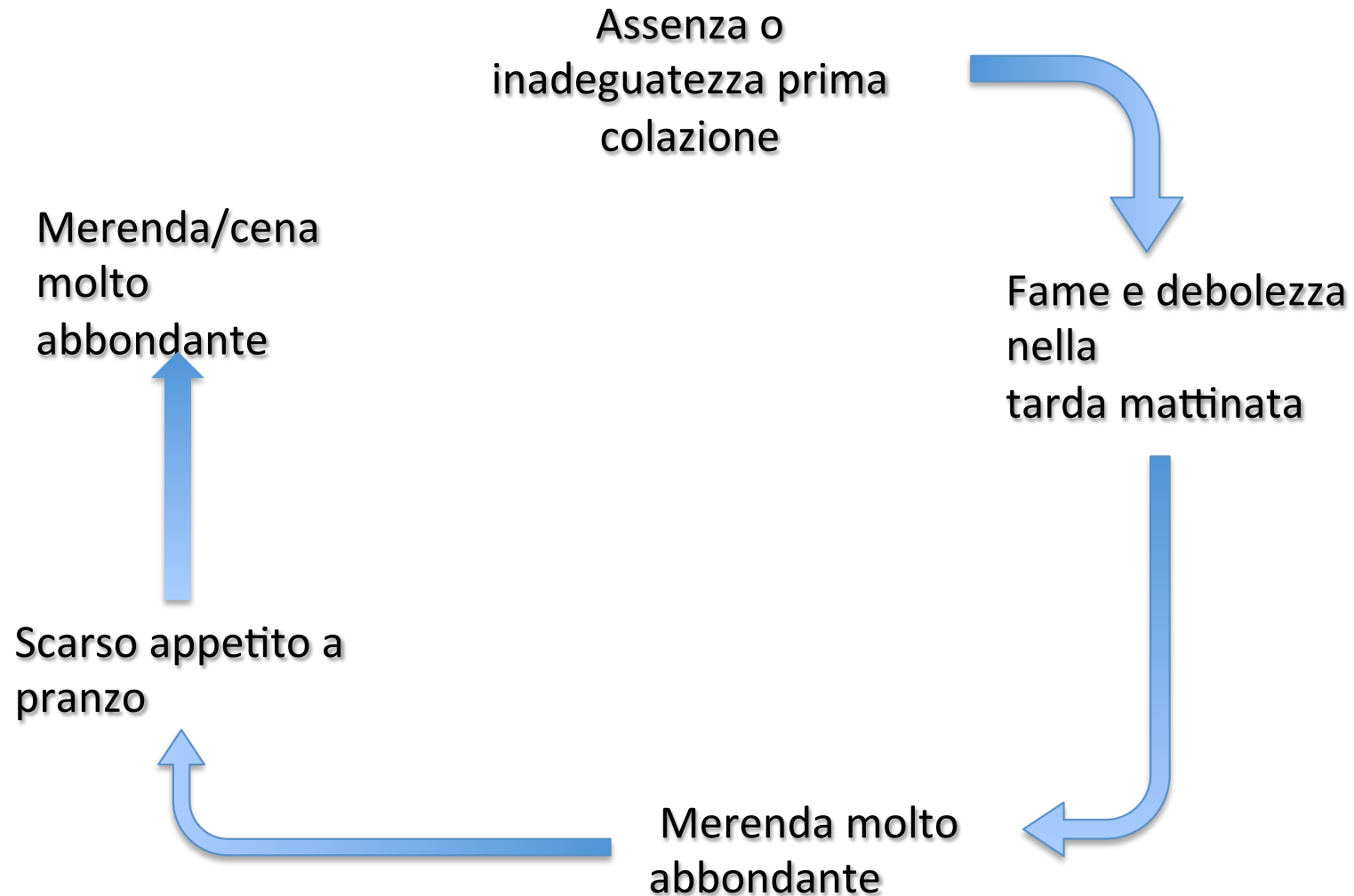
. Raatz,<sup>7</sup>

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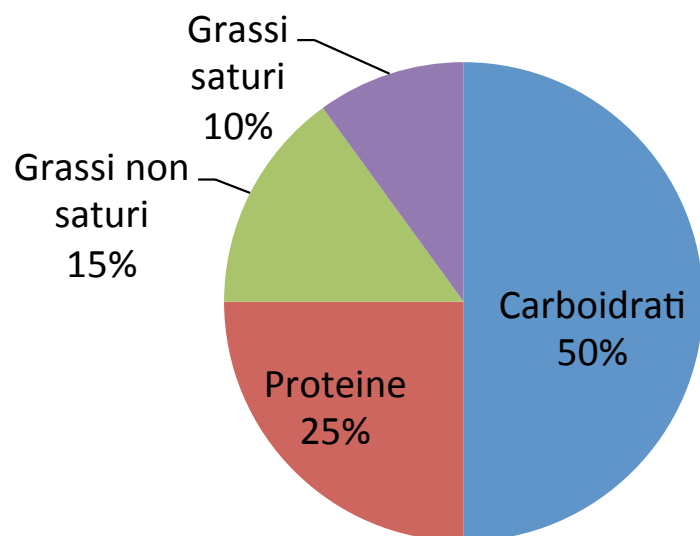
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# Presupposti teorici ai 5 pasti

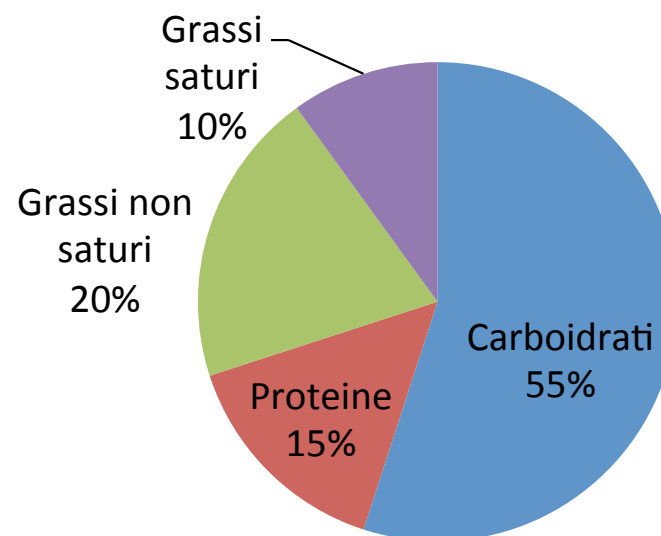


Andrea Ghiselli, 2015

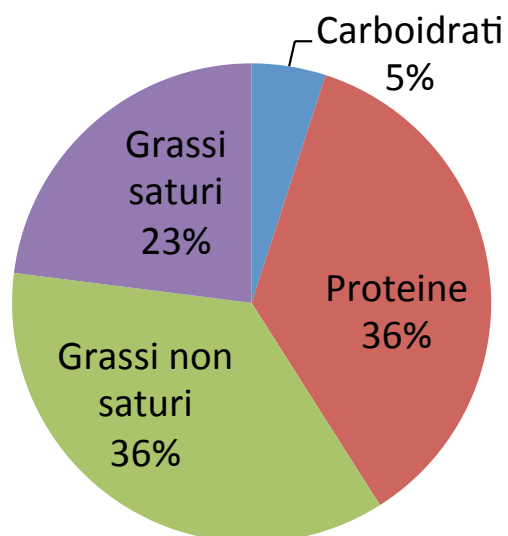
## MinSal 2013+LARN 2014



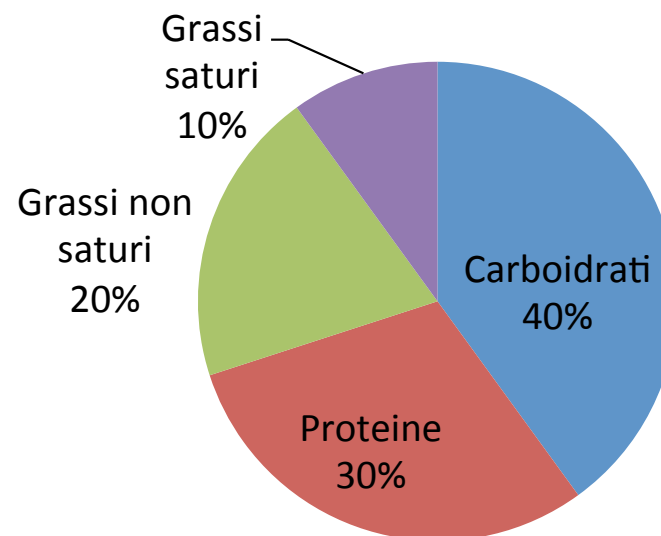
## American Heart Association



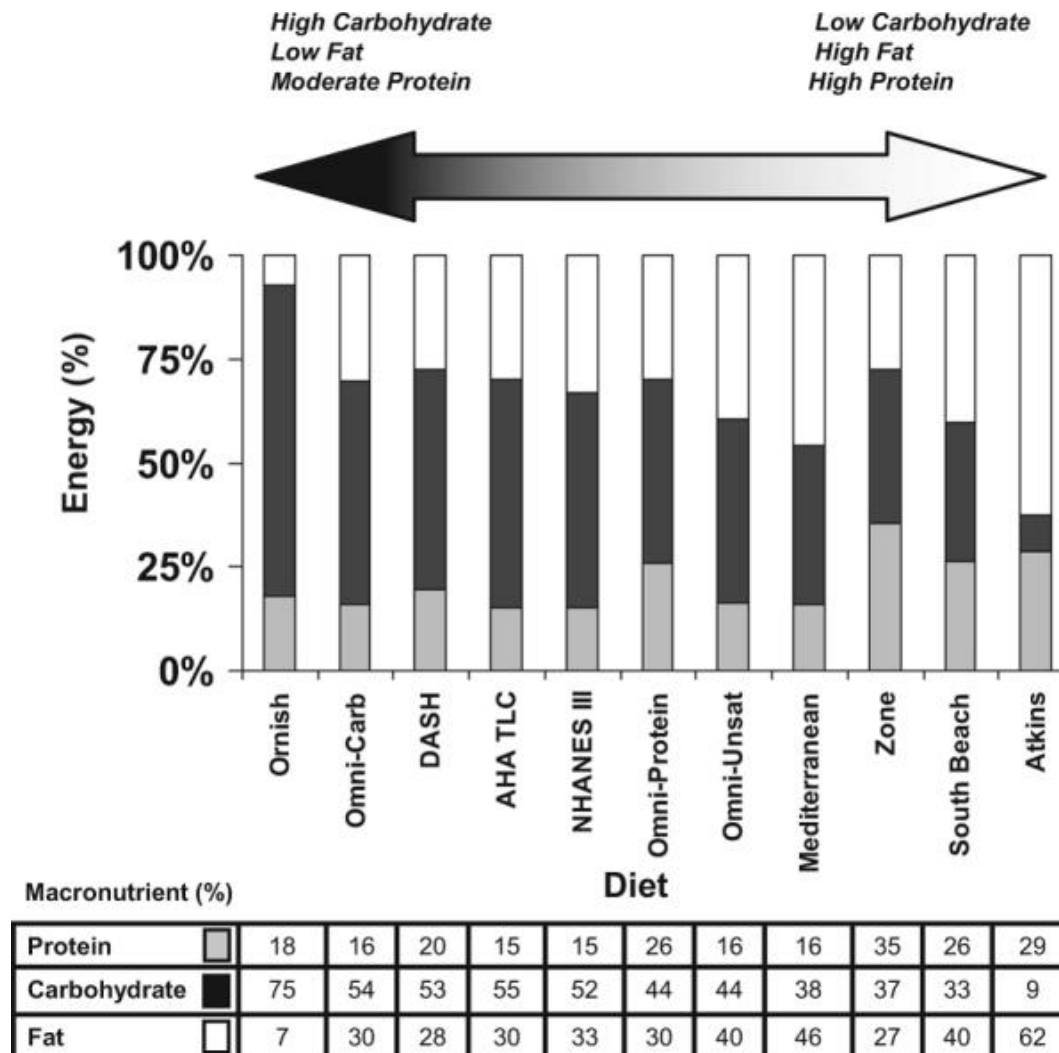
## Atkins



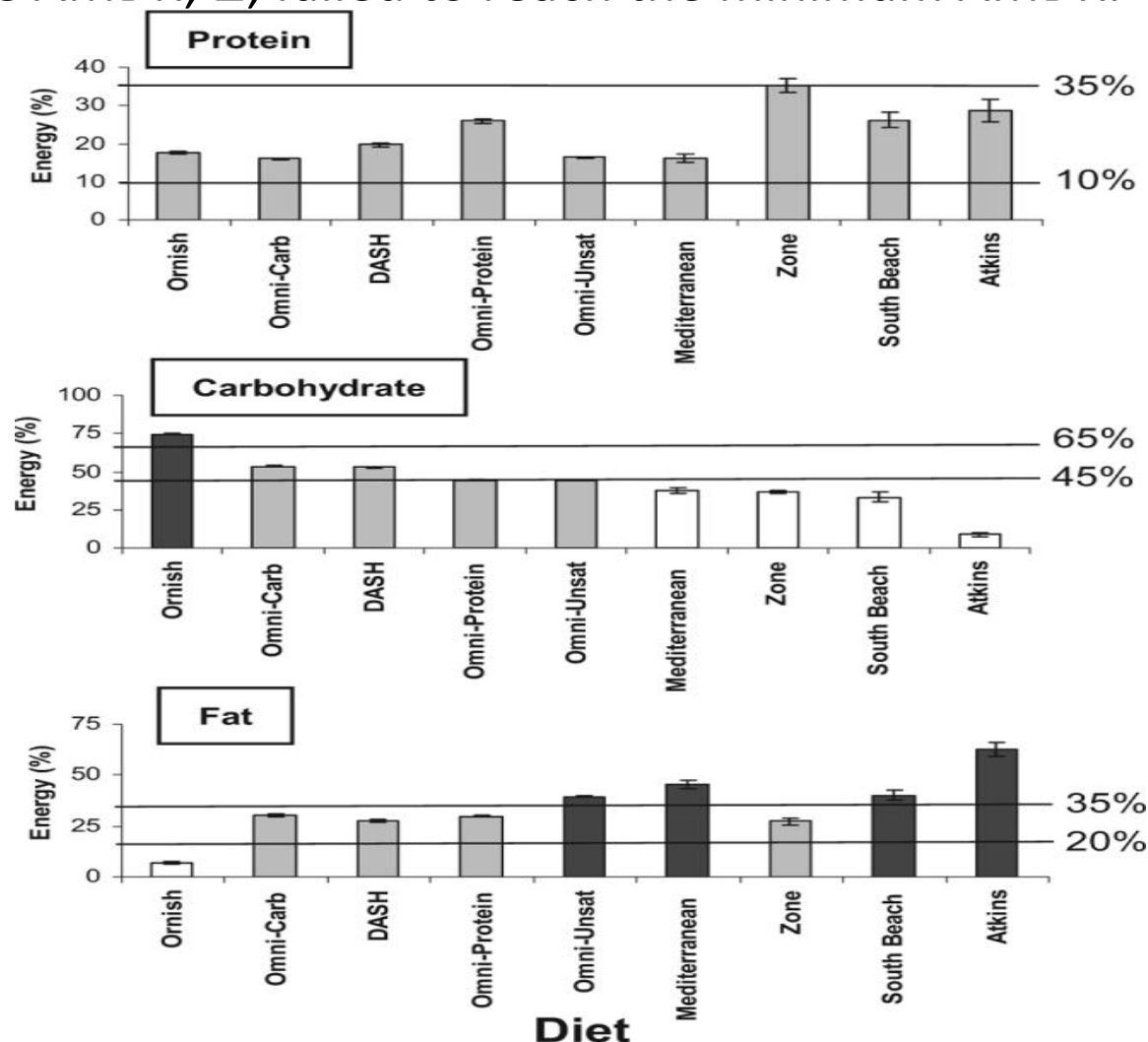
## Zona



Macronutrient profiles of popular diets, the OmniHeart and Dietary Approaches to Stop Hypertension (DASH) study diets, the American Heart Association Therapeutic Lifestyle (AHA TLC) guidelines, and typical US macronutrient intakes as reported in the third Health and Nutrition Examination Survey (NHANES III).

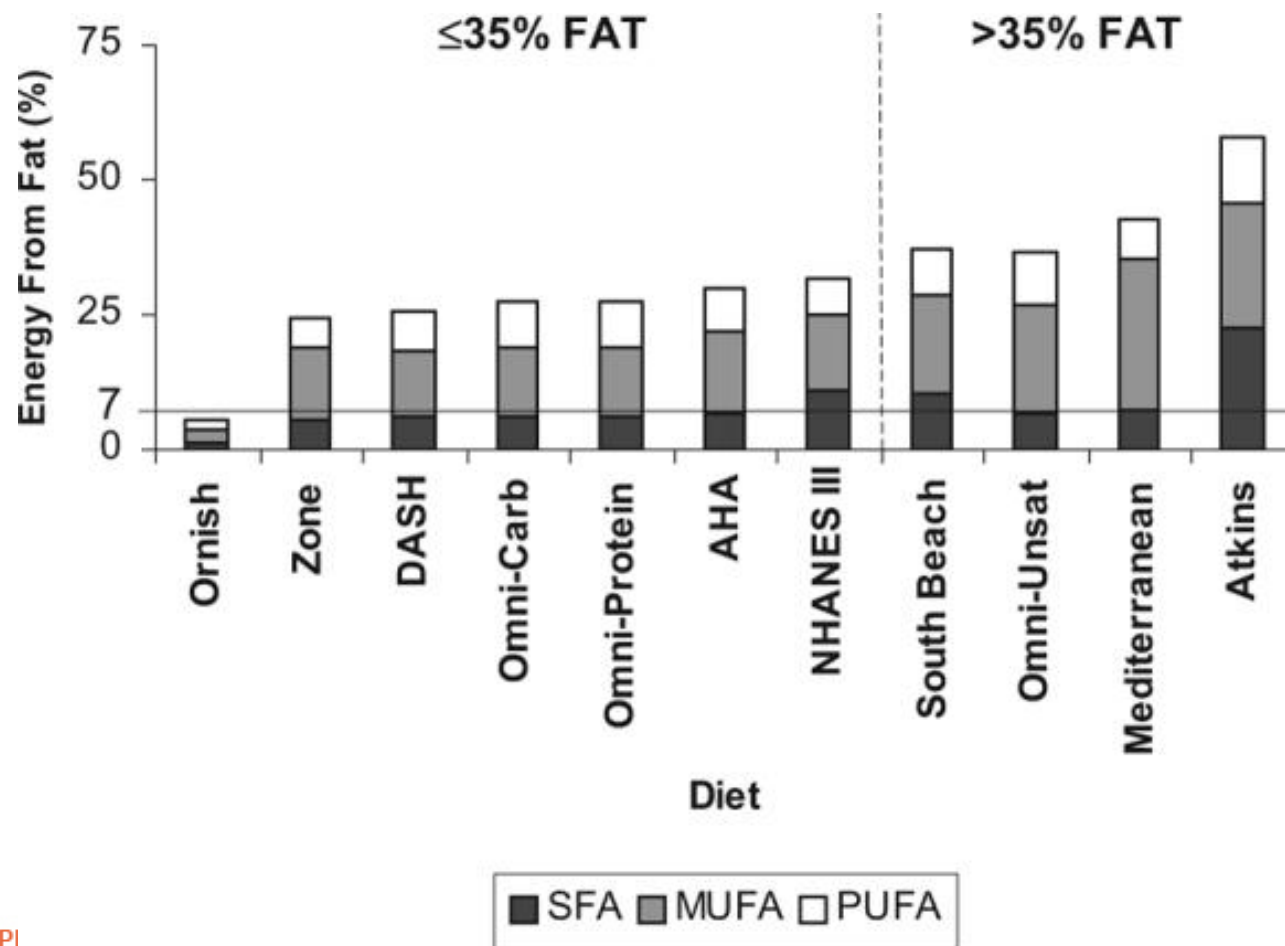


Comparison of the calculated macronutrient profiles (mean  $\pm$  SEM) of various diet plans with the Institute of Medicine's Acceptable Macronutrient Distribution Ranges (AMDR). Solid horizontal lines represent the upper and lower limits of the AMDR for the macronutrient. ■, exceeds the AMDR; ▒, meets the AMDR; □, failed to reach the minimum AMDR.

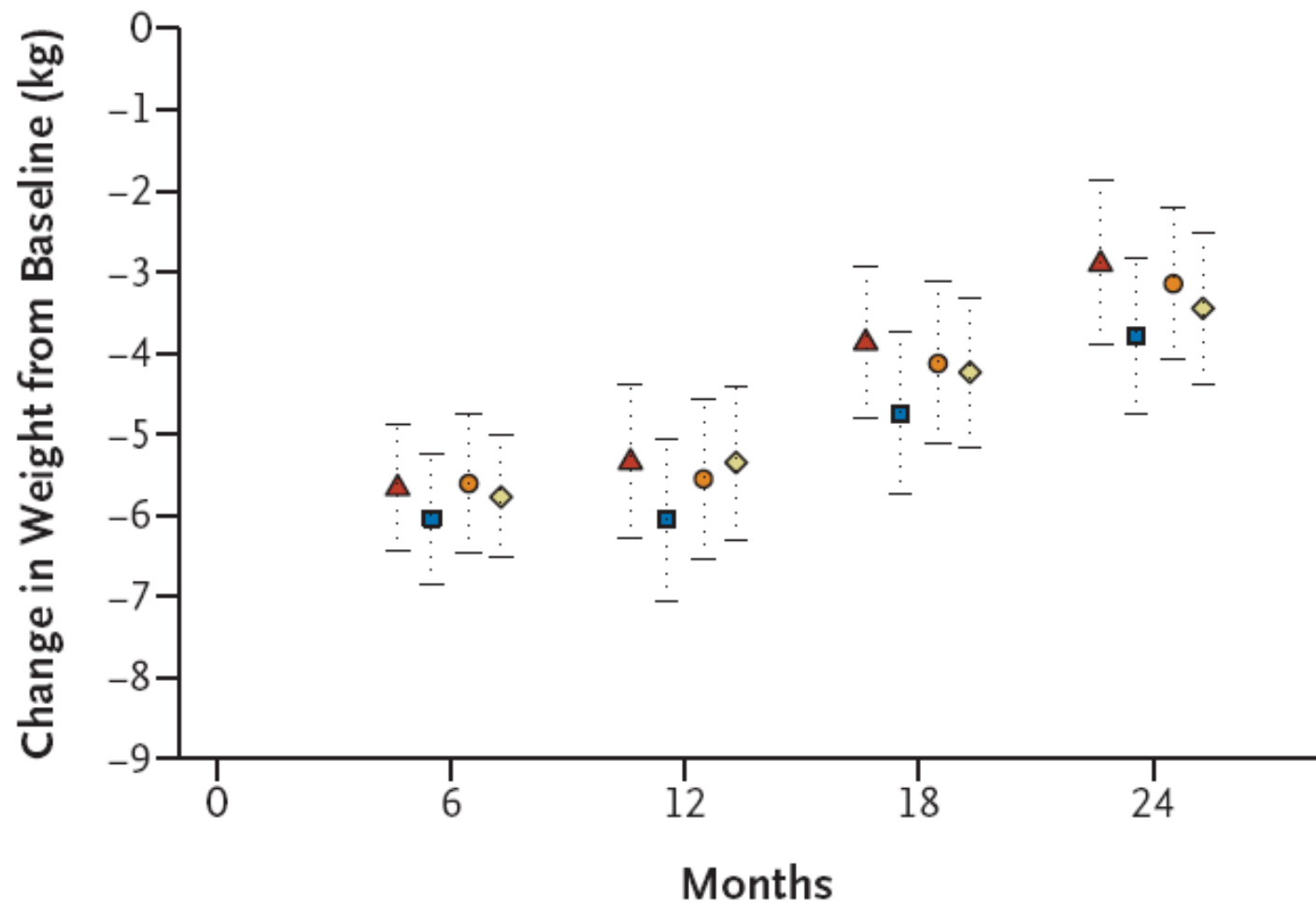


de Souza RJ et al., Am J Clin Nutr. 2008 Jul;88(1):1-11.

Typical fatty acid profiles of popular diet sand typical US macronutrient intakes as reported in the third Health and Nutrition Examination Survey (NHANES III) as “reference points.” Solid horizontal line represents the 7% upper level of intake for saturated fat proposed by the AHA.



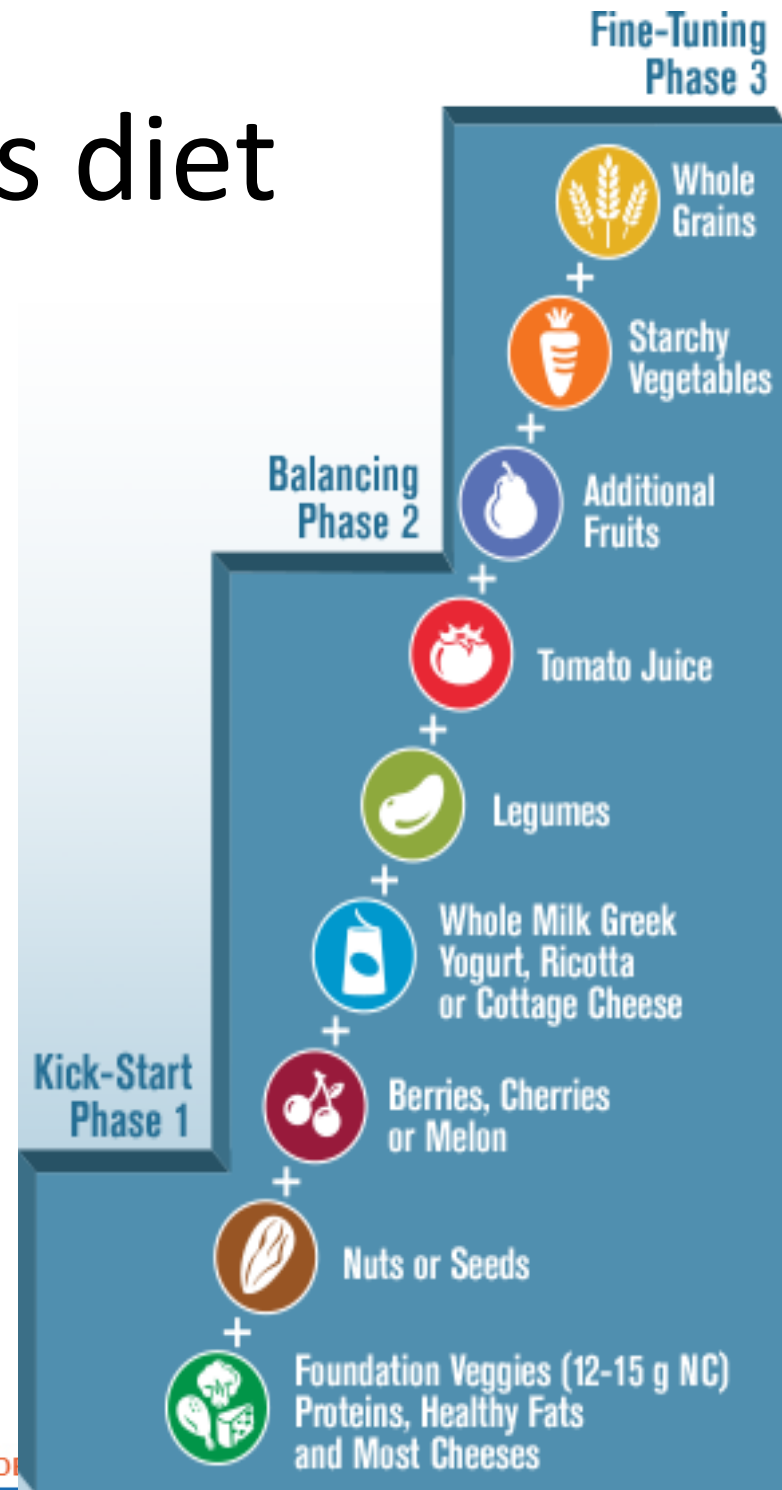
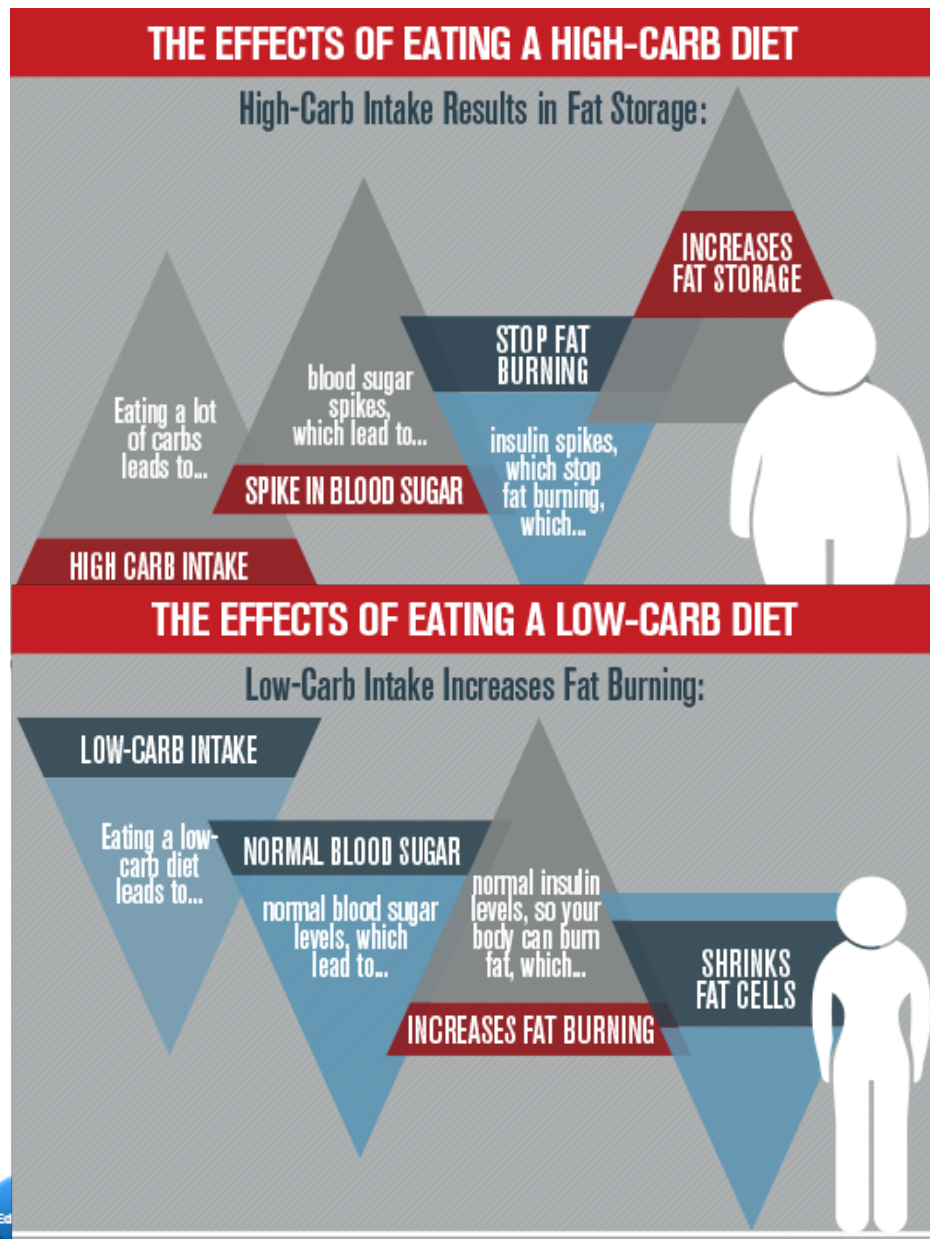
**A All Participants**



Carbohydrate/Protein/Fat: ▲ 65/15/20% ■ 55/25/20% ● 45/15/40% ◆ 35/25/40%

P/C/F = 29/9/62

# The Atkins diet



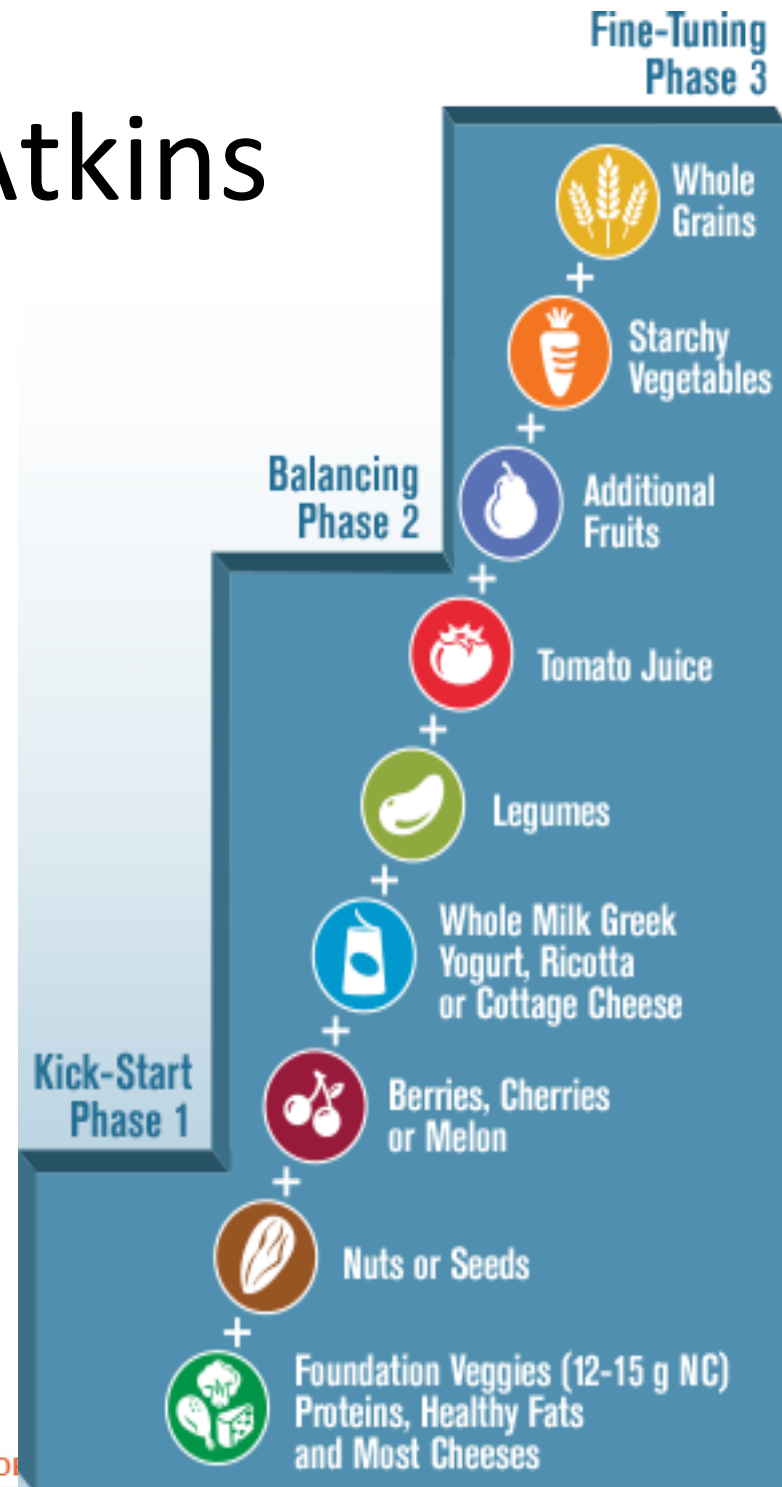
# La dieta Atkins

## Pro

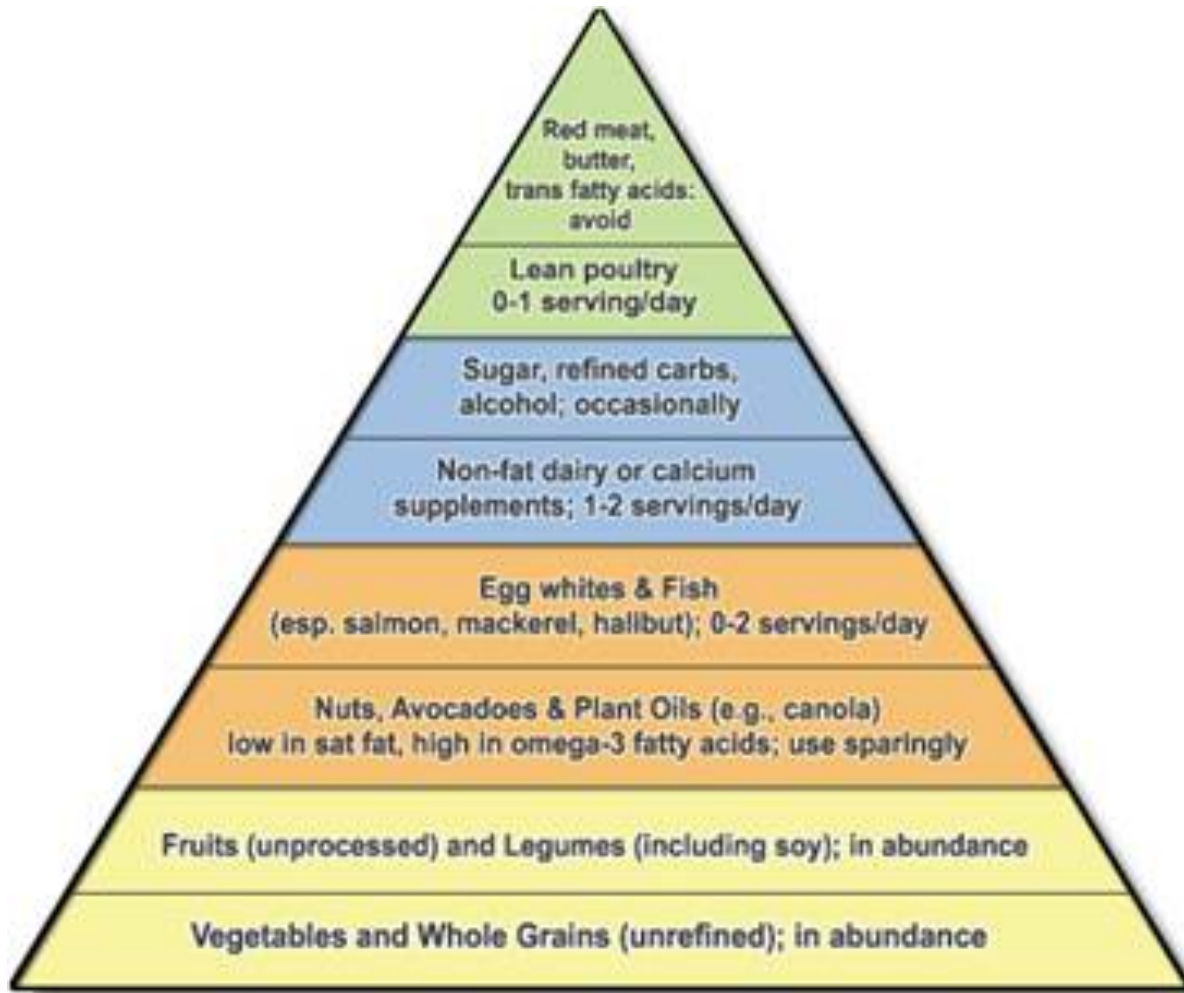
- Saziente
- Organizzata

## Contro

- Potenzialmente associata all'aumento del rischio cardiovascolare (grassi e proteine animali)
- Restrittiva
- Difficile da sostenere nel tempo
- Lontana dalle linee guida nutrizionali
- Sconsigliata a pazienti con calcolosi renale, gestanti, mamme che allattano
- Effetti collaterali: cefalea, stipsi, debolezza, ...

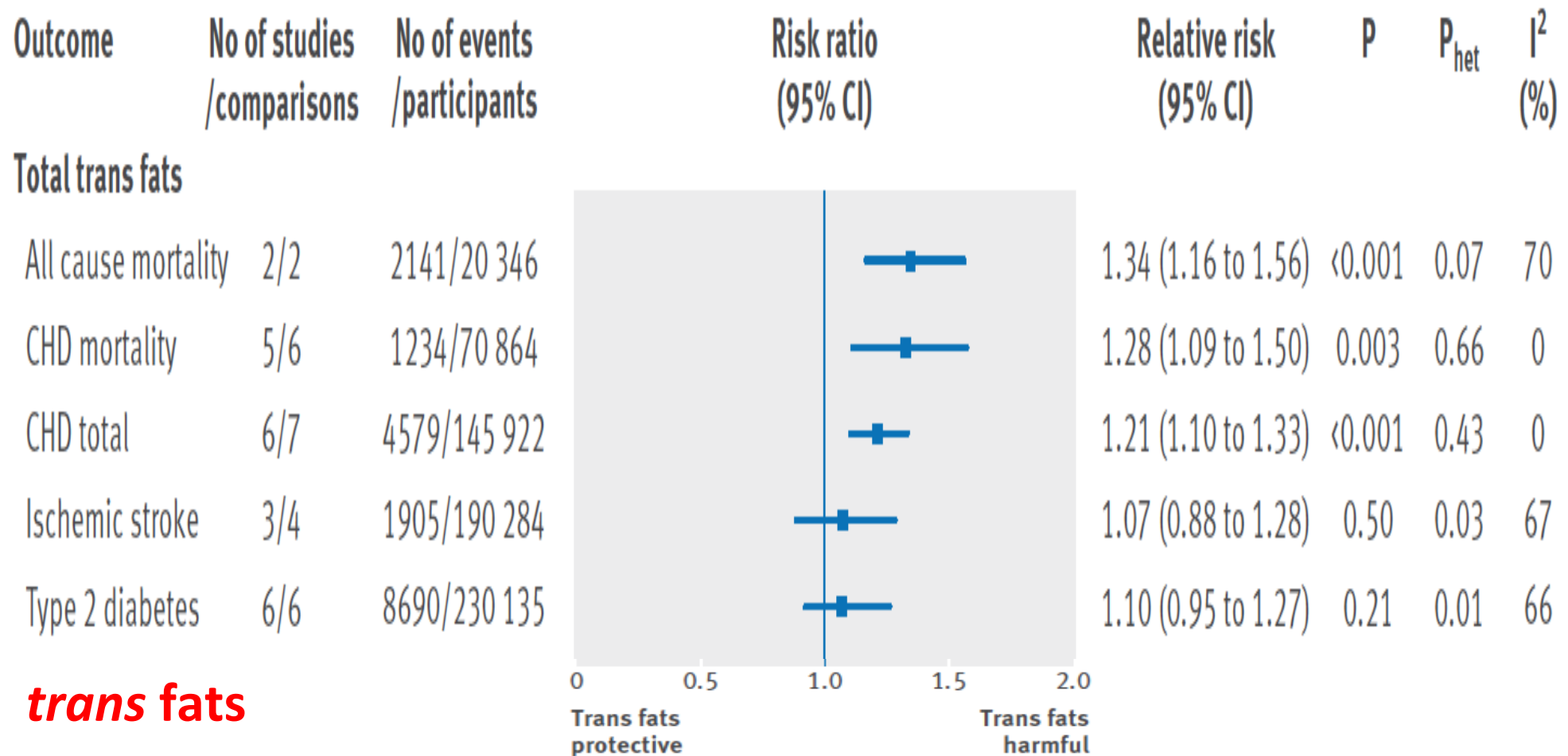


# La dieta Ornish



- E' una dieta vegetariana
- E' iperglucidica (70% En da carboidrati, non semplici) e ipolipidica (10% En)
- Non implica restrizione calorica
- Ha un rapporto alimenti:calorie più elevato rispetto ad altre diete
- Viene associata ad attività fisica regolare e alla riduzione dello stress
- E' molto restrittiva
- Non è indicata per alcune condizioni particolari (età pediatrica, gravidanza, allattamento, anziano)

# Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies



**trans fats**

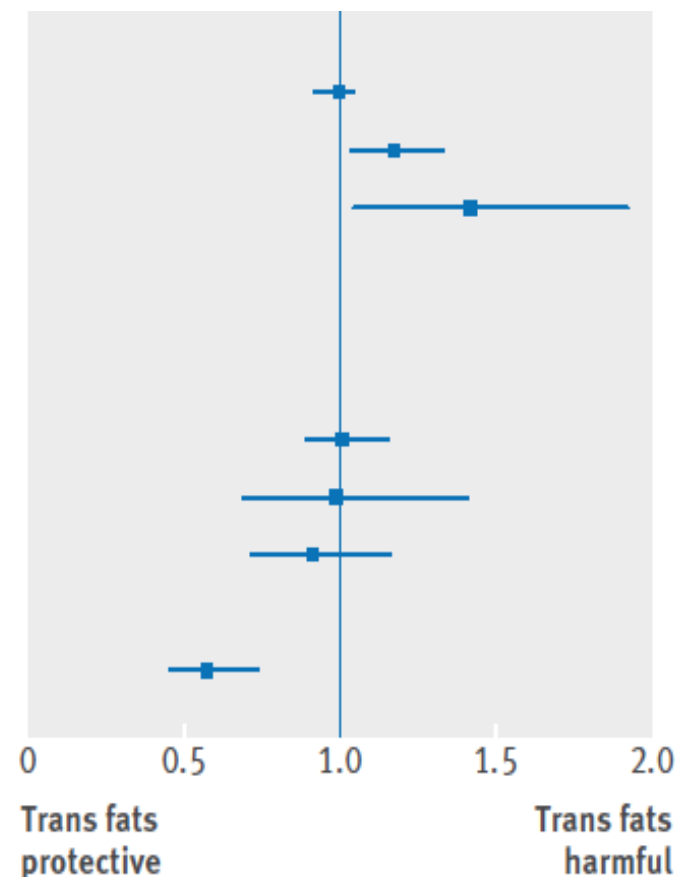
# Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies

## Industrial trans fats

All cause mortality	1/2	11 890/71 464
CHD mortality	2/2	3018/93 394
CHD total	2/2	454/69 848
Ischemic stroke	0	0/0
Type 2 diabetes	0	0/0

## Ruminant trans fats

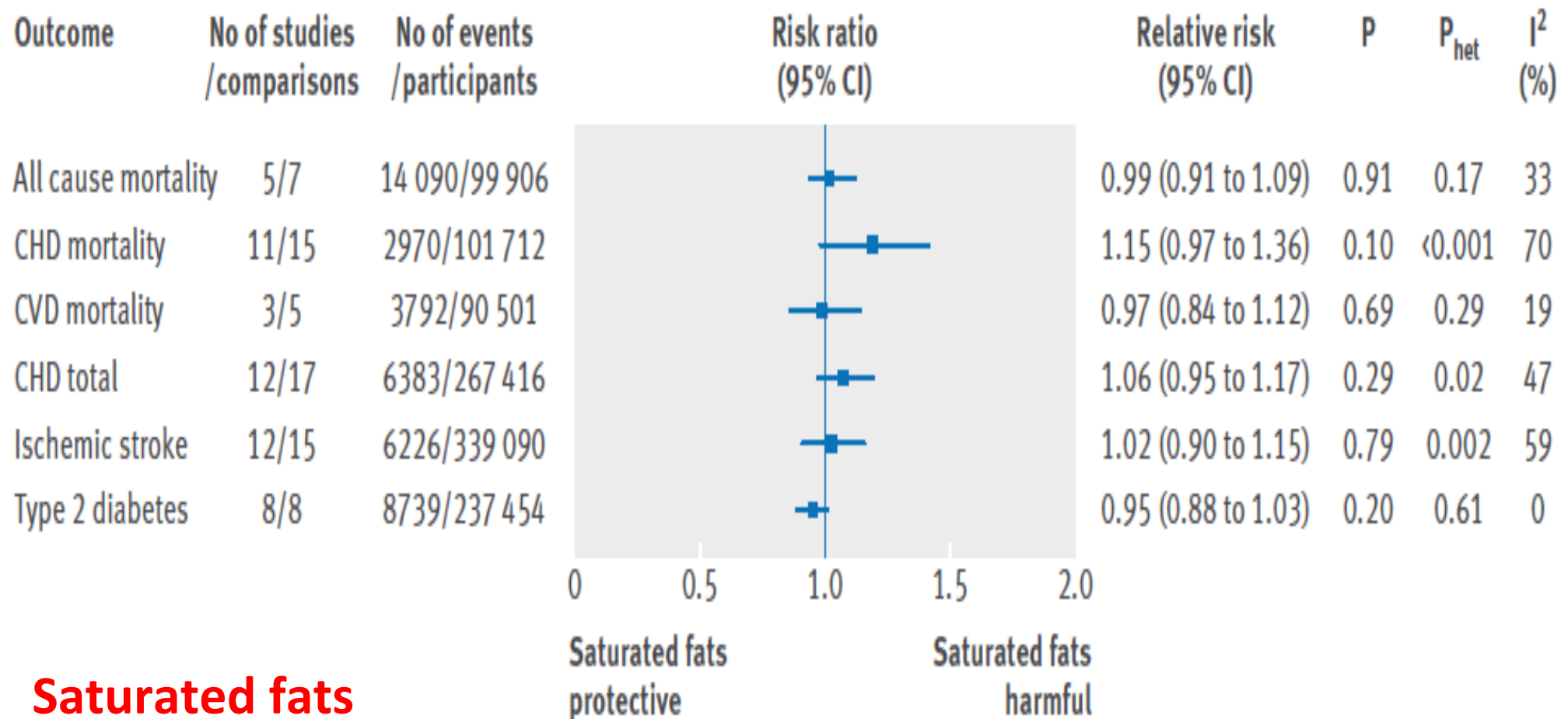
All cause mortality	1/2	11 890/71 464
CHD mortality	2/3	3018/93 394
CHD total	3/4	828/73 546
Ischemic stroke	0	0/0
Type 2 diabetes	5/5	1153/12 942



0.98 (0.92 to 1.04)	0.52	0.52	0
1.18 (1.04 to 1.33)	0.009	0.68	0
1.42 (1.05 to 1.92)	0.02	0.22	34
-	-	-	-
-	-	-	-
1.04 (0.92 to 1.18)	0.51	0.31	4
1.01 (0.71 to 1.43)	0.95	0.01	79
0.93 (0.73 to 1.18)	0.55	0.13	46
-	-	-	-
0.58 (0.46 to 0.74)	<0.001	0.22	30

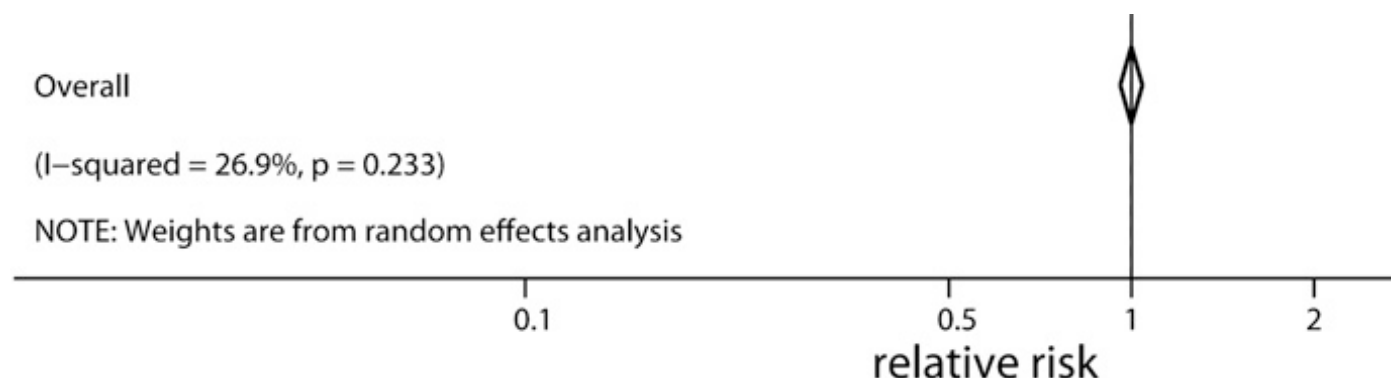
**trans fats**

# Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies



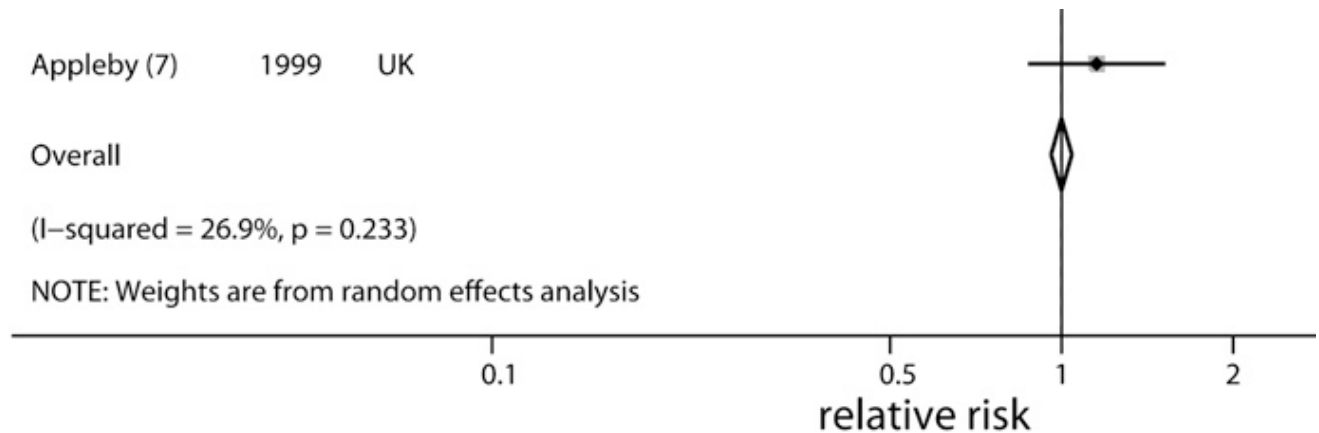
**Saturated fats**

# Milk and CVD: a metanalysis



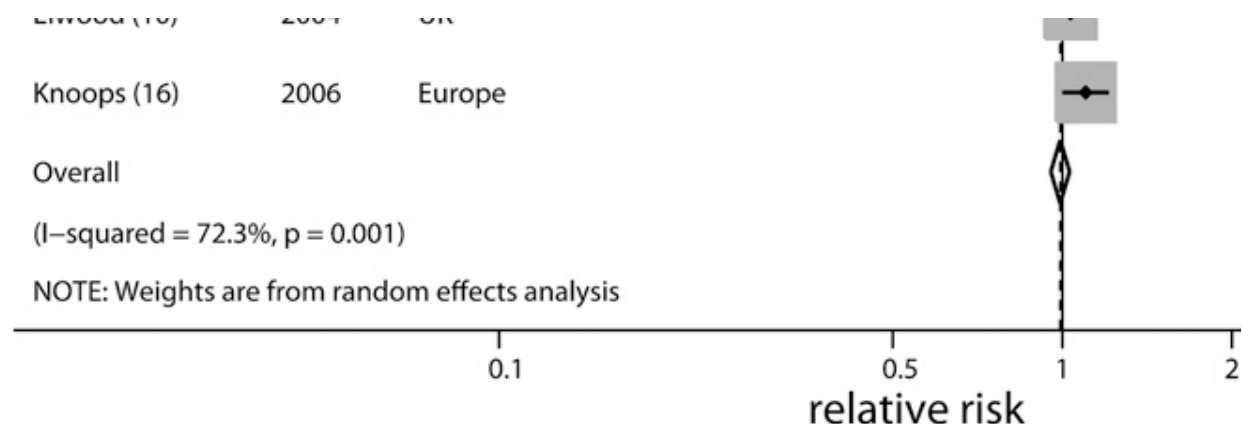
**FIGURE 3.** Relation between milk (per 200 mL/d) and coronary heart disease: dose-response meta-analysis (no. of cases = 4391). Shown are author names, reference number, year of publication, country of study, and estimated relative risks (RRs) and 95% CIs pooled across the categories of milk exposure with the gene. The x axis, the RR is plotted with a line through the RR (= 1) that indicates no significant association. The bottom indicates the pooled result, with the RR in the middle and the 95% CI. A test for heterogeneity, much heterogeneity is due to between-study variation with a *P* value (if *P* < 0.05).

# Milk and CHD: a metanalysis



**FIGURE 3.** Relation between milk (per 200 mL/d) and coronary heart disease: dose-response meta-analysis (no. of cases = 4391). Shown are author names, reference number, year of publication, country of study, and estimated relative risks (RRs) and 95% CIs pooled across the categories of milk exposure with the general population. The x axis, the RR is plotted with a line through the RR (= 1) that indicates no significant association. The diamond at the bottom indicates the pooled result, with the RR in the middle and the 95% CI. A test for heterogeneity,  $I^2$ , indicates that much heterogeneity is due to between-study variation with a  $P$  value (if  $P < 0.05$ ).

# Milk and stroke: a metanalysis

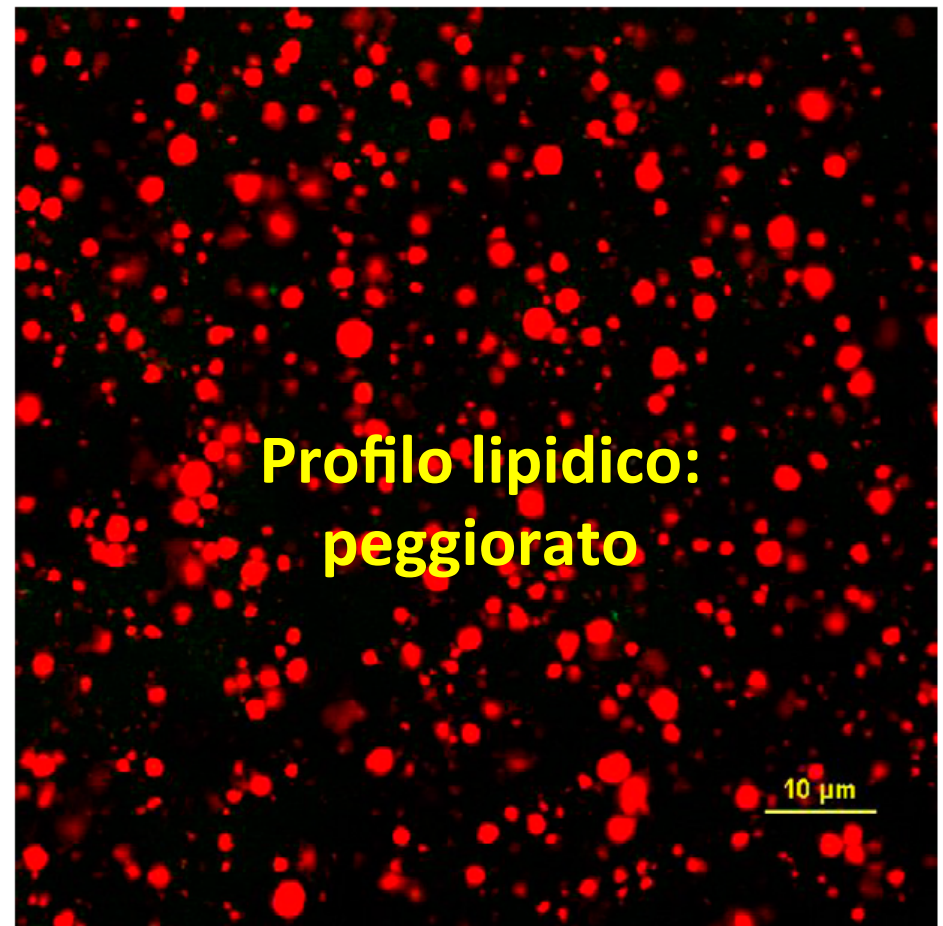
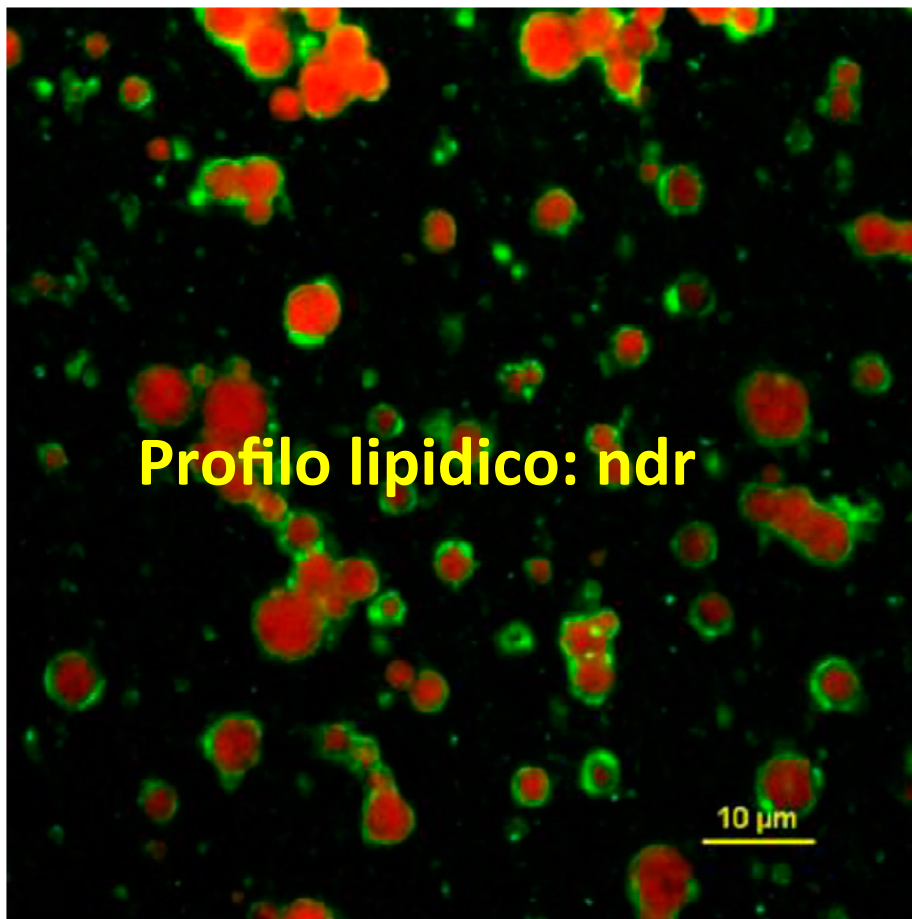


**FIGURE 5.** Relation between milk (per 200 mL/d) and all-cause mortality: dose-response meta-analysis (n = 23,949). Shown are author names, reference number, year of publication, country of study, and estimated relative risks (RRs) and 95% CIs pooled across the categories of milk exposure with the x axis, the RR is plotted with a line through the RR (= 1) that indicates no significant association. The diamond at the bottom indicates the pooled result, with the RR in the middle and the 95% CI. A test for heterogeneity indicates much heterogeneity is due to between-study variation with a *P* value (if *P* < 0.05).

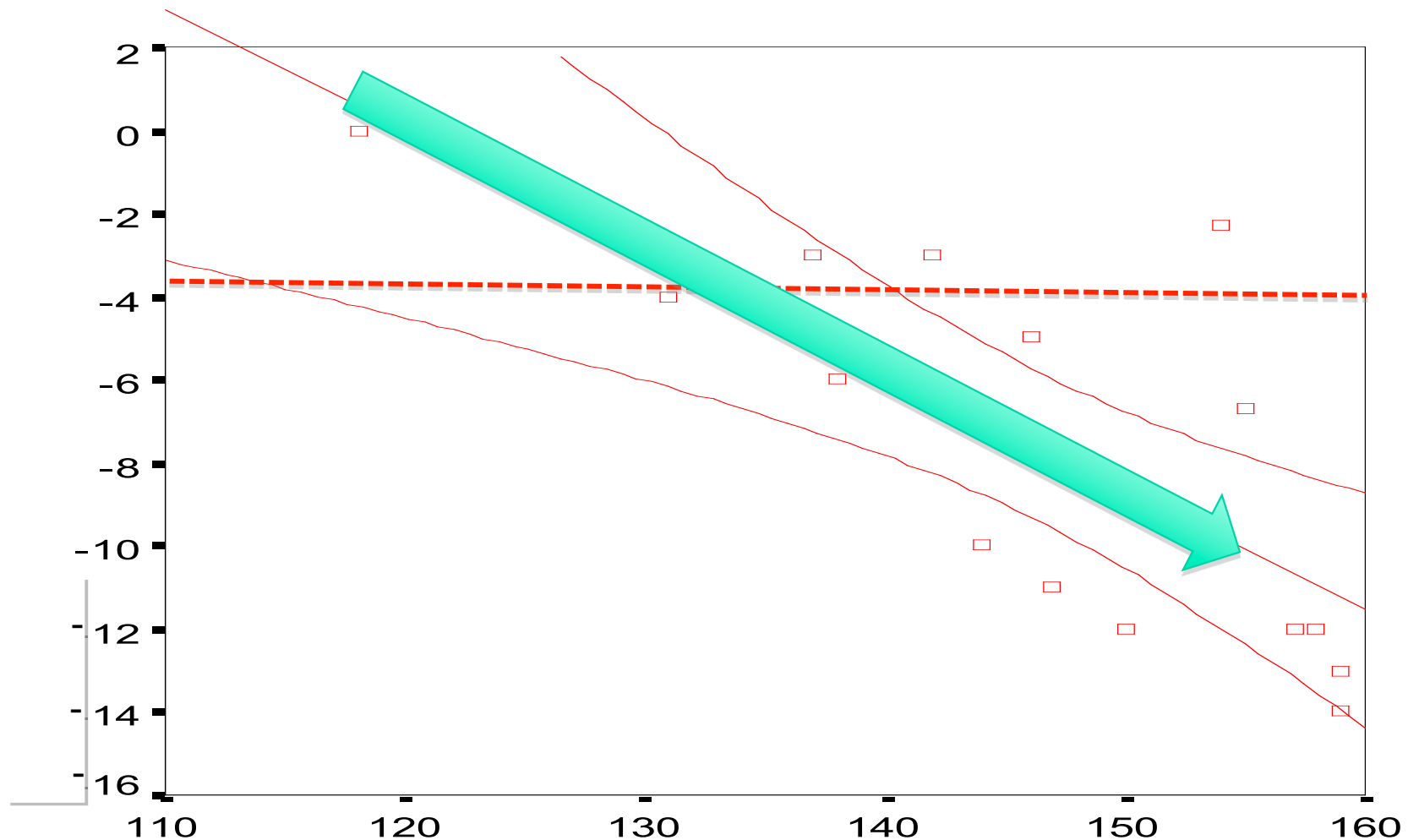
Soedamah-Muthu SS et al, Am J Clin Nutr 2011

# Potential role of milk fat globule membrane in modulating plasma lipoproteins, gene expression, and cholesterol metabolism in humans: a randomized study<sup>1</sup>

*Fredrik Rosqvist,<sup>2</sup> Annika Smedman,<sup>2,4</sup> Helena Lindmark-Månsson,<sup>3,4</sup> Marie Paulsson,<sup>3</sup> Paul Petrus,<sup>6</sup> Sara Straniero,<sup>5</sup> Mats Rudling,<sup>5</sup> Ingrid Dahlman,<sup>6</sup> and Ulf Risérus<sup>2\*</sup>*



# Tripeptidi del latte: riduzione PAS e PAS basale negli studi controllati disponibili



PAS baseline

Cicero A et al, personal communication, 2009

# Latte e tumori: le evidenze della letteratura

Sede	Rischio	Pubblicazione	Note
Prostata	+3%	Am J Clin Nutr 2015	Metanalisi
Stomaco	ns	World J Gastroenterol 2014	Metanalisi
Colon	-7%	PLOSoone 2013	EPIC
Mammella	ns	Cancer Causes Control 2013	Black Women Study
Pancreas	ns	Ann Oncol 2014	Metanalisi
Mammella	ns	Breast Cancer Res Treat 2011	Metanalisi

JUNE 23, 2014

# TIME

## Eat Butter.

Scientists labeled fat the enemy. Why they were wrong

BY BRYAN WALSH



TIME.COM

4<sup>a</sup>  
Edizione

CORSO DI 2° LIVELLO PER

**SIMP<sup>e</sup>SV**  
Società Italiana di Medicina  
di Prevenzione e degli Stili di Vita

# A changing view on SFAs and dairy: from enemy to friend

## CONCLUSIONS

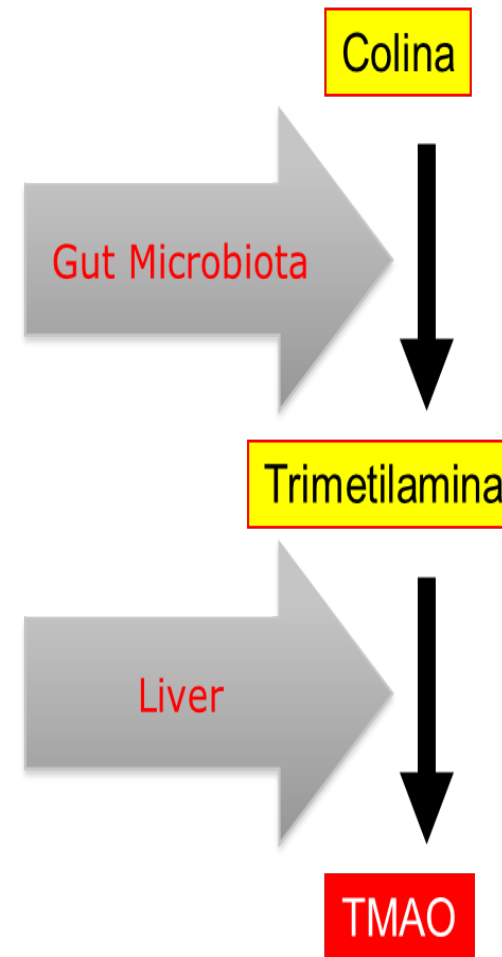
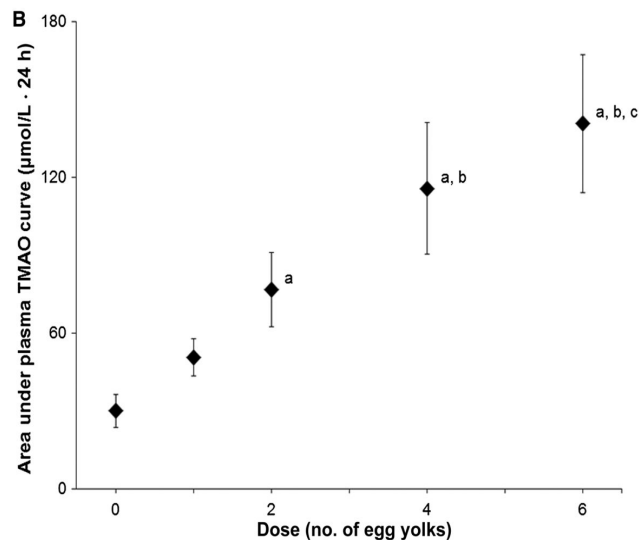
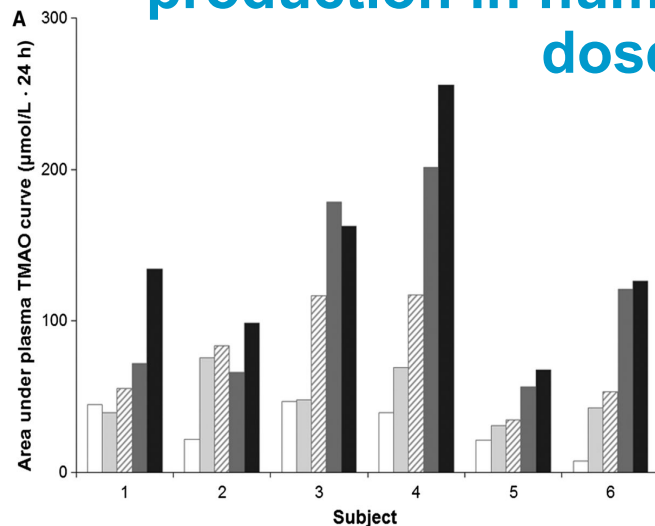
The totality of evidence does not support that dairy SFAs increase the risk of coronary artery disease or stroke or CVD mortality. In contrast, lean dairy is clearly associated with decreased risk of type 2 diabetes, and this effect is partly independent of any effect of body fat loss. In addition, lean dairy does not increase body fatness but tends to preserve lean body tissue. There is no evidence left to support the existing public health advice to limit consumption of dairy to prevent CVD and type 2 diabetes. Cheese and other dairy products are, in fact, nutrient-dense foods that give many people pleasure in their daily meals.

# Uova e colesterolo alimentare: un tema da ripensare?

Egg-yolk years	Quintile of egg-yolk years					p
	<50	50–110	110–150	150–200	≥200	
Normally distributed variables: mean ± SD						
Age at first visit	55.70 ± 17.03	57.97 ± 16.32	56.82 ± 12.35	64.55 ± 12.00	69.77 ± 11.38	0.0001
Eggs per week	0.41 ± 0.44	1.37 ± 0.54	2.30 ± 0.53	2.76 ± 0.59	4.68 ± 3.03	0.0001
Systolic pressure (mmHg)	141 ± 24	139 ± 24	142 ± 22	144 ± 22	145 ± 23	0.001
Diastolic pressure (mmHg)	83 ± 12	82 ± 12	85 ± 13	82 ± 13	80 ± 13	0.001
Total cholesterol (mmol/L)	4.93 ± 1.16	4.94 ± 1.17	5.0 ± 1.14	4.90 ± 1.16	4.81 ± 1.19	0.47
Triglycerides (mmol/L)	1.88 ± 1.41	1.84 ± 1.08	1.96 ± 1.31	1.94 ± 1.40	1.85 ± 1.17	0.77
HDL cholesterol (mmol/L)	1.34 ± 0.48	1.33 ± 0.42	1.33 ± 0.42	1.29 ± 0.42	1.35 ± 0.45	0.58
LDL cholesterol (mmol/L)	2.76 ± 1.04	2.75 ± 1.02	2.81 ± 1.09	2.73 ± 1.19	2.67 ± 1.06	0.62
Body mass index	27.62 ± 5.62	27.42 ± 5.62	27.71 ± 5.61	27.82 ± 5.61	28.51 ± 5.42	0.001
Plaque area (mm <sup>2</sup> )	101.45 ± 125.64	110.35 ± 129.02	113.58 ± 138.82	135.76 ± 137.67	175.77 ± 147.61	0.0001
Age-dependent variables: age-adjusted marginal mean ± SE						
Smoking (pack-years)	14.14 ± 1.37	14.37 ± 1.40	16.57 ± 1.25	13.88 ± 1.30	17.00 ± 1.20	0.24
Categorical variables: percent						
Female	48.6%	51.7%	44.8%	45.0%	46.7%	0.56
Diabetic	11.8%	14.5%	11.8%	13.4%	14.6%	0.80

Spence, Jenkins & Davignon, Atherosclerosis 2012

# Effect of egg ingestion on trimethylamine-N-oxide production in humans: a randomized, controlled, dose-response study



**Plasma TMAO. Six healthy volunteers (subjects) consumed a standardized low-choline diet on the day before each of 5 randomly assigned doses of 0, 1, 2, 4, or 6 egg yolks.**

Carolyn A Miller et al. Am J Clin Nutr 2014;100:778-786

# Egg consumption and risk of heart failure, myocardial infarction, and stroke: results from 2 prospective cohorts<sup>1-3</sup>

Susanna C Larsson,\* Agneta Åkesson, and Alicja Wolk

**Design:** In prospective cohorts of 37,766 men (Cohort of Swedish Men) and 32,805 women (Swedish Mammography Cohort) who were free of cardiovascular disease (CVD), egg consumption was assessed at baseline with a food-frequency questionnaire. Incident CVD cases were identified through linkage with the Swedish National Patient and Cause of Death Registers. The data were analyzed with the use of a Cox proportional hazards regression model.

**Results:** During 13 y of follow-up, we ascertained 1628 HFs, 3262 MIs, 2039 ischemic strokes, and 405 hemorrhagic strokes in men and 1207 HFs, 1504 MIs, 1561 ischemic strokes, and 294 hemorrhagic strokes in women. There was no statistically significant association between egg consumption and risk of MI or any stroke type in either men or women or HF in women. In men, consumption of  $\leq 6$  eggs/wk was not associated with HF risk; however, daily egg consumption ( $\geq 1/d$ ) was associated with a 30% higher risk of HF (RR: 1.30; 95% CI: 1.01, 1.67). Egg consumption was not associated with any CVD outcome in individuals with diabetes.

**Conclusions:** Daily egg consumption was not associated with risk of MI or any stroke type in either men or women or with HF in women. Consumption of eggs  $\geq 1$  time/d, but not less frequent consumption, was associated with an elevated risk of HF in men. *Am J Clin Nutr* doi: 10.3945/ajcn.115.119263.

# Low fat vs Low carb diets: a RCT.

## Effects on weight and fat mass

that the loss of fat mass accounts for most of the reduction in body weight on a low-carbohydrate diet, which is consistent with other study findings (19, 21).

We found that a low-carbohydrate diet resulted in a significantly greater reduction in the ratio of total-HDL cholesterol, which has been identified as a strong and independent predictor of CHD (27). This finding is consistent with at least 1 previous study (23) but not others that had small sample sizes or high rates of loss to follow-up (20, 21). The decreases in HDL cholesterol and triglycer-

between the groups.

We also observed moderate reductions in blood pressure and plasma glucose, serum insulin, and serum triglyceride levels that did not differ significantly between the groups. In our study, participants on the low-carbohydrate diet had greater decreases in CRP levels than those on the low-fat diet. Two previous studies that examined CRP levels found no difference between the diets (19, 29); however, these studies had relatively small sample sizes and may have been underpowered.

316 | 2 September 2014 | *Annals of Internal Medicine* | Volume 161 • Number 5

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# Low fat vs Low carb diets: a RCT. Effects on HDL-c and Triglycerides

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316 | 2 September 2014 | *Annals of Internal Medicine* | Volume 161 • Number 5

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# Why is it important to keep the Glycemic Response low?

1. Your body makes **less insulin**, and it is thus **less probable** to develop low blood sugar (hypoglycemia) after the meal, and **to become hungry** .
2. The body uses **fat** (instead of glucose) **for energy** production
3. **Less blood sugar** is converted **into fat**

*Eventually, body weight decreases*

## Are there other ways to keep the Glycemic Response low? **Yes**

If you select the **proper carbohydrates**, you will have, like in the low carb diets, a **low glycemic response**

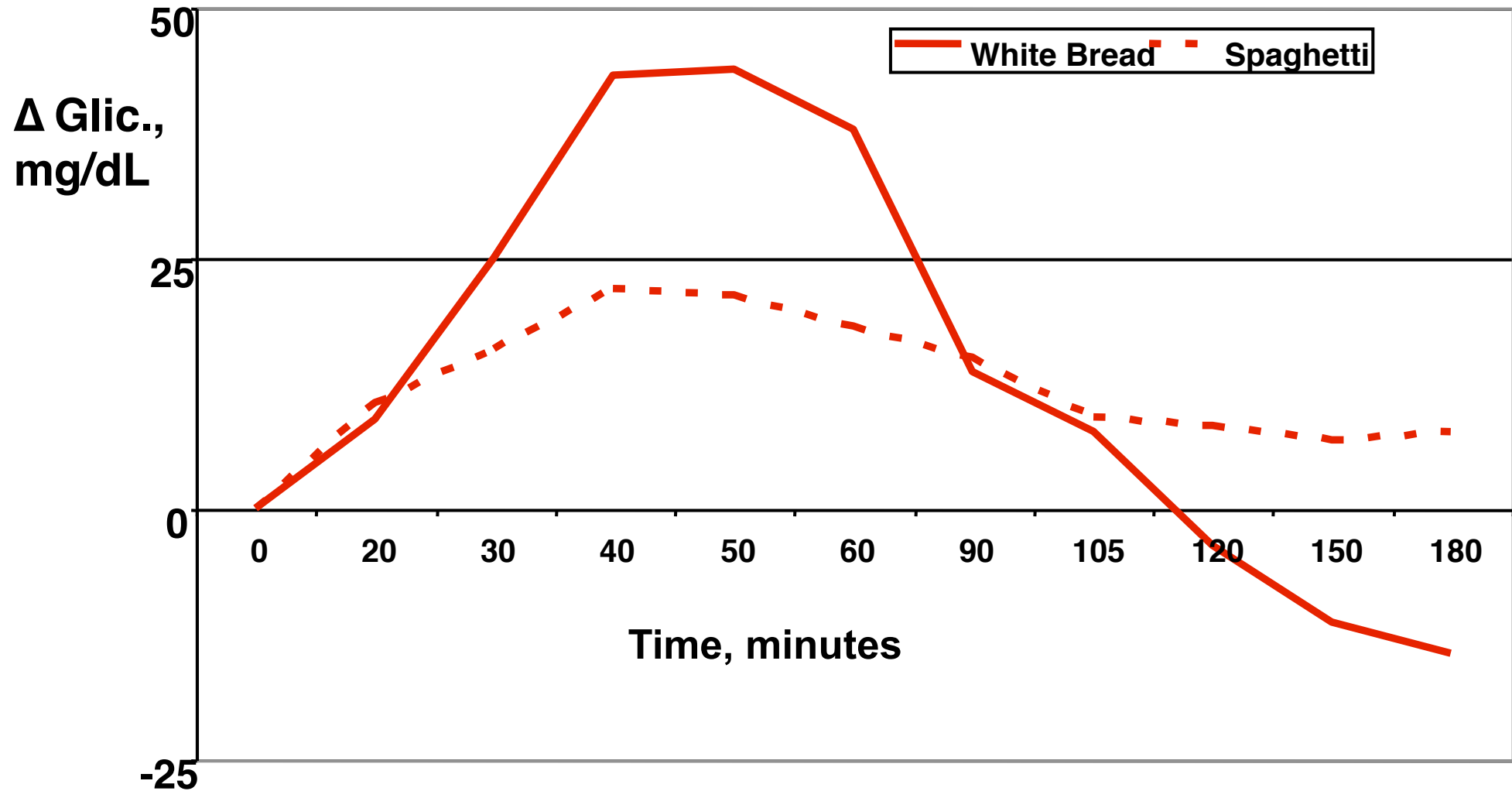
# Low glycaemic index or low glycaemic load diets for overweight and obesity (Review)

Thomas D, Elliott EJ, Baur L



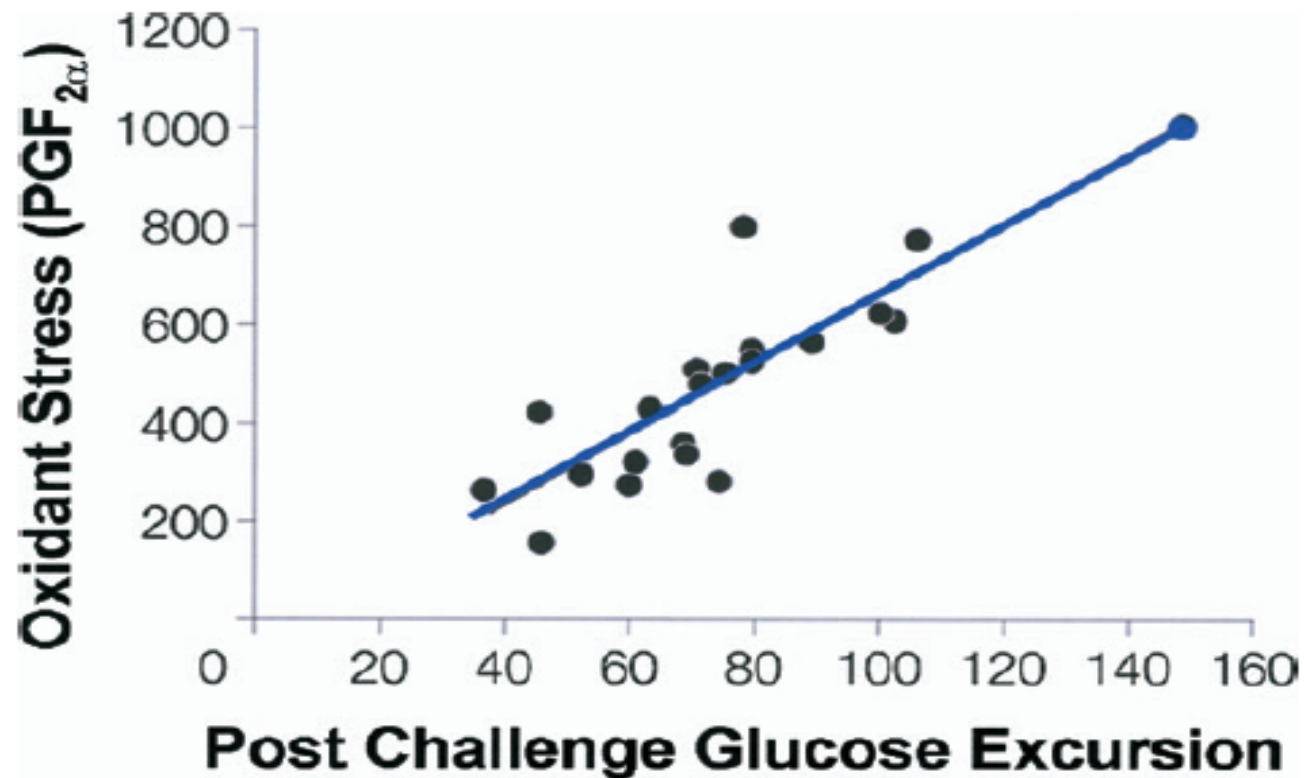
LOWERING THE GLYCAEMIC LOAD OF THE DIET APPEARS TO BE AN EFFECTIVE METHOD OF PROMOTING WEIGHT LOSS AND IMPROVING LIPID PROFILES AND CAN BE SIMPLY INCORPORATED INTO A PERSON'S LIFESTYLE.

# GLYCEMIC RESPONSE AFTER A WHITE BREAD OR A SPAGHETTI MEAL



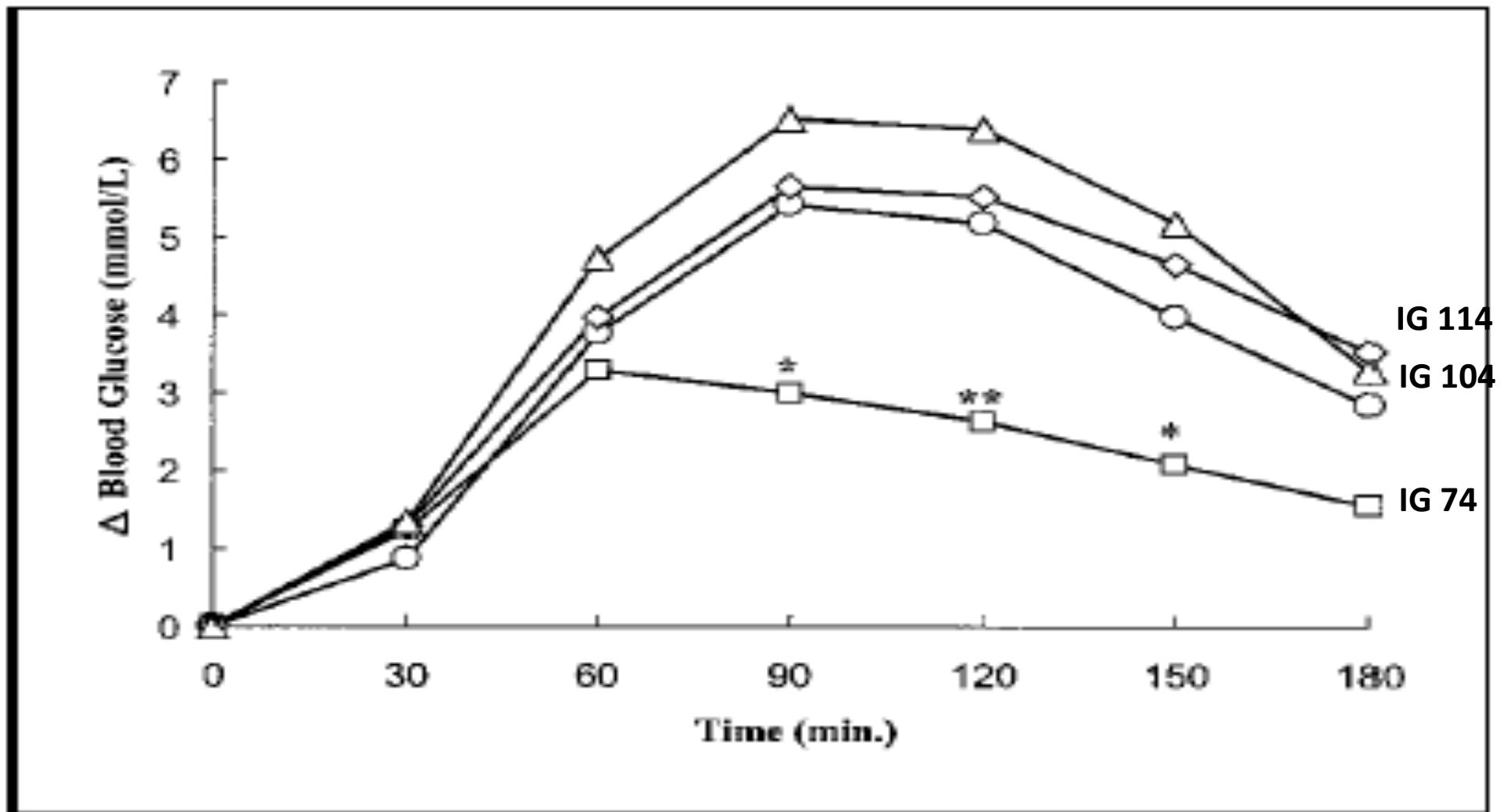
Ludwig, J Am Med Assoc, 2002

# Post-prandial glucose excursions and urinary excretion of 8-iso PGF<sub>2</sub> alfa, a measure of oxidant stress.

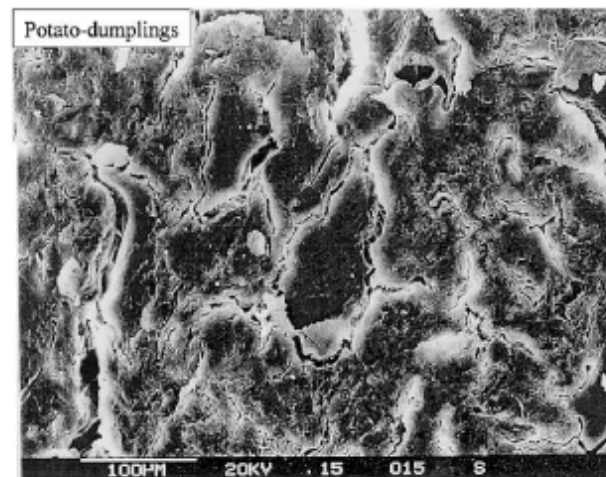
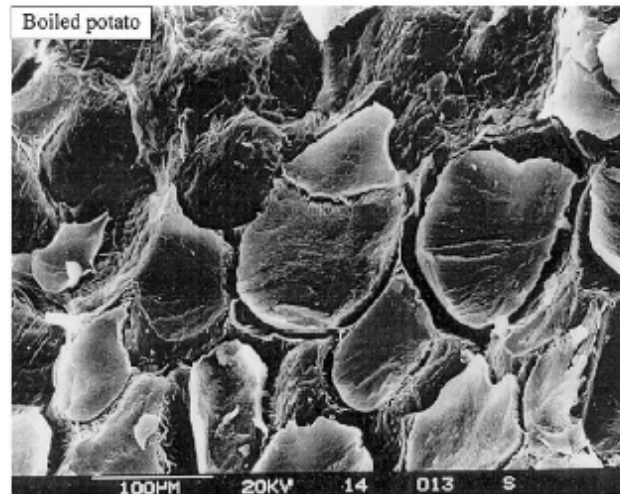


**Glucose Excursion  
Directly Related to Oxidant Stress**

Il glucosio ematico aumenta rispetto ai livelli basali dopo assunzione di pane bianco ○ pane tostato △ , pizza ◇ e gnocchi di patate □ . \* $p \leq 0.05$ , \*\* $p \leq 0.01$  gnocchi vs pane bianco.



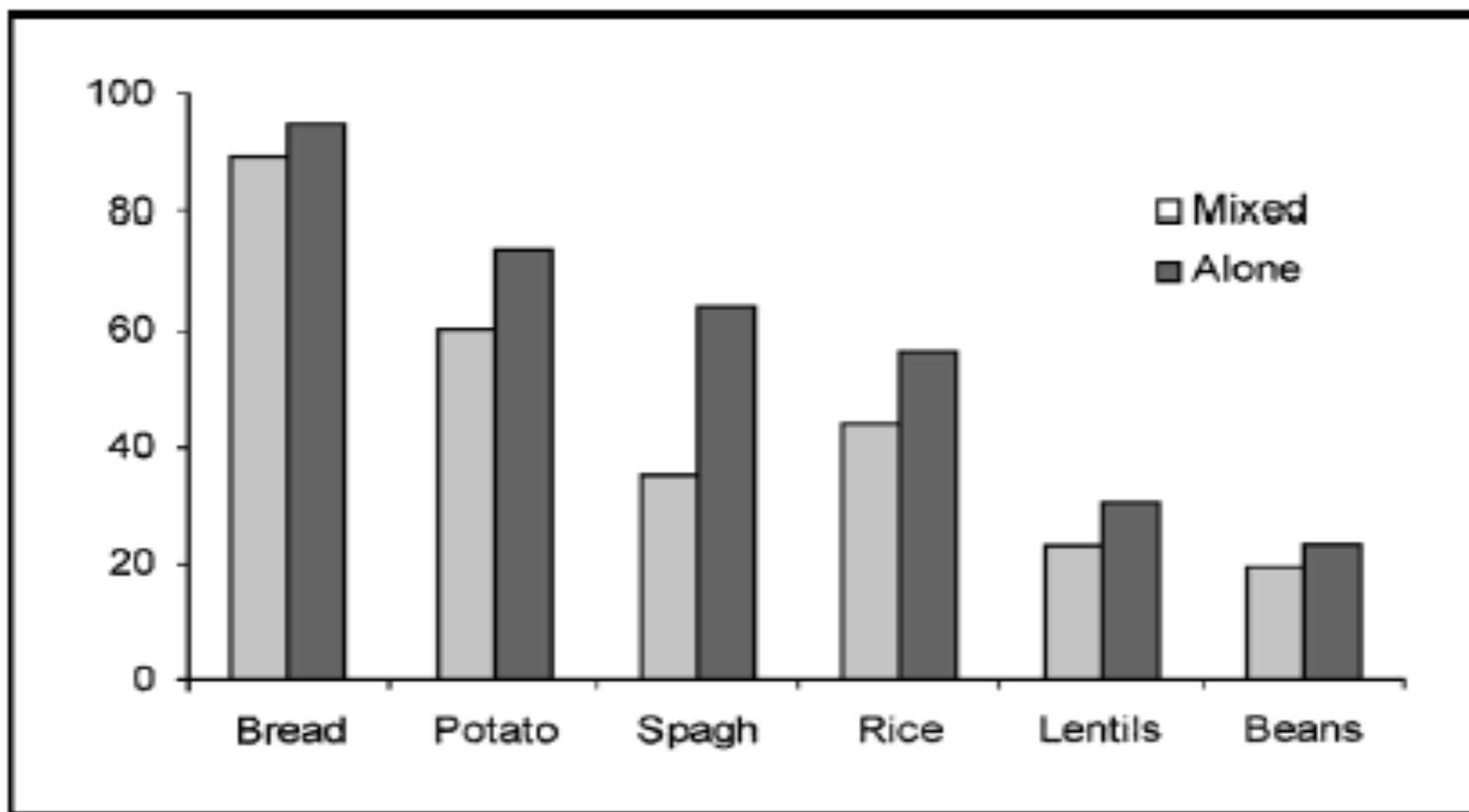
**L'analisi al microscopio elettronico a scansione dimostra che gli gnocchi hanno una struttura compatta come altri alimenti a base di carboidrati a basso indice glicemico. Al contrario negli alimenti lievitati l'elevata porosità conseguente all'incorporazione di gas che espande durante la cottura, aumenta enormemente la superficie esposta all'attività enzimatica.**



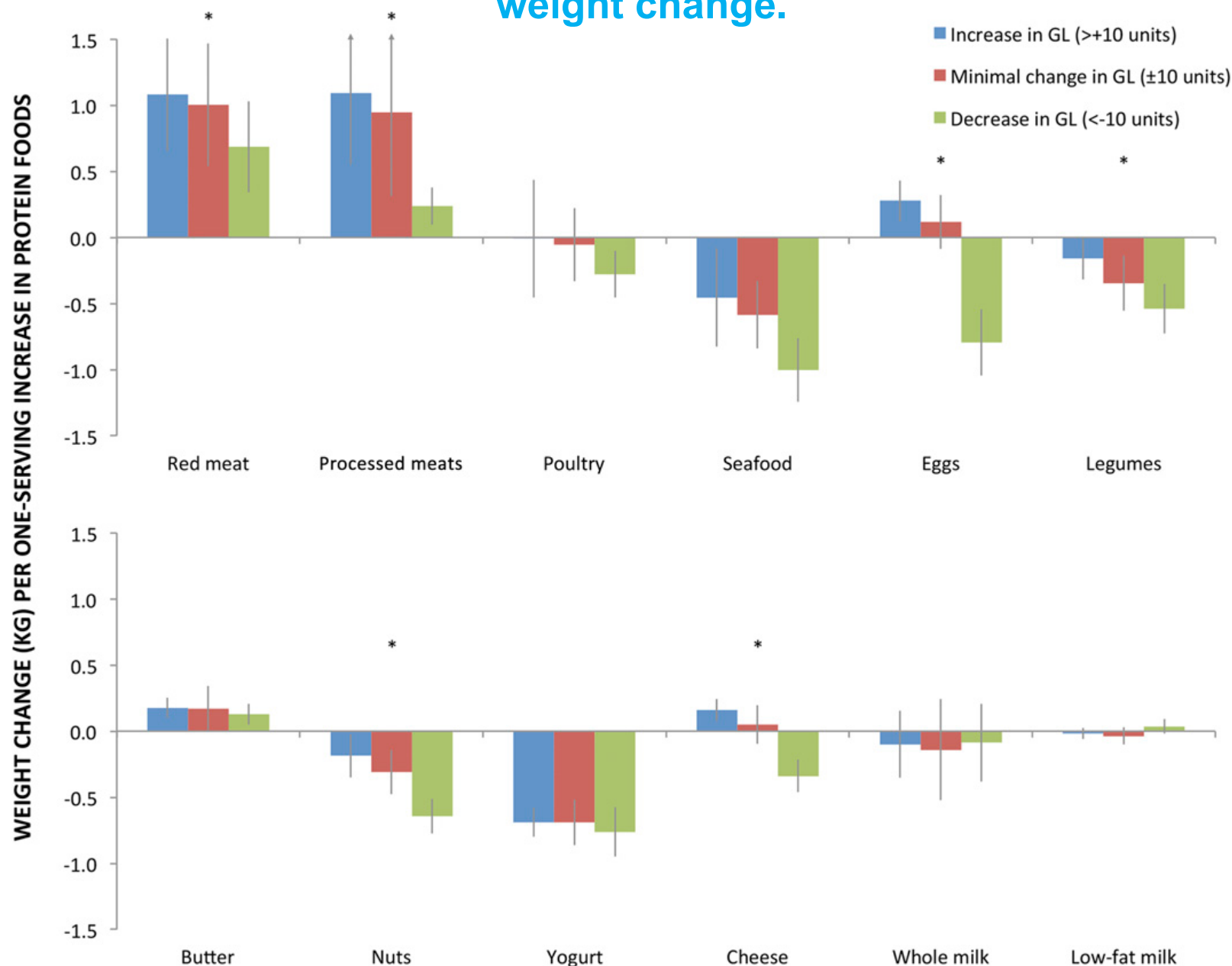
# Indice Glicemico (IG), relativo al Pane Bianco, di alcuni alimenti

Alimento	Indice Glicemico
<b>Pane bianco</b>	<b>100</b>
<b>Pomodori</b>	<b>13</b>
<b>Ciliegie</b>	<b>32</b>
<b>Fagioli</b>	<b>40/60</b>
<b>Mele</b>	<b>52</b>
<b>Spaghetti</b>	<b>52</b>
<b>Maccheroni</b>	<b>68</b>
<b>Pizza</b>	<b>86</b>
<b>Saccarosio</b>	<b>92</b>
<b>Polenta</b>	<b>106</b>
<b>Patate bollite</b>	<b>120</b>
<b>Glucosio</b>	<b>138</b>

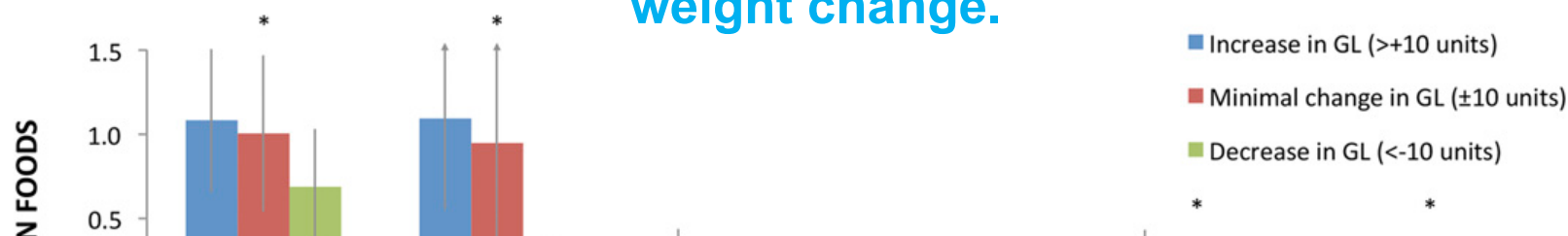
# Indice glicemico di alcuni alimenti assunti singolarmente o con pasti composti



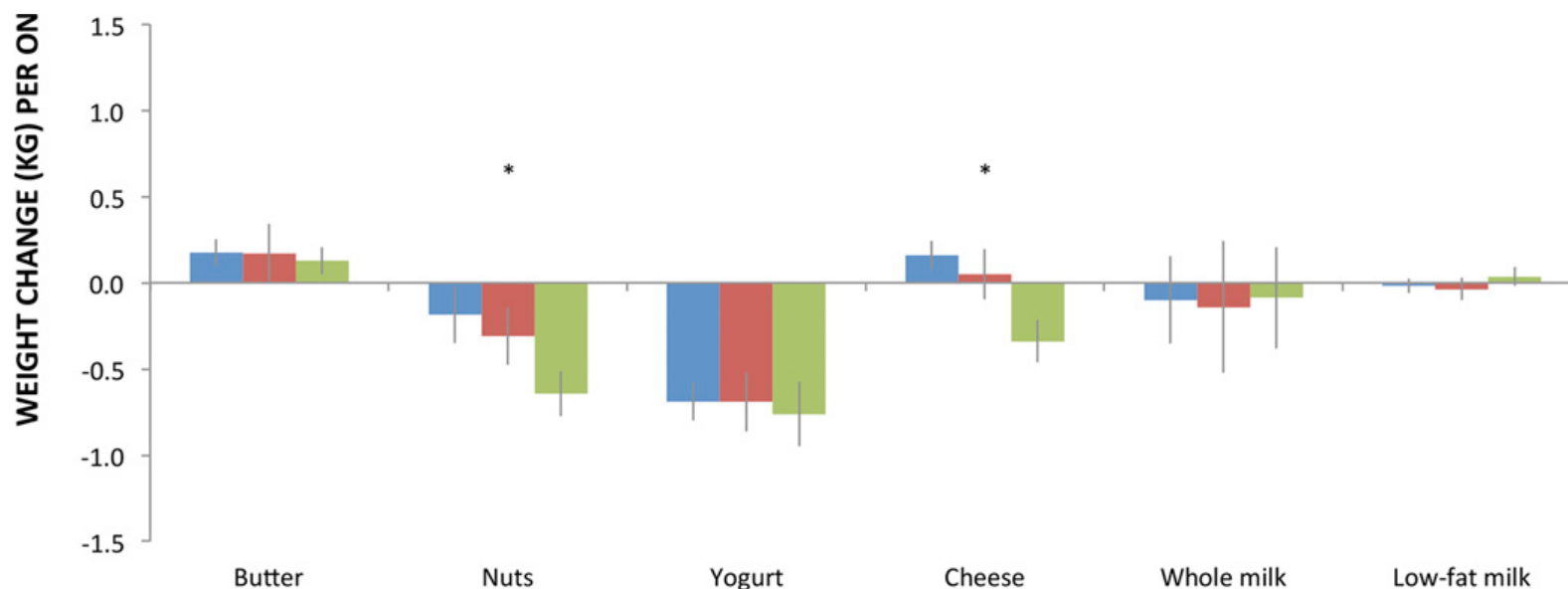
## Association between 4-y changes in servings of protein foods with long-term weight change.



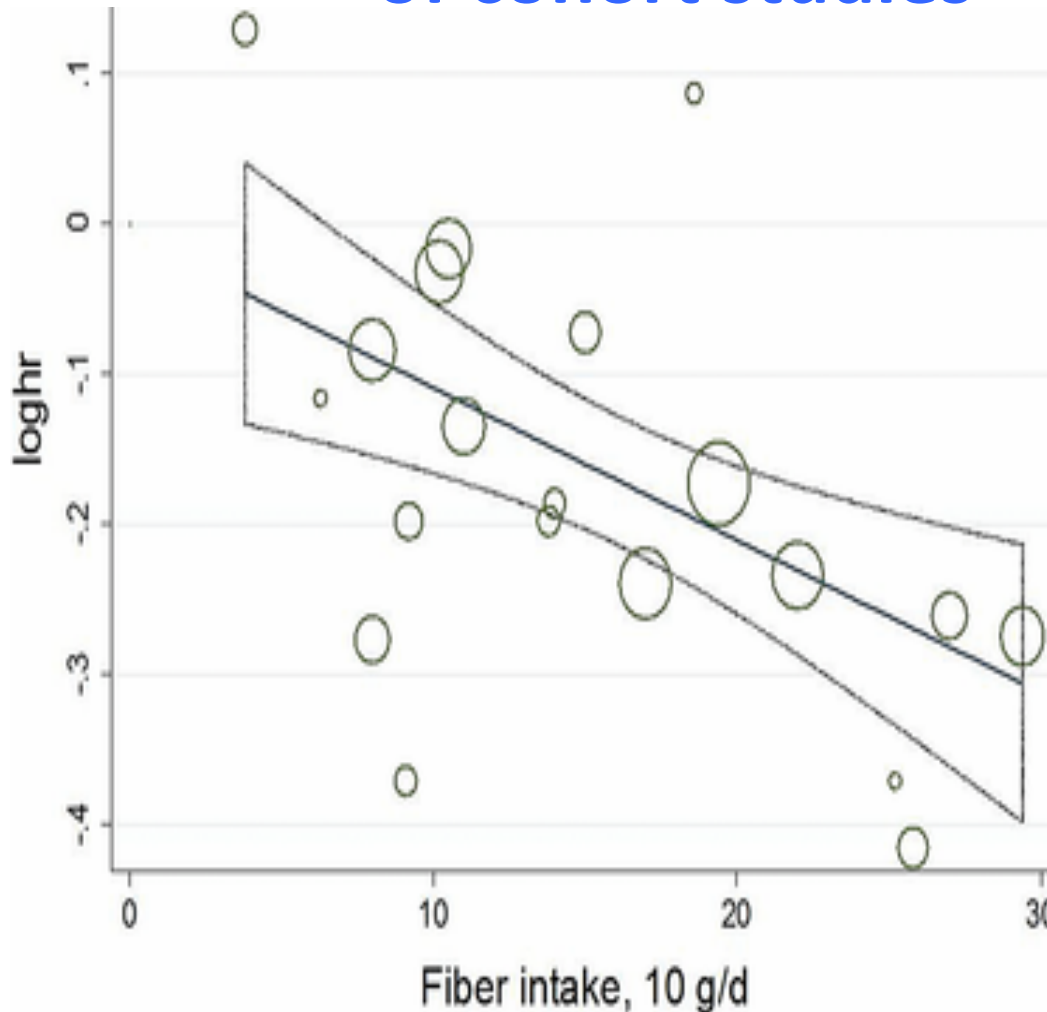
## Association between 4-y changes in servings of protein foods with long-term weight change.



**Proteine da fonti “magre” e carboidrati a basso indice glicemico promuovono e mantengono nel tempo un miglior controllo ponderale**



# Fiber consumption and all-cause, cardiovascular, and cancer mortalities: A systematic review and meta-analysis of cohort studies



**For +10g intake:**  
**Total mortality:**  
**HR 0.89**  
**CVD mortality:**  
**HR 0.80**  
**Cancer mortality:**  
**HR 0.91**  
**CHD mortality:**  
**HR 0.66**

# Fruit, vegetables and fiber and risk to develop overweight or obesity.

## The Women Health Study.

gain and risk of becoming overweight or obese, few have specifically investigated the impact of fruit and vegetable intake (16–19). In the European Prospective Investigation into Cancer and Nutrition Study, fruit and vegetable intake was not associated with weight change during a mean of 5 y of follow-up in 373,803 women and men aged between 25 and 70 y (17). However, in stratified analyses, an inverse association was observed between high fruit intake and weight change among women who were initially aged >50 y, of normal weight, never smokers, or had a low prudent dietary pattern score. The Nurses' Health Study examined 74,063 women followed for 12 y (16), comparing women with the largest increase vs. decrease in fruit and vegetable intake, and the RR of becoming obese was 0.76 (95% CI: 0.69, 0.86; *P*-trend: <0.0001). In 79,236 women and men of the Cancer Prevention Study II, higher vegetable consumption was associated with lower odds of gaining weight over a 10-y period (18).

decreases in body weight. Diets higher in fruits and vegetables and fiber reduced the risk of becoming overweight or obese. In a randomized trial of 97 women, increasing intakes of fruits and vegetables and fiber reduced body weight. In a randomized trial of 97 women, increasing intakes of fruits and vegetables and fiber reduced body weight. In a randomized trial of 97 women, increasing intakes of fruits and vegetables and fiber reduced body weight. In a randomized trial of 97 women, increasing intakes of fruits and vegetables and fiber reduced body weight.

Fruits and vegetables contain several mechanisms. Magnesium, and calcium control (45). Polyphenols found in fruits and vegetables

Fruits, vegetables

# Fiber intake and PCR in 4.900 USA adults (NAHNES 99-00)

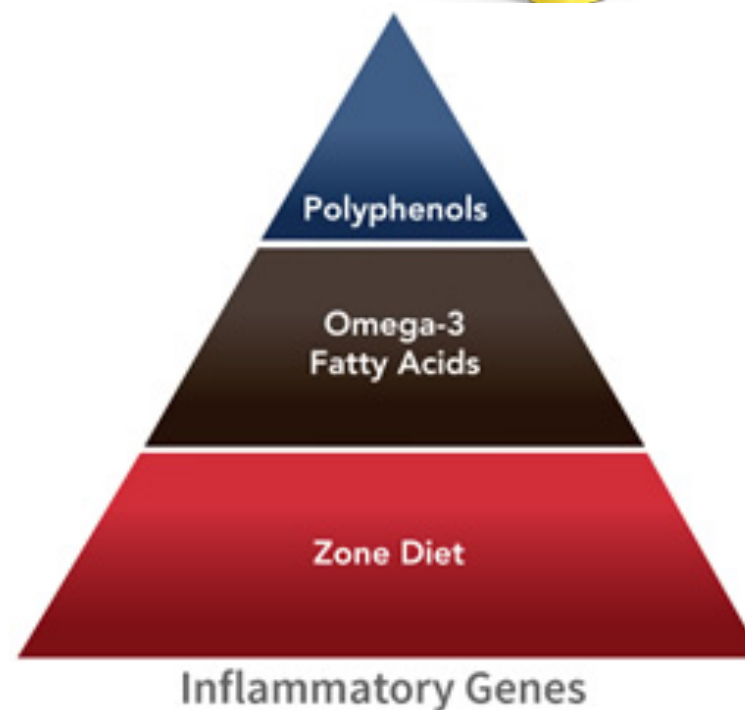
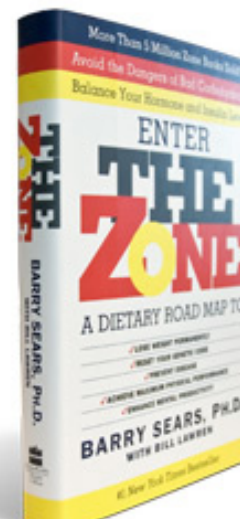
**TABLE 3** Odds Ratios (ORs) and 95% Confidence Intervals (CIs) of the Likelihood of Elevated C-Reactive Protein (>3.0 mg/L)

Dietary Fiber Quartile (g/d)	Unadjusted Model		Adjusted Model		Highly Sensitive CRP (mg/L)	
	OR	95% CI	OR	95% CI	Median	95% CI
Q1 <8.4	1.00	1.00	1.00	1.00	2.30	2.10-2.51
Q2 8.4-13.3	0.95	0.78-1.17	0.75	0.53-1.07	2.04	1.74-2.34
Q3 13.3-19.5	0.75	0.60-0.95	0.64	0.43-0.96	1.89	1.46-2.33
Q4 >19.5	0.68	0.55-0.84	0.58	0.38-0.88	1.76*	1.58-1.94

\*The median for the highest quartile is significantly lower than the median for the lowest quartile ( $p < 0.05$ ).  
Adjusted models include age, race, gender, body mass index, smoking status, alcohol consumption, exercise, medications, and total caloric intake. Estimated United States population median highly sensitive CRP and 95% CI of the medians are shown for each quartile of fiber consumption.

**From a fiber intake < 8,4 g/die to an intake > 19,5 g/die, CRP decreases from 2,3 to 1,8 mg/L ( - 20%;  $p < 0,05$ )**

Leading Anti-Inflammatory Nutrition Since 1995

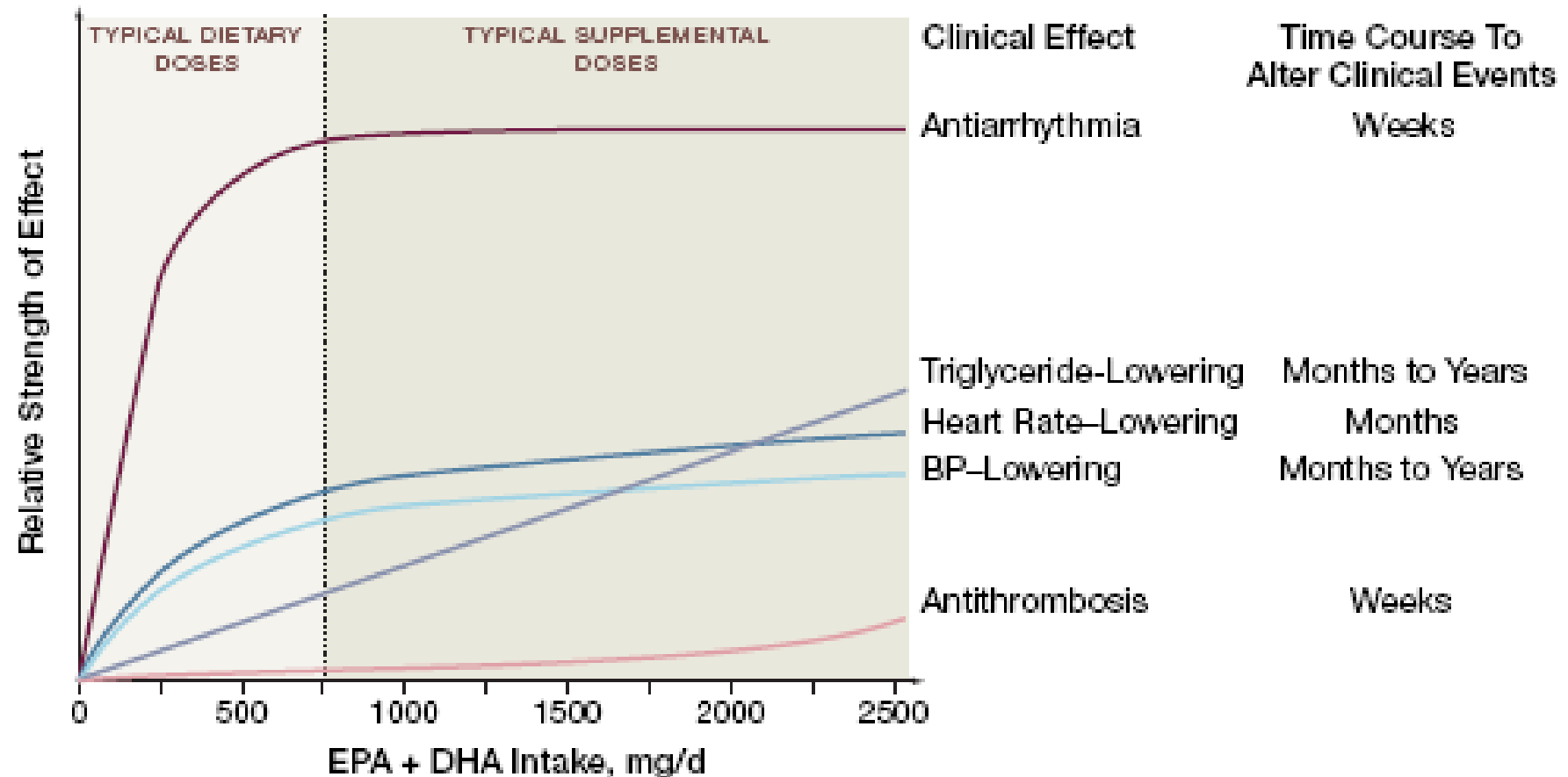


# Biomarkers of inflammation and endothelial dysfunction and trans fatty acid intake in the Nurses' Health Study (1986-1990)

Quintile	<i>n</i>	<i>CRP mg/L</i>	<i>IL-6 ng/L</i>	<i>E-selectin ng/L</i>
Trans fatty acids (range; g/d)				
Q1 (0.61-1.87)	147	1.1 (0.9, 1.3)	1.8 (1.6, 2.0)	41.8 (39.0, 44.9)
Q2 (1.88-2.26)	145	1.3 (1.1, 1.6)	1.7 (1.5, 2.0)	41.9 (39.0, 45.0)
Q3 (2.27-2.64)	146	1.5 (1.3, 1.8)	1.8 (1.6, 2.0)	41.9 (39.0, 45.0)
Q4 (2.65-3.13)	146	1.7 (1.4, 2.0)	1.9 (1.7, 2.2)	45.1 (42.0, 48.4)
Q5 (3.14-7.58)	146	1.9 (1.6, 2.3)	2.1 (1.8, 2.3)	50.3 (46.8, 54.0)
P for trend*		<0.001	0.02	<0.001

\* P for trend of medians in each quintiles

# Schema of Potential Dose Responses and Time Courses for Altering Clinical Events of Physiologic Effects of Fish or Fish Oil Intake



# Inflammatory Markers and Daily Fish Consumption in 1,514 men (18 - 87 years) and 1,528 women (18 - 89 years) from the ATTICA study

	Fish Consumption				p Value
	No fish	<150 g/week	150–300 g/week	>300 g/week	
Participants (%)	319 (11%)	1,719 (56%)	745 (24%)	259 (9%)	—
CRP (mg/L)	2.7 ± 1.2	2.0 ± 1.1†	2.0 ± 2.1†	1.8 ± 1.1†	0.004
IL-6 (ng/L)	1.5 ± 0.5	1.3 ± 0.6‡	1.2 ± 1.1†	1.0 ± 0.3†	0.03
TNF-alfa (mg/dL)	5.3 ± 3	5.1 ± 2	4.7 ± 3†	4.2 ± 2†	<0.001
Amyloid A (mg/dL)	6.4 ± 4	5.9 ± 4	5.1 ± 4‡	4.6 ± 3†	0.004
WBC (.000)	6.8 ± 3	6.7 ± 4	6.5 ± 4‡	6.5 ± 3‡	0.04

# CRP concentration and plasma omega-3 quartiles in 1,400 Finnish men

	r	$\beta$	Serum n-3 fatty acids quartile <sup>a</sup>				P for trend
			1 (n = 348)	2 (n = 349)	3 (n = 349)	4 (n = 349)	
Total n-3 polyunsaturated fatty acids	-0.06						
Model 1		-0.18	1.22 (1.11–1.34)	1.26 (1.14–1.38)	1.21 (1.10–1.33)	1.07 (0.97–1.18)	0.03
Model 2		-0.21	1.23 (1.13–1.35)	1.27 (1.16–1.38)	1.18 (1.08–1.28)	1.08 (0.99–1.17)	0.01
EPA + DPA + DHA	-0.04						
Model 1		-0.09	1.24 (1.13–1.37)	1.18 (1.07–1.30)	1.25 (1.13–1.37)	1.08 (0.98–1.19)	0.07
Model 2		-0.14	1.28 (1.17–1.40)	1.19 (1.09–1.30)	1.21 (1.11–1.32)	1.08 (0.99–1.17)	0.01
EPA	-0.0003						
Model 1		0.02	1.19 (1.08–1.31)	1.24 (1.12–1.36)	1.15 (1.04–1.26)	1.17 (1.06–1.29)	0.60
Model 2		-0.05	1.23 (1.13–1.35)	1.25 (1.14–1.36)	1.13 (1.04–1.24)	1.13 (1.04–1.24)	0.10
DPA	-0.21						
Model 1		-0.96	1.65 (1.50–1.81)	1.18 (1.07–1.29)	1.05 (0.96–1.16)	0.97 (0.88–1.06)	<0.001
Model 2		-0.69	1.51 (1.39–1.65)	1.18 (1.09–1.29)	1.07 (0.98–1.17)	1.03 (0.95–1.13)	<0.001
DHA	-0.05						
Model 1		-0.13	1.17 (1.06–1.29)	1.28 (1.16–1.41)	1.25 (1.14–1.38)	1.06 (0.96–1.16)	0.13
Model 2		-0.16	1.21 (1.12–1.33)	1.24 (1.13–1.35)	1.22 (1.12–1.33)	1.08 (0.99–1.18)	0.05
ALA	-0.10						
Model 1		-0.41	1.42 (1.29–1.56)	1.14 (1.04–1.25)	1.15 (1.04–1.26)	1.07 (0.97–1.17)	<0.001
Model 2		-0.22	1.30 (1.19–1.42)	1.13 (1.03–1.23)	1.18 (1.08–1.29)	1.14 (1.04–1.25)	0.08

Reinders I et al., Eur J Clin Nutr 2012

# Biochemical Pathways of Arachidonic Acid ( $\omega$ -6) and Eicosapentenoic Acid ( $\omega$ -3)

LOX	LTs <sub>4</sub>	————→	platelet aggregation
		————→	vasoconstriction/inflammation
COX	TxA <sub>2</sub>	————→	platelet aggregation
		————→	vasoconstriction
	PGI <sub>2</sub>	————→	anti-aggregatory
		————→	vasodilatation

## Eicosapentenoic acid

LOX	LTs <sub>5</sub>	————→	red. platelet aggregation
		————→	red. vasoconstriction/inflammation
COX	TxA <sub>3</sub>	————→	red. platelet aggregation
		————→	red. vasoconstriction
	PGI <sub>3</sub>	————→	anti-aggregatory
		————→	vasodilatation

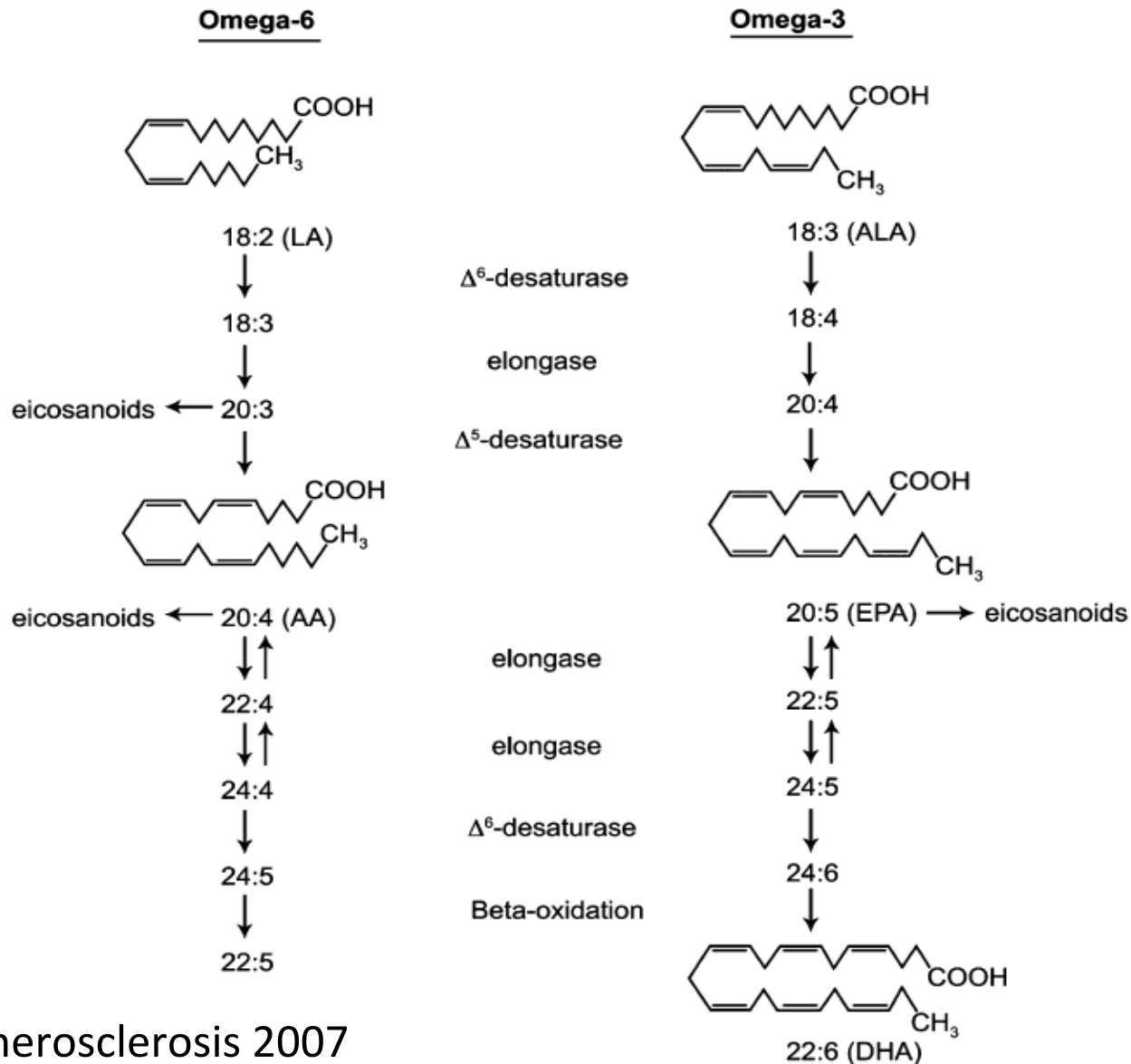
# Biochemical Pathways of Arachidonic Acid ( $\omega$ -6) and Eicosapentenoic Acid ( $\omega$ -3)

LOX	LTs <sub>4</sub>	→	platelet aggregation
		→	vasoconstriction/ <b>inflammation</b>
COX	TxA <sub>2</sub>	→	platelet aggregation
		→	vasoconstriction
	PGI <sub>2</sub>	→	anti-aggregatory
		→	vasodilatation

## Eicosapentenoic acid

LOX	LTs <sub>5</sub>	→	red. platelet aggregation
		→	<b>red.</b> vasoconstriction/ <b>inflammation</b>
COX	TxA <sub>3</sub>	→	red. platelet aggregation
		→	red. vasoconstriction
	PGI <sub>3</sub>	→	anti-aggregatory
		→	vasodilatation

# Common metabolic pathways of n-3 and n-6 fatty acids



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subsequent synthesis of pro-inflamr prostaglandin E<sub>2</sub> [PGE<sub>2</sub>], leukotriene l [TXA<sub>2</sub>]].<sup>7-10</sup> Elevated proinflammator could drive up other biomarkers of i leukin-6 [IL-6], tumor necrosis factor

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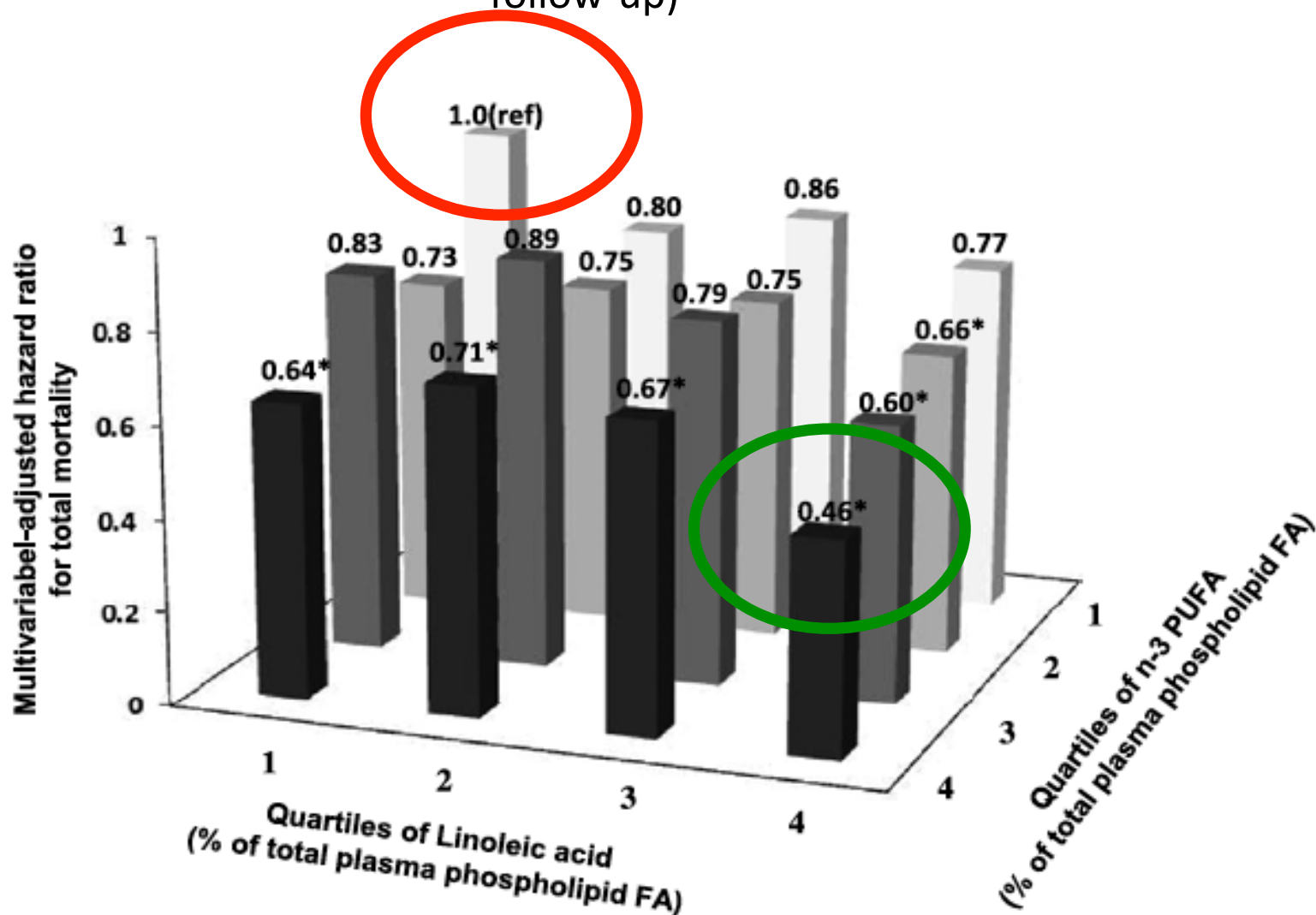
JOURNAL OF THE ACADEMY OF NUTRITIC

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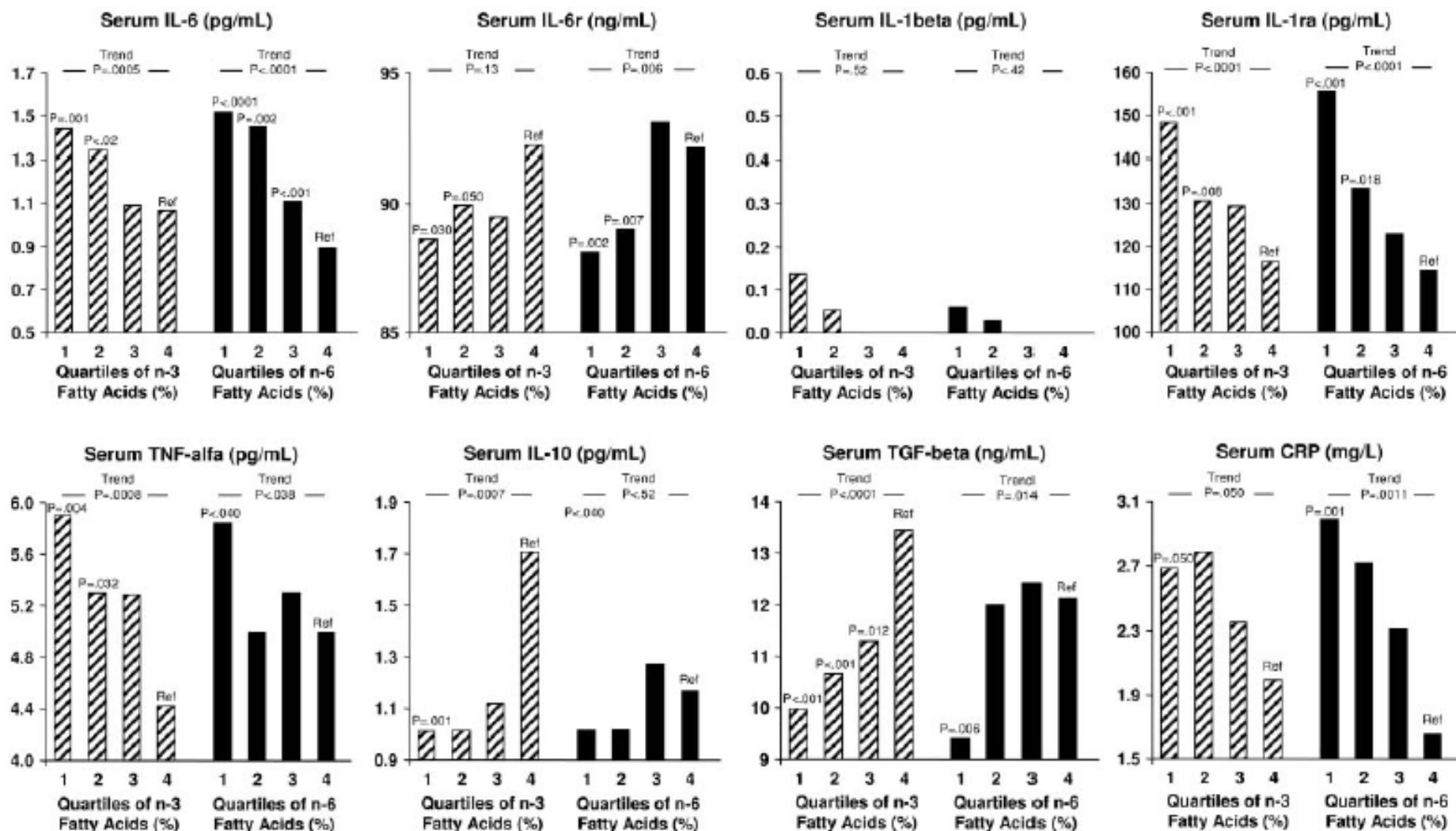
**We conclude that virtually no evidence is available from randomized, controlled intervention studies among healthy, noninfant human beings to show that addition of LA to the diet increases the concentration of inflammatory markers.**

# Omega-3, omega-6 and all-cause mortality

The Cardiovascular Health Study (2792 participants aged  $\geq 65$  years, 8 y follow-up)



# Plasma Polyunsaturated Fatty Acids and Circulating Inflammatory Markers in 1.123 free living subjects aged 20-98 (InCHIANTI study)

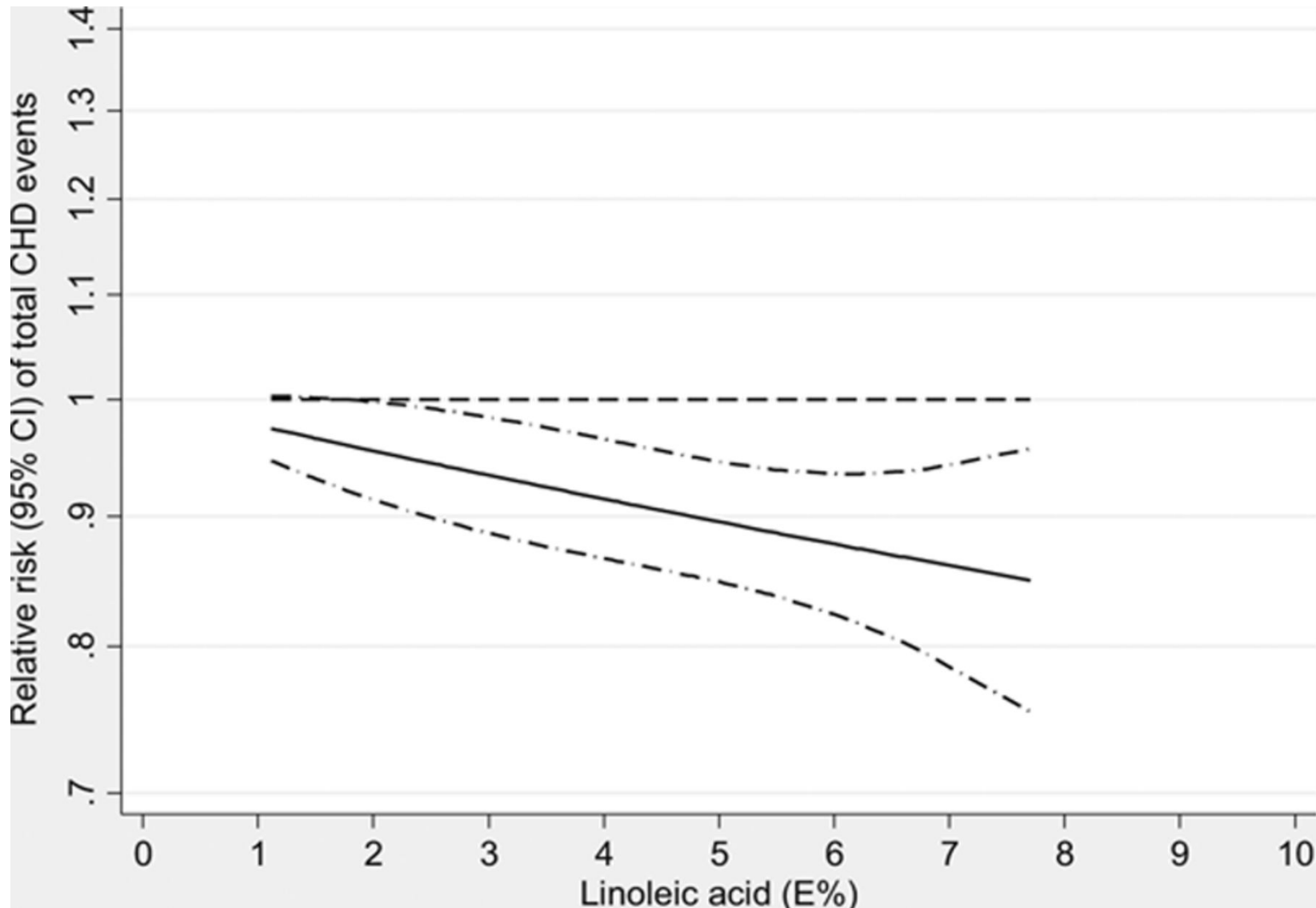


# Livelli ematici delle varie categorie di acidi grassi nei casi con IMA e nei controlli

	Cases	SD	Control s	SD	p
SFA	44.58	2.82	43.40	3.30	0.005
MUFA	28.90	2.81	28.06	3.46	0.05
PUFA	26.39	3.27	28.43	4.19	<0.0001
Total n-6	24.17	2.92	25.78	3.71	0.0004
Total n-3	2.26	0.68	2.66	0.85	0.0002
n-6/n-3	11.38	2.71	10.46	2.82	0.01

## Dietary omega-6 and CHD

Dose–response analysis for the curvilinear association between dietary intake of linoleic acid and total coronary heart disease events.

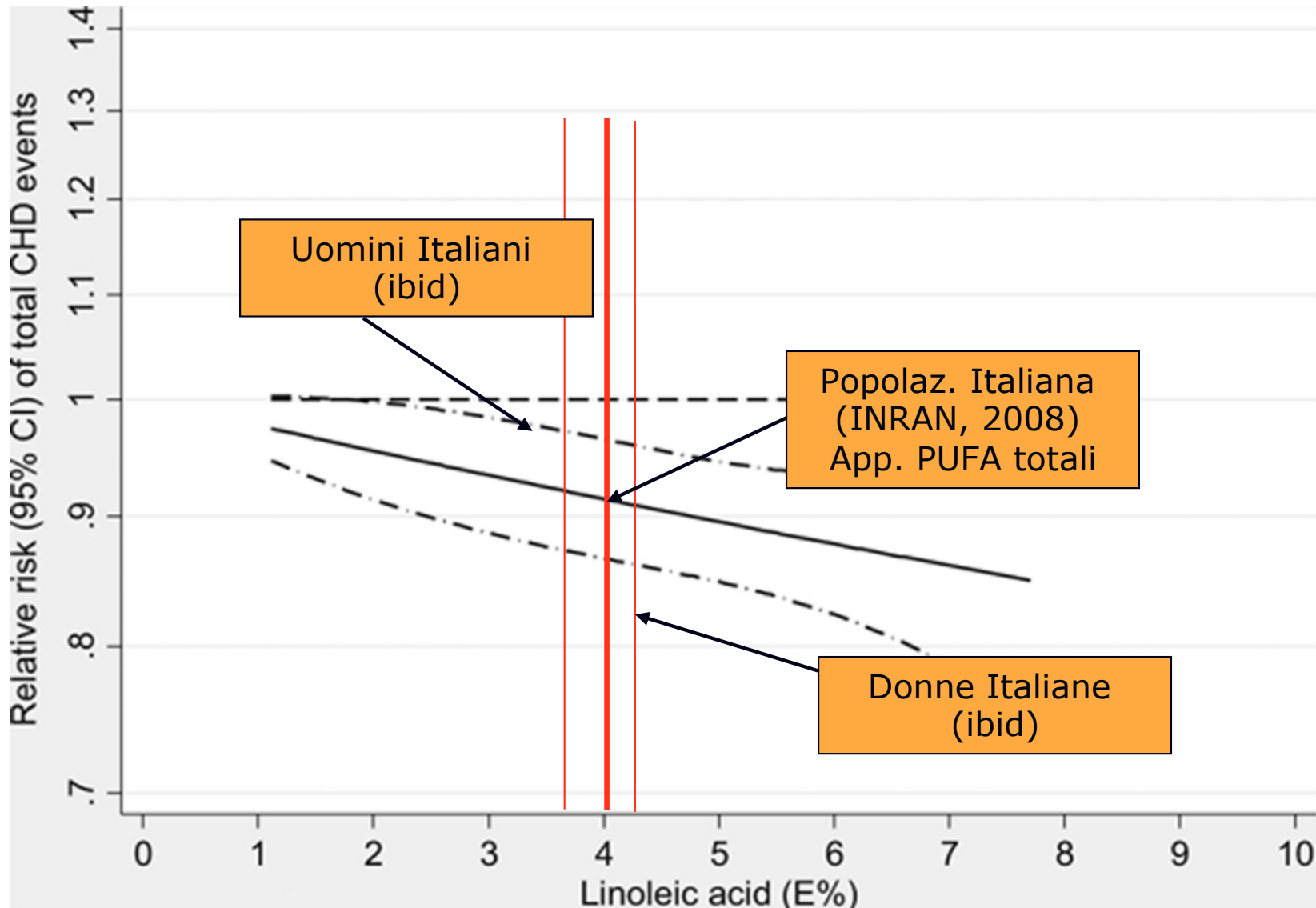


Maryam S. Farvid et al. Circulation.

2014;130:1568-1578

# Dietary omega-6 and CHD

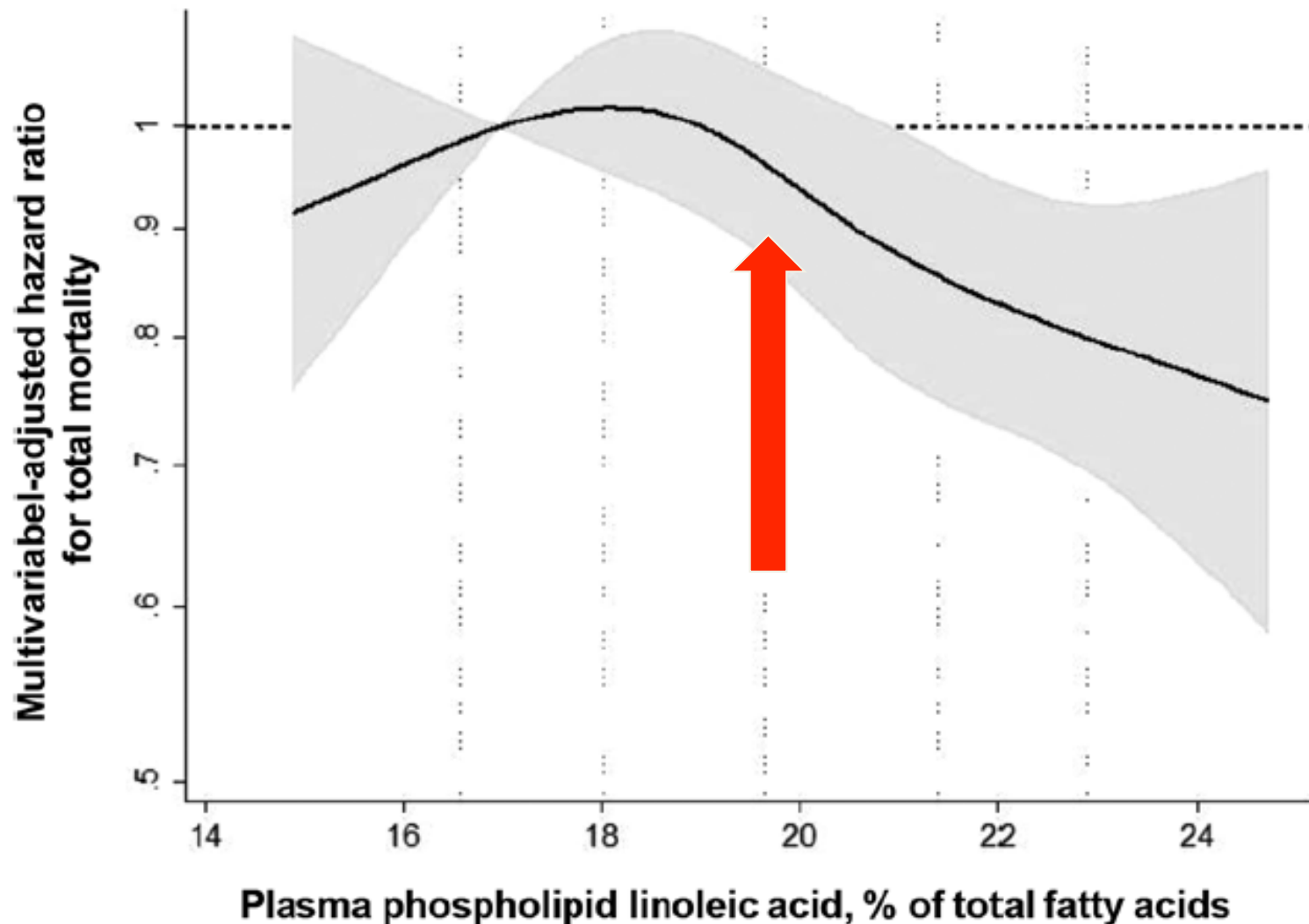
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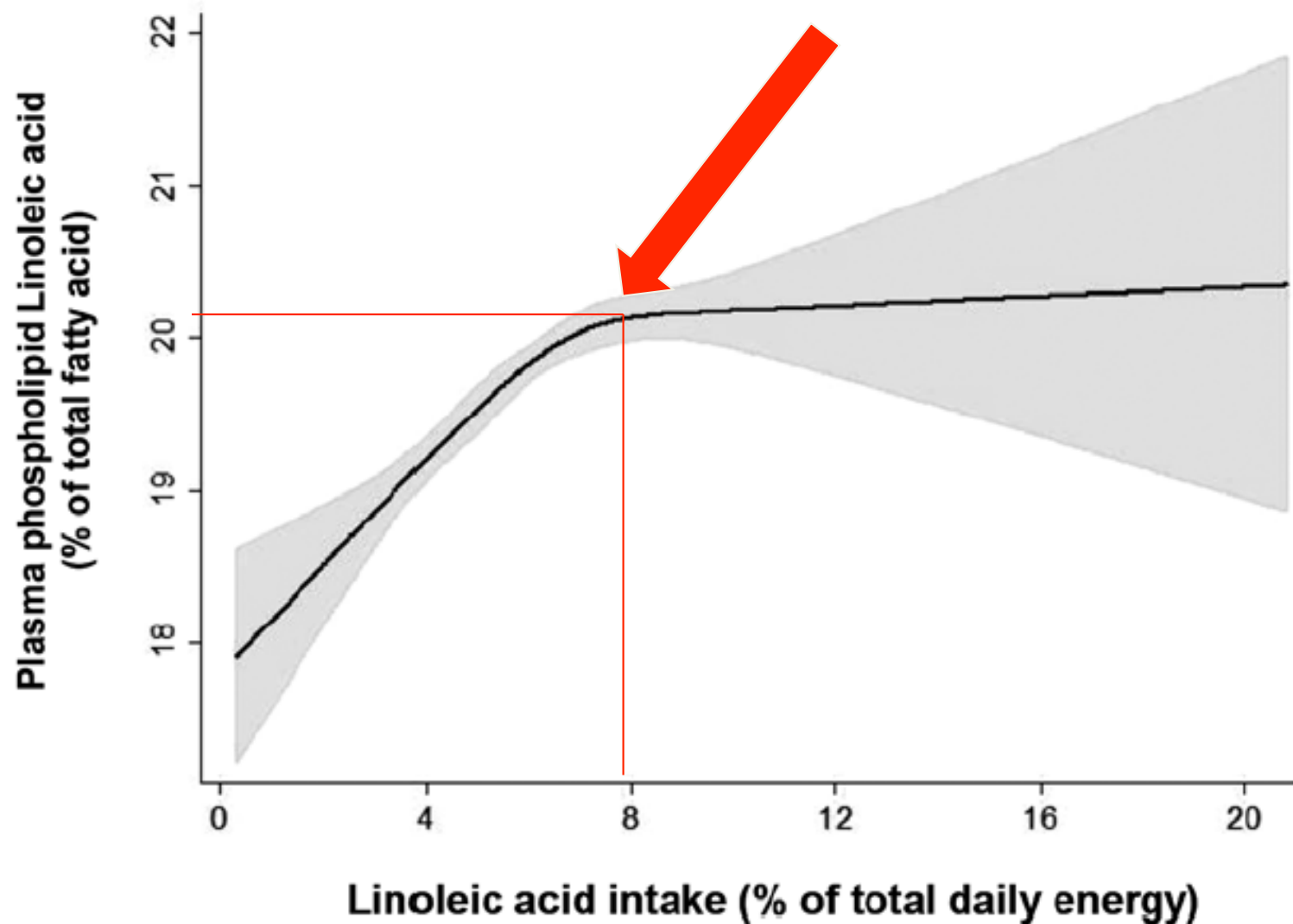
Maryam S. Farvid et al. Circulation.

2014;130:1568-1578

# Circulating omega-6 polyunsaturated fatty acids and total and cause-specific mortality: the Cardiovascular Health Study

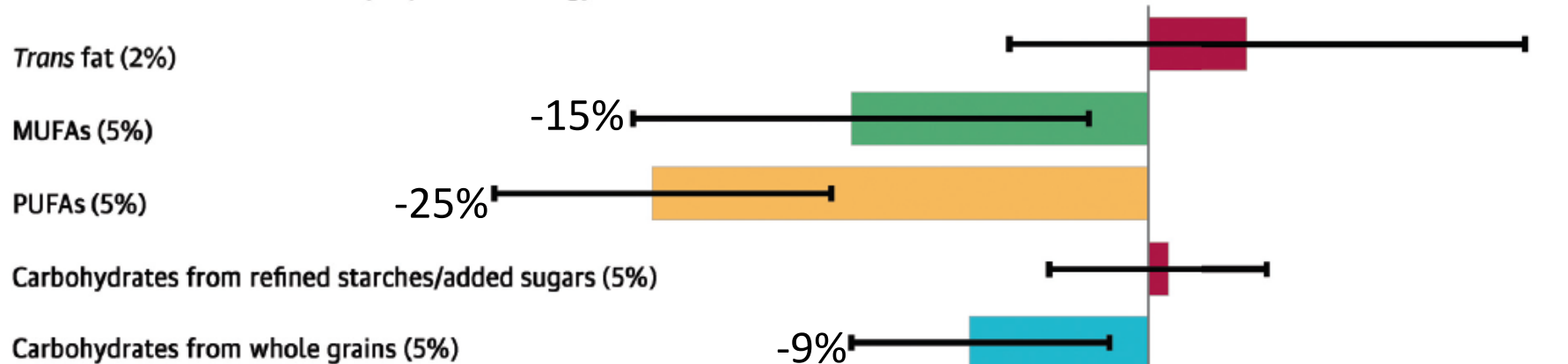


# Linoleic acid intake and Plasma PL Linoleic levels

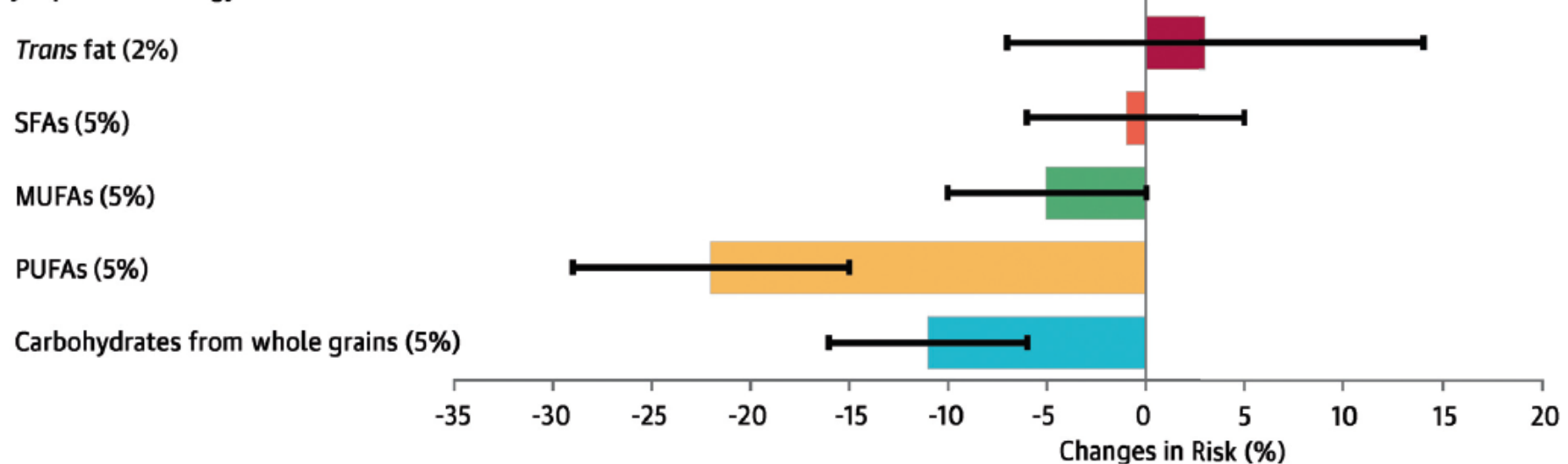


# Saturated fats compared with unsaturated fats and sources of carbohydrates in relation to risk of CHD

Isocaloric substitution of SFAs by equivalent energy from



Isocaloric substitution of carbohydrates from refined starches/added sugars by equivalent energy from



frequency of nut consumption was inversely associated with total and cause-specific mortality, independently of other predictors of death. (Funded by the National Institutes of Health and the International Tree Nut Council Nutrition Research Education Foundation.)

N ENGL J MED 369;21 NEJM.ORG NOVEMBER 21, 2013

The New England Journal of Medicine

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**N Engl J Med, Nov 21 2013**

# Total mortality, according to frequency of nut consumption

Variable	Frequency of Nut Consumption						P Value for Trend
	Never	Less Than Once per Week	Once per Week	Two to Four Times per Week	Five or Six Times per Week	Seven or More Times per Week	
Women							
No. of person-years	390,915	973,667	384,892	311,509	44,677	29,822	
No. of deaths	3343	7486	2663	2169	337	202	
Age-adjusted hazard ratio (95% CI)	1.00	0.69 (0.66–0.71)	0.59 (0.56–0.62)	0.54 (0.51–0.57)	0.60 (0.53–0.67)	0.67 (0.58–0.77)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.98)	0.88 (0.83–0.92)	0.85 (0.80–0.90)	0.88 (0.78–0.98)	0.79 (0.68–0.91)	<0.001
Men							
No. of person-years	130,848	228,338	217,025	237,617	49,416	40,127	
No. of deaths	1860	2801	2518	2843	671	536	
Age-adjusted hazard ratio (95% CI)	1.00	0.74 (0.70–0.79)	0.76 (0.71–0.80)	0.69 (0.65–0.73)	0.69 (0.63–0.76)	0.67 (0.61–0.74)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.85–0.96)	0.91 (0.86–0.97)	0.89 (0.83–0.94)	0.83 (0.76–0.91)	0.80 (0.73–0.88)	<0.001
Pooled†							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.90–0.96)	0.89 (0.86–0.93)	0.87 (0.83–0.90)	0.85 (0.79–0.91)	0.80 (0.73–0.86)	<0.001

Bao Y et al, N Engl J Med, Nov 21 2013

# Cause specific mortality, according to frequency of nut consumption

Hazard Ratio (95% CI)	Hazard Ratio (95% CI)	Hazard Ratio (95% CI)
<p><b>Figure 1. Hazard Ratios for Death from Any Cause and from Specific Causes, According to Frequency of Nut Consumption and Type</b></p> <p>Multivariate hazard ratios for death among study participants who consumed nuts two or more times per week versus those who consumed nuts were adjusted for age; race; body-mass index; level of physical activity; status with regard to smoking, whether examination was performed for screening purposes, current multivitamin use, and current aspirin use; status with regard to a family history of diabetes mellitus, myocardial infarction, or cancer; status with regard to a history of diabetes mellitus, hypertension, or hypercholesterolemia; intake of total energy, alcohol, red or processed meat, fruits, and vegetables; and, for women, menopausal status and hormone therapy. For further details of these variables, see Figure S1 in the Supplementary Appendix. Results were pooled with the use of the random-effects model. <math>P &gt; 0.05</math> for heterogeneity between women and men in all categories of nut consumption. The risk estimates for other categories of nut consumption are shown in Table S8 in the Supplementary Appendix. Horizontal lines represent 95% confidence intervals.</p>		

with no nut consumption, the pooled multivariate-adjusted hazard ratios for death were 0.88 (95% CI, 0.84 to 0.93) for peanuts and 0.83 (95% CI, 0.79 to 0.88) for tree nuts.

In analyses stratified by other potential factors for death, the inverse association between nut consumption and total mortality persisted in all subgroups (Fig. 2, and Table 1).

2006

N ENGL J MED 369;21 NEJM.ORG NOVEMBER 21, 2013

The New England Journal of Medicine

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# Energy, fatty acid, phenolic, and sterol composition of an average portion of nuts

Nut (28 g)	Energy	Fat	SFA	MUFA	PUFA	LA	ALA	TPs	PSs	Folate	Vitamin E
	<i>kcal</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>mg</i> GAE	<i>mg</i>	<i>μg</i> DFE	<i>mg</i>
Almonds	162	14.2	1.1	9.0	3.4	3.4	0.0	117	33.6	14	7.4
Cashews	154	13.0	2.6	7.6	2.2	2.2	0.0	76	44.2	7	0.3
Hazelnuts	176	17.0	1.3	12.8	2.2	2.2	0.0	82	26.2	32	4.3
Macadamias	201	21.2	3.4	16.5	0.4	0.4	0.1	45	32.5	3	0.2
Pecans	193	20.2	1.7	11.4	6.0	5.8	0.3	464	28.6	6	0.4
Pistachios	156	12.4	1.5	6.5	3.8	3.7	0.1	565	59.9	14	0.7
Walnuts	183	18.3	1.7	2.5	13.2	10.7	2.5	436	20.2	28	0.2
Peanuts	149	13.8	1.9	6.8	4.4	4.4	0.0	117	61.6	68	2.4

<sup>1</sup> Values presented are for raw nuts. Data are from reference 16. ALA,  $\alpha$ -linolenic acid; DFE, dietary folate equivalents; GAE, gallic acid equivalents; LA, linoleic acid; PS, plant sterol; TP, total phenol.

Pribis P et al, Am J Clin Nutr 2014

# Energy, fatty acid, phenolic, and sterol composition of an average portion of nuts

Nut (28 g)	Energy	Fat	SFA	MUFA	PUFA	LA	ALA	TPs	PSs	Folate	Vitamin E
	<i>kcal</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>g</i>	<i>mg</i> GAE	<i>mg</i>	<i>μg</i> DFE	<i>mg</i>
Almonds	162	14.2	1.1	9.0	3.4	3.4	0.0	117	33.6	14	7.4
Cashews	154	13.0	2.6	7.6	2.2	2.2	0.0	76	44.2	7	0.3
Hazelnuts	176	17.0	1.3	12.8	2.2	2.2	0.0	82	26.2	32	4.3
Macadamias	201	21.2	3.4	16.5	0.4	0.4	0.1	45	32.5	3	0.2
Pecans	193	20.2	1.7	11.4	6.0	5.8	0.3	464	28.6	6	0.4
Pistachios	156	12.4	1.5	6.5	3.8	3.7	0.1	565	59.9	14	0.7
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<sup>1</sup> Values presented are for raw nuts. Data are from reference 16. ALA,  $\alpha$ -linolenic acid; DFE, dietary folate equivalents; GAE, gallic acid equivalents; LA, linoleic acid; PS, plant sterol; TP, total phenol.

Pribis P et al, Am J Clin Nutr 2014

# Weight Watchers

- Successful lifetime member (successful program completer)
- Low-calorie, exchange diet; clients prepare own meals
- “Get Moving” booklet distributed
- Behavioral weight control methods
- Group sessions, weekly meetings

RESEARCH ARTICLE

Open Access

# Weight Watchers on prescription: An observational study of weight change among adults referred to Weight Watchers by the NHS

Amy L Ahern<sup>†</sup>, Ashley D Olson<sup>†</sup>, Louise M Aston<sup>†</sup> and Susan A Jebb<sup>\*†</sup>

## Method:

Data was obtained from the WW NHS Referral Scheme database for 29,326 referral courses started after 2nd April 2007 and ending before 6th October 2009 [90% female; median age 49 years (IQR 38 - 61 years); median BMI 35.1 kg/m<sup>2</sup> (IQR 31.8 - 39.5 kg/m<sup>2</sup>).

Participants received vouchers (funded by the PCT following referral by a healthcare professional) to attend 12 WW meetings. Body weight was measured at WW meetings and relayed to the central database.

## Results:

**Median weight change for all referrals was -2.8 kg** [IQR -5.9 - -0.7 kg] representing -3.1% initial weight.

33% of all courses resulted in loss of  $\geq 5\%$  initial weight. 54% of courses were completed. **Median weight change for those completing a first course was -5.4 kg** [IQR -7.8 - -3.1 kg] or -5.6% of initial weight.

57% lost  $\geq 5\%$  initial weight.

**Conclusions: A third of all patients who were referred to WW through the WW NHS Referral Scheme and started a 12 session course achieved  $\geq 5\%$  weight loss, which is usually associated with clinical benefits.**

# Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction: A Randomized Trial

Michael L. Dansinger; Joi Augustin Gleason; John L. Griffith; et al.

*JAMA*. 2005;293(1):43-53 (doi:10.1001/jama.293.1.43)

## Objective

To assess adherence rates and the effectiveness of 4 popular diets (Atkins, Zone, Weight Watchers, and Ornish) for weight loss and cardiac risk factor reduction.

## Design, Setting, and Participants

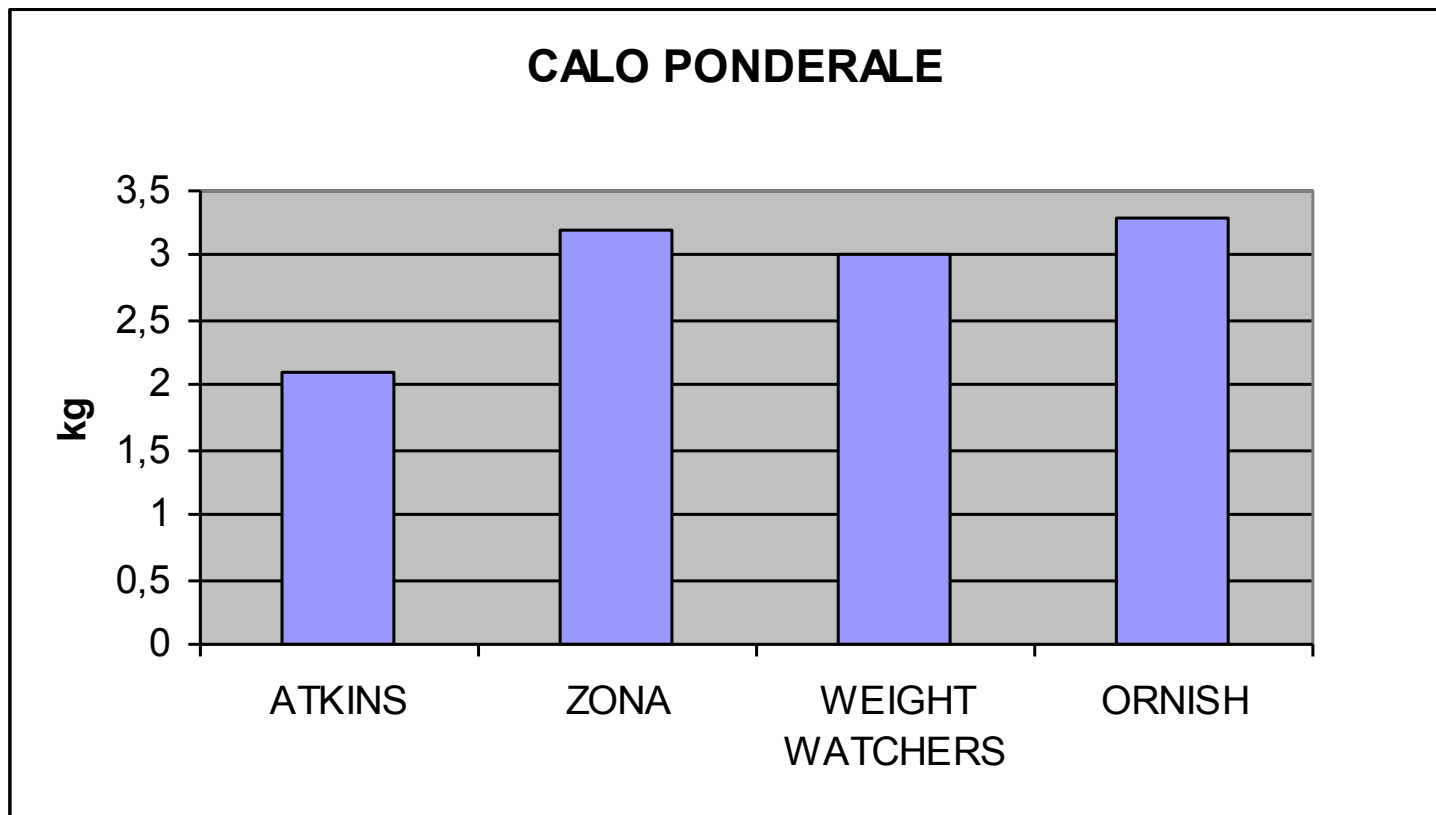
A single-center randomized trial at an academic medical center in Boston, Mass, of overweight or obese (body mass index: mean, 35; range, 27-42) adults aged 22 to 72 years with known hypertension, dyslipidemia, or fasting hyperglycemia. Participants were enrolled starting July 18, 2000, and randomized to 4 popular diet groups until January 24, 2002.

## Intervention

A total of 160 participants were randomly assigned to either Atkins (carbohydrate restriction, n=40), Zone (macronutrient balance, n=40), Weight Watchers (calorie restriction, n=40), or Ornish (fat restriction, n=40) diet groups. After 2 months of maximum effort, participants selected their own levels of dietary adherence.

# DIETA ATKINS, ORNISH, WEIGHT WATCHERS E DIETA ZONA

160 PARTECIPANTI, BMI MEDIO 35, DURATA 1 ANNO



Michael L. Dansinger, MD; Joi Augustin Gleason, MS, RD; John L. Griffith, PhD; Harry P. Selker, MD, MSPH; Ernst J. Schaefer, MD Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction A Randomized Trial

**JAMA. 2005**;293:43-53.

# Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction: A Randomized Trial

Michael L. Dansinger; Joi Augustin Gleason; John L. Griffith; et al.

*JAMA*. 2005;293(1):43-53 (doi:10.1001/jama.293.1.43)

Variable	Diet Group, Mean Change (SD)			
	Atkins (n = 40)	Zone (n = 40)	Weight Watchers (n = 40)	Ornish (n = 40)
Weight, kg				
2 mo	-4.7 (2.9)†	-4.6 (3.4)†	-4.2 (3.8)†	-5.0 (3.0)†
6 mo	-5.8 (5.3)†	-5.2 (6.4)†	-4.7 (6.1)†	-6.7 (8.0)†
12 mo	-3.9 (6.0)†	-4.9 (6.9)†	-4.6 (5.4)†	-6.6 (9.3)†
BMI				
2 mo	-1.6 (1.0)†	-1.6 (1.2)†	-1.5 (1.3)†	-1.7 (1.0)†
6 mo	-2.0 (1.9)†	-1.7 (2.2)†	-1.7 (2.1)†	-2.4 (2.7)†
12 mo	-1.4 (2.1)†	-1.6 (2.3)†	-1.7 (1.9)†	-2.3 (3.2)†
Waist circumference, cm				
2 mo	-4.3 (2.9)†	-3.6 (3.5)†	-4.2 (4.3)†	-3.7 (3.2)†
6 mo	-5.9 (5.3)†	-4.4 (6.0)†	-4.7 (6.4)†	-4.8 (6.5)†
12 mo	-4.7 (5.4)†	-4.5 (6.0)†	-5.0 (6.0)†	-4.3 (7.2)‡
Total cholesterol, mg/dL				
2 mo	-2.3 (27)	-22.3 (26)†	-17.9 (29)†	-26.2 (30)†
6 mo	-1.6 (24)	-9.6 (23)‡	-10.8 (24)‡	-21.6 (33)†
12 mo	-8.1 (31)	-15.6 (43)	-12.6 (28)‡	-21.5 (26)†
LDL cholesterol, mg/dL				
2 mo	1.6 (20)	-11.7 (29)‡	-14.7 (27)†	-22.7 (27)†
6 mo	-4.9 (18)	-10.3 (26)	-9.4 (27)	-20.0 (28)†
12 mo	-13.5 (32)	-18.1 (41)‡	-14.2 (32)‡	-25.2 (20)†
HDL cholesterol, mg/dL				
2 mo	4.2 (6.7)†	2.2 (8.4)	-0.3 (13.0)	-4.9 (8.2)†
6 mo	7.0 (7.4)†	5.5 (12.7)‡	3.2 (10.3)	-2.8 (9.6)
12 mo	6.4 (8.8)†	5.1 (12.5)‡	5.2 (12.0)‡	-1.1 (9.3)
Total/HDL cholesterol ratio				
2 mo	-0.47 (0.71)†	-0.80 (1.12)†	-0.60 (2.03)	-0.24 (1.19)
6 mo	-0.70 (0.80)†	-0.71 (1.08)†	-0.80 (1.79)‡	-0.48 (1.46)
12 mo	-0.75 (0.81)†	-0.79 (1.21)†	-1.07 (1.98)‡	-0.59 (1.30)
LDL/HDL cholesterol ratio				
2 mo	-0.23 (0.63)‡	-0.40 (0.86)‡	-0.50 (1.70)	-0.29 (0.77)
6 mo	-0.55 (0.66)†	-0.49 (0.85)‡	-0.63 (1.56)‡	-0.41 (0.93)
12 mo	-0.73 (1.01)†	-0.61 (0.94)†	-0.85 (1.65)‡	-0.62 (0.87)†

# Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction: A Randomized Trial

Michael L. Dansinger; Joi Augustin Gleason; John L. Griffith; et al.

*JAMA*. 2005;293(1):43-53 (doi:10.1001/jama.293.1.43)

Variable	Diet Group, Mean Change (SD)			
	Atkins (n = 40)	Zone (n = 40)	Weight Watchers (n = 40)	Ornish (n = 40)
Triglycerides, mg/dL				
2 mo	-42 (72)†	-66 (112)†	-11 (43)	-1 (90)
6 mo	-19 (53)	-23 (70)	-2 (64)	-4 (99)
12 mo	-2 (117)	4 (183)	-20 (75)	11 (53)
Systolic BP, mm Hg				
2 mo	-5.4 (15)†	-4.9 (15)	-5.9 (14)‡	-1.8 (10)
6 mo	-6.7 (12)†	-6.1 (17)	-6.4 (16)‡	-1.2 (12)
12 mo	0.3 (17)	2.1 (18)	-4.1 (16)	0.9 (11)
Diastolic BP, mm Hg				
2 mo	-5.5 (9.0)†	-5.8 (8.0)†	-3.7 (8.0)‡	-3.4 (8.1)‡
6 mo	-7.3 (7.4)†	-6.2 (10.8)†	-2.4 (7.9)	-0.5 (8.6)
12 mo	-2.6 (10.3)	-1.8 (11.8)	-2.6 (7.8)	0.4 (6.6)
Glucose, mg/dL				
2 mo	-12.7 (34)‡	-10.8 (31)	-6.6 (26)	-4.2 (27)
6 mo	-14.1 (34)	-12.6 (40)	-5.0 (25)	-9.6 (34)
12 mo	2.5 (42)	-6.4 (22)	-7.1 (23)	-8.2 (43)
Insulin, µU/mL				
2 mo	-6.5 (15)‡	-8.6 (13)†	-2.2 (7)	-2.3 (15)
6 mo	-4.1 (15)	-3.0 (20)	-3.4 (8)‡	-0.7 (25)
12 mo	-2.3 (9)	-8.5 (17)‡	-4.1 (7)†	-5.9 (8)‡
C-reactive protein, mg/L				
2 mo	-0.42 (1.8)	-0.27 (2.1)	-0.05 (1.3)	-0.84 (3.0)
6 mo	-1.29 (2.6)‡	-0.65 (2.3)	-0.67 (1.7)‡	-1.33 (3.8)
12 mo	-1.33 (2.8)‡	-0.88 (2.6)	-0.88 (1.6)†	-1.76 (3.1)‡

# **Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction: A Randomized Trial**

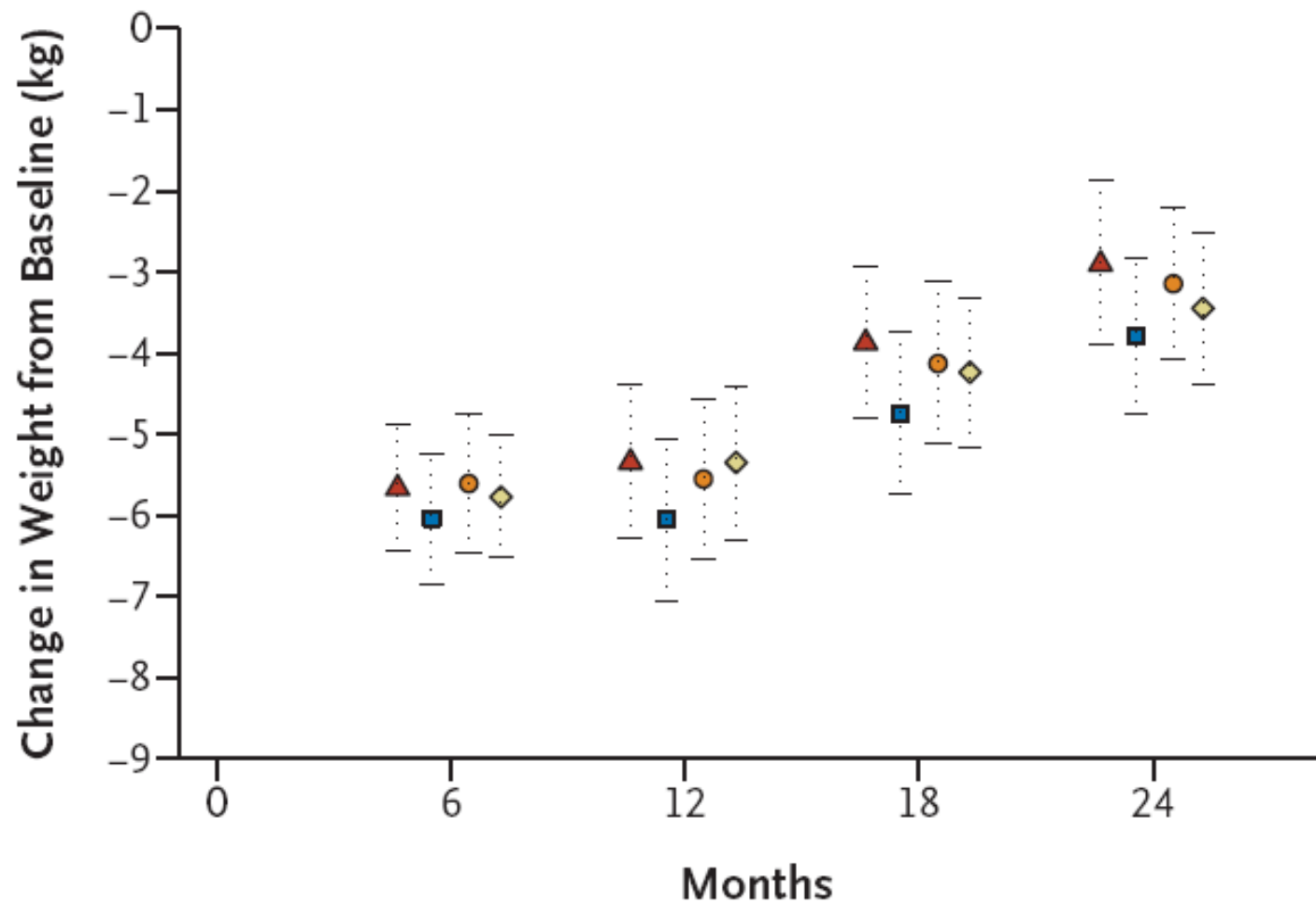
Michael L. Dansinger; Joi Augustin Gleason; John L. Griffith; et al.

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## **Conclusion**

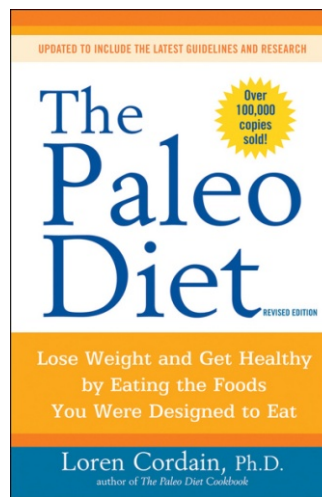
**Each popular diet modestly reduced body weight and several cardiac risk factors at 1 year. Overall dietary adherence rates were low, although increased adherence was associated with greater weight loss and cardiac risk factor reductions for each diet group.**

**A All Participants**



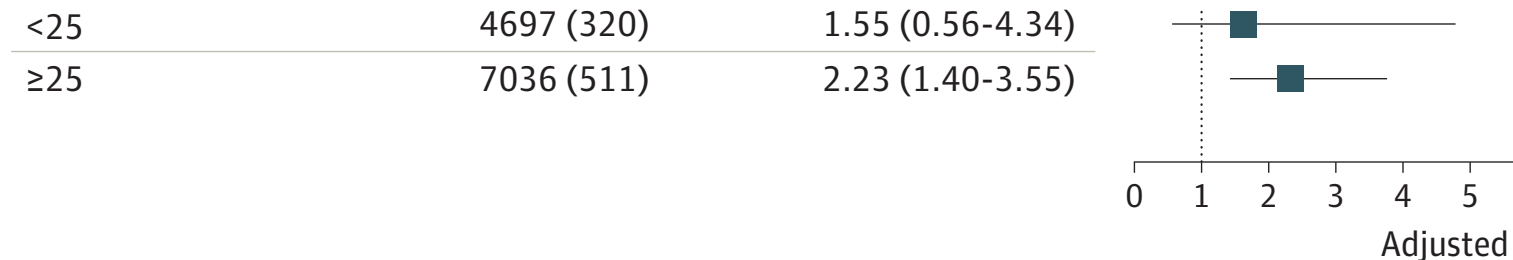
Carbohydrate/Protein/Fat: ▲ 65/15/20% ■ 55/25/20% ● 45/15/40% ◆ 35/25/40%

AHA Protein Criteria	Atkins <sup>29</sup>	Zone <sup>30</sup>	Protein Power <sup>31</sup>	Sugar Busters <sup>32</sup>	Stillman <sup>28</sup>
Total protein is not excessive (average 50–100 g/d, proportional 15–20% kcal/day to carbohydrates and fat)	No.	No.	No.	No.	No.
	1st 2 weeks = 125 g/d (36%)	127 g/d (34%)	91 g/d (26%)	71 g/d (27%)	162 g/d (64%)
	Ongoing weight loss = 161 g/d (35%)				
	Maintenance = 110 g/d (24%)				
Carbohydrates are not omitted or severely restricted. Minimum of 100 g/d	No.	Yes.	No.	Yes.	No.
	1st 2 weeks = 28 g/d (5%)	135 g/d (36%)	56 g/d (16%)	114 g/d (52%)	7 g/d (3%)
	Ongoing weight loss = 33 g/d				
	Maintenance = Yes 128 g/d				
Total fat (30%) and saturated fat (10%) are not excessive	No.	Yes.	No.	Yes.	No.
	1st 2 weeks = 53% fat, 26% saturated fat per day	29% total calories, 4% saturated fat per day	54% total fat, 18% saturated fat per day	21% total calories, 4% saturated fat per day	33% total calories, 13% saturated fat per day
Total diet can be safely implemented over the long term by providing nutrient adequacy and support a healthful eating plan to prevent increases in disease risk	No.	No.	No.	No.	No.
	Limited food choices. Diet low in fiber, vitamin D, thiamine, pantothenic acid, copper, magnesium, manganese, potassium, calcium. * High in total fat and saturated fat	Food must be eaten in required proportions of protein, fat, carbohydrates. Menus not appealing, vegetable portions very large. Low in copper *	Not practical for long term. Rigid rules. Diet low in calcium, fiber, pantothenic acid, copper, manganese. * High in total fat and saturated fat	Eliminates many carbohydrate foods. Discourages eating fruit with meals. Low in calcium, vitamin D, vitamin E, pantothenic acid, copper, potassium *	Eliminates many foods. Diet low in fiber, vitamin A, thiamine, vitamin C, vitamin D, folate, pantothenic acid, calcium, copper, magnesium, manganese, potassium *



- Higher protein intake (15 % En vs 19-35 % found in hunter-gatherer diets).
- Lower carbohydrate intake and lower glycemic index (fresh fruits and vegetables represent the main carbohydrate source and will provide for 35-45 % of your daily calories).
- Higher fiber intake
- Moderate to higher fat intake (MUFA and PUFA)
- Higher potassium and lower sodium intake
- Net dietary alkaline (fruits and veggies) load that balances dietary acid (meats, fish, grains, legumes, cheese, and salt)
- Higher intake of vitamins, minerals, antioxidants, and plant phytochemicals.

# Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults



take was moderately and negatively correlated with total grain, vegetable, meat, and variety components ( $r = -0.06, -0.20, -0.12$ , and  $-0.19$ , respectively;  $P < .05$ ) and moderately and positively correlated with total fat and cholesterol intake ( $r = 0.17$  and  $0.08$ ;  $P < .05$ ). However, HRs remained largely unchanged after adjusting each component of the HEI (Supplement [eTable between sugar mortality, w comparing ings/wk (36c ing/wk or le

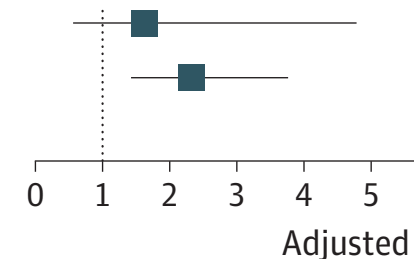
E6 JAMA Internal Medicine Published online February 3, 2014

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# Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults

<25	4697 (320)	1.55 (0.56-4.34)
≥25	7036 (511)	2.23 (1.40-3.55)



take was moderately and inversely associated with mortality (HR = 0.85; 95% CI, 0.70-1.04;  $P = .02$ ) and mortality (HR = 0.85; 95% CI, 0.70-1.04;  $P = .02$ ) after adjusting for vegetable, meat, and whole grain intake. Higher added sugar intake was also inversely associated with mortality (HR = 0.85; 95% CI, 0.70-1.04;  $P = .02$ ) and mortality (HR = 0.85; 95% CI, 0.70-1.04;  $P = .02$ ) after adjusting for total fat and cholesterol intake ( $r = 0.17$  and  $0.08$ ;  $P < .05$ ). However, HRs remained largely unchanged after adjusting for energy intake (Supplemental Table 1, [http://archinte.jamanetwork.com](#)).

**15%, 2400 kcal: 90 g sucrose**  
**15%, 2000 kcal, 75 g sucrose**

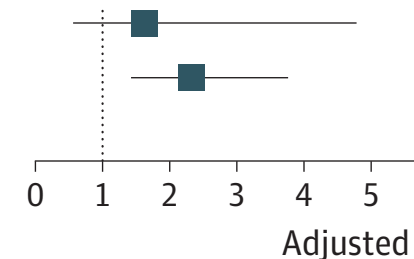
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# Carbohydrates and Health

Scientific Advisory Committee on Nutrition

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2015

## Sugars and sugars-sweetened foods and beverages

Prospective cohort studies indicate that sugars or sugars-sweetened beverage intake is not associated with the incidence of colo-rectal cancer. There is no association between the incidence of type 2 diabetes mellitus and total or individual sugars intake, but a greater risk is associated with a higher intake of sugars-sweetened beverages. There is insufficient evidence to enable conclusions to be drawn in relation to cardiovascular disease endpoints. Prospective cohort studies, conducted in children and adolescents, indicate that higher consumption (i.e. the amount) of sugars, sugars-containing foods and sugars-sweetened beverages is associated with a greater risk of dental caries in the deciduous and

# La dieta senza glutine

- Unica terapia ad oggi della celiachia, è stata adottata anche da chi vuole perdere peso
- Non vi sono evidenze a supporto di tale effetto
- Pro
  - Limita l'assunzione di carboidrati e incoraggia il consumo di frutta e verdura
- Contro
  - Si associa a possibili carenze (fibra, ferro, folati)
  - E' difficile da seguire nel tempo
  - Prevede l'uso di alimenti equivalenti dal punto di vista energetico a quelli tradizionali ma più costosi
  - La diffusione di questo regime alimentare potrebbe contribuire a mascherare diagnosi di celiachia

# La dieta del pompelmo(1000kcal/d)

- Breakfast: Two boiled eggs, two slices of bacon, and ½ grapefruit or 8 ounces of grapefruit juice.
- Lunch: Salad with dressing, any meat in any amount, and ½ grapefruit or 8 ounces of grapefruit juice.
- Dinner: Any kind of meat prepared any way, salad or red and green vegetables, coffee or tea, and ½ grapefruit or 8 ounces of grapefruit juice.
- Bedtime Snack: 8 ounces of skim milk.



Fortemente ipocalorica, ipoglicidica, iperproteica (VLC, low carb, high prot)

Scopo: perdere peso rapidamente (fino a 3-4 kg in 12 giorni) sfruttando gli enzimi ‘bruciagrassi’ contenuti nel pompelmo

## A favore

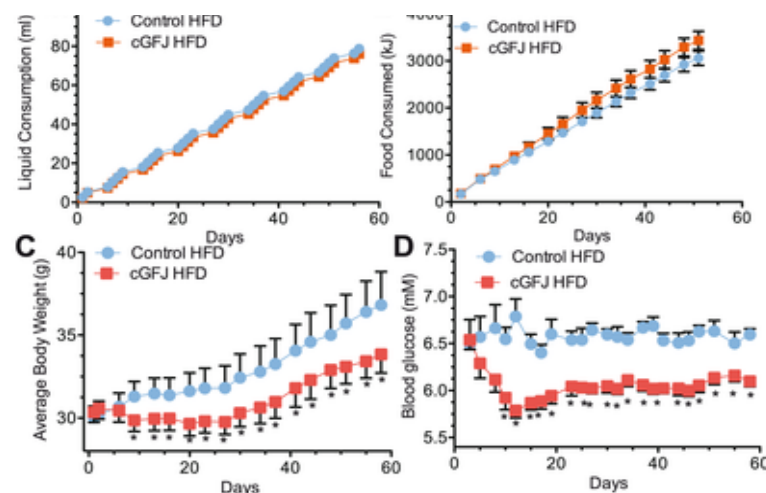
- Risultati incoraggianti in breve tempo
- Il pompelmo è ricco di vitamina C

## Contro

- Non esistono evidenze scientifiche a supporto dell’effetto ‘bruciagrassi’ del pompelmo
- Perdita di liquidi piuttosto che di massa grassa (rapida ripresa dei chili persi)
- Non è previsto il controllo del peso nel tempo
- Monotonia ed eliminazione di molti alimenti
- Interazioni pompelmo-farmaci (liveli di CYP3A4 ridotti del 47% a 2 ore). Es. Statine e antistaminici.

# Consumption of Clarified Grapefruit Juice Ameliorates High-Fat Diet Induced Insulin Resistance and Weight Gain in Mice

Rostislav Chudnovskiy, Airlia Thompson, Kevin Tharp, Marc Hellerstein, Joseph L. Napoli\*, Andreas Stahl\*



Mice were fed a HFD for 6 wk starting at 4 wk old. Animals were then divided randomly into control and GFJ groups (day 0) and HFD feeding was continued an additional 56 d: A) cumulative liquid consumption; B) cumulative food consumption; C) total body weights; D) blood glucose.

Mice fed a high-fat diet and cGFJ experienced a 18.4% decrease in weight, a 13–17% decrease in fasting blood glucose, a three-fold decrease in fasting serum insulin, and a 38% decrease in liver triacylglycerol values, compared to controls.



Chudnovskiy R, Thompson A, Tharp K, Hellerstein M, et al. (2014) Consumption of Clarified Grapefruit Juice Ameliorates High-Fat Diet Induced Insulin Resistance and Weight Gain in Mice. PLoS ONE 9(10): e108408. doi:10.1371/journal.pone.0108408

# Detox diets

- Detox diets are marketing myth rather than nutritional reality. They sound like a great concept and it would be fabulous if they really delivered all that they promised! Unfortunately, many of the claims made by detox diet promoters are exaggerated, not based on robust science and any benefit short lived.
- While they may encourage some positive habits like eating more fruit and vegetables, it's best to enjoy a healthy, varied diet and active lifestyle rather than following a detox diet.

# The blood type diet

- **Premise**

The foods you eat react chemically with your blood type. If you follow a diet designed for your blood type, your body will digest food more efficiently. You'll lose weight, have more energy, and help prevent disease.

- **Does It Work?**

- **What You Can Eat**

**Type O blood:** A high-protein diet heavy on lean meat, poultry, fish, and vegetables, and light on grains, beans, and dairy.

**Type A blood:** A meat-free diet based on fruits and vegetables, beans and legumes, and whole grains -- ideally, organic and fresh

**Type B blood:** Avoid corn, wheat, buckwheat, lentils, tomatoes, peanuts, and sesame seeds. Chicken is also problematic. Eating green vegetables, eggs, certain meats, and low-fat dairy is encouraged.

**Type AB blood:** Foods to focus on include tofu, seafood, dairy, and green vegetables. Avoid caffeine, alcohol, and smoked or cured meats.

- **Cons**

There haven't been any studies directly comparing weight loss and health in people who were on the diet against those who weren't.

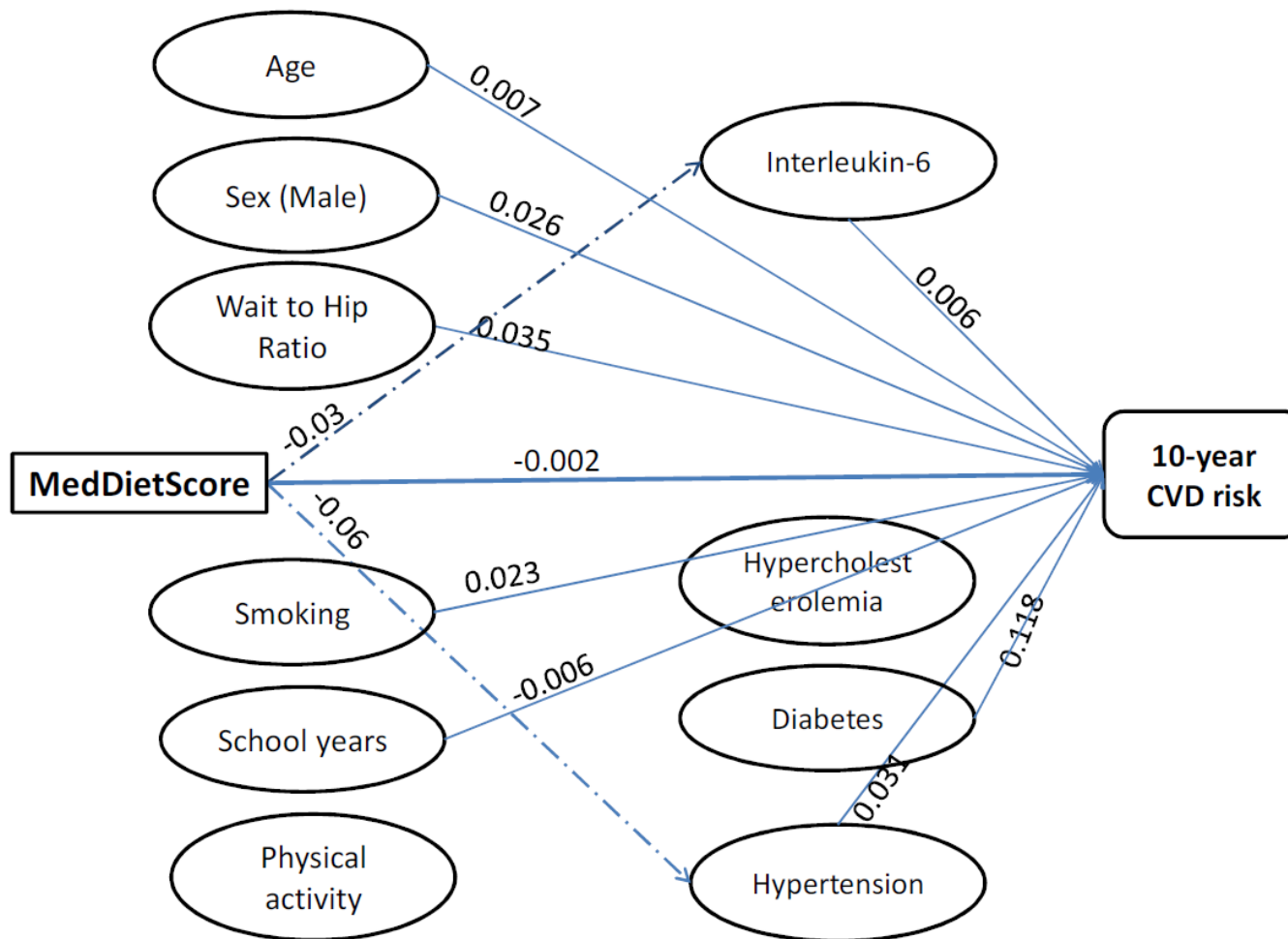
Only one study has evaluated this kind of diet. It found that people with certain blood types got more of a cholesterol-lowering benefit from eating a low-fat diet.

# The ATTICA study

- Mediterranean diet decreased 10-year CVD risk in the entire cohort, as well among smokers, sedentary and obese subjects
- Mediterranean diet decreased CRP and IL-6 levels, but still had a direct effect on CVD risk
- The level of adherence to the Mediterranean diet was modest

Panagiotakos D et al., the ATTICA Study group, Exploring the path of Mediterranean diet on 10-year incidence of cardiovascular disease: The ATTICA study (2002-2012), Nutrition, Metabolism and Cardiovascular Diseases (2014), doi: 10.1016/j.numecd.2014.09.006

# The ATTICA study



Panagiotakos D et al., the ATTICA Study group, Exploring the path of Mediterranean diet on 10-year incidence of cardiovascular disease: The ATTICA study (2002-2012), Nutrition, Metabolism and Cardiovascular Diseases (2014), doi: 10.1016/j.numecd.2014.09.006

# Med Diet is as effective as Low Carb diet in weight loss

... are effective alternatives to the low-carb diet for weight loss and appear to be just as safe as a low-fat diet. In addition to producing weight loss in this moderately obese group of patients, both the low-carbohydrate and Mediterranean diets had some beneficial metabolic effects, suggesting that these dietary strategies might be considered in clinical practice and that diets should be individualized according to personal preferences and metabolic needs. The similar calorie deficit achieved in all diet groups suggests that a

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Shai I et al, N Engl J Med 2008

# Low carb-high protein diets can have unfavourable health effects

Sporadic reports have suggested that low carbohydrate-high protein diets can increase the risk of cardiovascular disease

Three European cohort studies relying on mortality have all provided supportive evidence, but a US cohort study based on incidence indicated no association

Low carbohydrate-high protein diet and incidence of cardiovascular diseases in Swedish women: prospective cohort study

*BMJ* 2012;344:e4026

Low carbohydrate-high protein diets, used on a regular basis and without consideration of the nature of carbohydrates or the source of proteins, are associated with increased risk of cardiovascular disease.

**2014 overall evidence: Low carb diets may increase cardiovascular diseases**

**In contrast**, at least **3 randomized trials** and more than 20 epidemiological studies have all shown striking health benefits of the Med diets: fewer CV diseases, cancers, diabetes, and neurodegenerative diseases, ... and longer life expectancy!

**Interestingly**, investigators experienced some forms of **modernized Med**; clearly **anticipating** that adoption of the Med diet by contemporary consumers needs some “adaptation” to be well accepted

**Mediterranean Diet and Cardiovascular Disease:  
Historical Perspective and Latest Evidence**

Michel de Lorgeril

# Olio di oliva V/EV o "normale"

**Risk of cardiovascular events and mortality according to baseline extra-virgin olive oil intake**

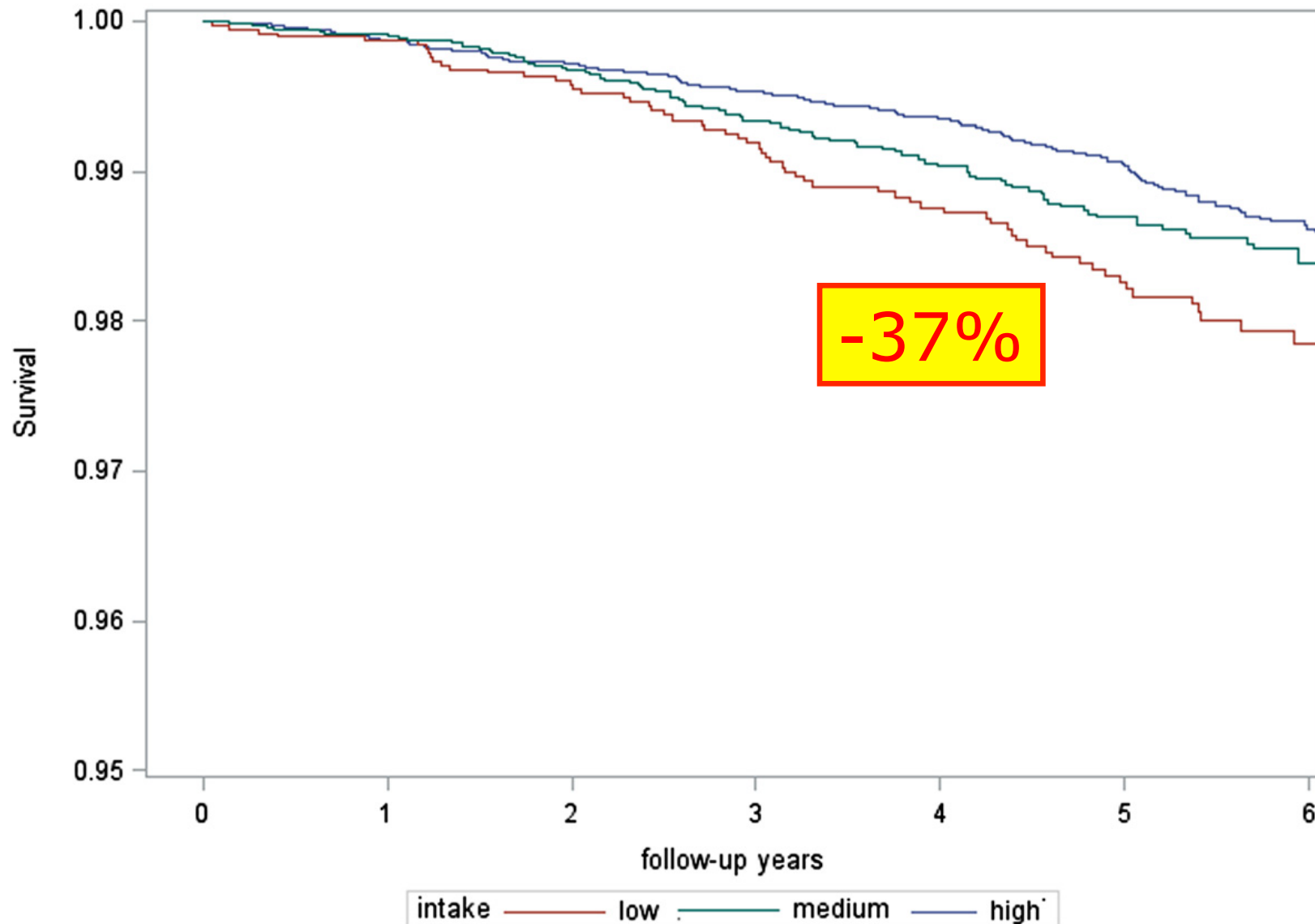
	Energy-adjusted tertiles of extra-virgin olive oil, g/day			<i>P for trend</i>	Energy-adjusted extra virgin olive oil intake (10 g/d)
	1 (low) (n = 2,405)	2 (n = 2,406)	3 (high) (n = 2,405)		
<b>Mean extra-virgin olive oil intake</b>	9.1 ± 11.23	19.5 ± 20.0	34.6 ± 27.4		
<b>Major CVD events</b>					
Cardiovascular event, % (n)	4.6 (111)	4.2 (101)	2.7 (65)		3.8 (277)
Multivariable model 1	1 (Ref.)	1.01 (0.77, 1.33)	0.60 (0.43, 0.82)	< 0.01	0.89 (0.84, 0.95)
Multivariable model 2	1 (Ref.)	1.00 (0.76, 1.32)	0.60 (0.44, 0.84)	< 0.01	0.90 (0.85, 0.95)
Multivariable model 3	1 (Ref.)	0.99 (0.75, 1.31)	0.61 (0.44, 0.85)	< 0.01	0.90 (0.85, 0.95)
<b>All-cause mortality</b>	<b>1 (low) (n = 2,405)</b>	<b>2 (n = 2,406)</b>	<b>3 (high) (n = 2,405)</b>	<b><i>P for trend</i></b>	
All causes of mortality, % (n)	5.2 (125)	4.2 (100)	4.1 (98)		4.5 (323)
Multivariable model 1	1 (Ref.)	0.88 (0.67, 1.15)	0.81 (0.61, 1.07)	0.19	0.95 (0.91, 1.00)
Multivariable model 2	1 (Ref.)	0.84 (0.64, 1.10)	0.80 (0.60, 1.07)	0.20	0.95 (0.90, 1.00)
Multivariable model 3	1 (Ref.)	0.84 (0.64, 1.10)	0.82 (0.61, 1.09)	0.25	0.96 (0.91, 1.01)

# Olio di oliva V/EV o "normale"

Risk of cardiovascular events and mortality according to baseline common olive oil intake

	Energy-adjusted tertiles of common olive oil, g/day			<i>P for trend</i>	Energy-adjusted common olive oil intake (10 g/d)
	1 (low) (n = 2,405)	2 (n = 2,406)	3 (high) (n = 2,405)		
<b>Mean common olive oil intake</b>	12.1 ± 11.7	18.6 ± 18.5	21.7 ± 25.9		
<b>Major CVD events</b>					
Cardiovascular event, % (n)	3.5 (85)	3.6 (86)	4.4 (106)		3.8 (277)
Multivariable model 1	1 (Ref.)	1.06 (0.78, 1.45)	1.20 (0.88, 1.62)	0.23	1.04 (0.99, 1.10)
Multivariable model 2	1 (Ref.)	1.01 (0.74, 1.38)	1.13 (0.83, 1.54)	0.35	1.04 (0.98, 1.10)
Multivariable model 3	1 (Ref.)	0.99 (0.73, 1.36)	1.11 (0.82, 1.51)	0.40	1.03 (0.98, 1.09)
<b>All-cause mortality</b>	<b>1 (low) (n = 2,405)</b>	<b>2 (n = 2,406)</b>	<b>3 (high) (n = 2,405)</b>	<b><i>P for trend</i></b>	
All causes of mortality, % (n)	4.2 (101)	4.4 (106)	4.8 (116)		4.5 (323)
Multivariable model 1	1 (Ref.)	1.14 (0.86, 1.51)	1.17 (0.88, 1.51)	0.34	1.01 (0.96, 1.07)
Multivariable model 2	1 (Ref.)	1.10 (0.83, 1.47)	1.16 (0.87, 1.54)	0.37	1.01 (0.96, 1.07)
Multivariable model 3	1 (Ref.)	1.09 (0.82, 1.45)	1.14 (0.85, 1.51)	0.44	1.01 (0.96, 1.07)

# Polyphenol intake and all-cause mortality risk: a re-analysis of the PREDIMED trial



# Coffee Consumption and Mortality From All Causes, Cardiovascular Disease, and Cancer: A Dose-Response Meta-Analysis

## Association between coffee consumption and all-cause mortality

### Cardiovascular mortality

We found strong evidence of a nonlinear association between coffee consumption and all-cause mortality ( $P < 0.001$ ;  $P$  for nonlinearity  $< 0.001$ ) based on (Figure 2). Compared with no coffee consumption, relative risks for all-cause mortality were 0.92 (95% confidence interval (CI): 0.91, 0.94) for 1 cup/day, (

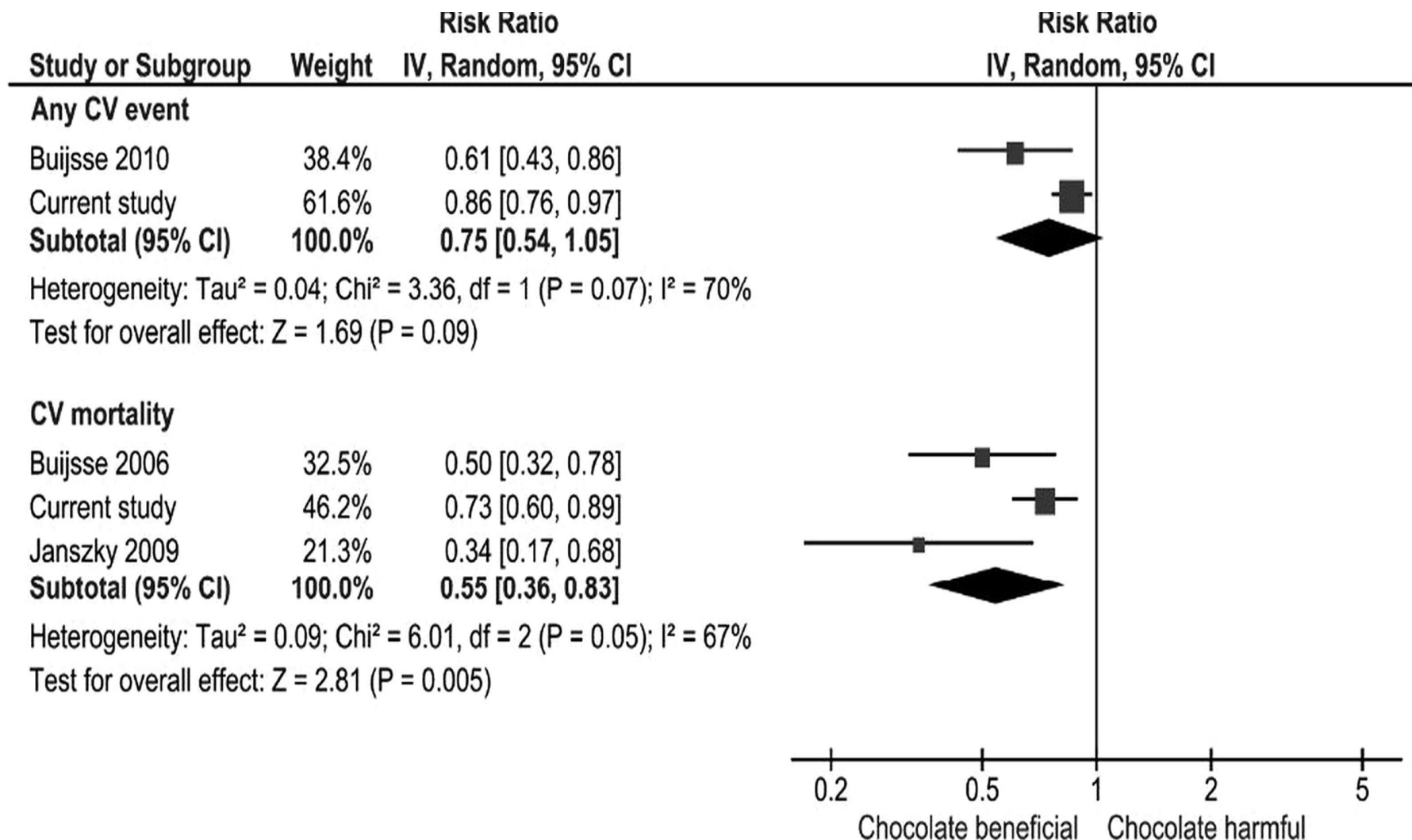
# Coffee Consumption and Mortality From All Causes, Cardiovascular Disease, and Cancer: A Dose-Response Meta-Analysis

upper and lower boundaries for each category as consumption. If the upper bound for the highest category was not provided, we assumed that the category had the same magnitude as the adjacent one.

## Statistical analysis

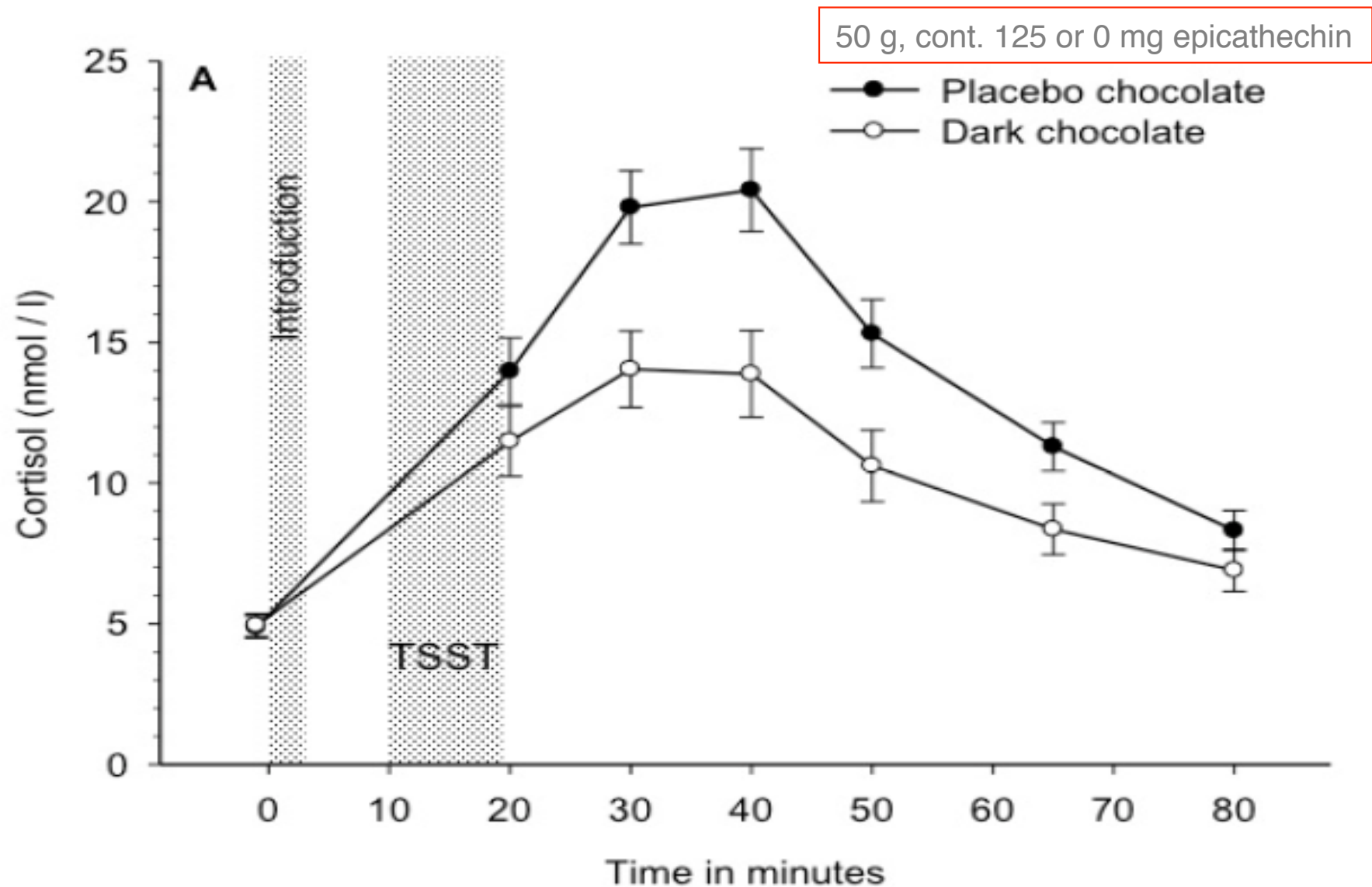
We performed a 2-stage random-effects dose-response meta-analysis to examine a potential nonlinear relationship between coffee consumption and all-cause mortality.

## Meta-analysis of chocolate consumption and risk of cardiovascular (CV) disease (composite).



Kwok CS, et al. Heart 2015

# Dark chocolate intake buffers stress reactivity in humans



# Inflammatory markers and total nut and seed consumption, Multi-Ethnic Study of Atherosclerosis.

Inflammatory marker†	Frequency of total nut and seed consumption				p for trend
	Never/rare	Less than once/week	1–4 times/week	≥5 times/week	
C-reactive protein (mg/liter)	(n = 917)	(n = 2,273)	(n = 2,183)	(n = 666)	
Age-adjusted	2.06	2.00	1.77***	1.69***	<0.001
Model 1 ‡	1.98	1.97	1.80**	1.72**	0.003
Model 2 §	1.97	1.96	1.81*	1.71**	0.003
Model 3 ¶	1.91	1.94	1.82	1.78	0.06
Interleukin-6 (pg/ml)	(n = 898)	(n = 2,229)	(n = 2,133)	(n = 654)	
Age-adjusted	1.30	1.24*	1.19***	1.15***	<0.001
Model 1 ‡	1.25	1.24	1.21	1.15**	0.004
Model 2 §	1.25	1.24	1.21	1.14**	0.003
Model 3 ¶	1.23	1.24	1.21	1.17	0.05
Fibrinogen (mg/dl)	(n = 915)	(n = 2,274)	(n = 2,182)	(n = 669)	
Age-adjusted	348	339***	335***	329***	<0.001
Model 1 ‡	343	338	338*	331***	0.003
Model 2 §	343	338*	338*	331***	0.003
Model 3 ¶	342	338	338	332**	0.03

# Position of the Academy of Nutrition and Dietetics: Interventions for the Treatment of Overweight and Obesity in Adults



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## ABSTRACT

It is the position of the Academy of Nutrition and Dietetics that successful treatment of overweight and obesity in adults requires adoption and maintenance of lifestyle behaviors contributing to both dietary intake and physical activity. These behaviors are influenced by many factors; therefore, interventions incorporating more than one level of the socioecological model and addressing several key factors in each level may be more successful than interventions targeting any one level and factor alone. Registered dietitian nutritionists, as part of a multidisciplinary team, need to be current and skilled in weight management to effectively assist and lead efforts that can reduce the obesity epidemic. Using the Academy of Nutrition and Dietetics' Evidence Analysis Process and Evidence Analysis Library, this position paper presents the current data and recommendations for the treatment of overweight and obesity in adults. Evidence on intrapersonal influences, such as dietary approaches, lifestyle intervention, pharmacotherapy, and surgery, is provided. Factors related to treatment, such as intensity of treatment and technology, are reviewed. Community-level interventions that strengthen existing community assets and capacity and public policy to create environments that support healthy energy balance behaviors are also discussed.

*J Acad Nutr Diet.* 2016;116:129-147.

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## POSITION STATEMENT

It is the position of the Academy of Nutrition and Dietetics that successful treatment of overweight and obesity in adults requires adoption and maintenance of lifestyle behaviors contributing to both dietary intake and physical activity. These behaviors are influenced by many factors; therefore, interventions incorporating more than one level of the socioecological model and addressing several key factors in each level may be more successful than interventions targeting any one level and factor alone.

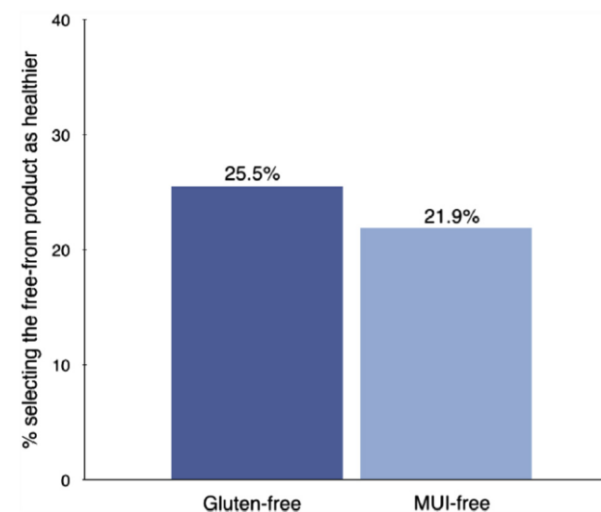
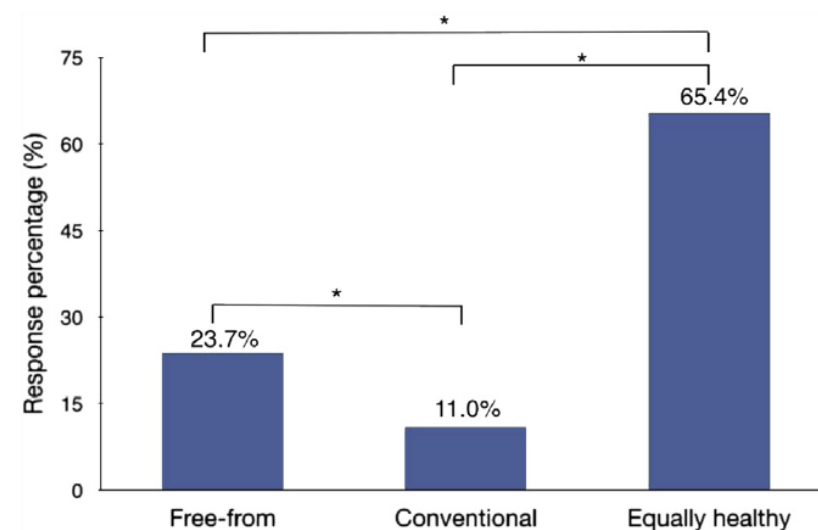
# The Influence of a Factitious Free-From Food Product Label on Consumer Perceptions of Healthfulness

Matthew Priven, MS\*; Jennifer Baum, MS\*; Edward Vieira, PhD, MBA; Teresa Fung, ScD, RD; Nancie Herbold, EdD, RD, LDN



Questo studio suggerisce che l’etichetta “senza” genera percezione di alimento salutare anche in assenza di informazioni sul rischio e che questi claim sono un potente metodo di comunicazione in grado di manipolare la percezione di salubrità di un prodotto.

J Acad Nutr Diet. 2015;115:1808-1814.



# **Cosa si intende per “consumo di dosi moderate di alcool”?**

**Definizione comunemente utilizzata in Italia:**

**1-2 drink al giorno per le donne**

**2-3 drink al giorno per gli uomini**

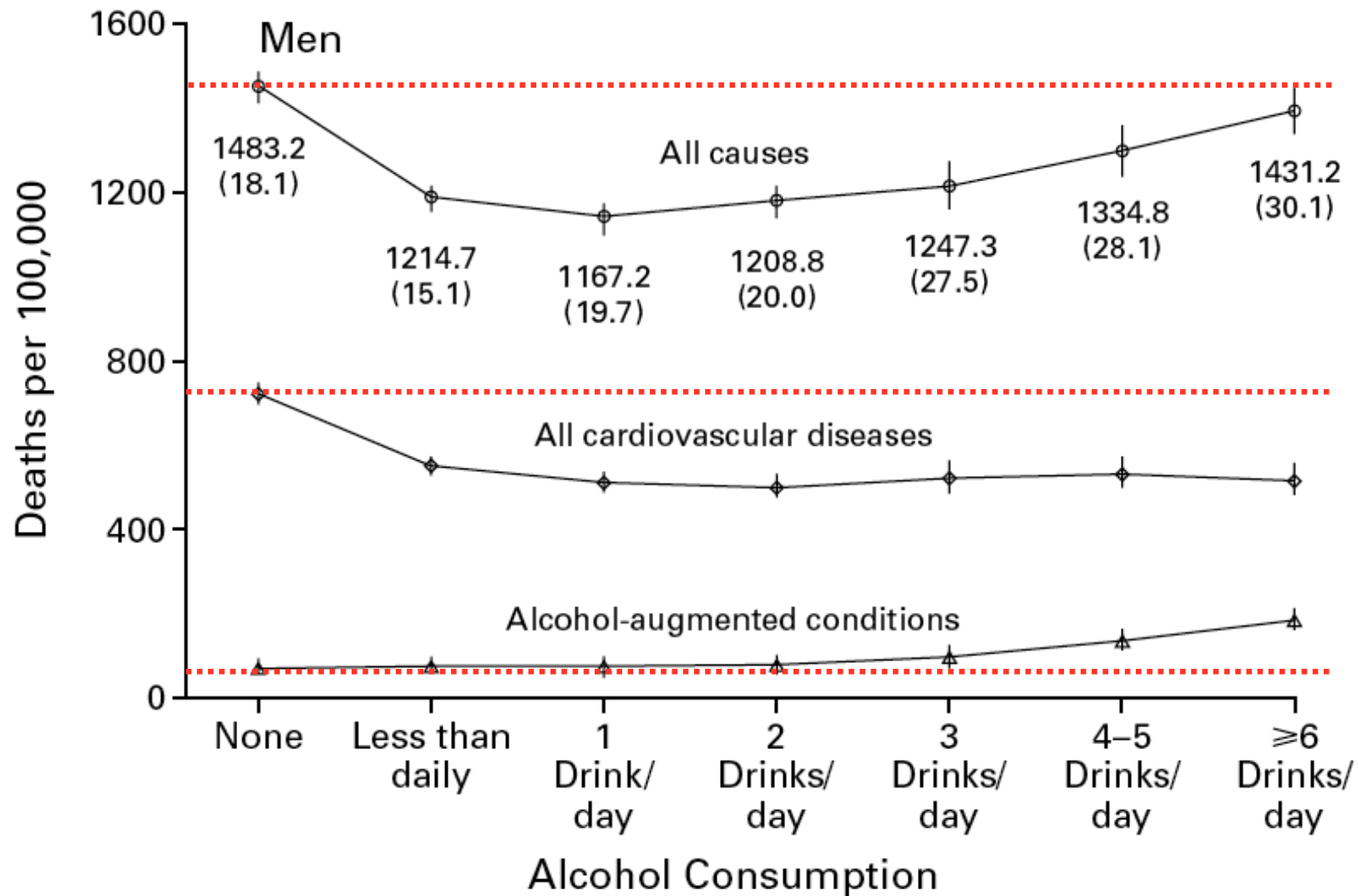
**Un drink è definito come:**

- **330 mL di birra**
- **150 mL di vino**
- **40 mL di liquori**

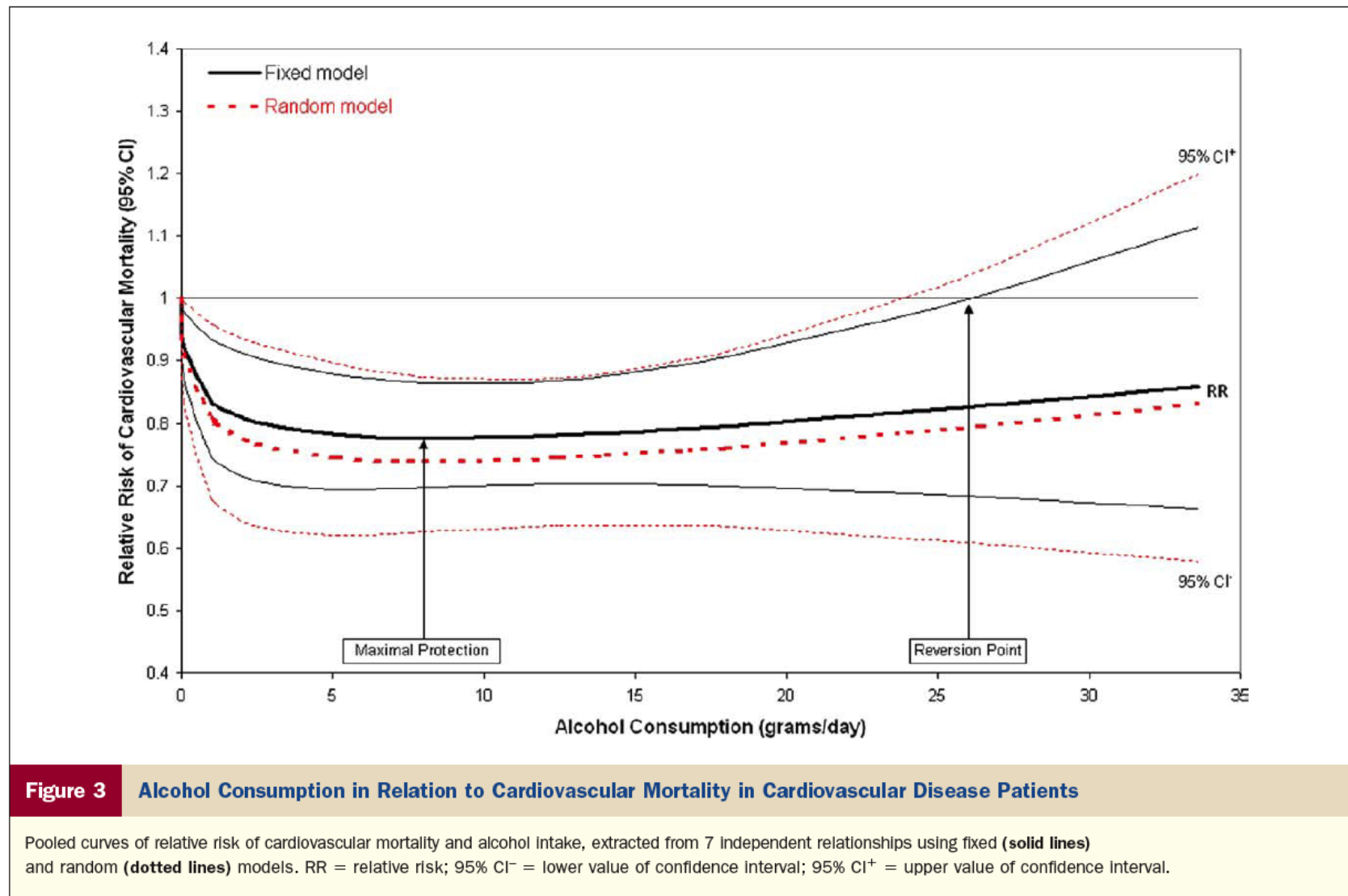
**Il contenuto di alcool in ogni drink è di circa:**

**10-13 g**

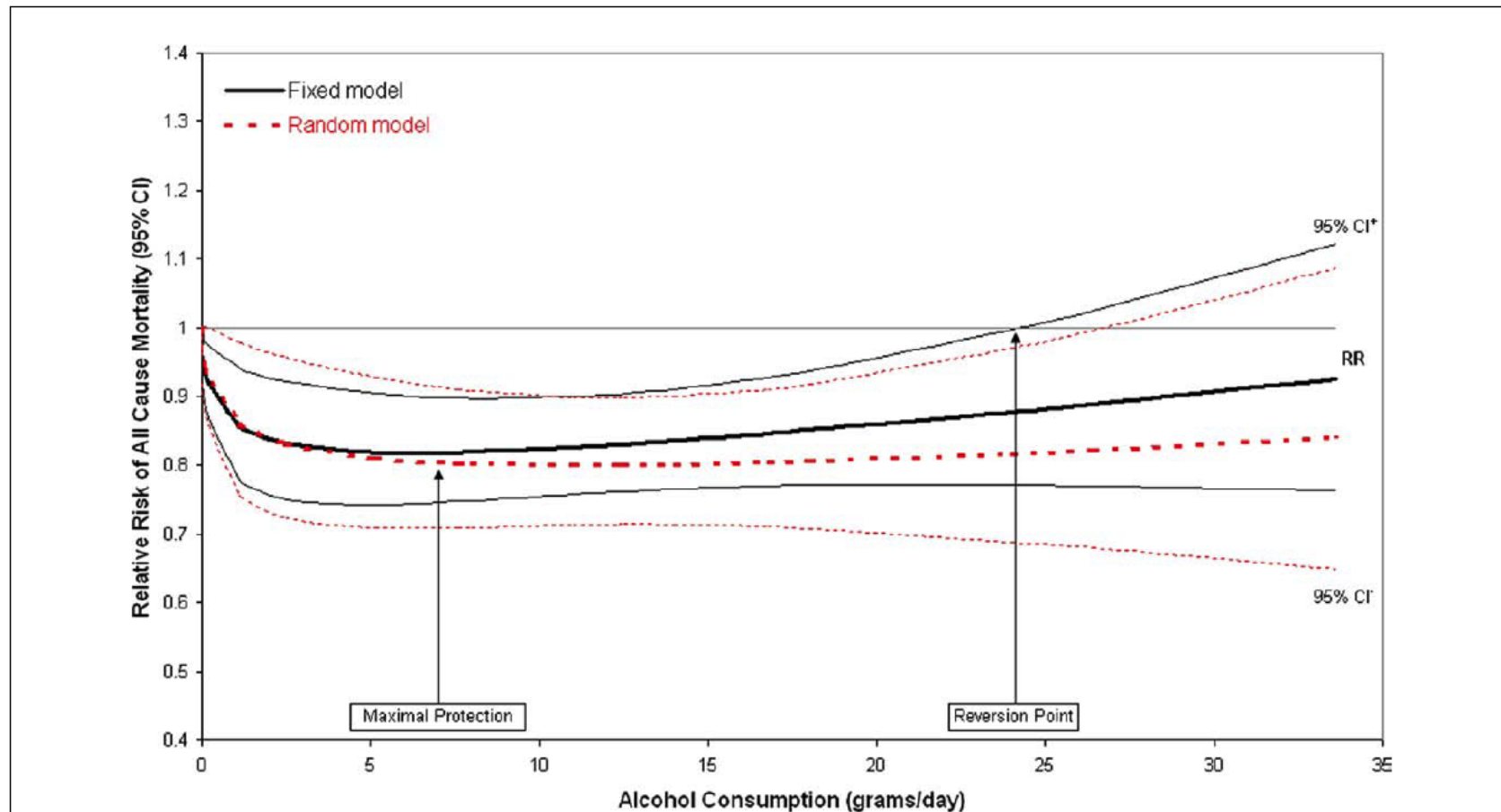
# Alcohol intake and all-cause mortality: the Cancer prevention Study II



# Consumo di alcool e mortalità cardiovascolare in pazienti con malattia CV: una metanalisi italiana



# Consumo di alcool e mortalità per tutte le cause in pazienti con malattia CV pregressa: una metanalisi



**Figure 4** Alcohol Consumption in Relation to All-Cause Mortality in Cardiovascular Disease Patients

Pooled curves of relative risk of all-cause mortality and alcohol intake extracted from 7 independent relationships using fixed (solid lines) and random (dotted lines) models. Abbreviations as in Figure 3.