Corso di 2° livello per l'organizzazione e la gestione di un ambulatorio degli stili di vita

2^ Edizione

STILE DI VITA:
ATTIVITA' MOTORIA, ALIMENTAZIONE, INTERVENTI DIETETICO NUTRIZIONALI

# Modelli alimentari

2° modulo

24 / 25 ottobre – 2015

*Franca Marangoni*

*Nutrition Foundation of Italy*

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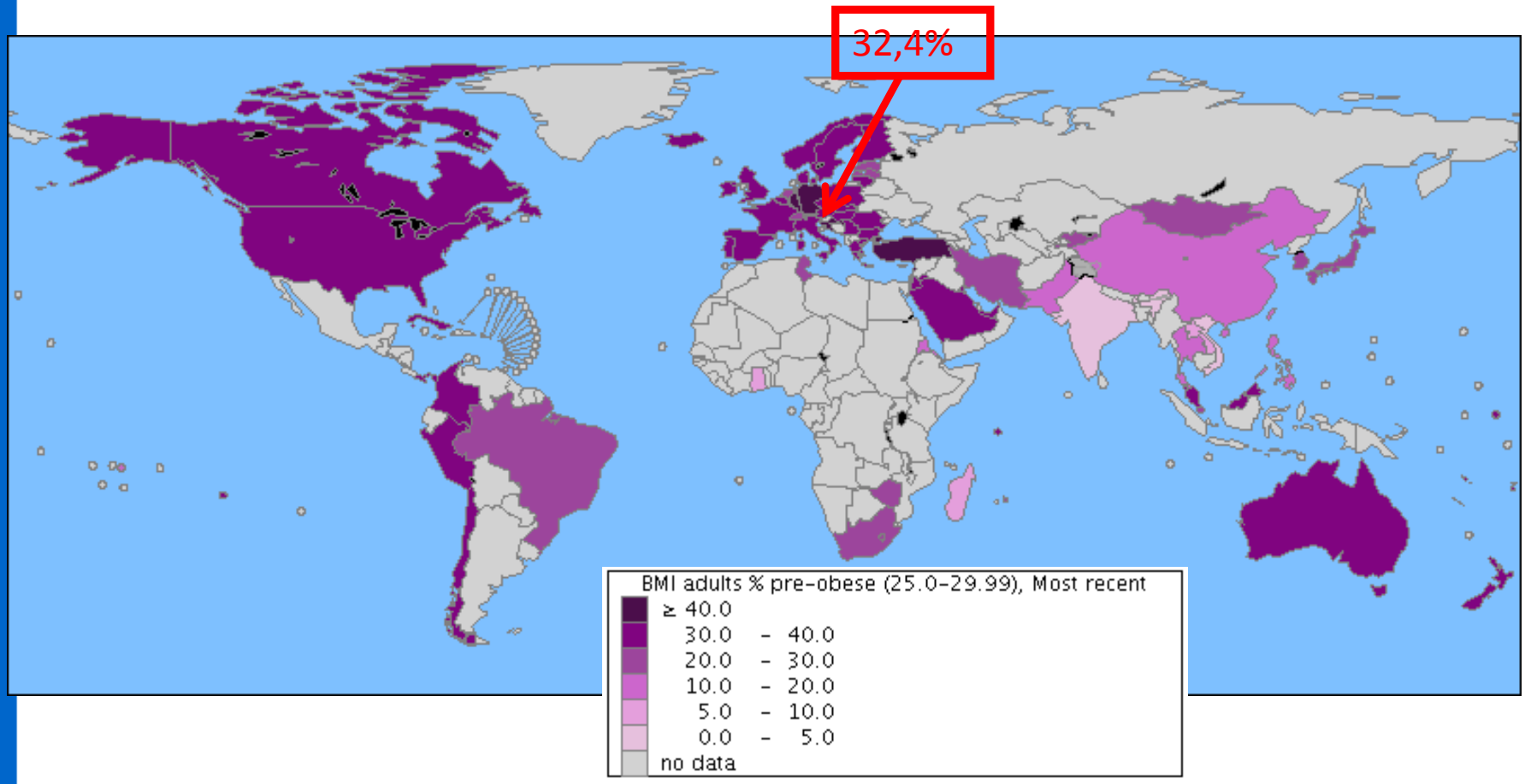
# BMI adults % pre-obese (25.0-29.99)

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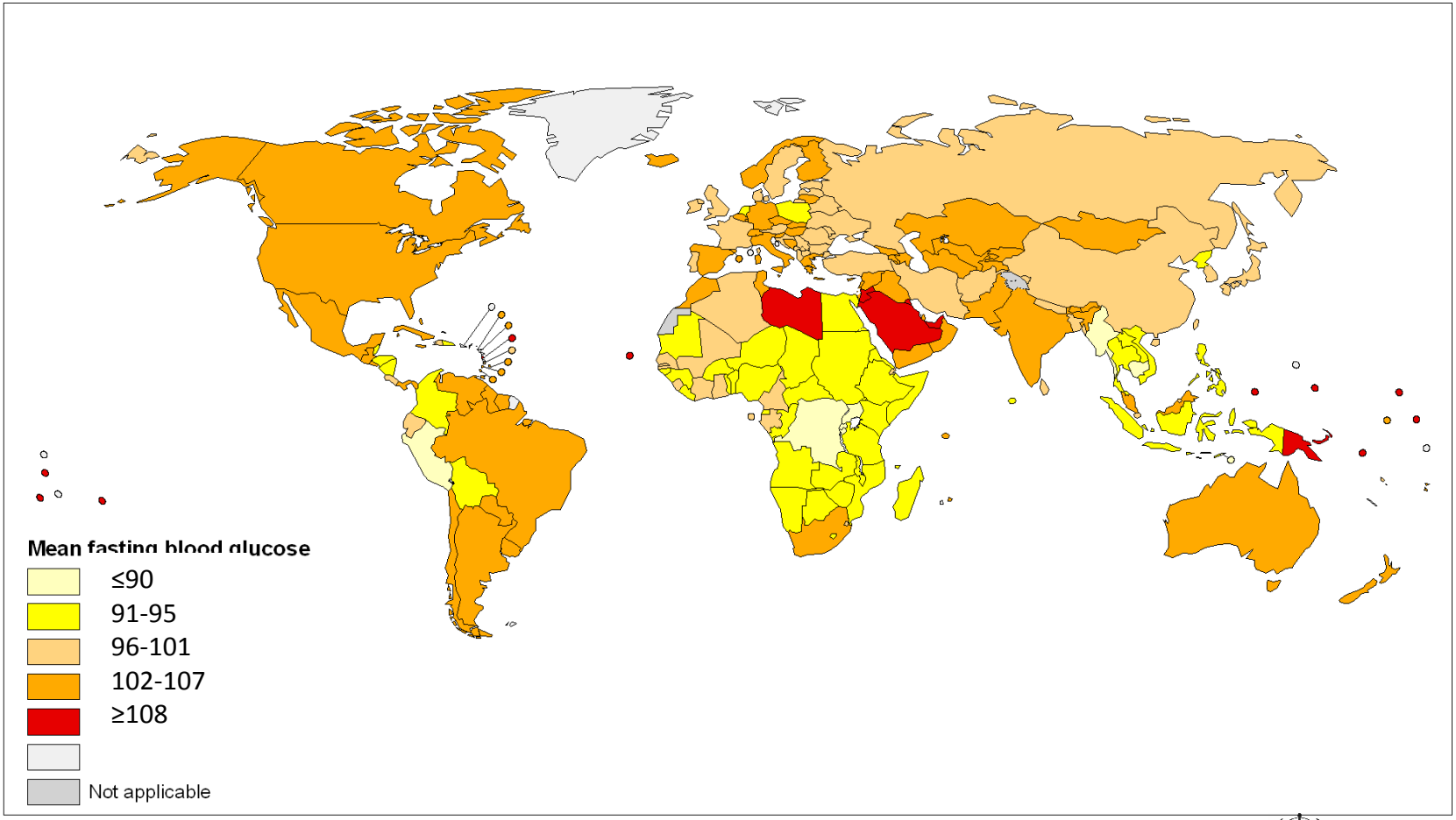
# Mean fasting blood glucose (mg/dL) , ages 25+, age standardized
## Males, 2008




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

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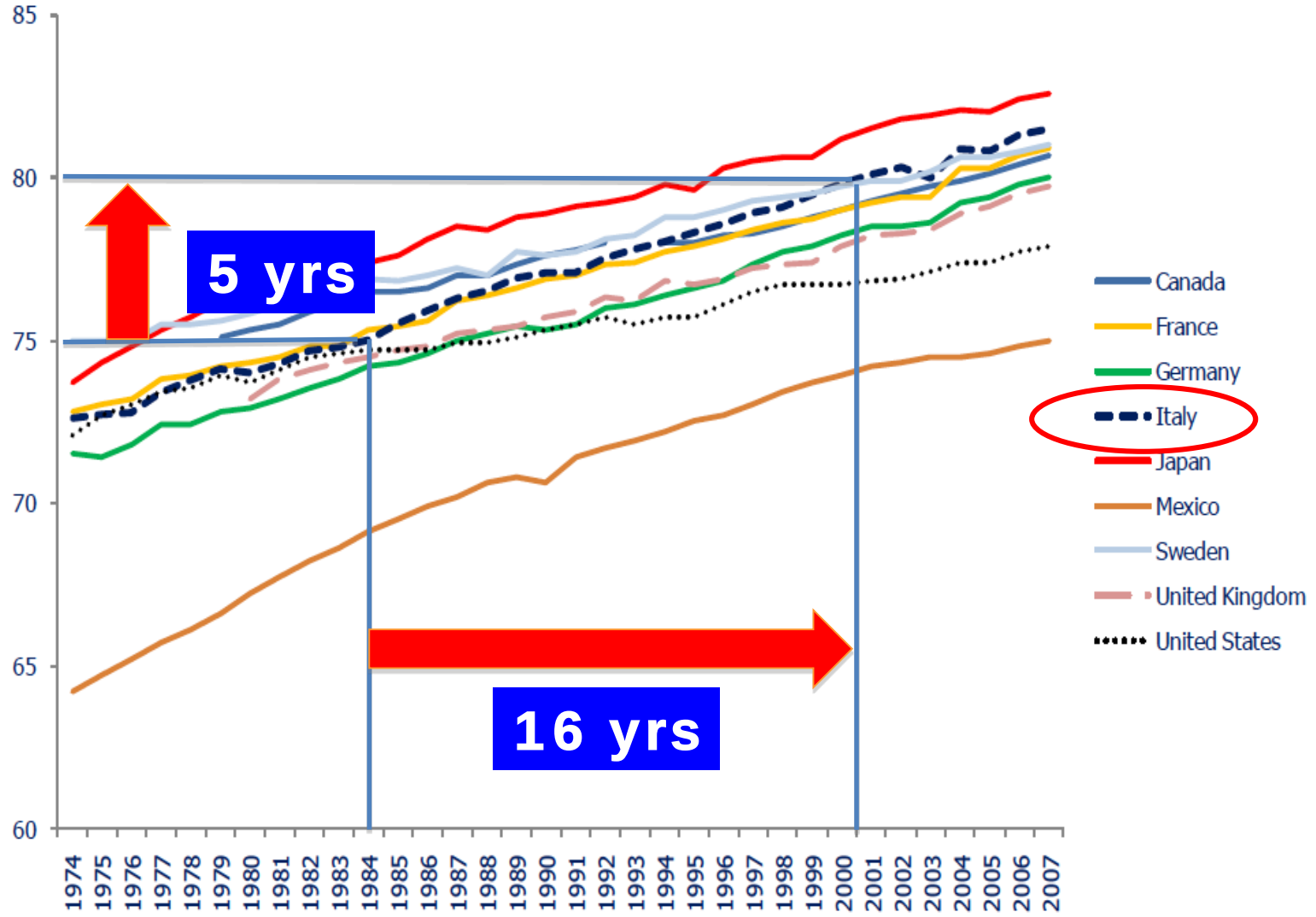
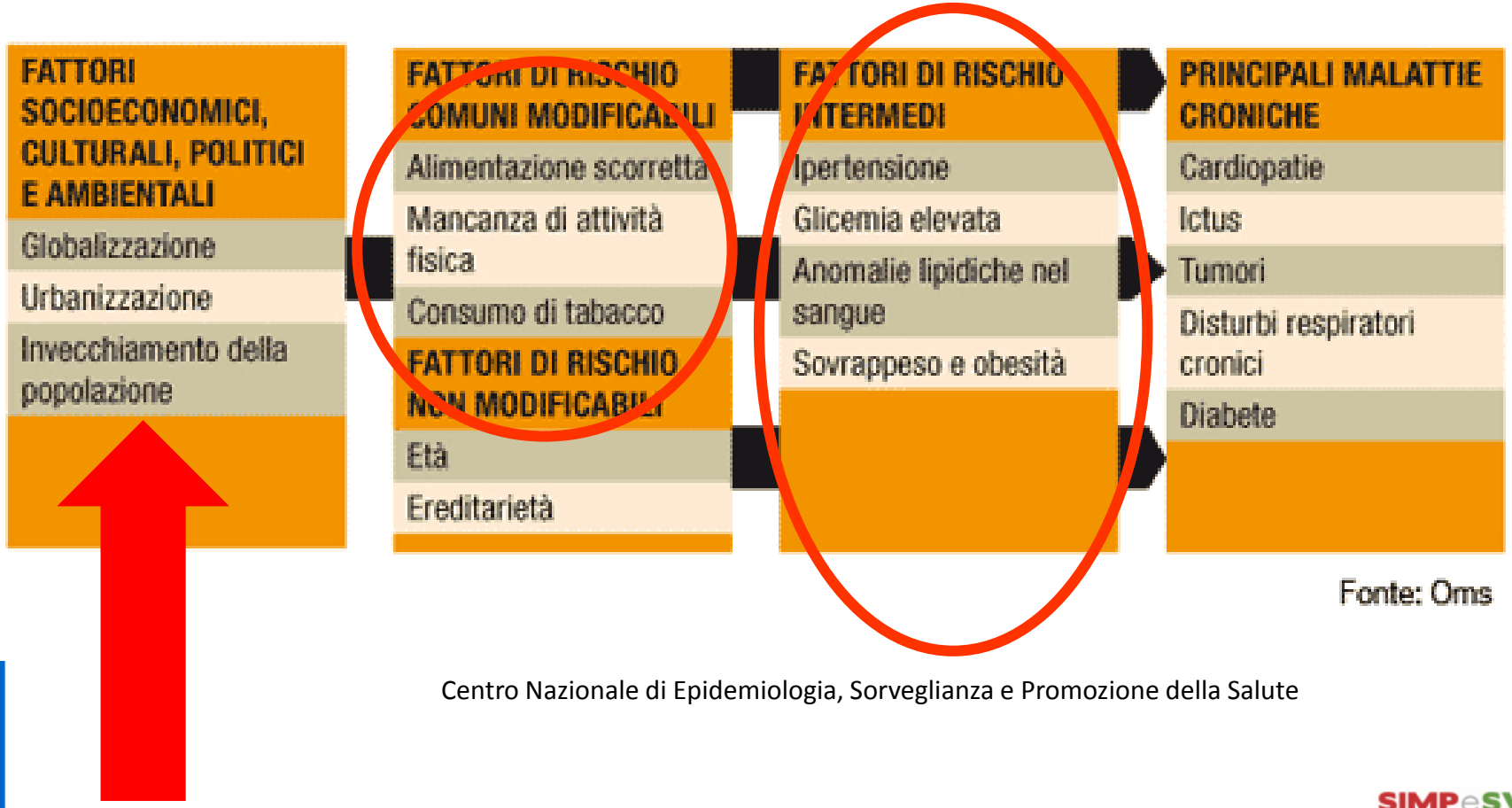
# An ongoing process...

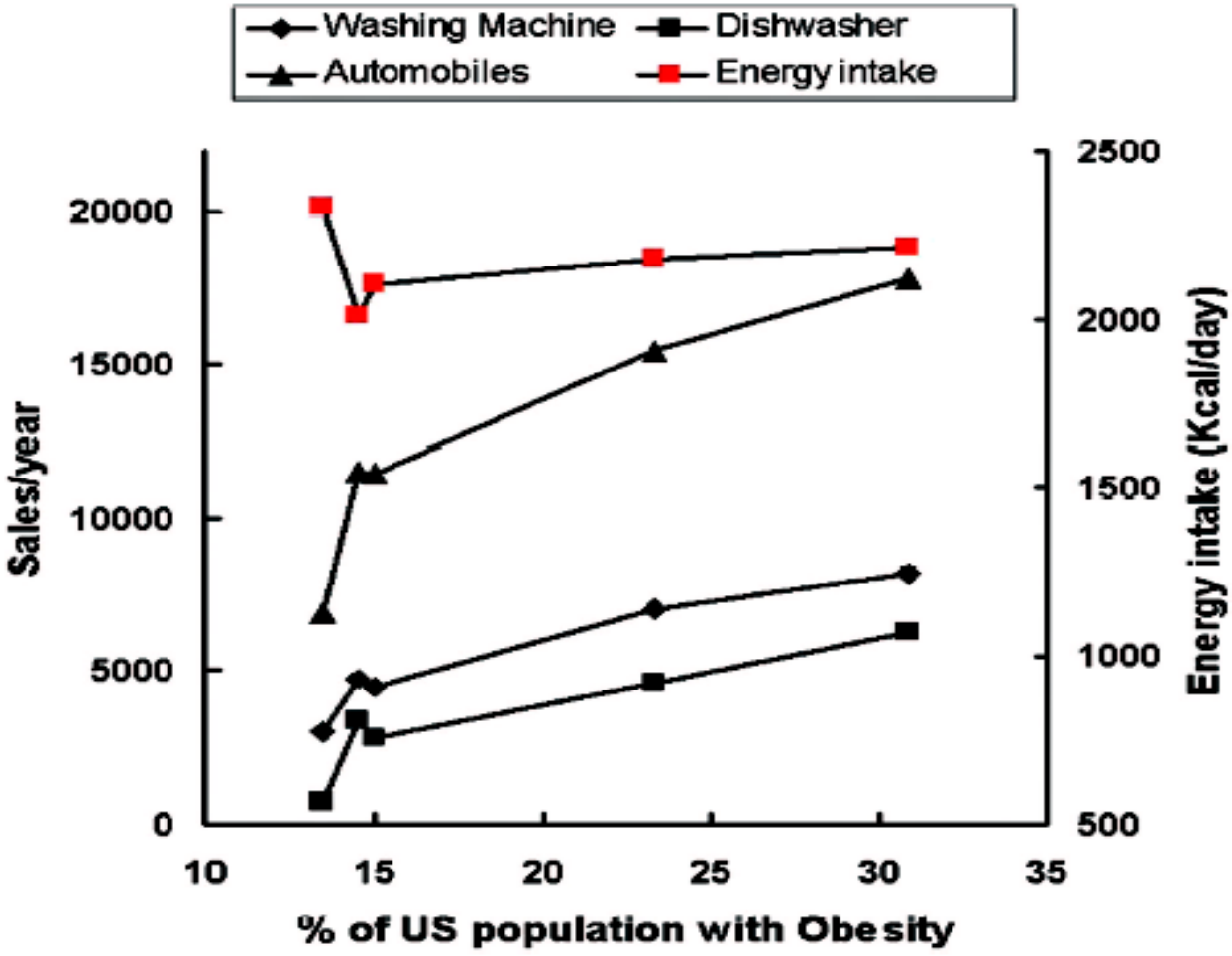


# Cause delle malattie croniche




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

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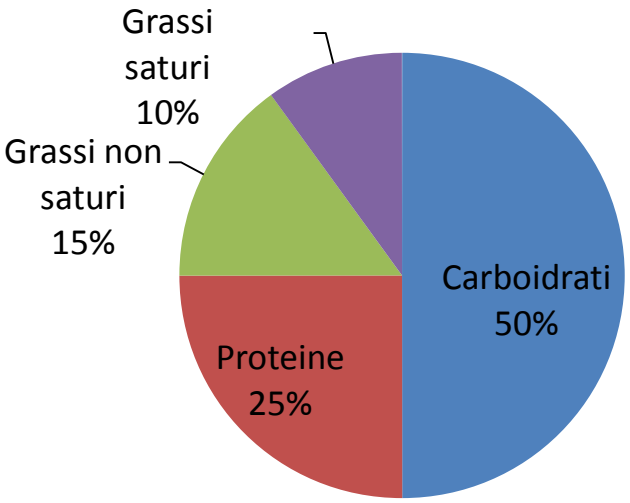
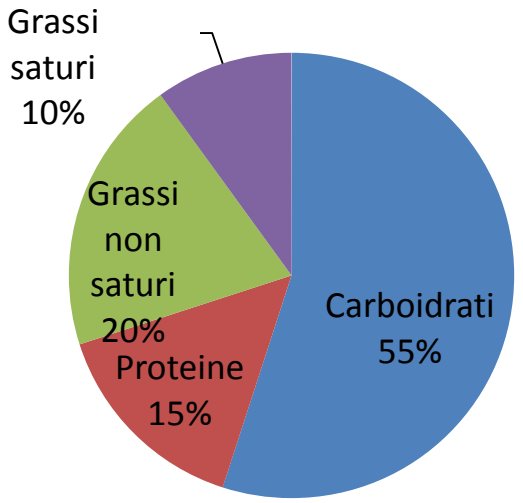
# Ripartizione dei nutrienti (LARN 2014)

- **Proteine** 15 - 20 % dell'apporto energetico totale (0,9g/kg)
- **Lipidi** <20-35 % del totale
  - ✓ Saturi <10 %
  - ✓ Monoinsaturi 10 %
  - ✓ Polinsaturi 5-10 %
    - ✓ N-6 4-8%
    - ✓ N-3 0,5-2% (AI 250 mg)
  - ✓ Colesterolo 100 mg/1000 kcal
- **Carboidrati** 40-60 % del totale
- **Fibre** 12,6-16,7 g / 1000 kcal
- **Sale** < 6 g/die
- **Acqua** >2 litri/die

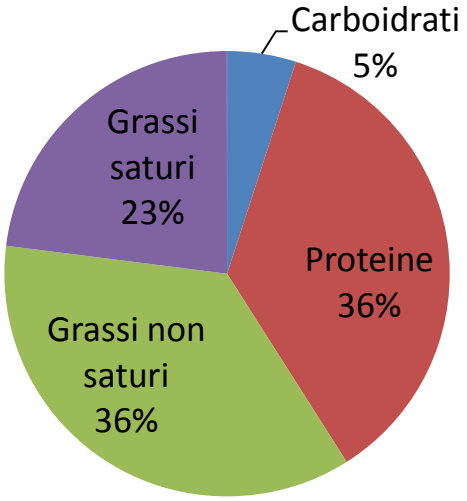
## MinSal 2013+LARN 2012



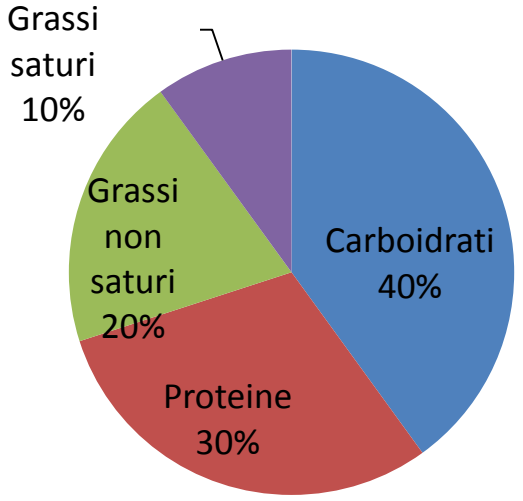

## American Heart Association




## Atkins




## Zona

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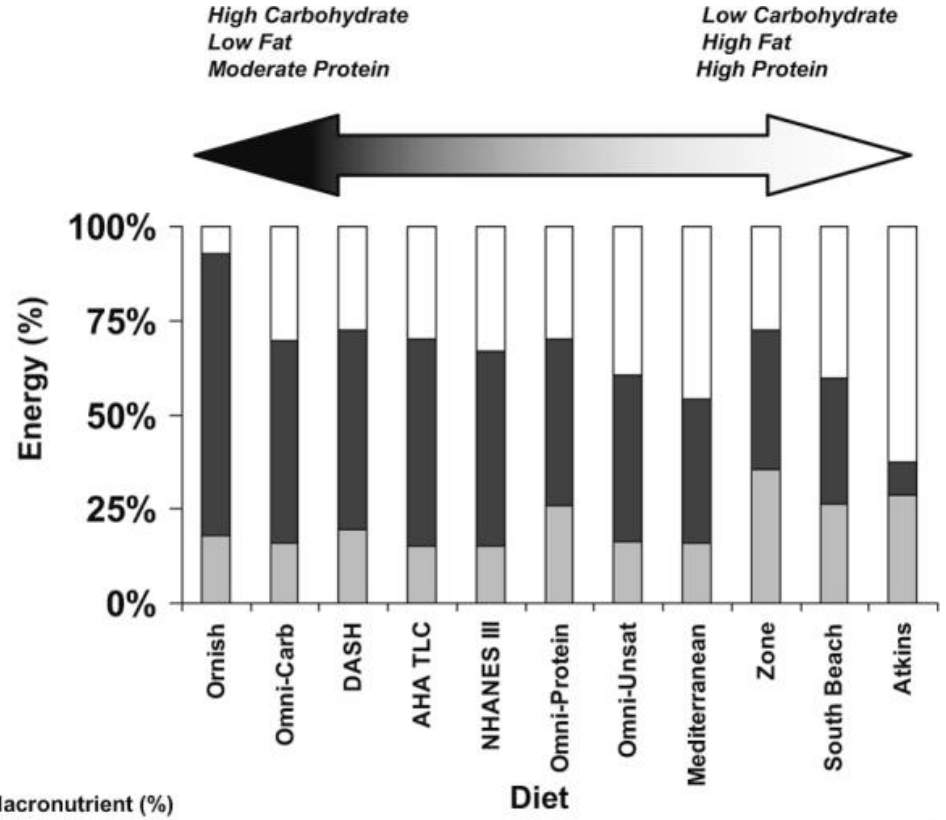
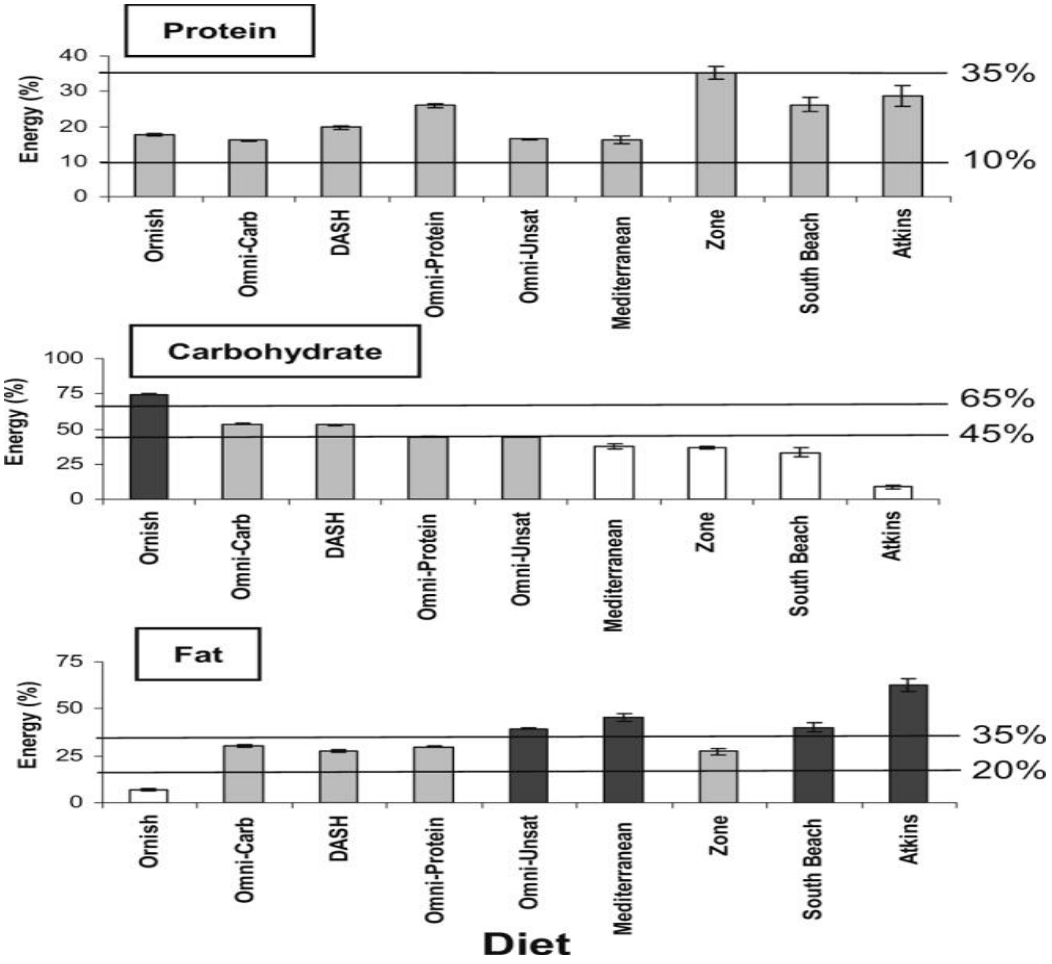
Macronutrient profiles of popular diets, the OmniHeart and Dietary Approaches to Stop Hypertension (DASH) study diets, the American Heart Association Therapeutic Lifestyle (AHA TLC) guidelines, and typical US macronutrient intakes as reported in the third Health and Nutrition Examination Survey (NHANES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




| Macronutrient (%) | Ornish | Omni-Carb | DASH | AHA TLC | NHANES III | Omni-Protein | Omni-Unsat | Mediterranean | Zone | South Beach | Atkins |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Protein | 18 | 16 | 20 | 15 | 15 | 26 | 16 | 16 | 35 | 26 | 29 |
| Carbohydrate | 75 | 54 | 53 | 55 | 52 | 44 | 44 | 38 | 37 | 33 | 9 |
| Fat | 7 | 30 | 28 | 30 | 33 | 30 | 40 | 46 | 27 | 40 | 62 |

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

Comparison of the calculated macronutrient profiles (mean ± 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.

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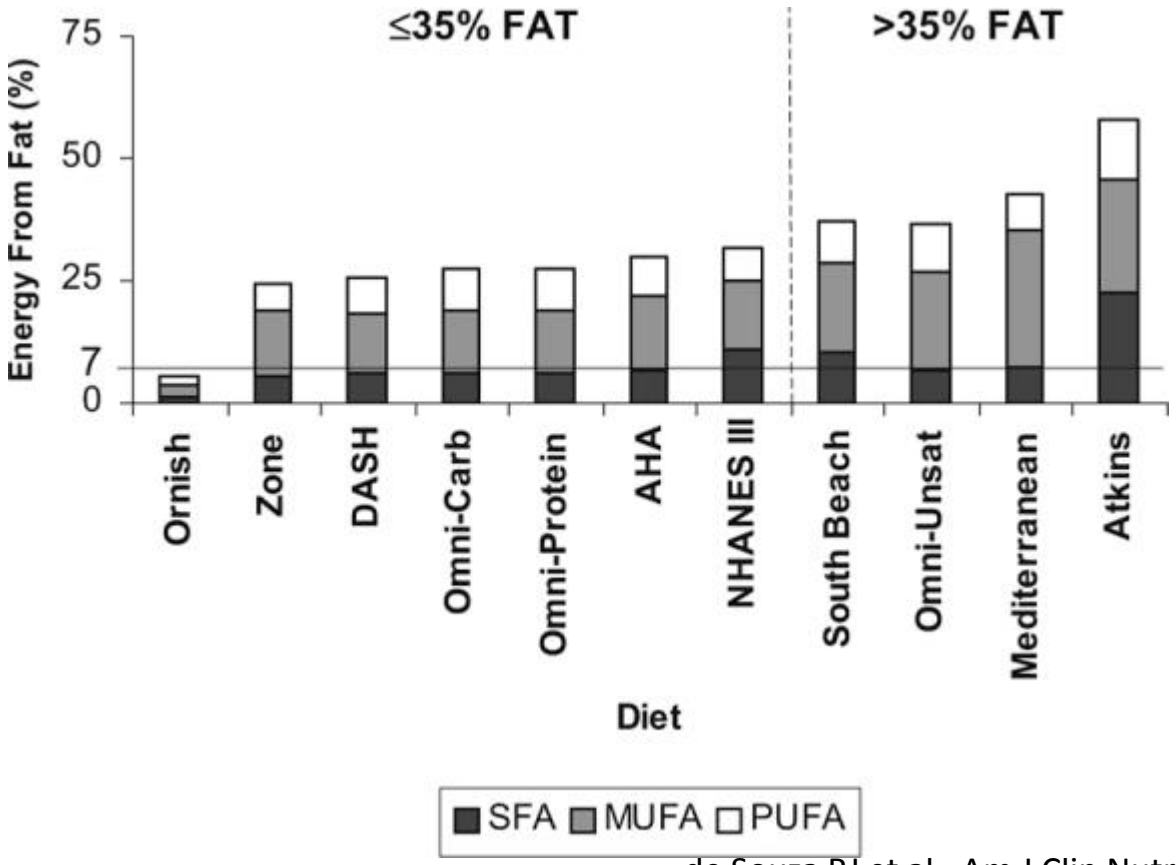
de Souza RJ et al., Am J Clin Nutr. 2008 Jul;88(1):1-11.

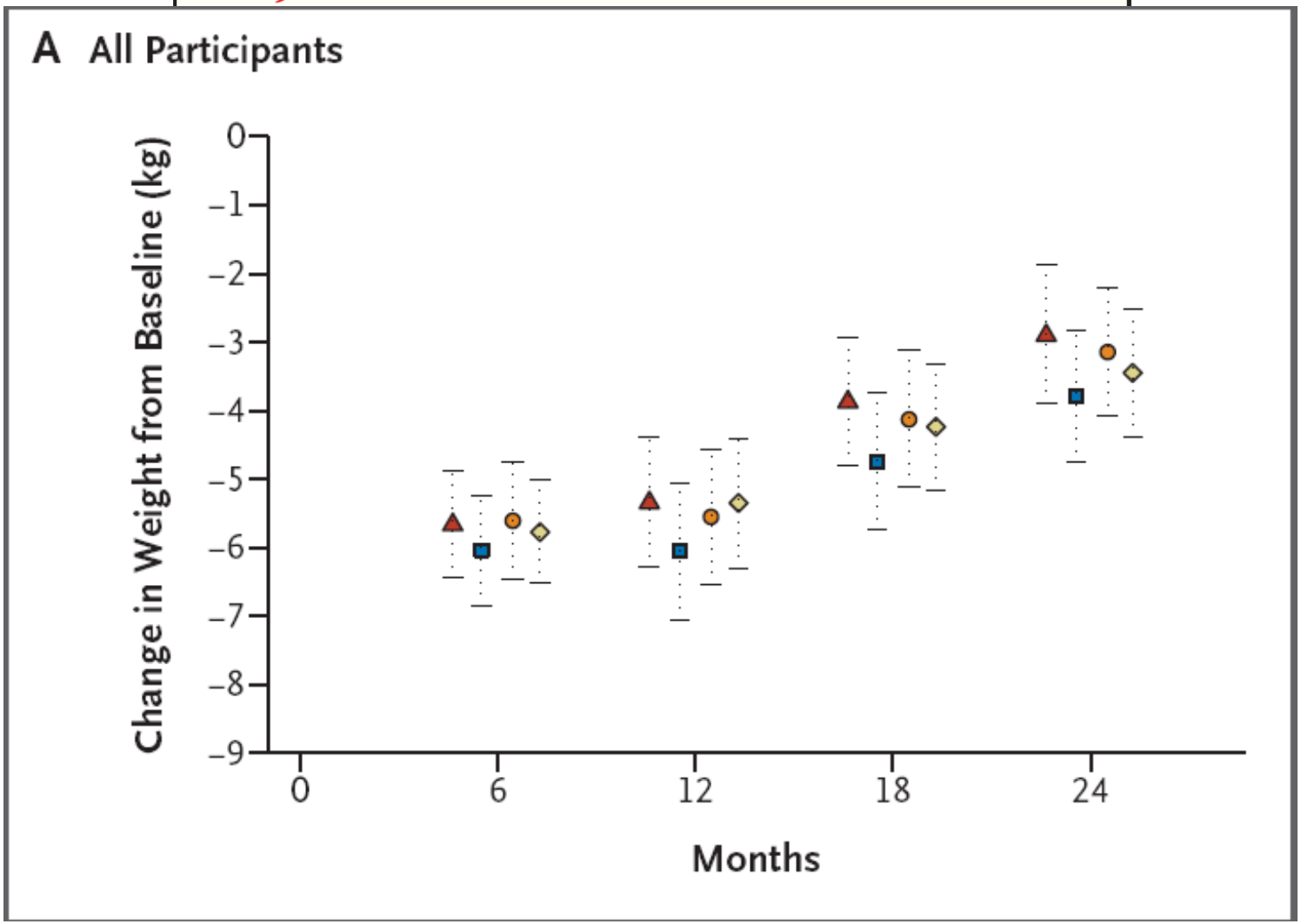
Typical fatty acid profiles of popular diet sand typical US macronutrient intakes as reported in the third Health and Nutrition Examination Survey (NHANES III) as “reference points.” Solid horizontal line represents the 7% upper level of intake for saturated fat proposed by the AHA.



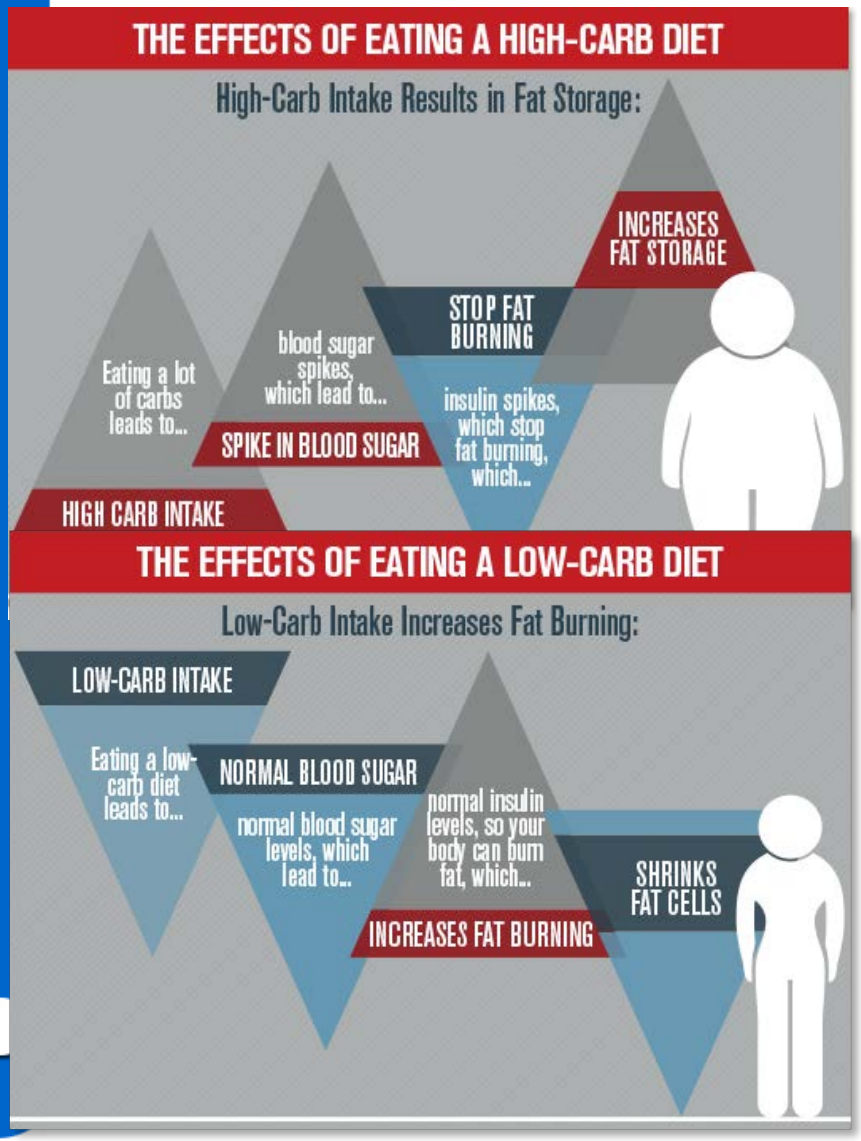

de Souza RJ et al., Am J Clin Nutr. 2008 Jul;88(1):1-11.

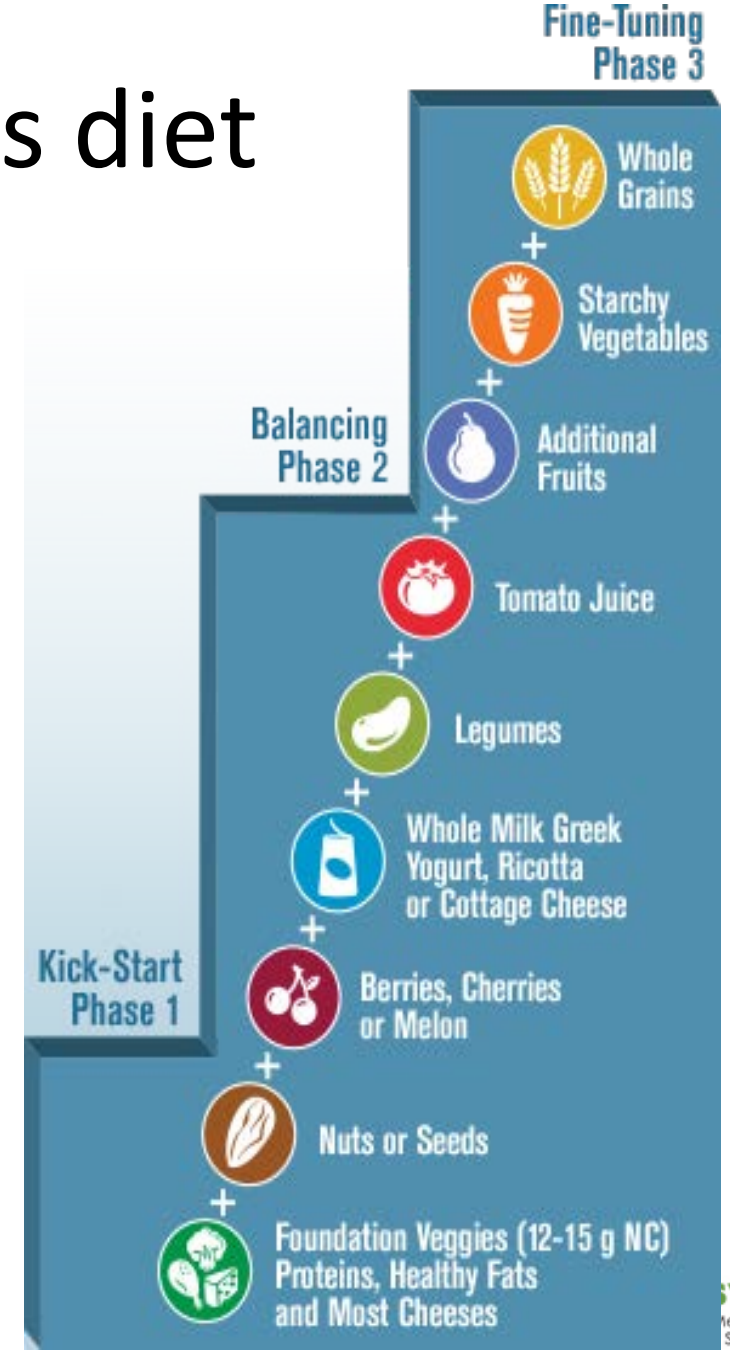
The NEW ENGLAND JOURNAL of MEDICINE

February 26
2009;360:859-73.



# The Atkins diet



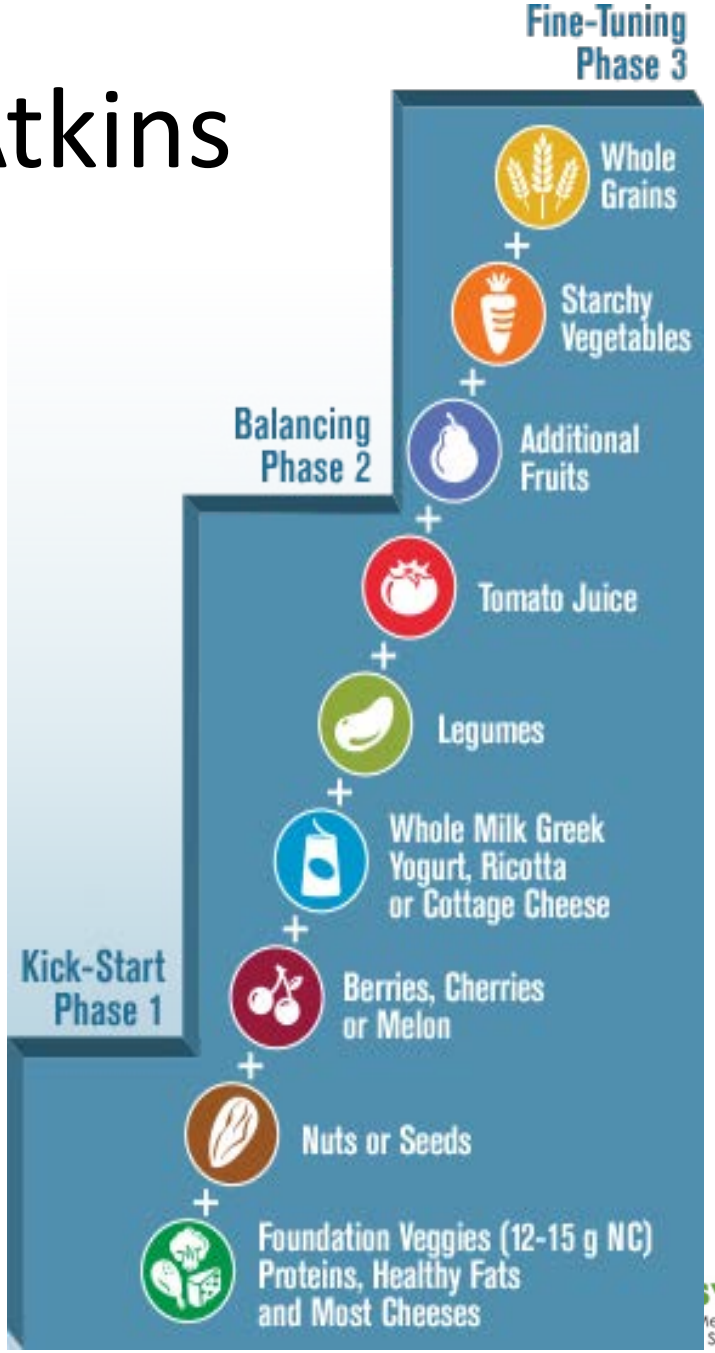
# La dieta Atkins

Pro

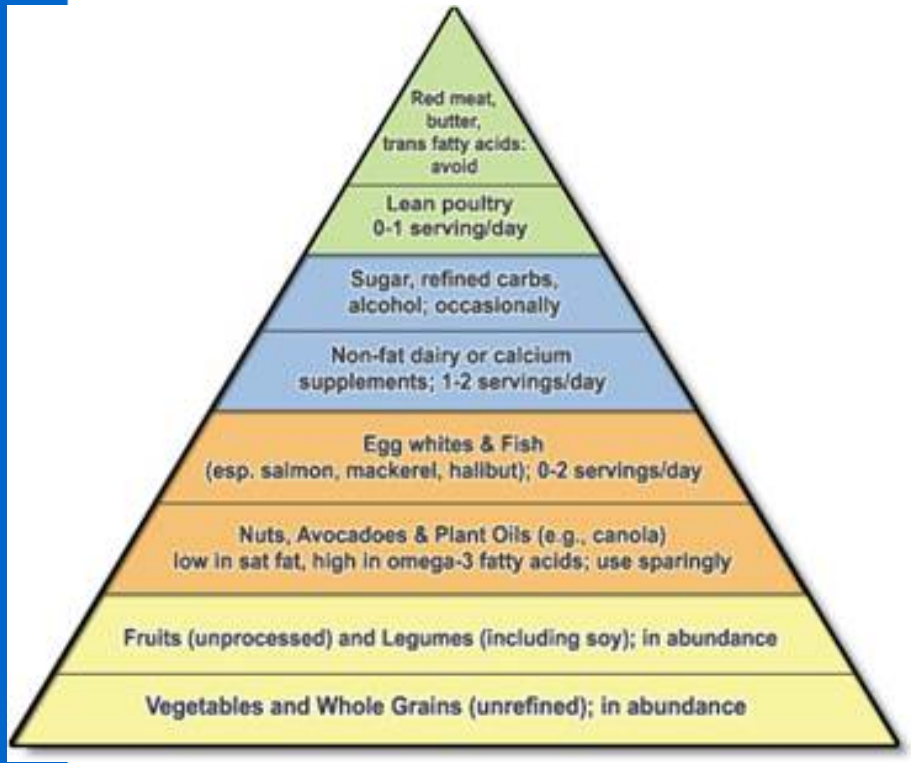
- Saziante
- Organizzata

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, …



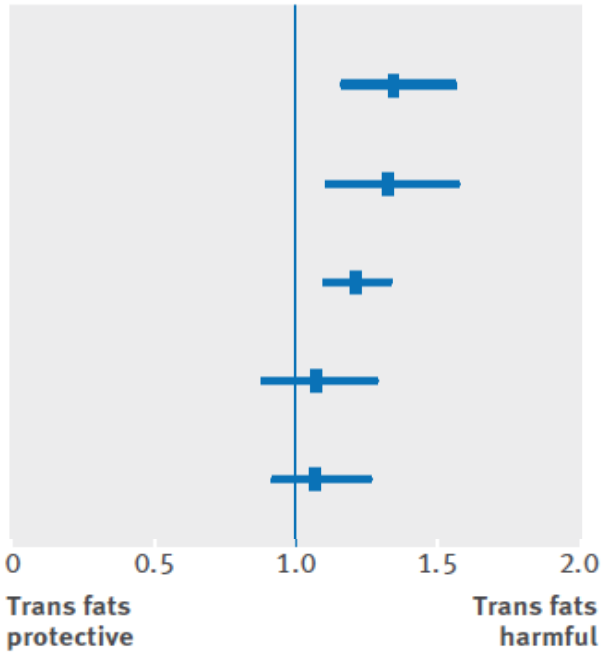
# La dieta Ornish




- 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

| Outcome | No of studies /comparisons | No of events /participants | Risk ratio (95% CI) | Relative risk (95% CI) | P | $P_{het}$ | $I^2$ (%) |
|---|---|---|---|---|---|---|---|
| **Total trans fats** | | | | | | | |
| All cause mortality | 2/2 | 2141/20 346 | | 1.34 (1.16 to 1.56) | <0.001 | 0.07 | 70 |
| CHD mortality | 5/6 | 1234/70 864 | | 1.28 (1.09 to 1.50) | 0.003 | 0.66 | 0 |
| CHD total | 6/7 | 4579/145 922 | | 1.21 (1.10 to 1.33) | <0.001 | 0.43 | 0 |
| Ischemic stroke | 3/4 | 1905/190 284 | | 1.07 (0.88 to 1.28) | 0.50 | 0.03 | 67 |
| Type 2 diabetes | 6/6 | 8690/230 135 | | 1.10 (0.95 to 1.27) | 0.21 | 0.01 | 66 |

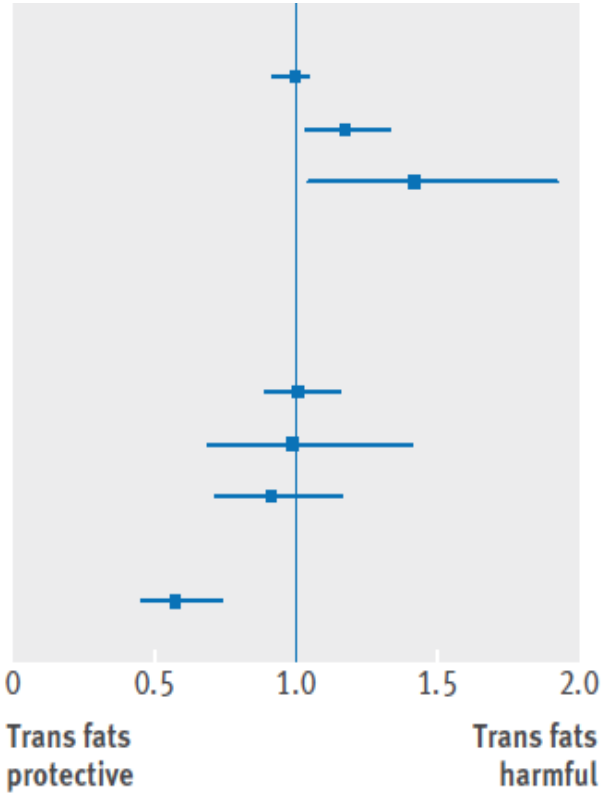



***trans* fats**

de Souza RJ et al, Brit Med J 2015

# 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 | 0.98 (0.92 to 1.04) | 0.52 | 0.52 | 0 |
| CHD mortality | 2/2 | 3018/93 394 | 1.18 (1.04 to 1.33) | 0.009 | 0.68 | 0 |
| CHD total | 2/2 | 454/69 848 | 1.42 (1.05 to 1.92) | 0.02 | 0.22 | 34 |
| Ischemic stroke | 0 | 0/0 | - | - | - | - |
| Type 2 diabetes | 0 | 0/0 | - | - | - | - |
| **Ruminant trans fats** | | | | | | |
| All cause mortality | 1/2 | 11 890/71 464 | 1.04 (0.92 to 1.18) | 0.51 | 0.31 | 4 |
| CHD mortality | 2/3 | 3018/93 394 | 1.01 (0.71 to 1.43) | 0.95 | 0.01 | 79 |
| CHD total | 3/4 | 828/73 546 | 0.93 (0.73 to 1.18) | 0.55 | 0.13 | 46 |
| Ischemic stroke | 0 | 0/0 | - | - | - | - |
| Type 2 diabetes | 5/5 | 1153/12 942 | 0.58 (0.46 to 0.74) | <0.001 | 0.22 | 30 |

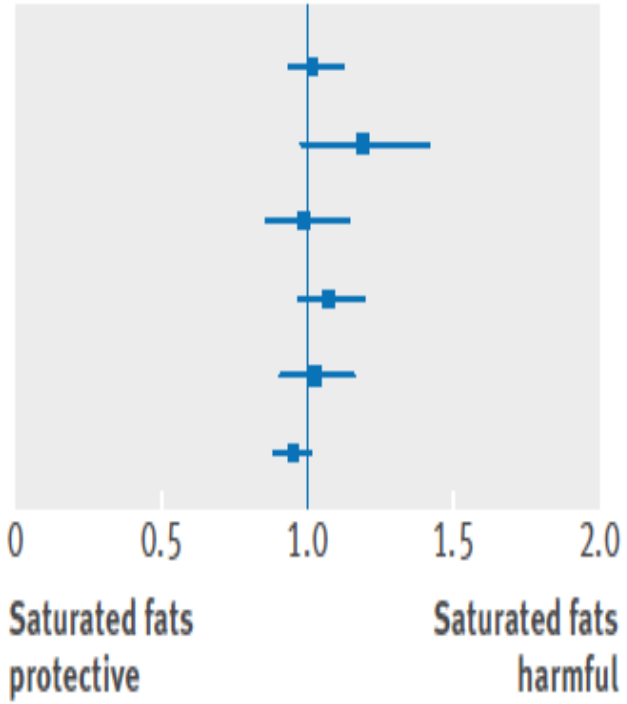



***trans* fats**

de Souza RJ et al, Brit Med J 2015

# 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

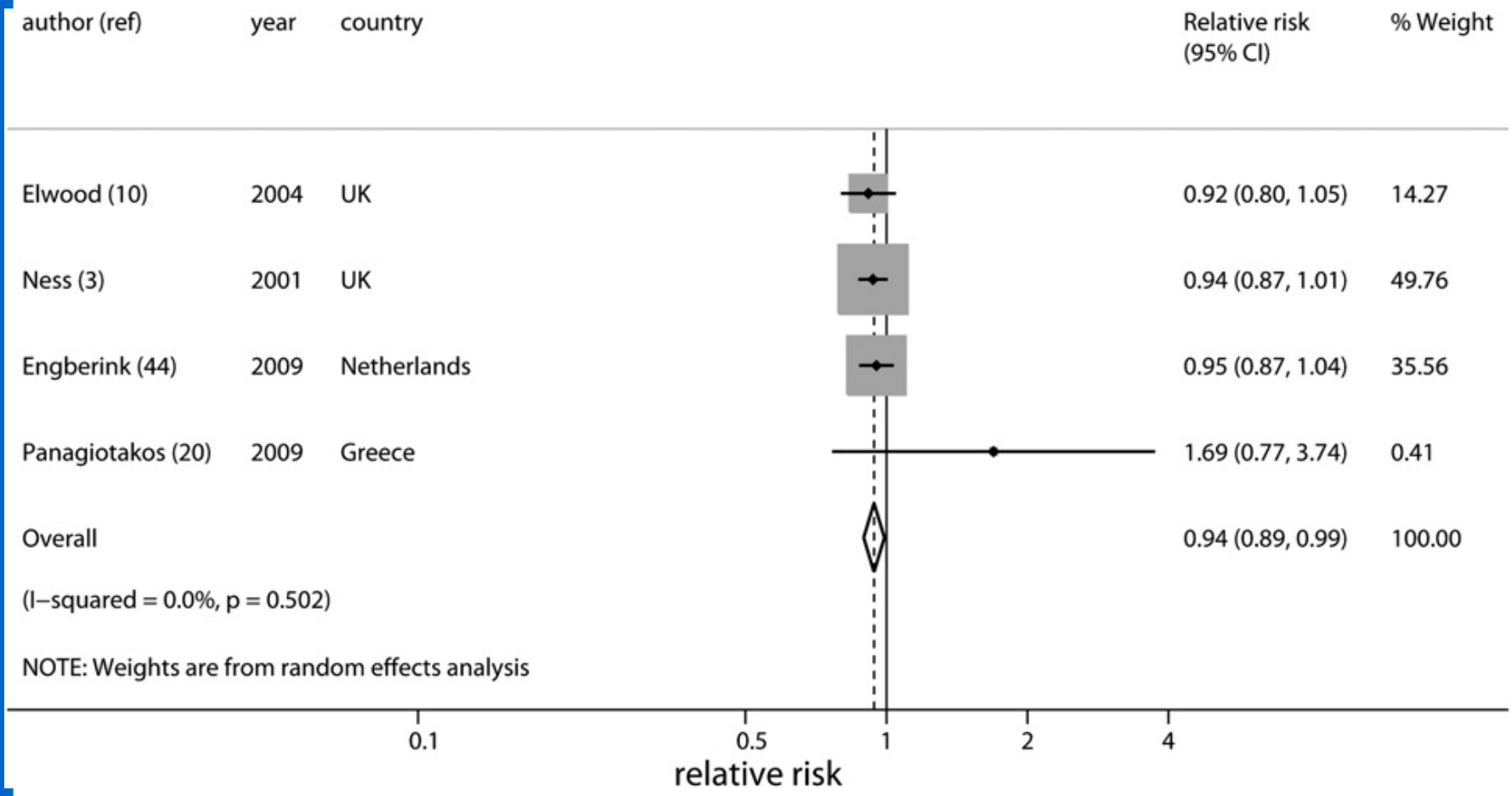
| Outcome | No of studies /comparisons | No of events /participants | Relative risk (95% CI) | P | $P_{het}$ | $I^2$ (%) |
|---|---|---|---|---|---|---|
| All cause mortality | 5/7 | 14 090/99 906 | 0.99 (0.91 to 1.09) | 0.91 | 0.17 | 33 |
| CHD mortality | 11/15 | 2970/101 712 | 1.15 (0.97 to 1.36) | 0.10 | <0.001 | 70 |
| CVD mortality | 3/5 | 3792/90 501 | 0.97 (0.84 to 1.12) | 0.69 | 0.29 | 19 |
| CHD total | 12/17 | 6383/267 416 | 1.06 (0.95 to 1.17) | 0.29 | 0.02 | 47 |
| Ischemic stroke | 12/15 | 6226/339 090 | 1.02 (0.90 to 1.15) | 0.79 | 0.002 | 59 |
| Type 2 diabetes | 8/8 | 8739/237 454 | 0.95 (0.88 to 1.03) | 0.20 | 0.61 | 0 |




**Saturated fats**

de Souza RJ et al, Brit Med J 2015

# Milk and CVD: a metanalysis

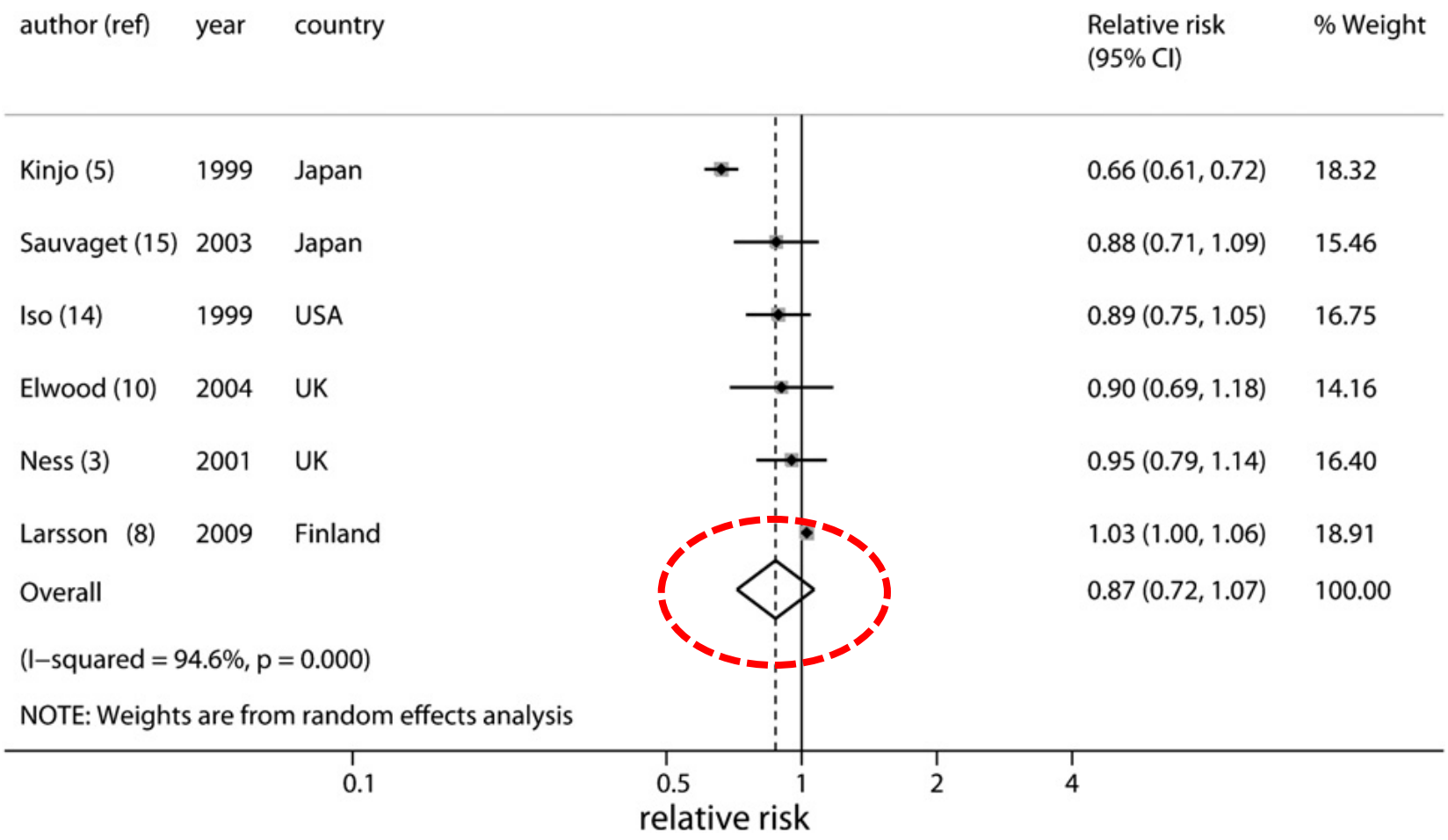



Soedamah-Muthu SS et al, Am J Clin Nutr 2011

# Milk and CHD: a metanalysis

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

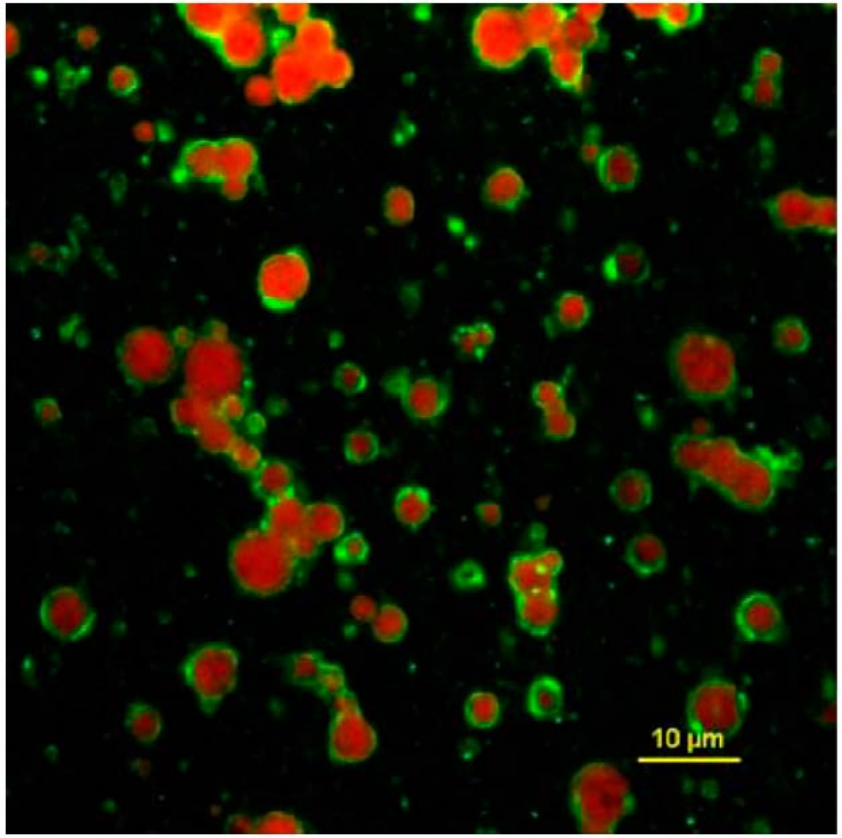
# Milk and stroke: a metanalysis

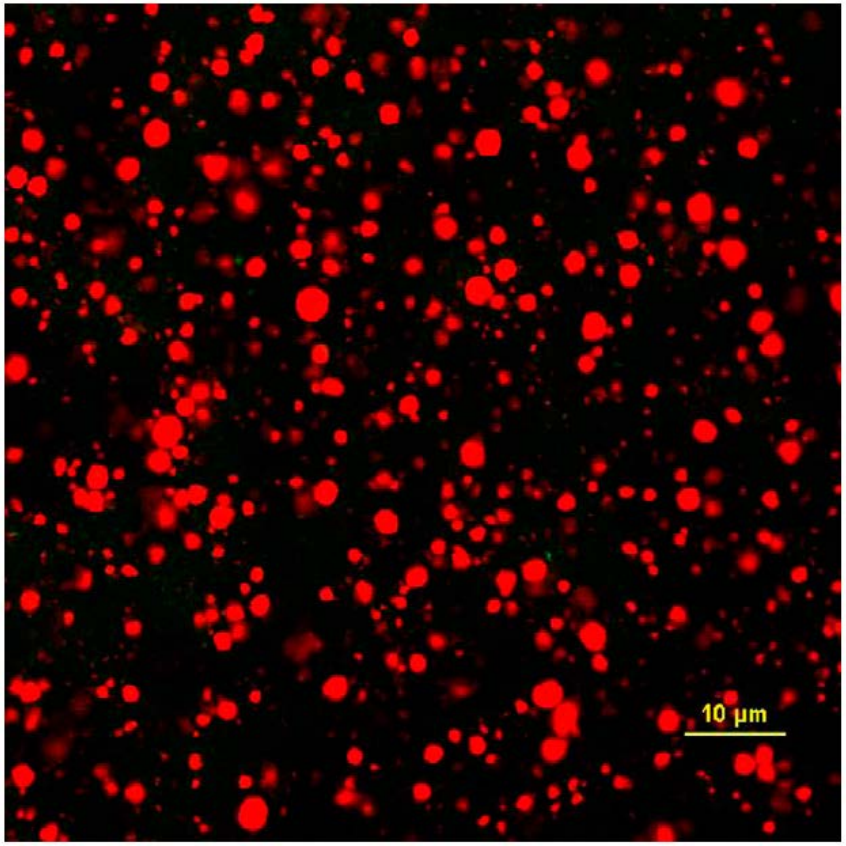



Soedamah-Muthu SS et al, Am J Clin Nutr 2011

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

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




Rosqvist F et al, Am J Clin Nutr 2015

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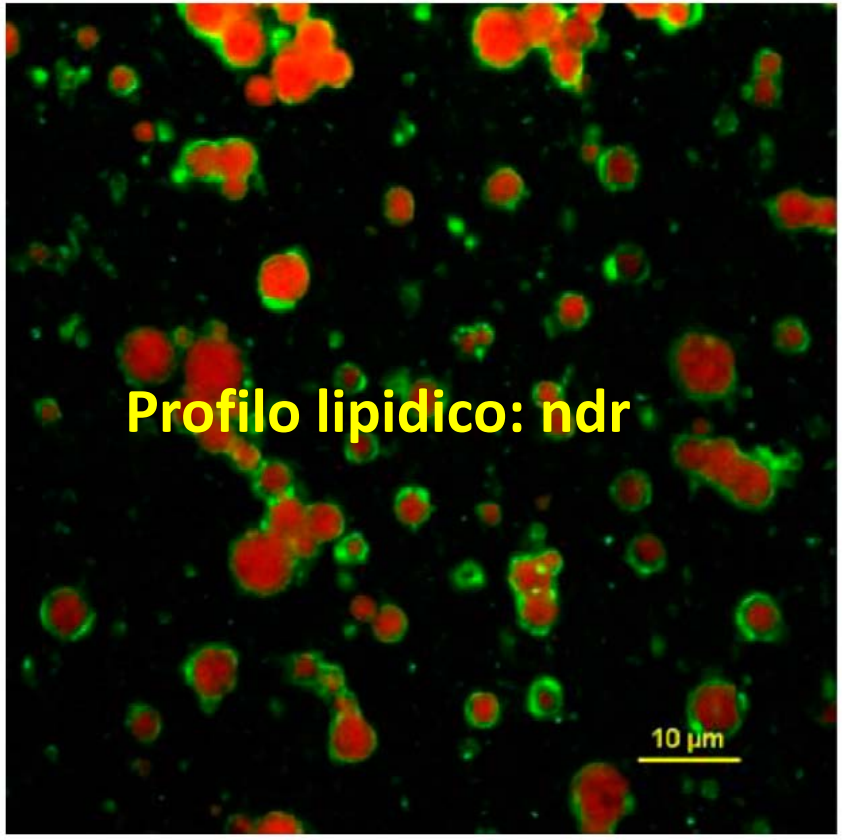
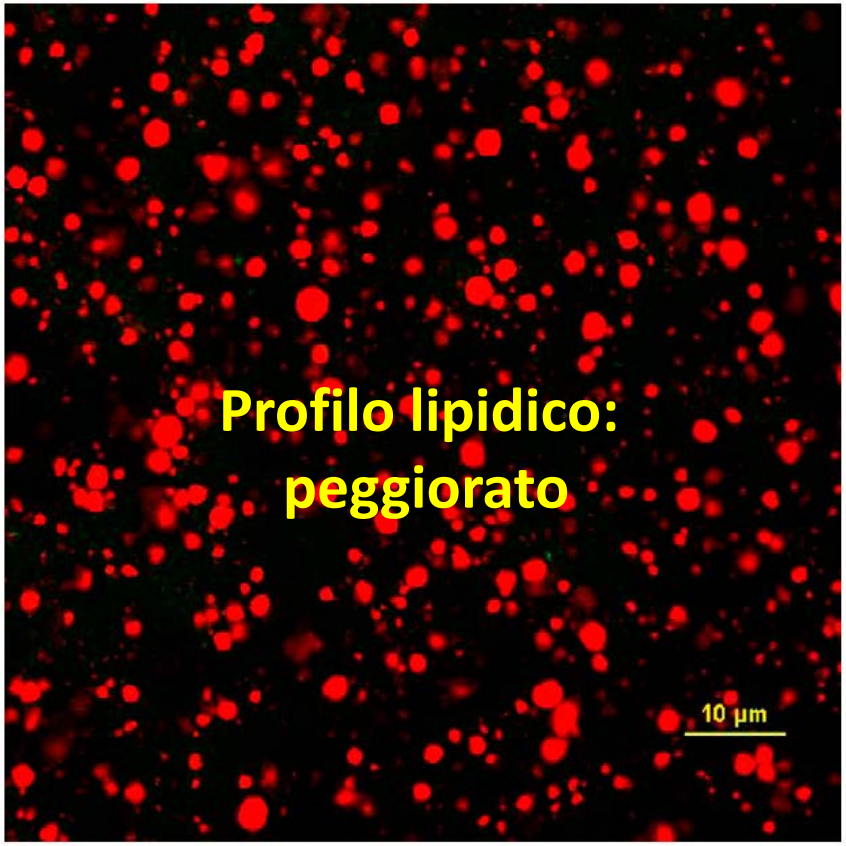
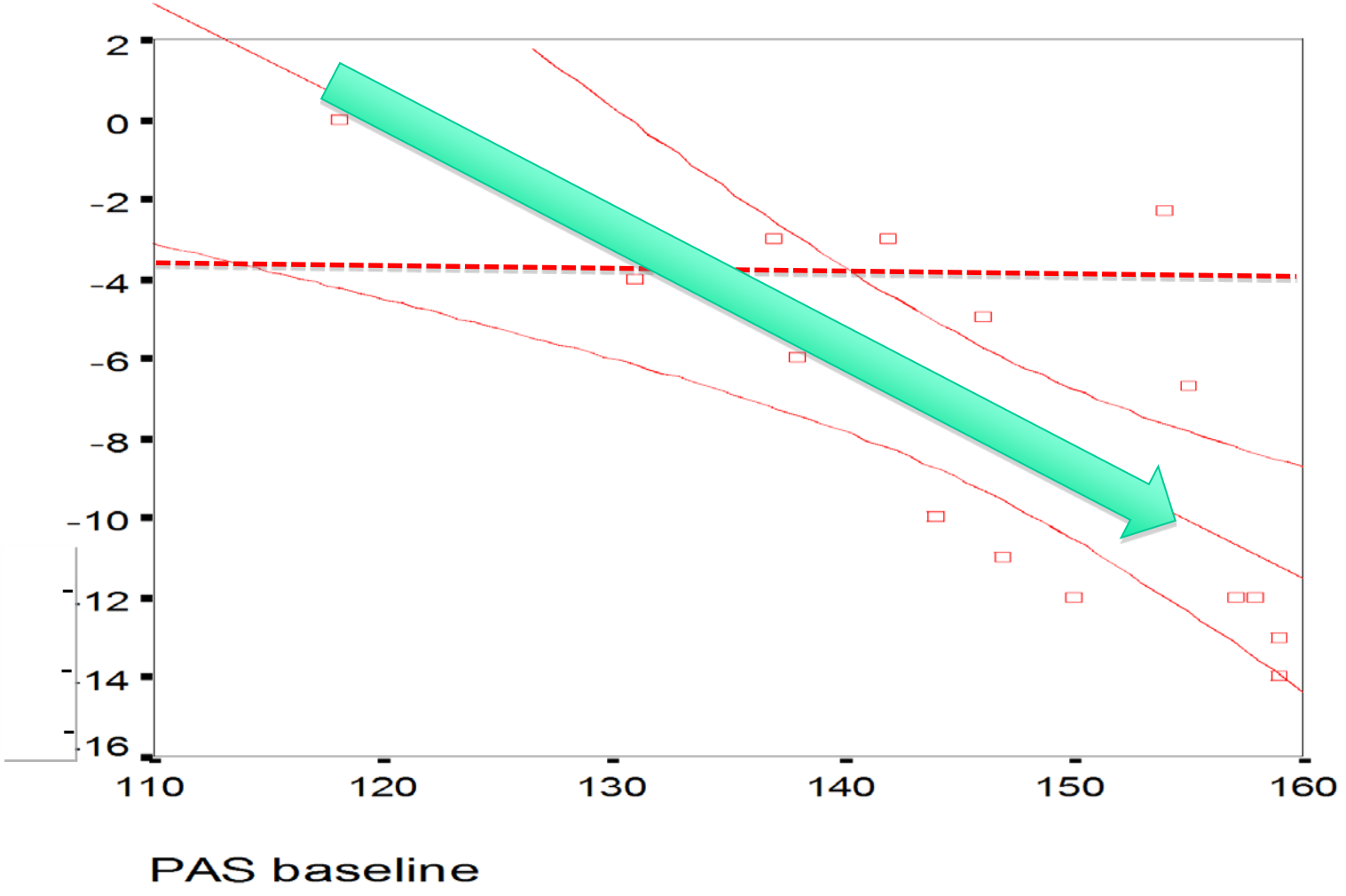



Rosqvist F et al, Am J Clin Nutr 2015

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




Cicero A et al, personal comunication, 2009

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# 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% | PLOSone 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 |

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# 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.

Astrup A, Am J Clin Nutr 2014

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# 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 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| Plaque area ($mm^2$) | 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, Aherosclerosis 2012

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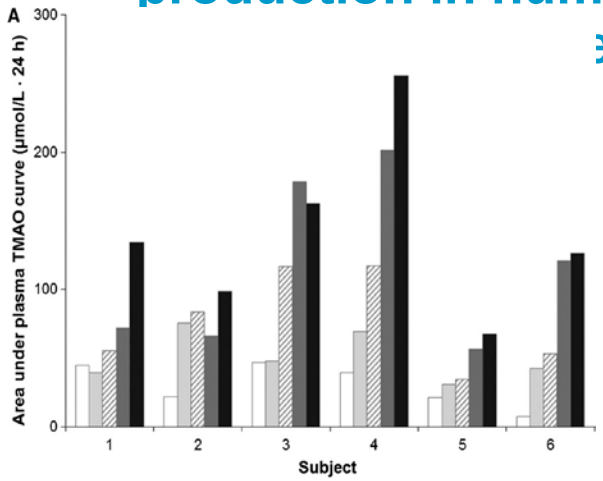
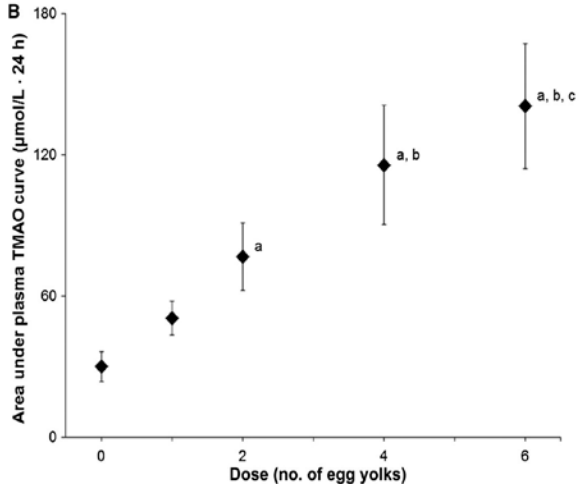
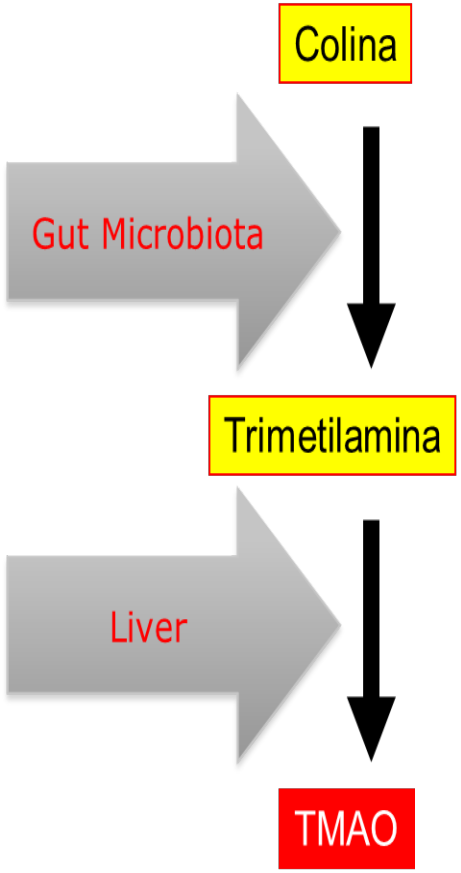
# Effect of egg ingestion on trimethylamine-N-oxide production in humans: a randomized, controlled, e-response study




**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

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# Egg consumption and risk of heart failure, myocardial infarction, and stroke: results from 2 prospective cohorts[1–3]

*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 ≤6 eggs/wk was not associated with HF risk; however, daily egg consumption (≥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 ≥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.

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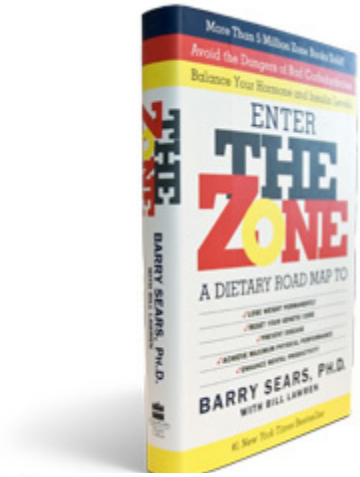
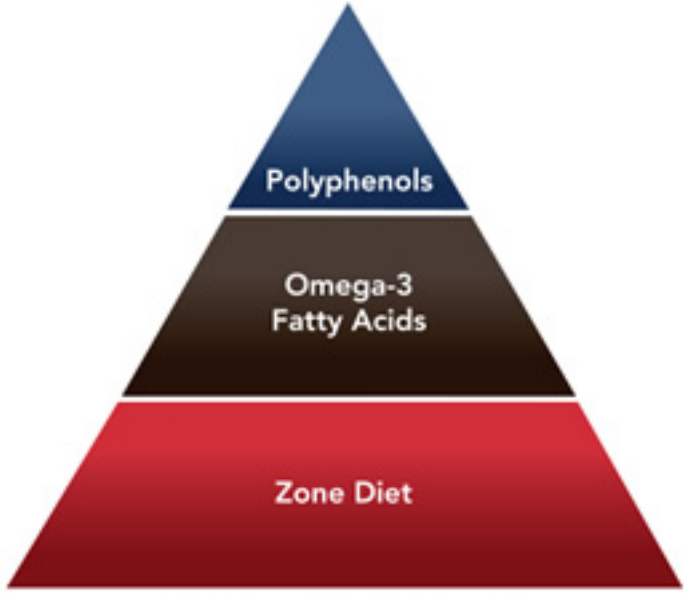
Dr. Sears ZONE Labs

Leading Anti-Inflammatory Nutrition Since 1995



Zone Food Pyramid




Inflammatory Genes

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

| Quintile | *n* | *CRP mg/L* | *IL-6 ng/L* | *E-selectin ng/L* |
|---|---|---|---|---|
| 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

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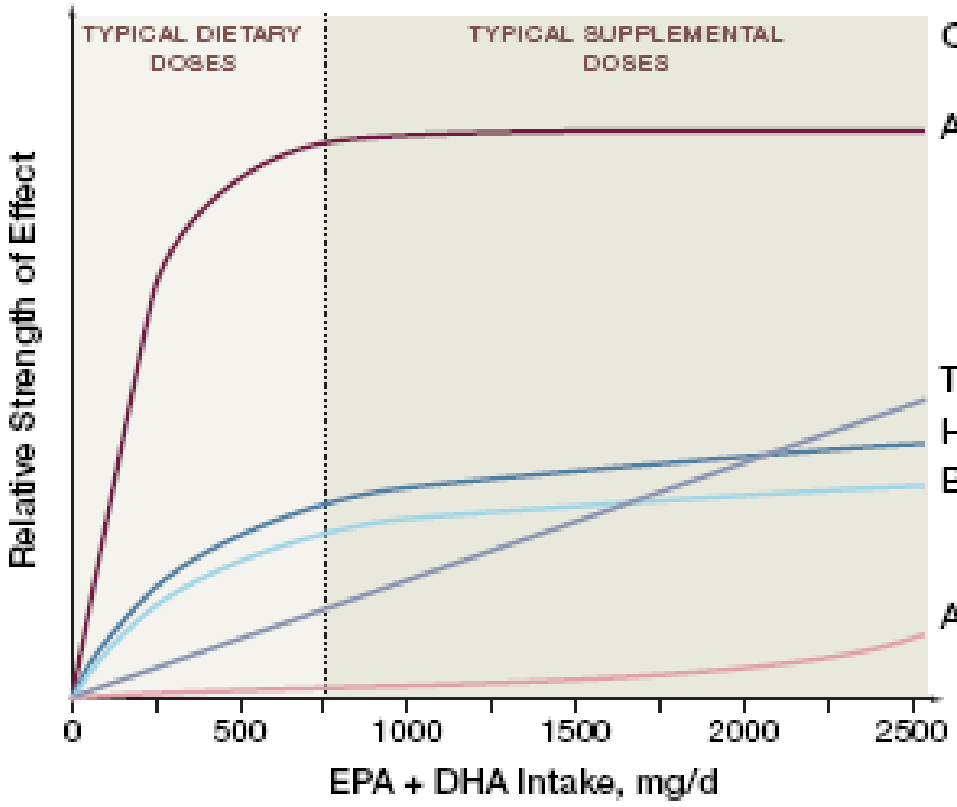
*Lopez-Garcia, J Nutr 2005*

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




| Clinical Effect | Time Course To Alter Clinical Events |
|---|---|
| Antiarrhythmia | Weeks |
| Triglyceride-Lowering | Months to Years |
| Heart Rate–Lowering | Months |
| BP–Lowering | Months to Years |
| Antithrombosis | Weeks |

**Mozaffarian & Rimm, JAMA 2006**

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# 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 | | | | |
|---|---|---|---|---|---|
| | No fish | <150 g/week | 150–300 g/week | >300 g/week | p Value |
| 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 |

A Zampelas et al; J Am Coll Cardiol 2005; 46:120–4

SIMPeSV

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

| | r | β | Serum n-3 fatty acids quartile[a] | | | | 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

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# Biochemical Pathways of Arachidonic Acid (ω-6) and Eicosapentenoic Acid (ω-3)

LOX → $LTs_4$ → platelet aggregation
→ vasoconstriction/inflammation

COX → $TxA_2$ → platelet aggregation
→ vasoconstriction

→ $PGI_2$ → anti-aggregatory
→ vasodilatation

**Eicosapentenoic acid**

LOX → $LTs_5$ → red. platelet aggregation
→ red. vasoconstriction/inflammation

COX → $TxA_3$ → red. platelet aggregation
→ red. vasoconstriction

→ $PGI_3$ → anti-aggregatory
→ vasodilatation

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# Biochemical Pathways of Arachidonic Acid (ω-6) and Eicosapentenoic Acid (ω-3)

LOX → $LTs_4$ → platelet aggregation
→ vasoconstriction/**inflammation**

COX → $TxA_2$ → platelet aggregation
→ vasoconstriction

→ $PGI_2$ → anti-aggregatory
→ vasodilatation

**Eicosapentenoic acid**

LOX → $LTs_5$ → red. platelet aggregation
→ **red.** vasoconstriction/**inflammation**

COX → $TxA_3$ → red. platelet aggregation
→ red. vasoconstriction

→ $PGI_3$ → anti-aggregatory
→ vasodilatation

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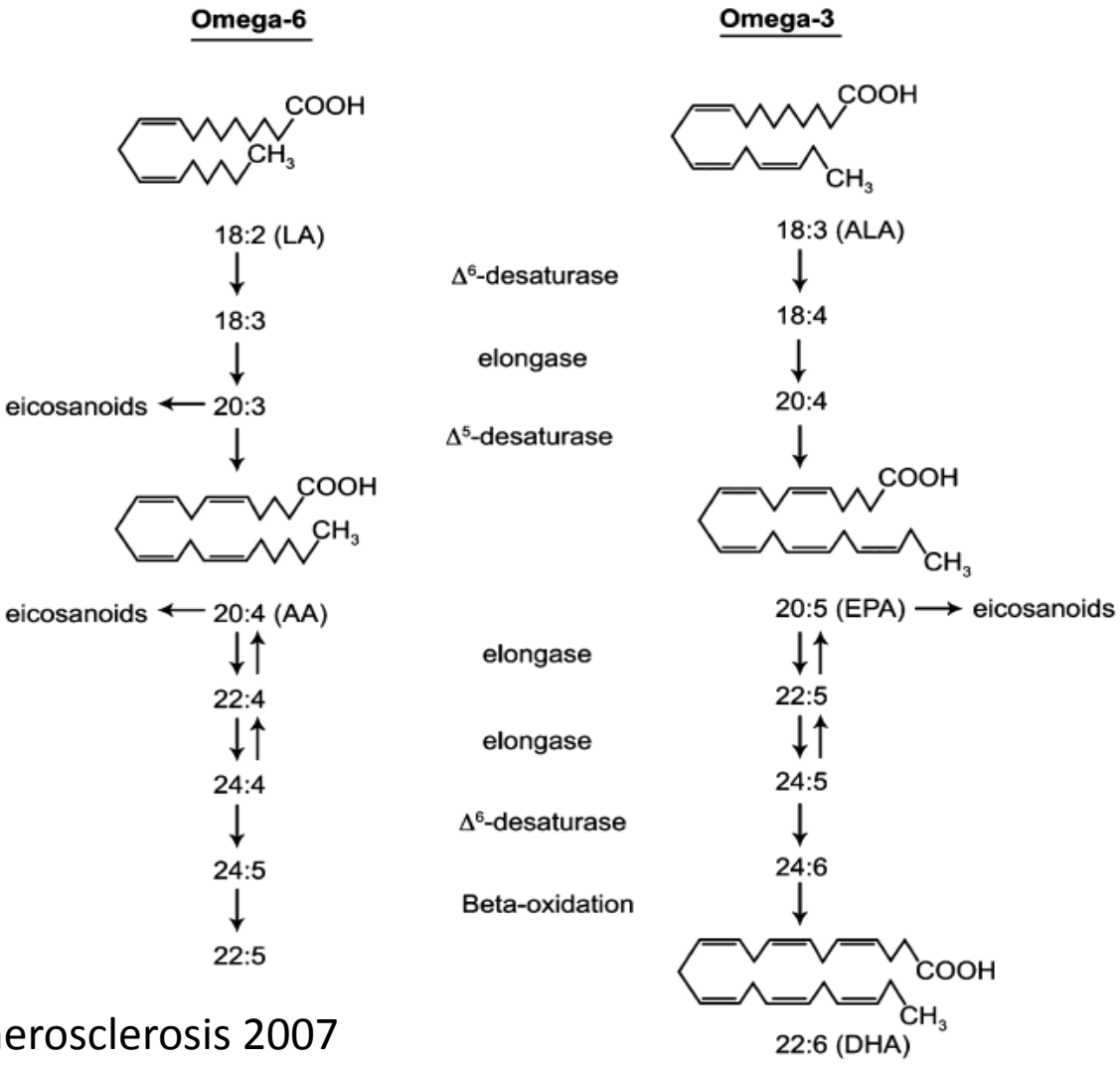
# Common metabolic pathways of n-3 and n-6 fatty acids




Harris, Atherosclerosis 2007

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# Effect of Dietary Linoleic Acid on Markers of Inflammation in Healthy Persons: A Systematic Review of Randomized Controlled Trials

Guy H. Johnson, PhD; Kevin Fritsche, PhD

1394 pubblicazioni → 15 lavori selezionati

Johnson GH et al, J Acad Nutr Diet, 2012

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Guy H. Johnson, PhD; Kevin Fritsche, PhD

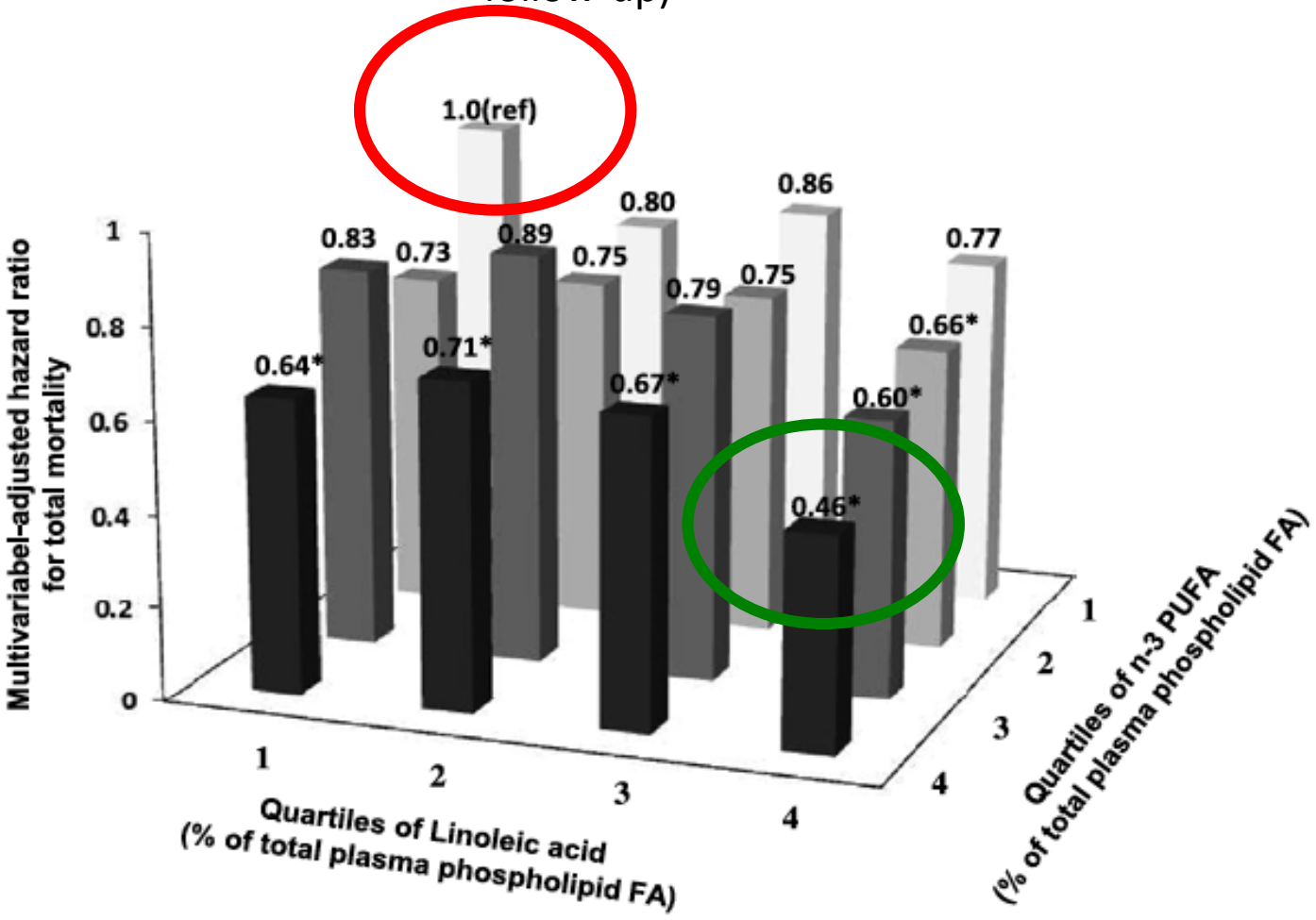
1394 pubblicazioni → 15 lavori selezionati

**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.**

**Johnson GH et al, J Acad Nutr Diet, 2012**

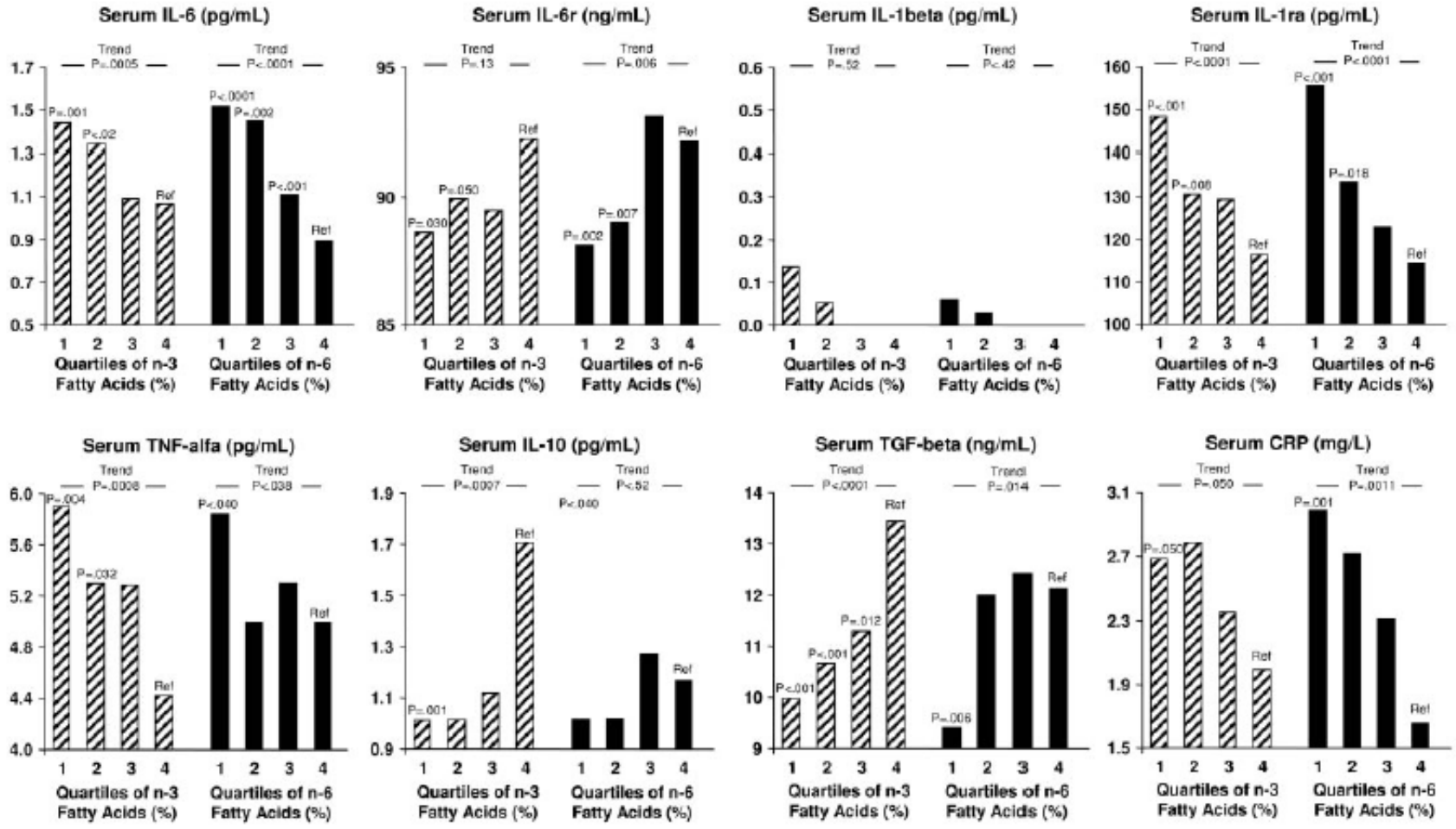
# Omega-3, omega-6 and all-cause mortality

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




**Wu JHY et al, Circulation 2014**

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




**Ferrucci L et al, J Clin Endocrinol Metab 2006**

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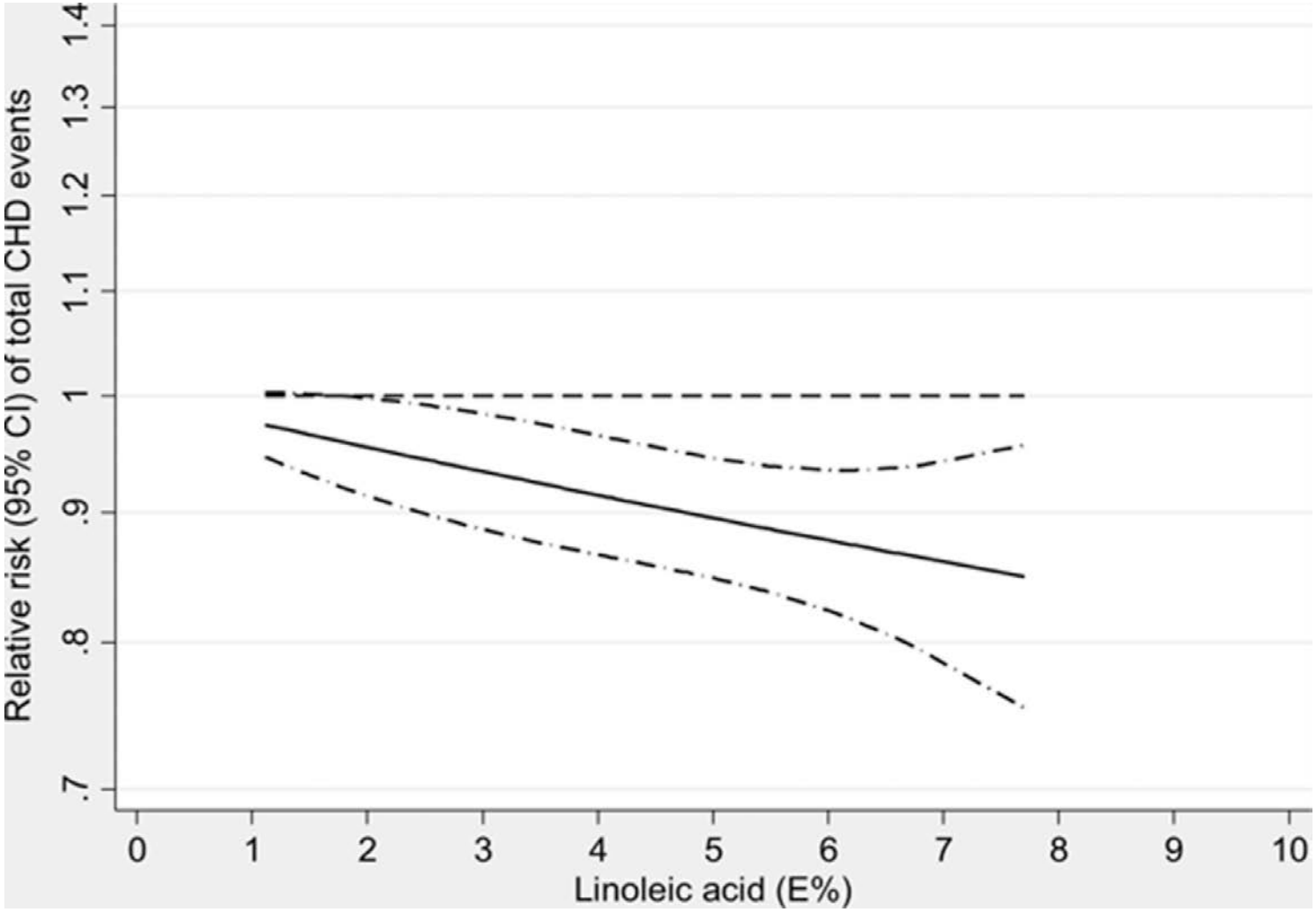
# Livelli ematici delle varie categorie di acidi grassi nei casi con IMA e nei controlli

| | Cases | SD | Controls | 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 |

Marangoni et al, Atherosclerosis 2014

# 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**

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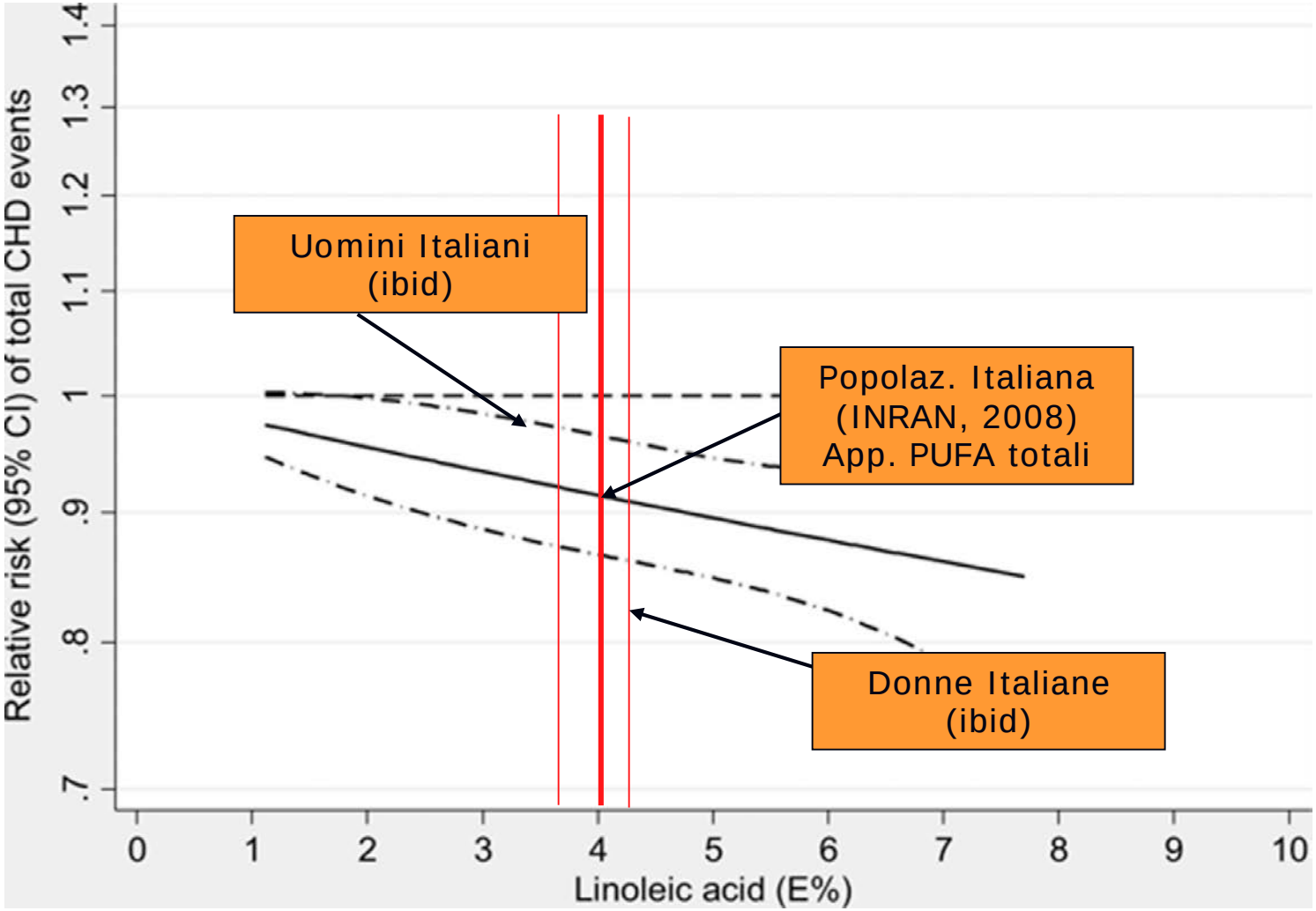


**Maryam S. Farvid et al. Circulation. 2014;130:1568-1578**

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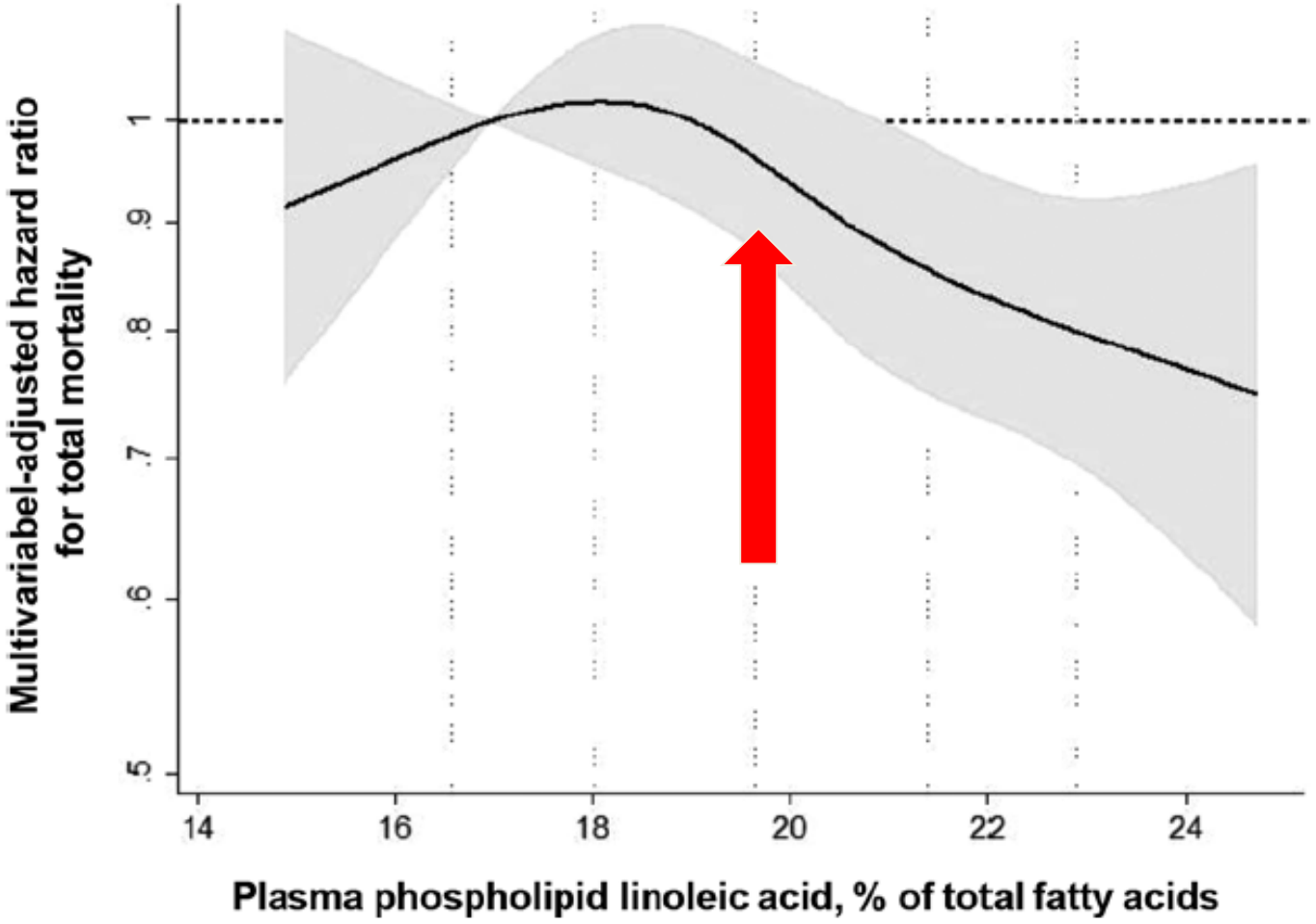
# Circulating omega-6 polyunsaturated fatty acids and total and cause-specific mortality: the Cardiovascular Health Study

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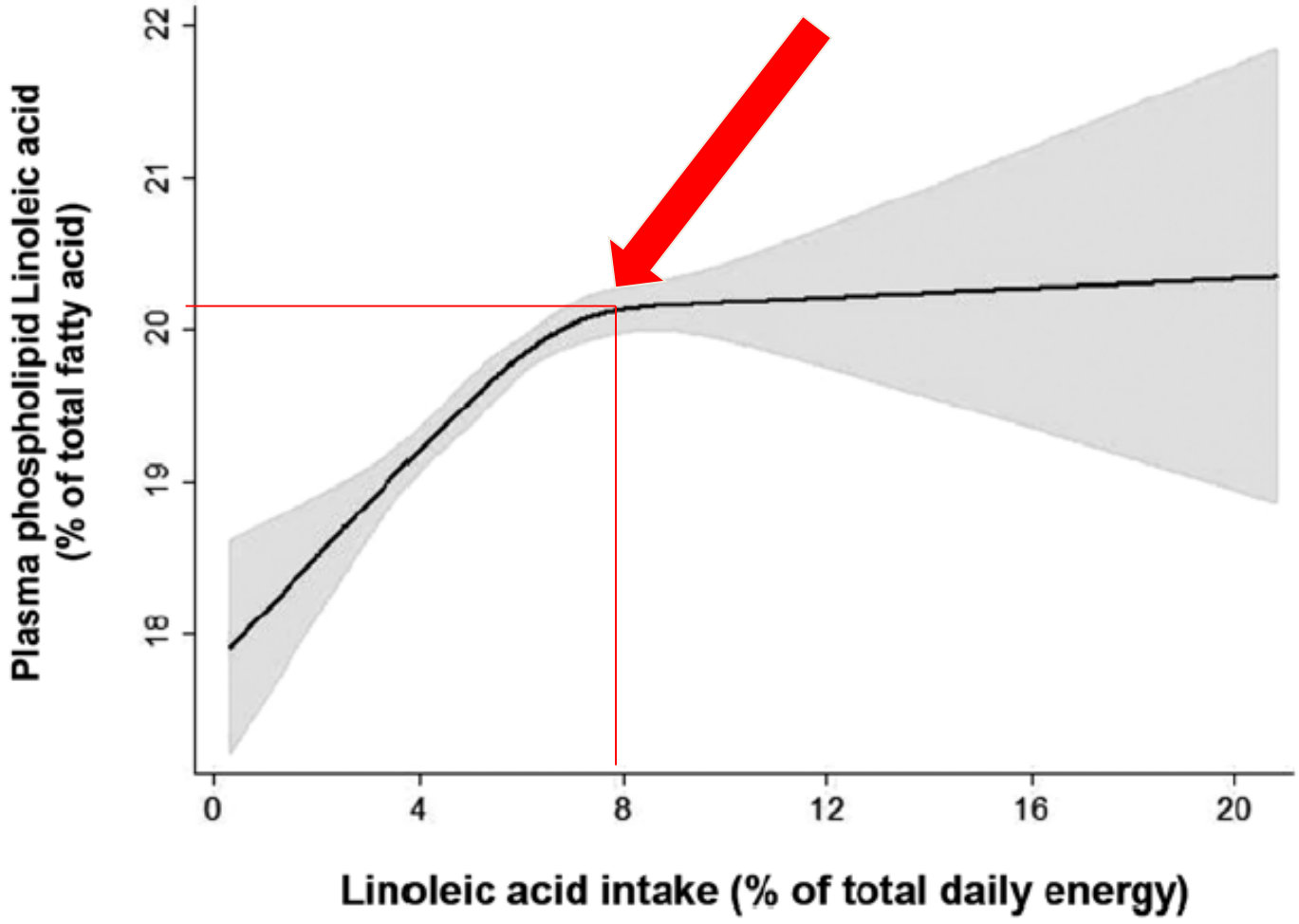
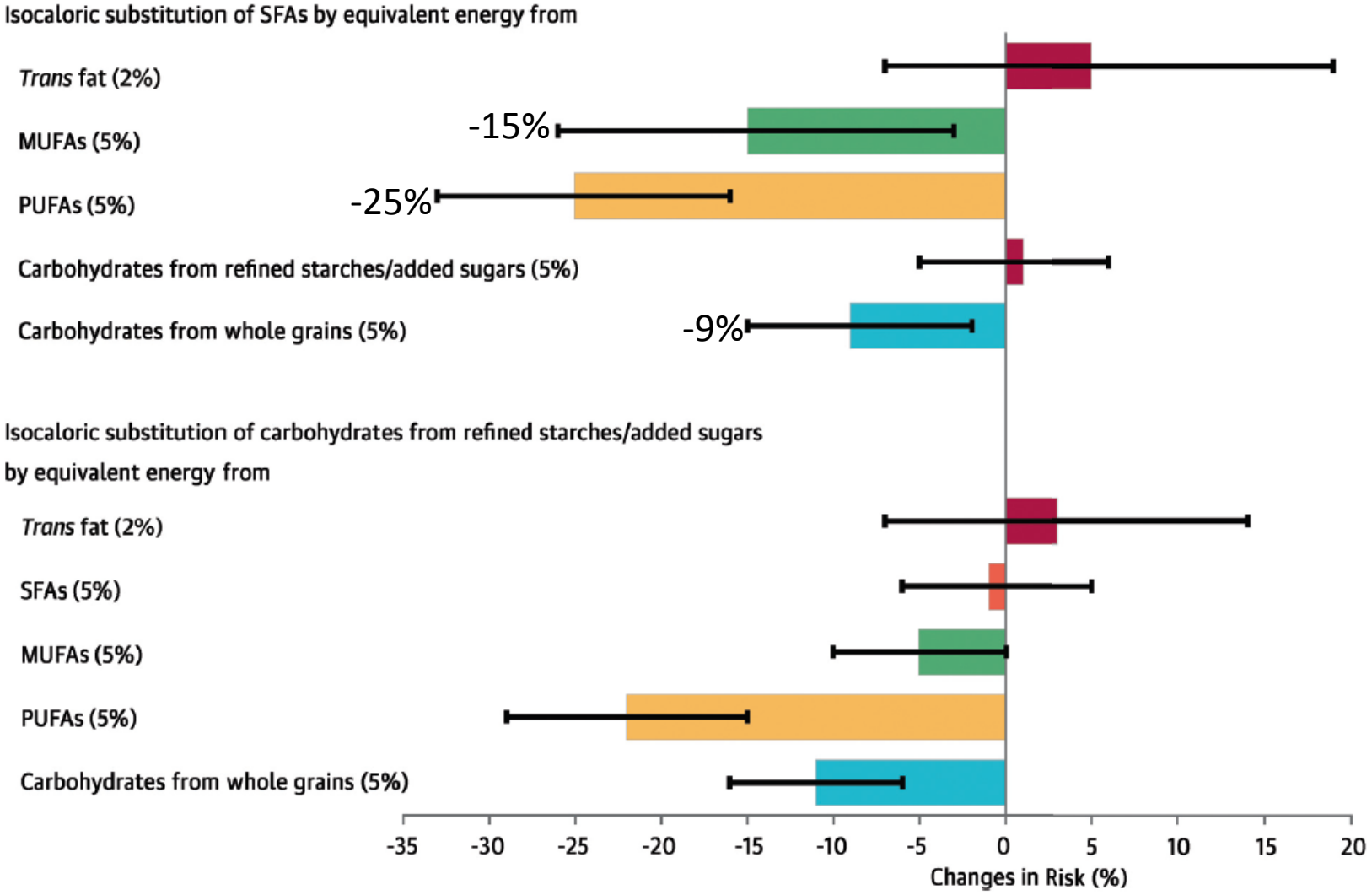
**Wu JHY et al, Circulation 2014**

# Linoleic acid intake and Plasma PL Linoleic levels




Wu JHY et al, Circulation 2014

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




Li J et al, JACC 2015

ORIGINAL ARTICLE

# Association of Nut Consumption with Total and Cause-Specific Mortality

Ying Bao, M.D., Sc.D., Jiali Han, Ph.D., Frank B. Hu, M.D., Ph.D., Edward L. Giovannucci, M.D., Sc.D., Meir J. Stampfer, M.D., Dr.P.H., Walter C. Willett, M.D., Dr.P.H., and Charles S. Fuchs, M.D., M.P.H.

ABSTRACT

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

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# 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**

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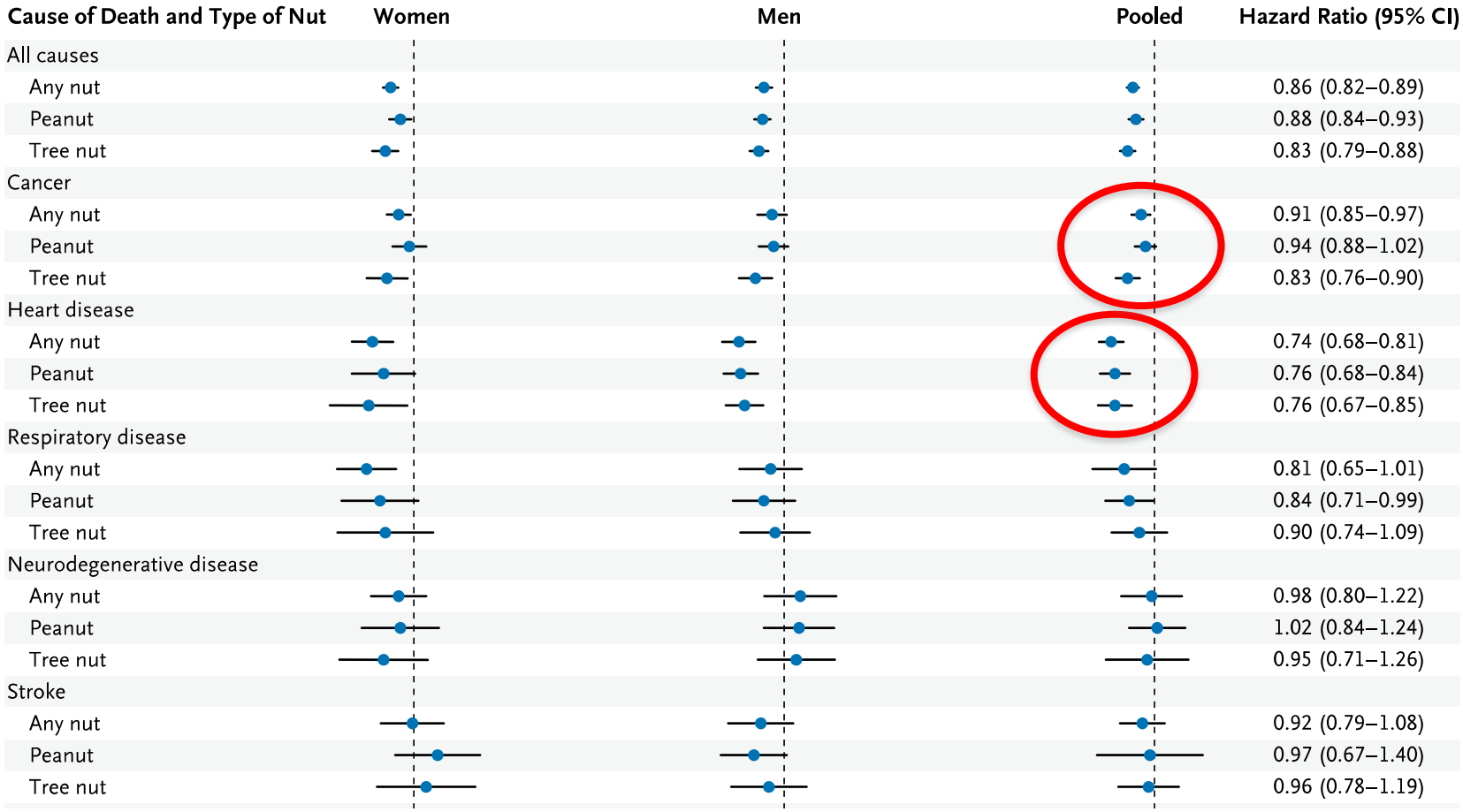
# Cause specific mortality, according to frequency of nut consumption




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

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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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *kcal* | *g* | *g* | *g* | *g* | *g* | *g* | *mg* GAE | *mg* | *μg* DFE | *mg* |
| 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 |

[1] 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

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| Peanuts | 149 | 13.8 | 1.9 | 6.8 | 4.4 | 4.4 | 0.0 | 117 | 61.6 | 68 | 2.4 |

[1] 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

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# 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

Ahern et al. BMC Public Health 2011, 11:434
http://www.biomedcentral.com/1471-2458/11/434

BMC Public Health

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[†], Ashley D Olson[†], Louise M Aston[†] and Susan A Jebb[*†]

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/m2 (IQR 31.8 - 39.5 kg/m2 .

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 ≥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 ≥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 ≥5% weight loss, which is usually associated with clinical benefits.

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# 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**

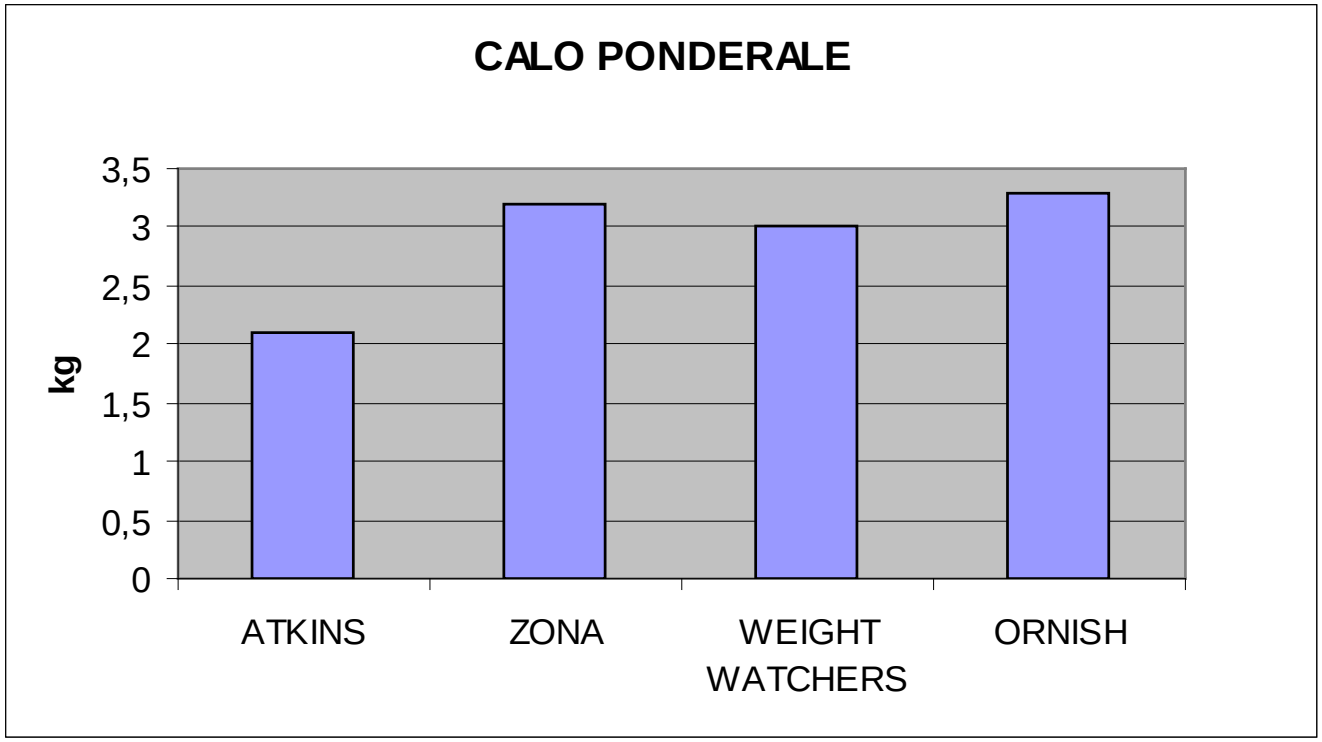
A single-center randomized trial at an academicmedical center in Boston, Mass, of overweight or obese (body mass index: mean, 35; range, 27-42) adults aged 22 to 72 years with known hypertension, dyslipidemia, or fasting hyperglycemia. Participants were enrolled starting July 18, 2000, and randomized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

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| 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, µIU/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)‡ |

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

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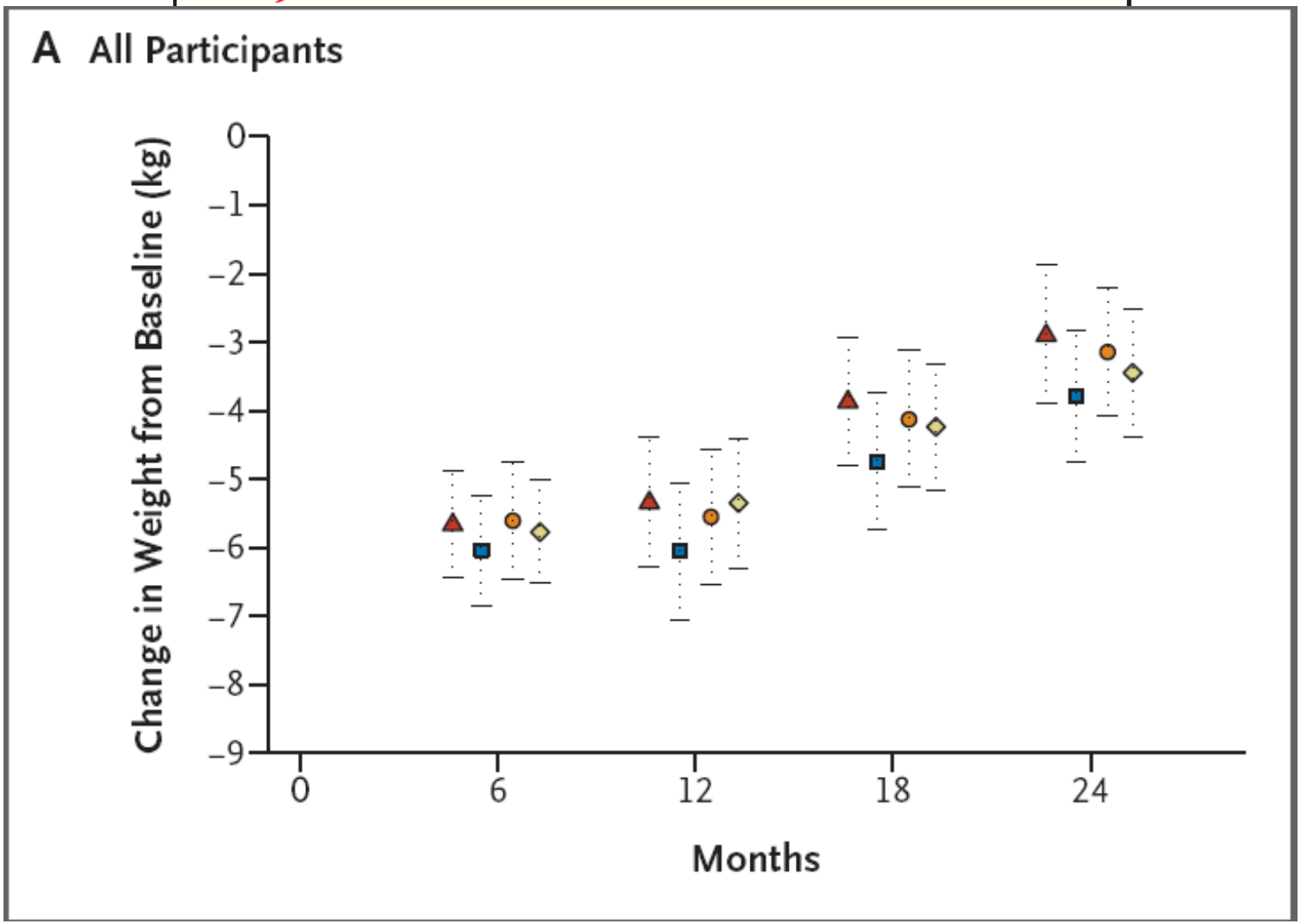
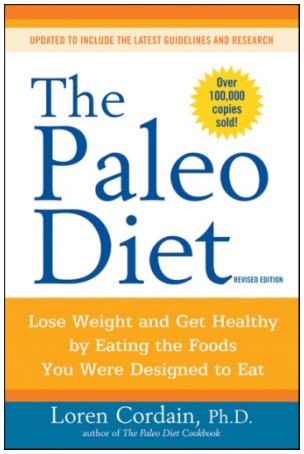
## Conclusion

**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.**

The NEW ENGLAND JOURNAL of MEDICINE

February 26
2009;360:859-73.






- 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.
- Lower intake of calcium

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

Thomas D, Elliott EJ, Baur L

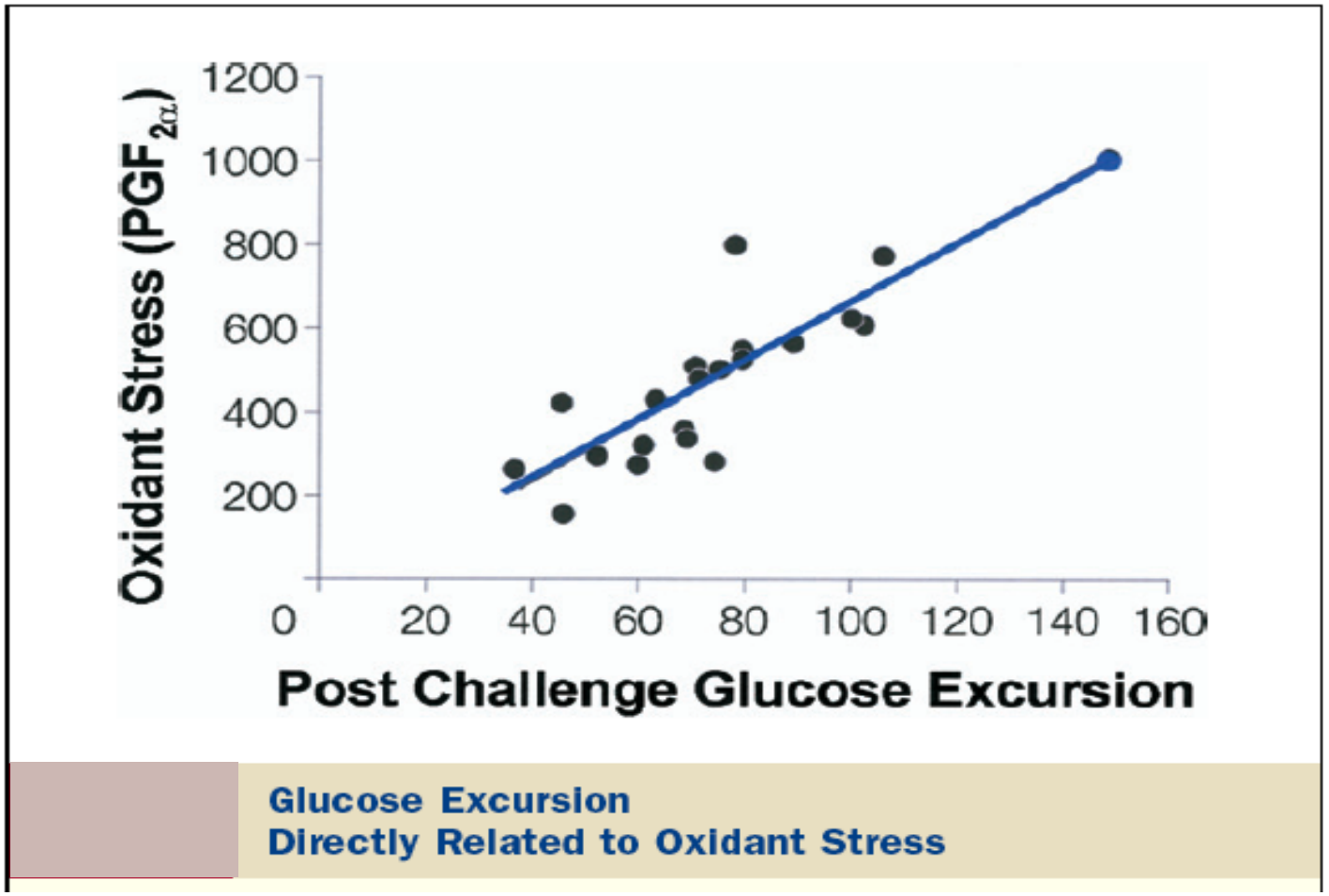
THE COCHRANE COLLABORATION®

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 PGF2 alfa, a measure of oxidant stress.




Monnier L et al, JAMA 2006

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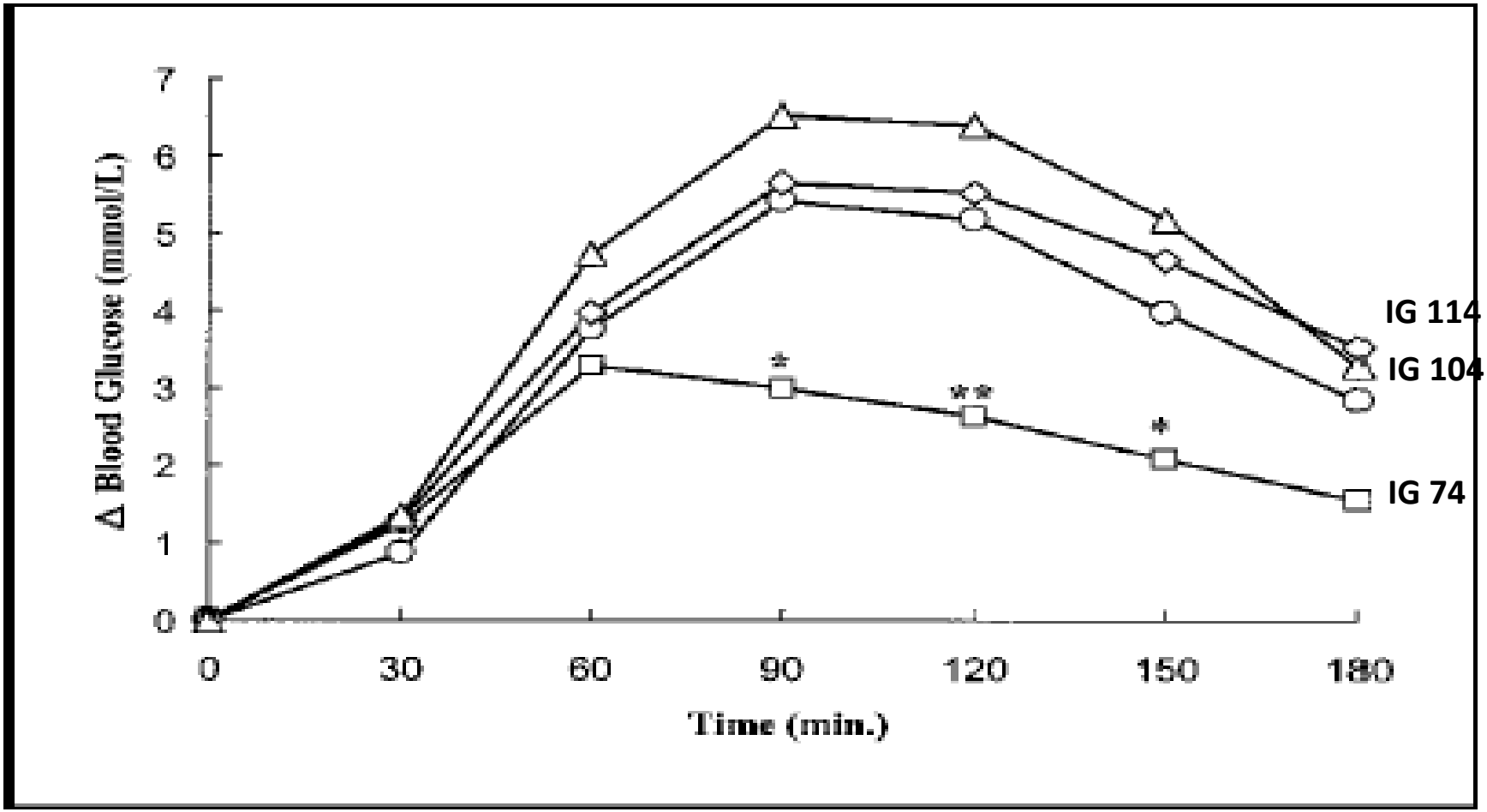
**Il glucosio ematico aumenta rispetto ai livelli basali dopo assunzione di pane bianco ○ pane tostato△ , pizza ◇ e gnocchi di patate □ . *p≤ 0.05, **$p$≤0.01 gnocchi vs pane bianco.**

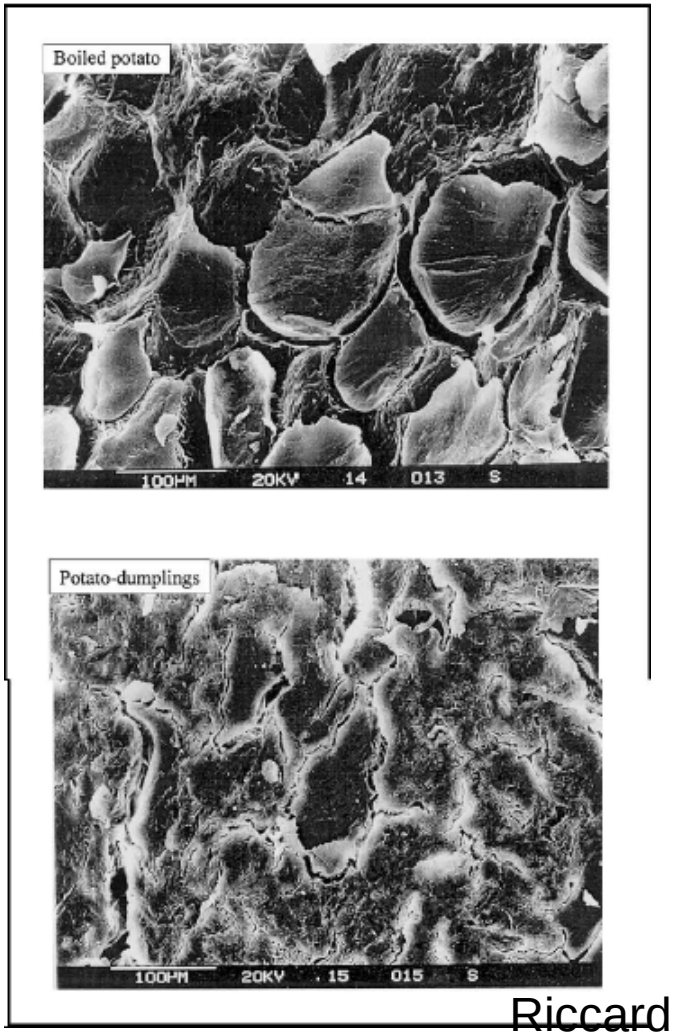



Riccardi, Nutrition Reviews, 2003

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

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

**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.**




Riccardi, Nutrition Reviews, 2003

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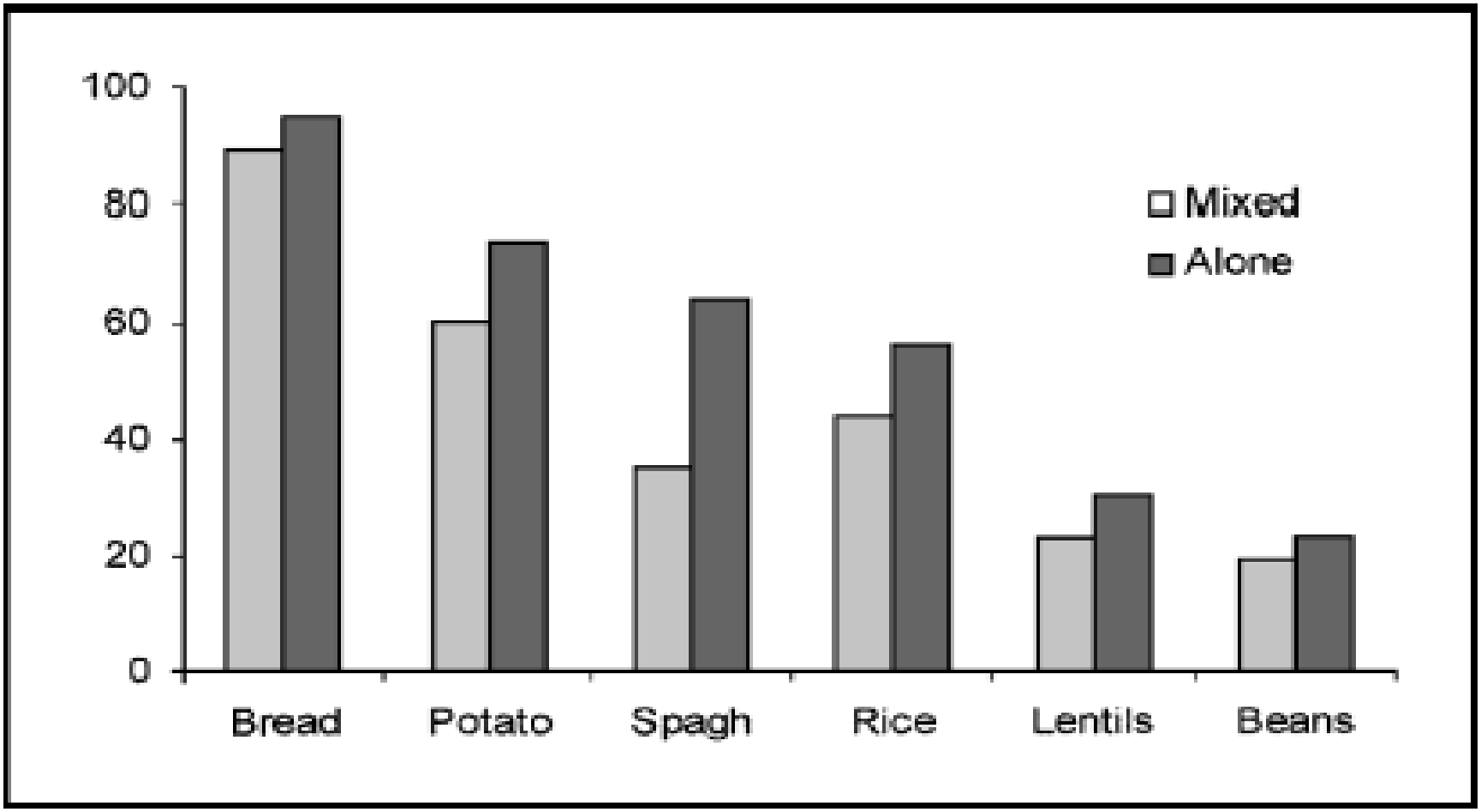
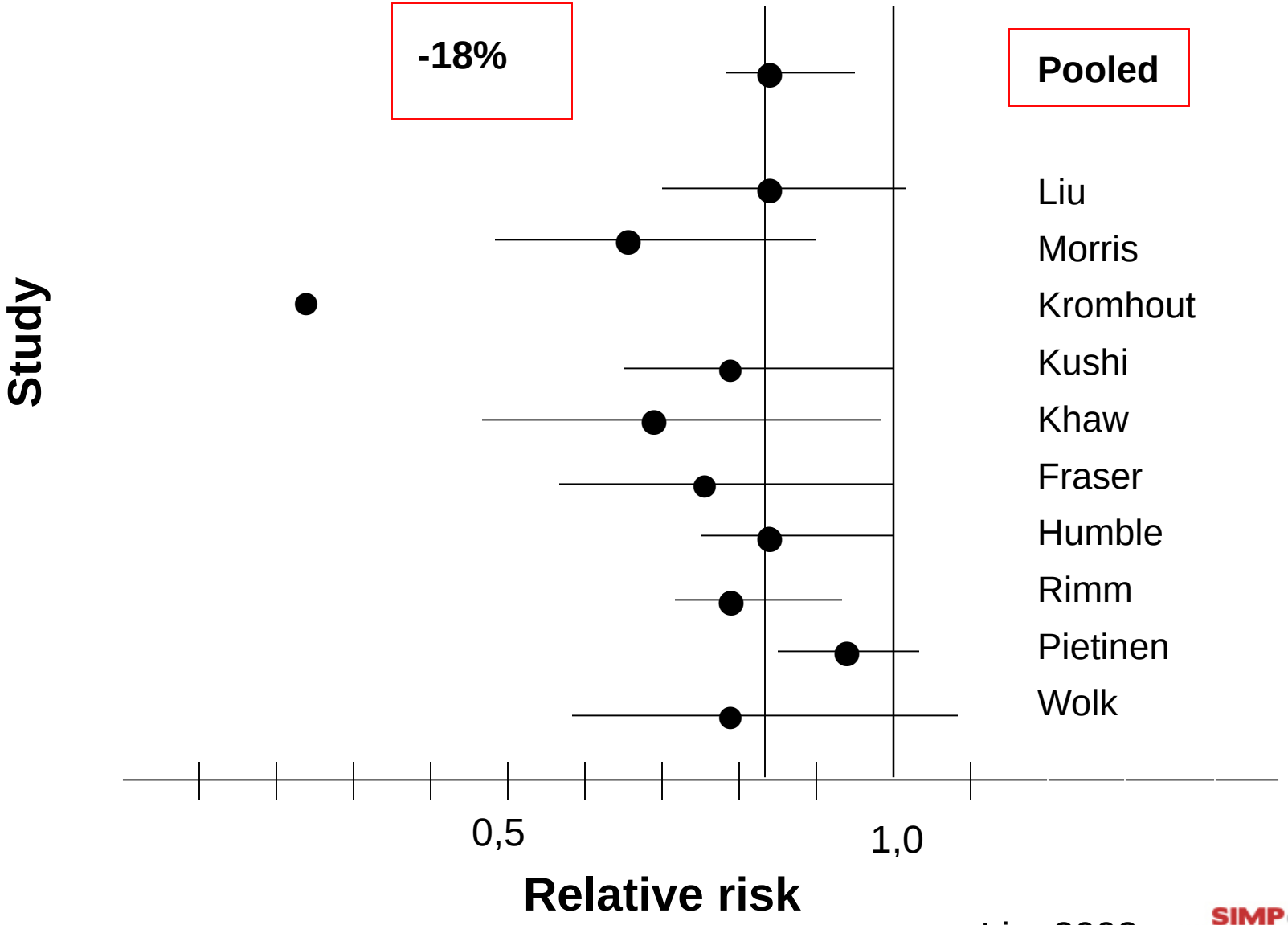
# Indice glicemico di alcuni alimenti assunti singolarmente o con pasti composti



# Dietary Fiber and Cardiovascular Disease: a Metanalisis




Liu, 2002

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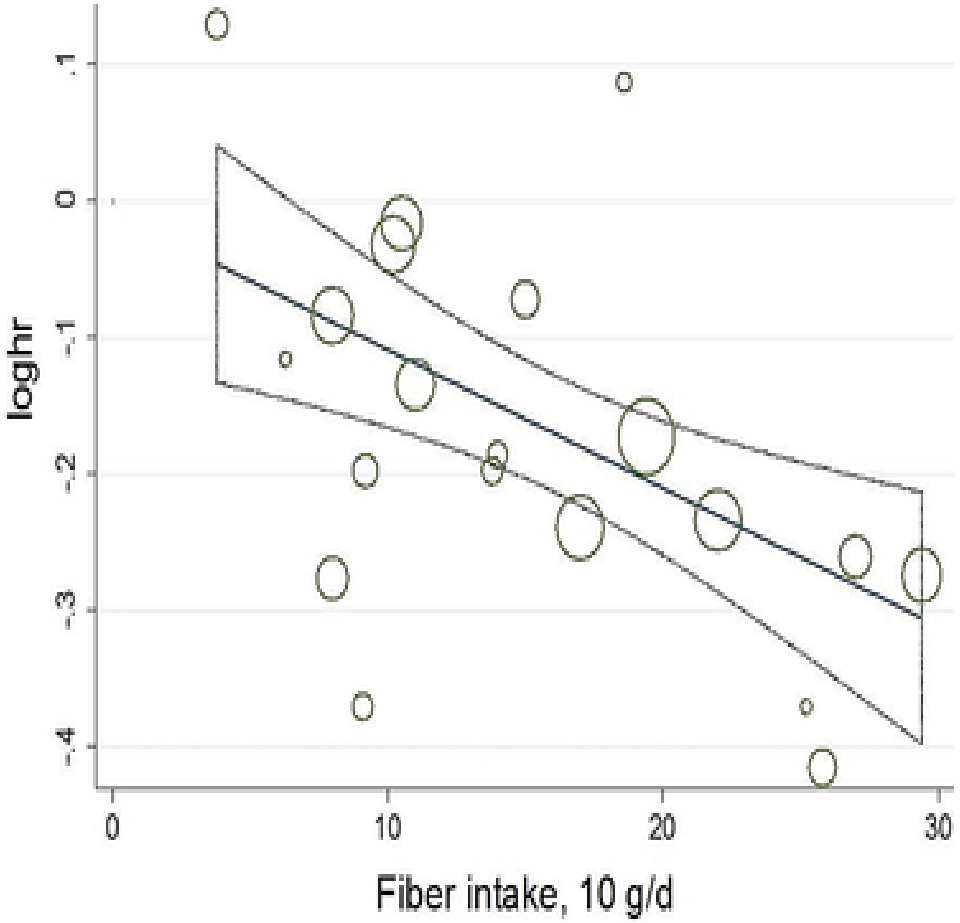
# Fiber consumption and all-cause, cardiovascular, and cancer mortalities: A systematic review and meta-analysis of cohort studies




**Liu L, Molecular Nutrition & Food Research** Volume 59, Issue 1, pages 139-146, 11 DEC 2014

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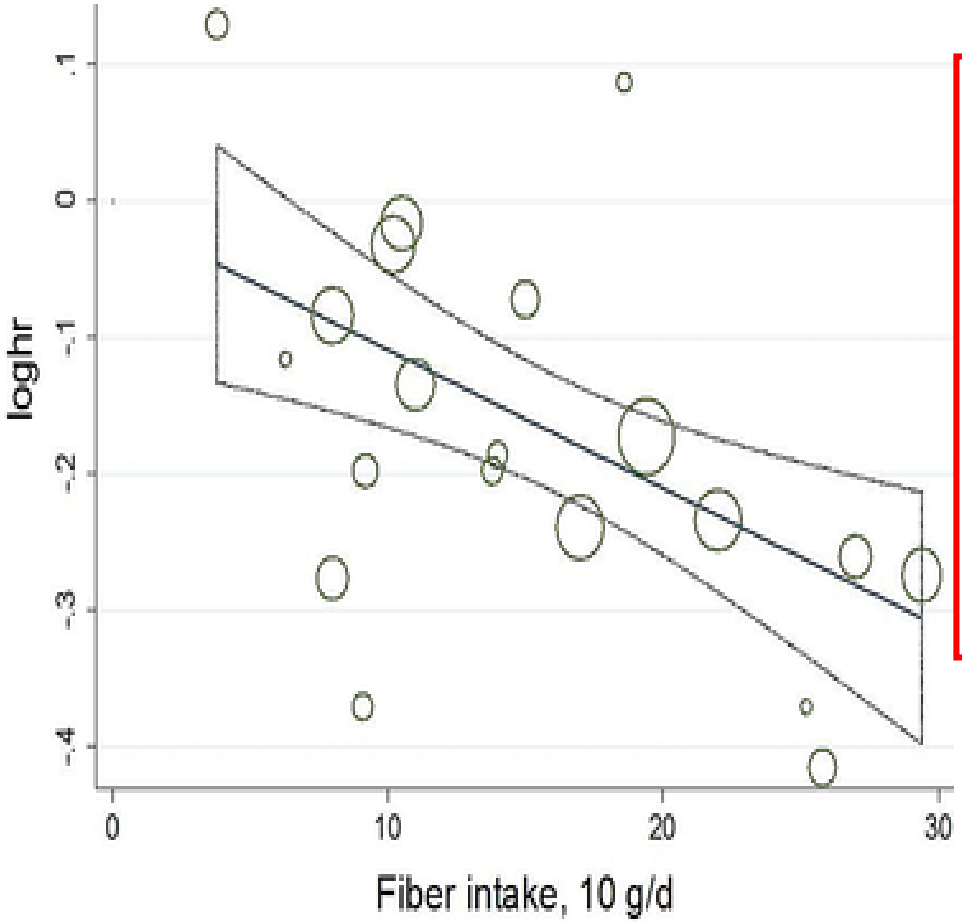
# Fiber consumption and all-cause, cardiovascular, and cancer mortalities: A systematic review and meta-analysis of cohort studies




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

**Liu L, Molecular Nutrition & Food Research** Volume 59, Issue 1, pages 139-146, 11 DEC 2014

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# Fruit, vegetables and fiber and risk to develop overweight or obesity. The Women Health Study.

| | | | | | |
|---|---|---|---|---|---|
| Fruits, servings/d | | | | | |
| Q1: <1.0 | 3604 | 1781 | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Q2: 1.0 to <1.7 | 3644 | 1694 | 0.94 (0.88, 1.01) | 0.97 (0.91, 1.04) | 0.86 (0.80, 0.92) |
| Q3: 1.7 to <2.3 | 3654 | 1648 | 0.92 (0.86, 0.98) | 0.96 (0.89, 1.02) | 0.93 (0.87, 1.00) |
| Q4: 2.3 to <3.1 | 3677 | 1586 | 0.88 (0.82, 0.94) | 0.92 (0.86, 0.99) | 0.92 (0.85, 0.99) |
| Q5: ≥3.1 | 3567 | 1416 | 0.81 (0.75, 0.87) | 0.86 (0.79, 0.93) | 0.87 (0.80, 0.94) |
| *P*-trend | | | <0.0001 | 0.0001 | 0.01 |
| Vegetables, servings/d | | | | | |
| Q1: <2.0 | 3605 | 1659 | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Q2: 2.0 to <3.0 | 3649 | 1617 | 0.95 (0.89, 1.02) | 0.98 (0.91, 1.05) | 0.86 (0.80, 0.92) |
| Q3: 3.0 to <3.9 | 3682 | 1674 | 1.01 (0.94, 1.08) | 1.07 (1.00, 1.15) | 1.05 (0.97, 1.12) |
| Q4: 3.9 to <5.4 | 3662 | 1618 | 0.98 (0.91, 1.05) | 1.06 (0.98, 1.14) | 1.00 (0.93, 1.07) |
| Q5: ≥5.4 | 3548 | 1557 | 0.99 (0.92, 1.06) | 1.11 (1.03, 1.20) | 0.99 (0.91, 1.07) |
| *P*-trend | | | 0.94 | 0.003 | 0.22 |
| Dietary fiber, mg/d | | | | | |
| Q1: <12.4 | 3630 | 1727 | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Q2: 12.4 to <16.1 | 3615 | 1660 | 0.98 (0.91, 1.04) | 1.00 (0.93, 1.07) | 1.18 (1.10, 1.27) |
| Q3: 16.1 to <19.7 | 3642 | 1627 | 0.94 (0.88, 1.00) | 0.97 (0.90, 1.04) | 1.07 (0.99, 1.16) |
| Q4: 19.7 to <24.7 | 3629 | 1587 | 0.93 (0.87, 1.00) | 0.98 (0.90, 1.06) | 1.05 (0.96, 1.14) |
| Q5: ≥24.7 | 3630 | 1524 | 0.90 (0.84, 0.96) | 0.96 (0.88, 1.06) | 1.00 (0.91, 1.10) |
| *P*-trend | | | 0.0008 | 0.40 | 0.13 |

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Rautianien S et al, J Nutr 2015

# 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)**

**King D, Am J Cardiol 2003**

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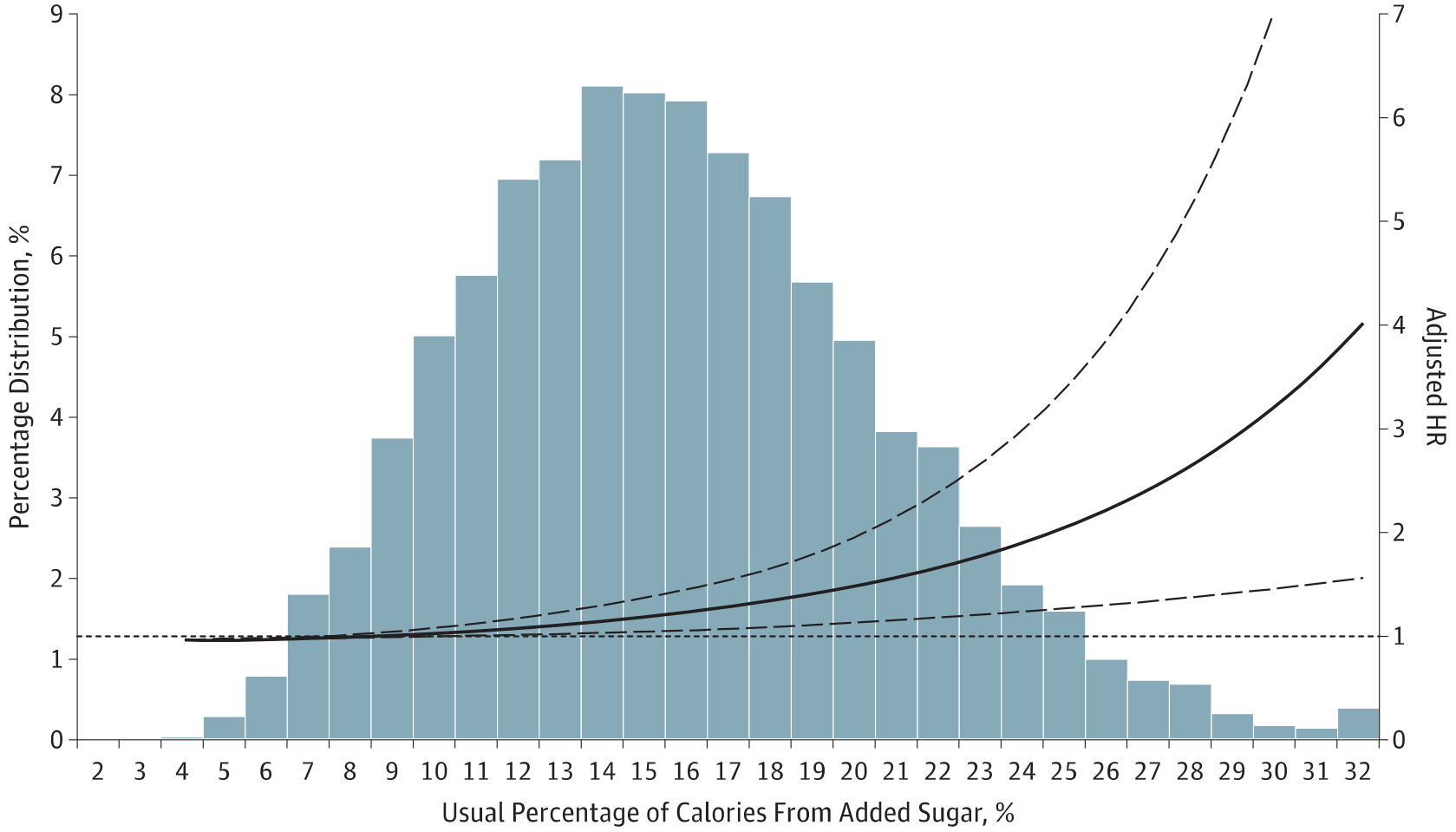
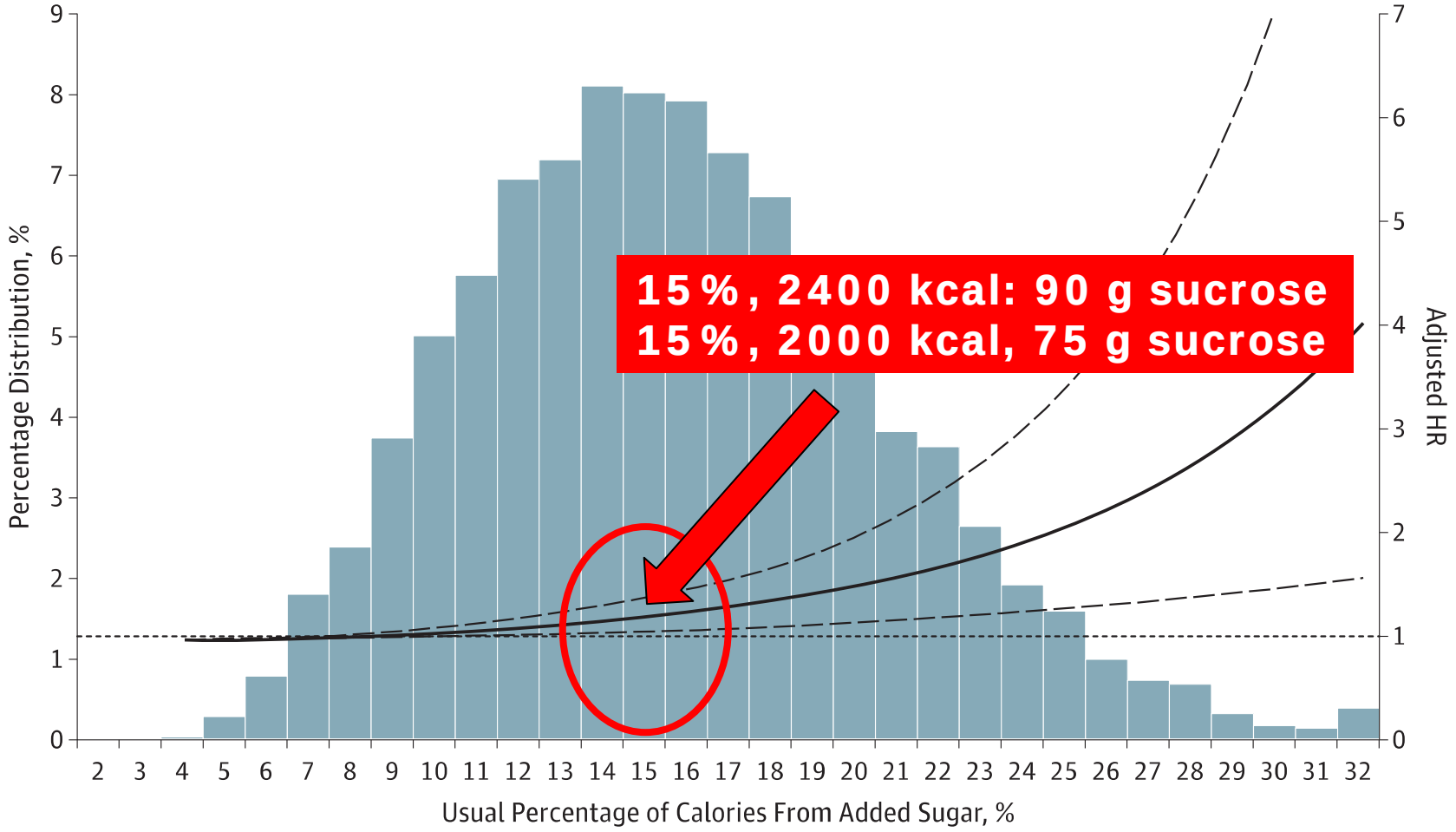
# Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults




Quang Y et al, JAMA Intern Med 2014

# Added Sugar Intake and Cardiovascular Diseases Mortality Among US Adults




Quang Y et al, JAMA Intern Med 2014

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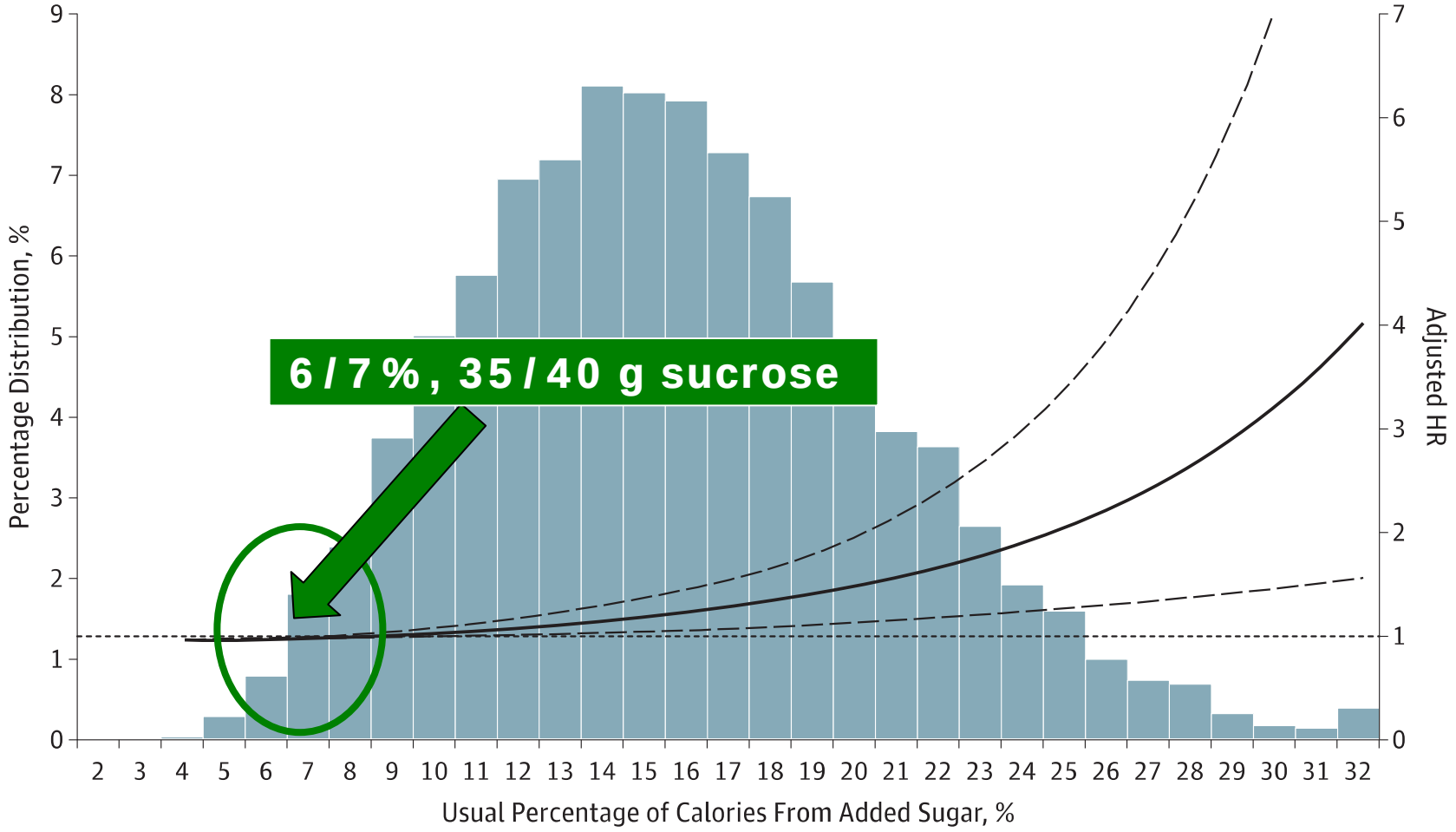



Quang Y et al, JAMA Intern Med 2014

# Carbohydrates and Health

Scientific Advisory Committee on Nutrition

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, ipoglucidica, 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

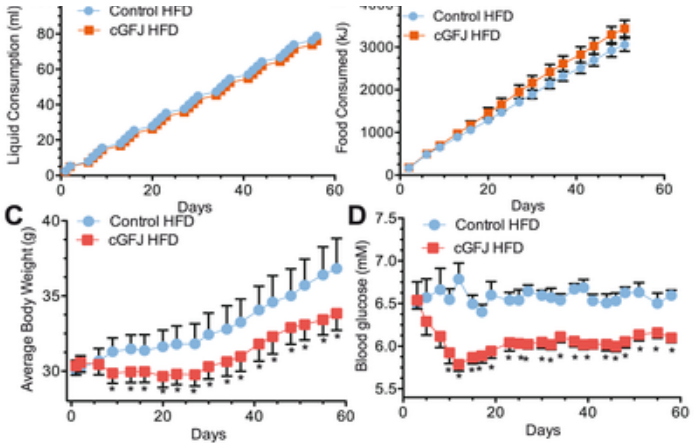
•Interazioni pompelmo-farmaci (liveli di CYP3A4 ridotti del 47% a 2 ore). Es. Statine e antistaminici.

OPEN ACCESS Freely available online

PLOS ONE

# 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.

© BDA May 2014. Review date May 2016. Version 4.

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# 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.

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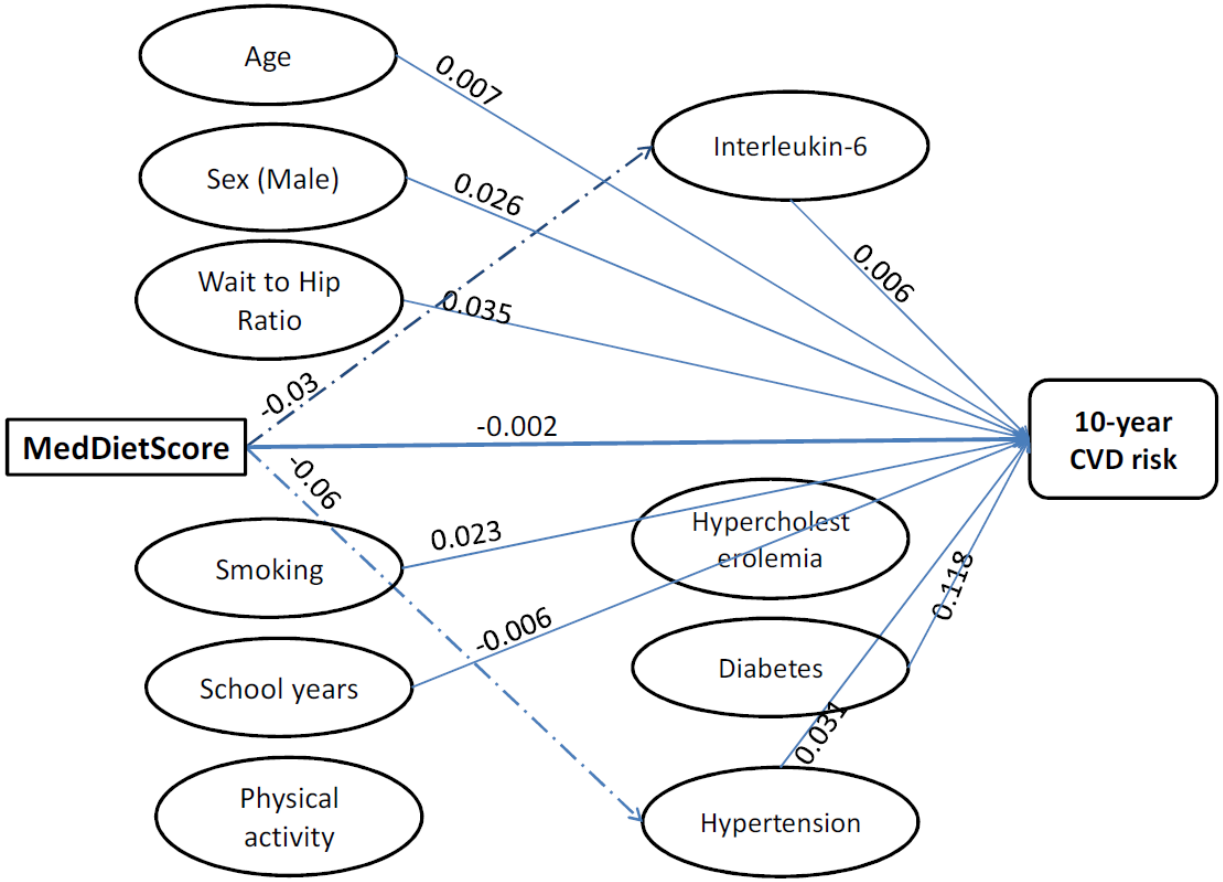
# The ATTICA study




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.

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# 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 | | | | |
|---|---|---|---|---|---|
| | 1 (low) (n = 2,405) | 2 (n = 2,406) | 3 (high) (n = 2,405) | *P for trend* | Energy-adjusted extra virgin olive oil intake (10 g/d) |
| **Mean extra-virgin olive oil intake** | **9.1 ± 11.23** | **19.5 ± 20.0** | **34.6 ± 27.4** | | |
| **Major CVD events** | | | | | |
| 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) |
| **All-cause mortality** | **1 (low) (n = 2,405)** | **2 (n = 2,406)** | **3 (high) (n = 2,405)** | ***P for trend*** | |
| 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) |

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Guasch-Ferrè M et al, BMC Medicine 2014

# 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 | | | | |
|---|---|---|---|---|---|
| | 1 (low) (n = 2,405) | 2 (n = 2,406) | 3 (high) (n = 2,405) | *P for trend* | Energy-adjusted common olive oil intake (10 g/d) |
| **Mean common olive oil intake** | **12.1 ± 11.7** | **18.6 ± 18.5** | **21.7 ± 25.9** | | |
| **Major CVD events** | | | | | |
| 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) |
| **All-cause mortality** | **1 (low) (n = 2,405)** | **2 (n = 2,406)** | **3 (high) (n = 2,405)** | ***P for trend*** | |
| 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) |

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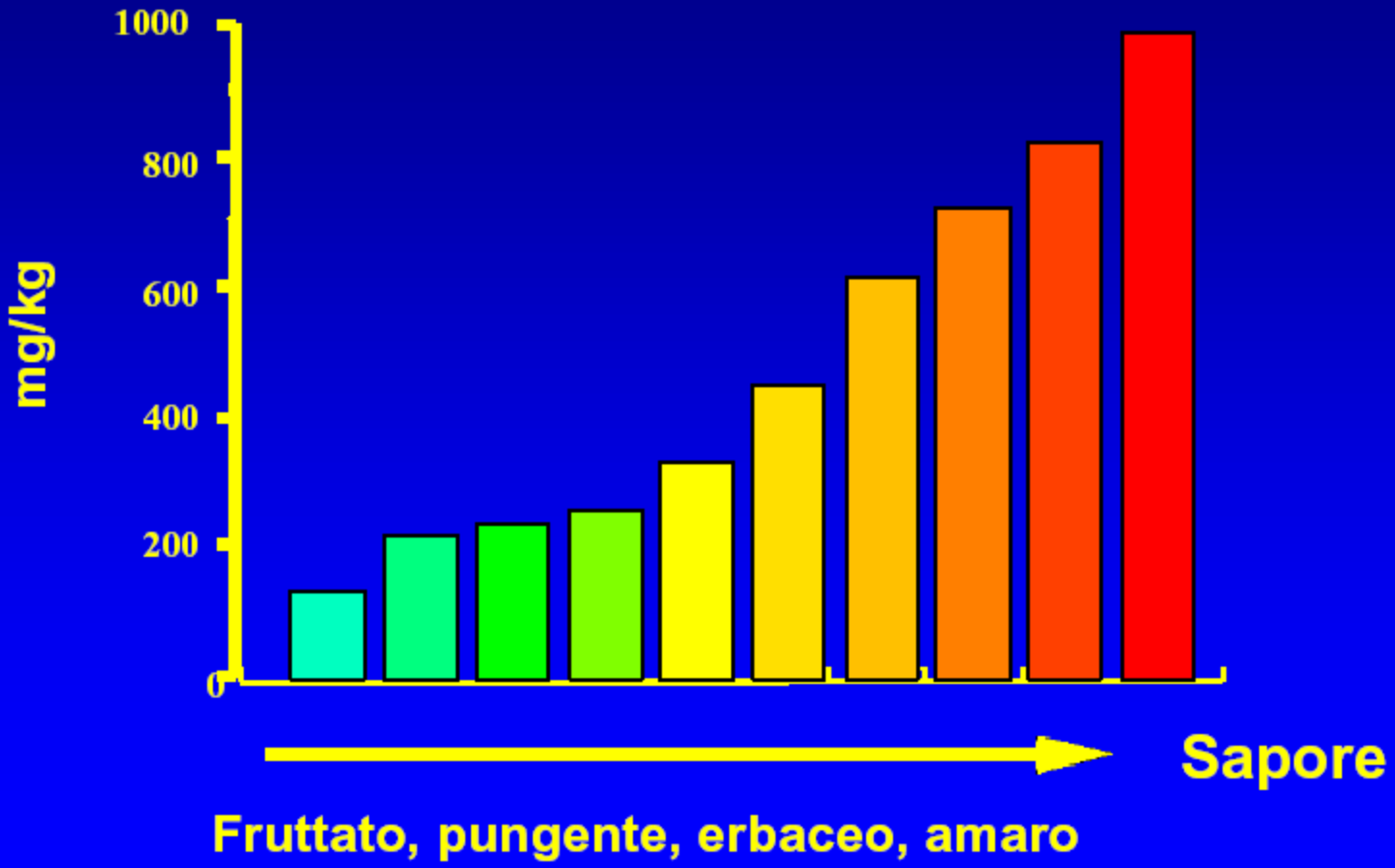
Guasch-Ferrè M et al, BMC Medicine 2014

# Costituenti dell'olio d'oliva

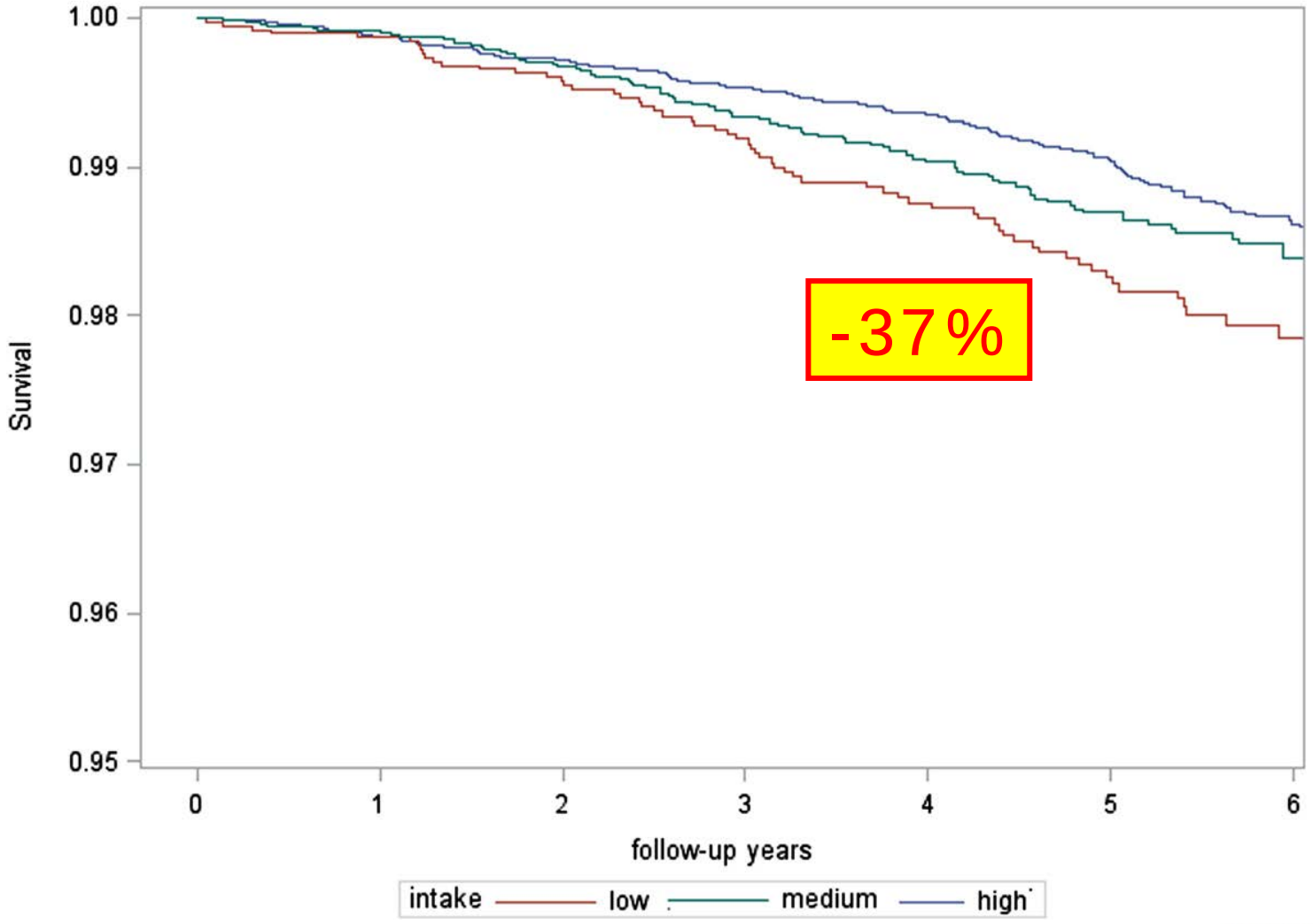
- Trigliceridi
- Idrocarburi
- Esteri non-gliceridi
- Tocoferoli
- *Poli*fenoli
- Steroli
- Acidi e alcoli terpenici
- Pigmenti
- Clorofille
- Carotenoidi

- *Poli*fenoli (50-800 mg/Kg)
  - Idrossitirosolo
  - Oleuropeina
  - Tirosolo
  - Acido caffeico
  - Ligstroside
  - Acido vanillico
  - Esteri di idrossitirosolo
  - Acido sinapico
  - Acido siringico
  - Oleocantale

# Contenuto in polifenoli e gusto dell'olio



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




Tresserra-Rimbau A et al, BMC Medicine 2014

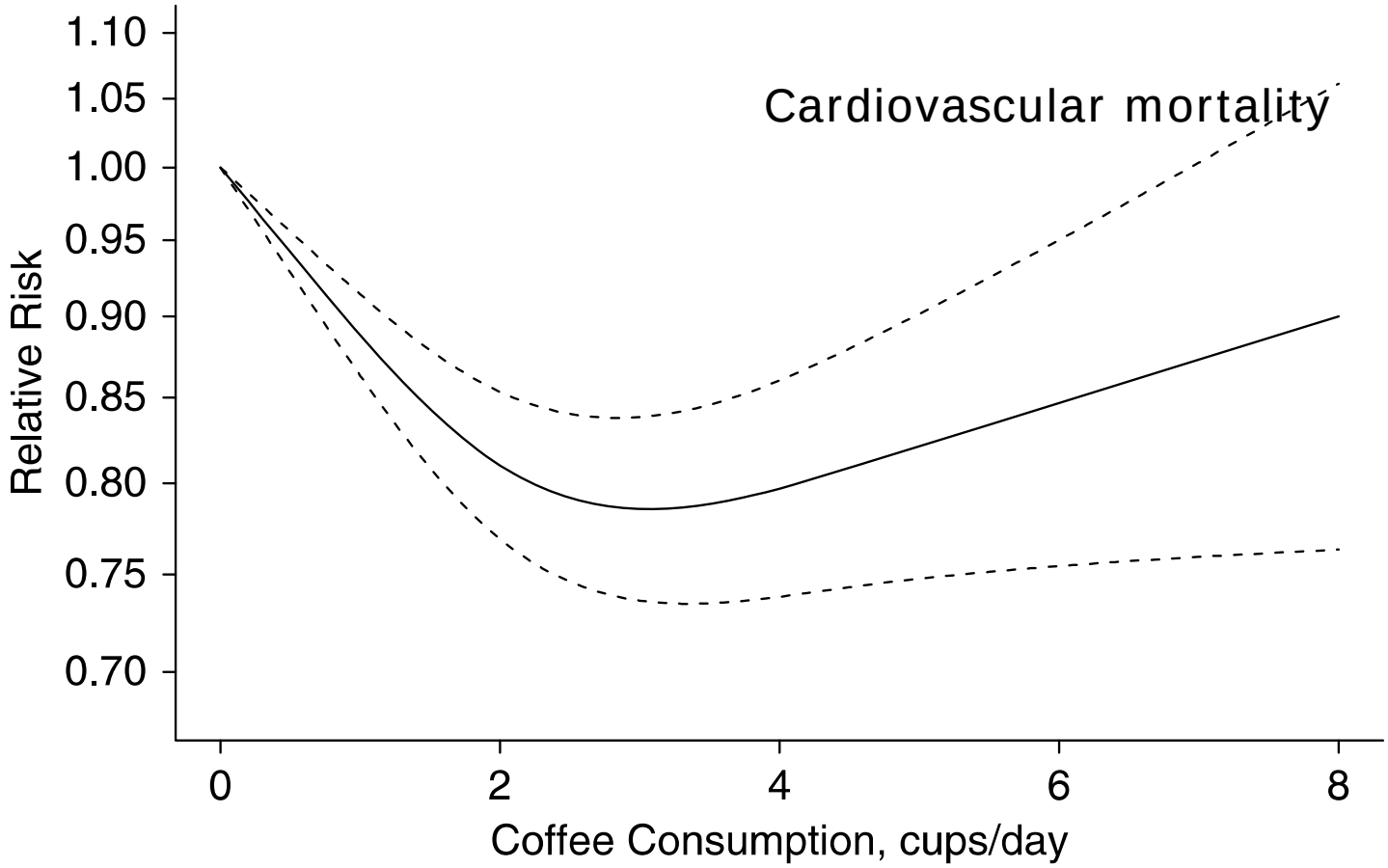
# Effetti di oli di oliva con differente tenore di polifenoli sui markers di infiammazione e altri parametri in soggetti ipertesi

| Biomarker | P value* |
|---|---|
| Nitrites/nitrates (μ | <0.001 |
| ADMA (μmol/l) | <0.01 |
| Ox-LDL (μg/l) | <0.01 |
| CRP (mg/l) | <0.001 |
| *Blood pressure (m* | |
| Systolic | <0.001 |
| Diastolic | <0.001 |
| *IRH measurement* | |
| HA | <0.001 |

Table values are mea
ADMA, asymmetric
PU, perfusion units.
**P* value for the comp
density lipoprotein;

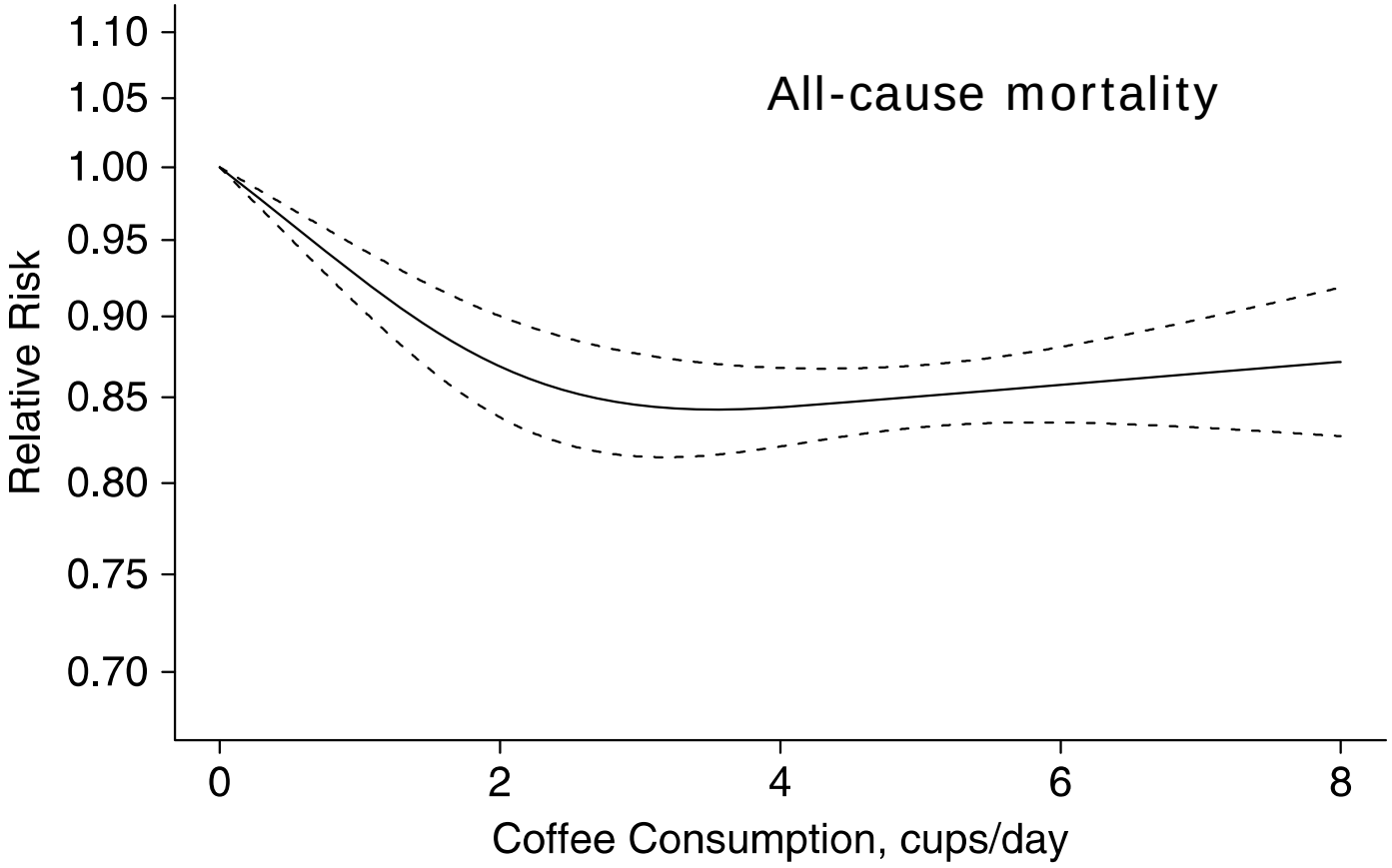
Moreno-Luna R A et al, Am J Hypertens 2012

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




Crippa A et al, Am J Epidemiol 2014

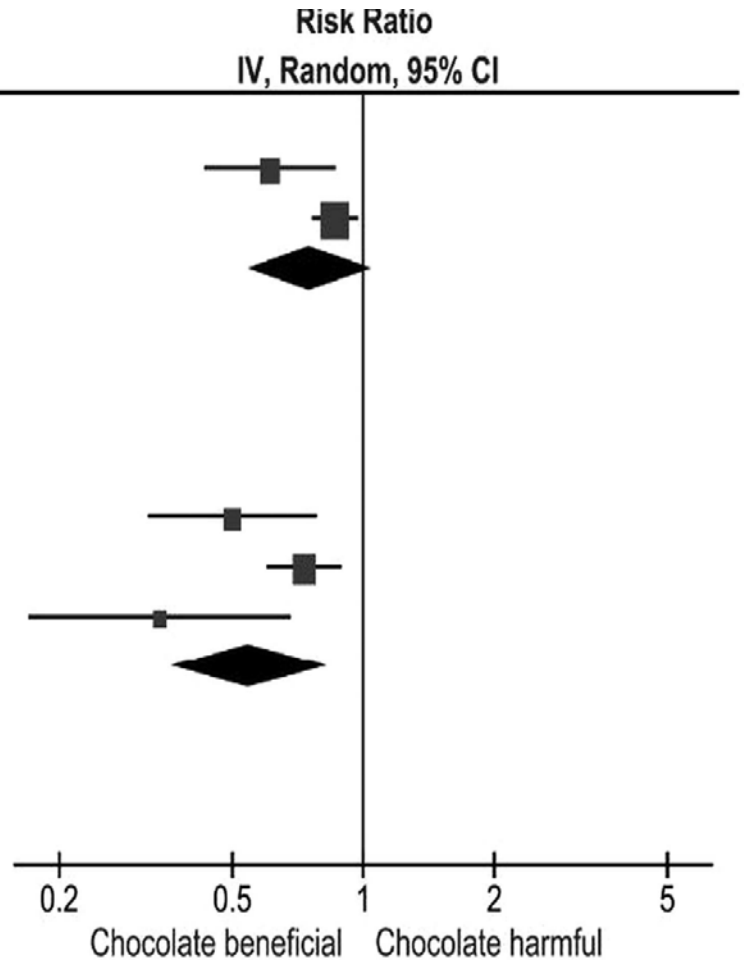
# Coffee Consumption and Mortality From All Causes, Cardiovascular Disease, and Cancer: A Dose-Response Meta-Analysis




Crippa A et al, Am J Epidemiol 2014

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

| Study or Subgroup | Weight | Risk Ratio IV, Random, 95% CI |
|---|---|---|
| **Any CV event** | | |
| Buijsse 2010 | 38.4% | 0.61 [0.43, 0.86] |
| Current study | 61.6% | 0.86 [0.76, 0.97] |
| **Subtotal (95% CI)** | **100.0%** | **0.75 [0.54, 1.05]** |
| Heterogeneity: Tau² = 0.04; Chi² = 3.36, df = 1 (P = 0.07); I² = 70% | | |
| Test for overall effect: Z = 1.69 (P = 0.09) | | |
| **CV mortality** | | |
| Buijsse 2006 | 32.5% | 0.50 [0.32, 0.78] |
| Current study | 46.2% | 0.73 [0.60, 0.89] |
| Janszky 2009 | 21.3% | 0.34 [0.17, 0.68] |
| **Subtotal (95% CI)** | **100.0%** | **0.55 [0.36, 0.83]** |
| Heterogeneity: Tau² = 0.09; Chi² = 6.01, df = 2 (P = 0.05); I² = 67% | | |
| Test for overall effect: Z = 2.81 (P = 0.005) | | |




Kwok CS, et al. Heart 2015

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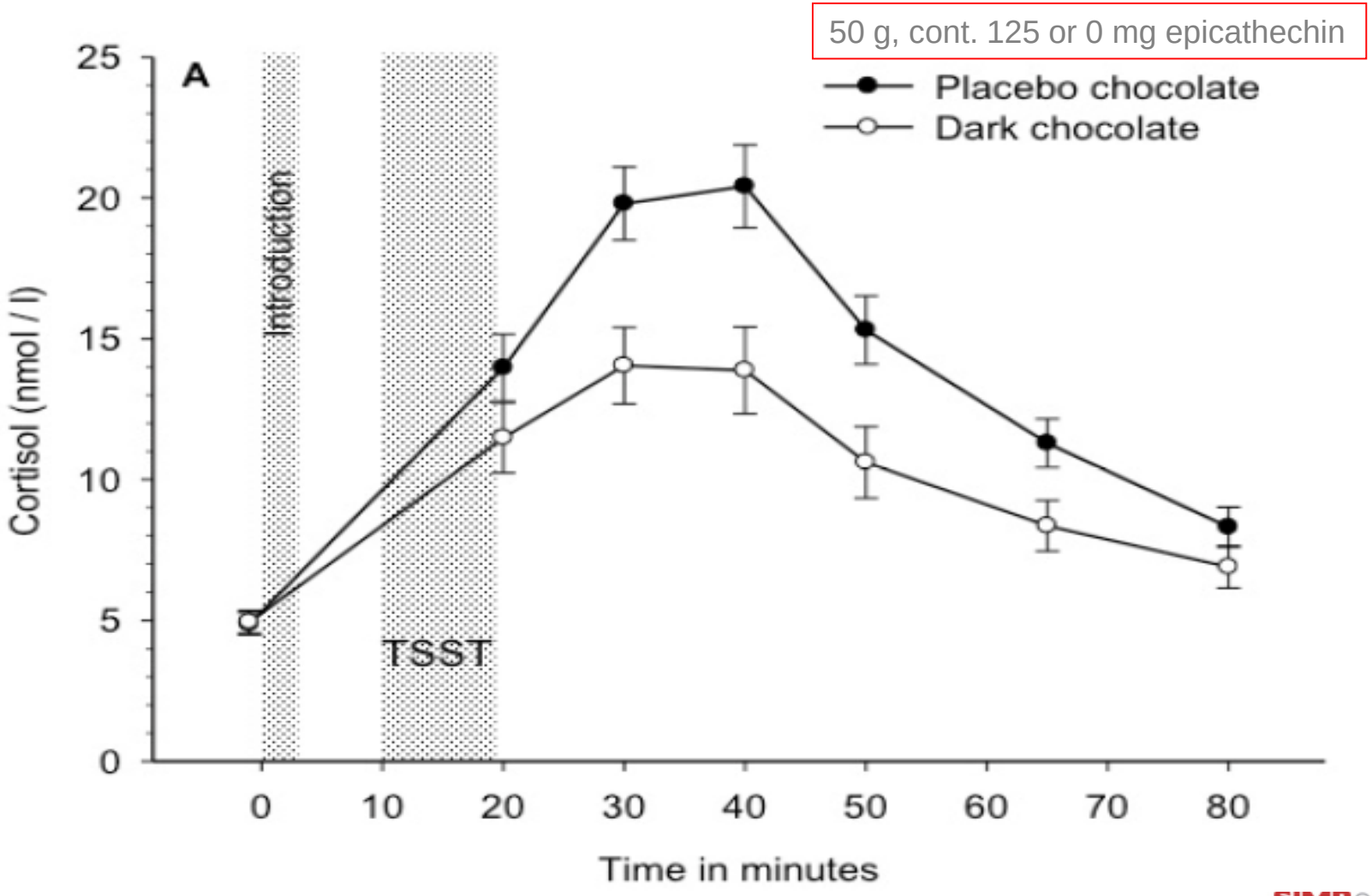
# Dark chocolate intake buffers stress reactivity in humans




Wirtz PH et al, J Am Coll Cardiol 2014

# 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 |

**Jiang R et al, Am J Epidemiol 2006**

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ORIGINAL ARTICLE

# Association of Nut Consumption with Total and Cause-Specific Mortality

Ying Bao, M.D., Sc.D., Jiali Han, Ph.D., Frank B. Hu, M.D., Ph.D., Edward L. Giovannucci, M.D., Sc.D., Meir J. Stampfer, M.D., Dr.P.H., Walter C. Willett, M.D., Dr.P.H., and Charles S. Fuchs, M.D., M.P.H.

ABSTRACT

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

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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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *kcal* | *g* | *g* | *g* | *g* | *g* | *g* | *mg* GAE | *mg* | *μg* DFE | *mg* |
| 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 |

[1] 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

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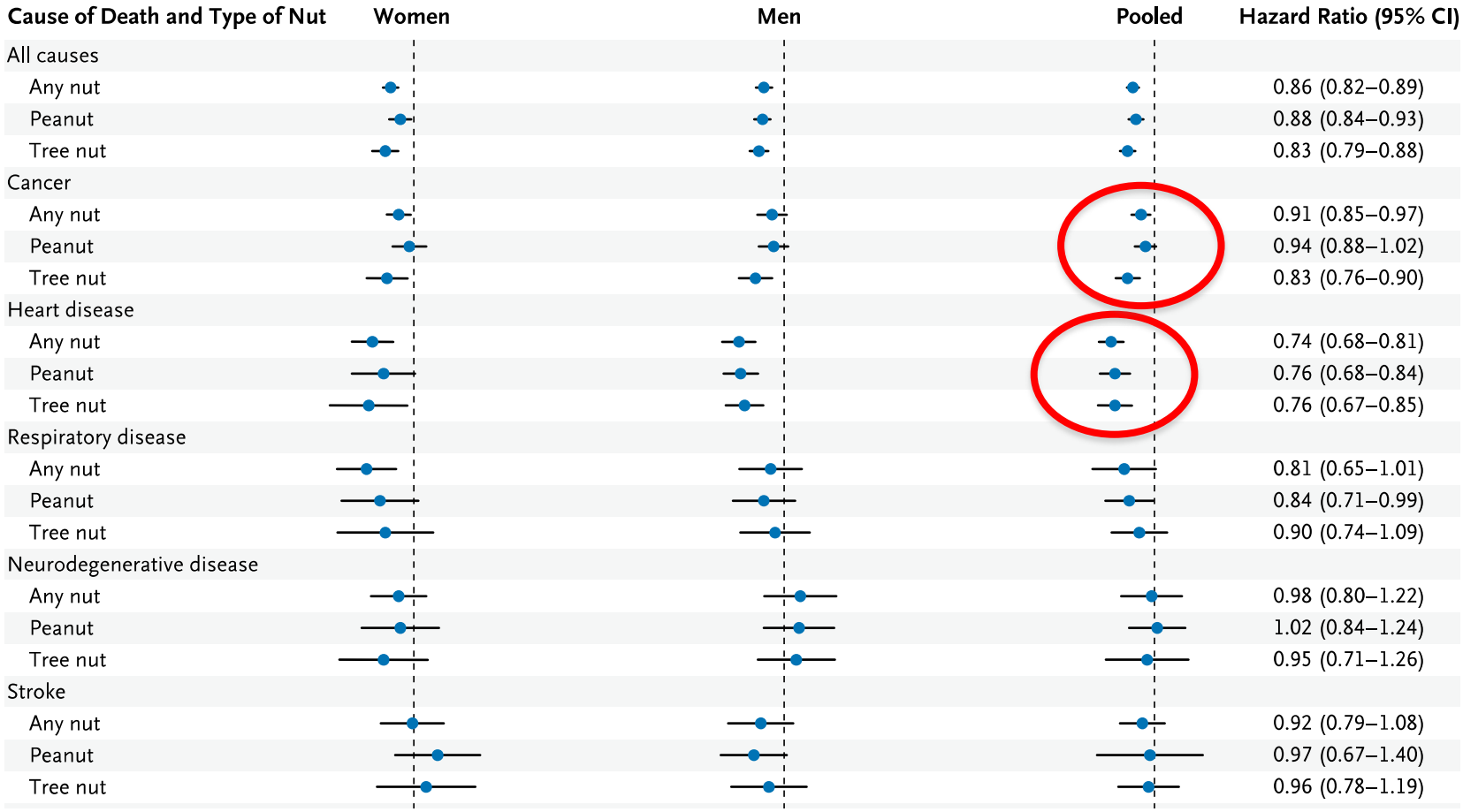
# Cause specific mortality, according to frequency of nut consumption




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

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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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *kcal* | *g* | *g* | *g* | *g* | *g* | *g* | *mg* GAE | *mg* | *μg* DFE | *mg* |
| 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 |

[1] 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

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# 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**

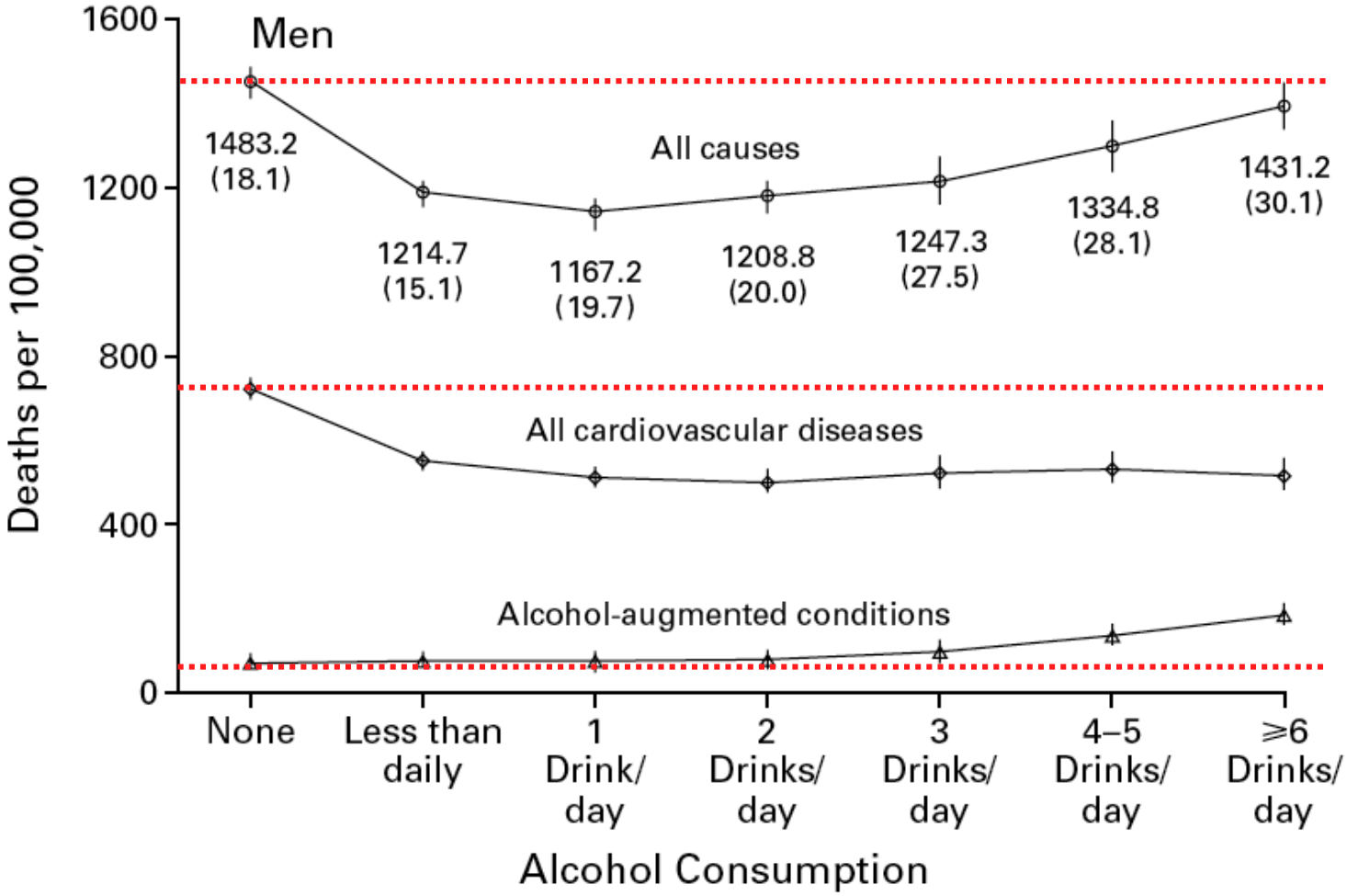
**Un drink è definito come:**

- **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




Thun M et al, *N Engl J Med* 1997

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

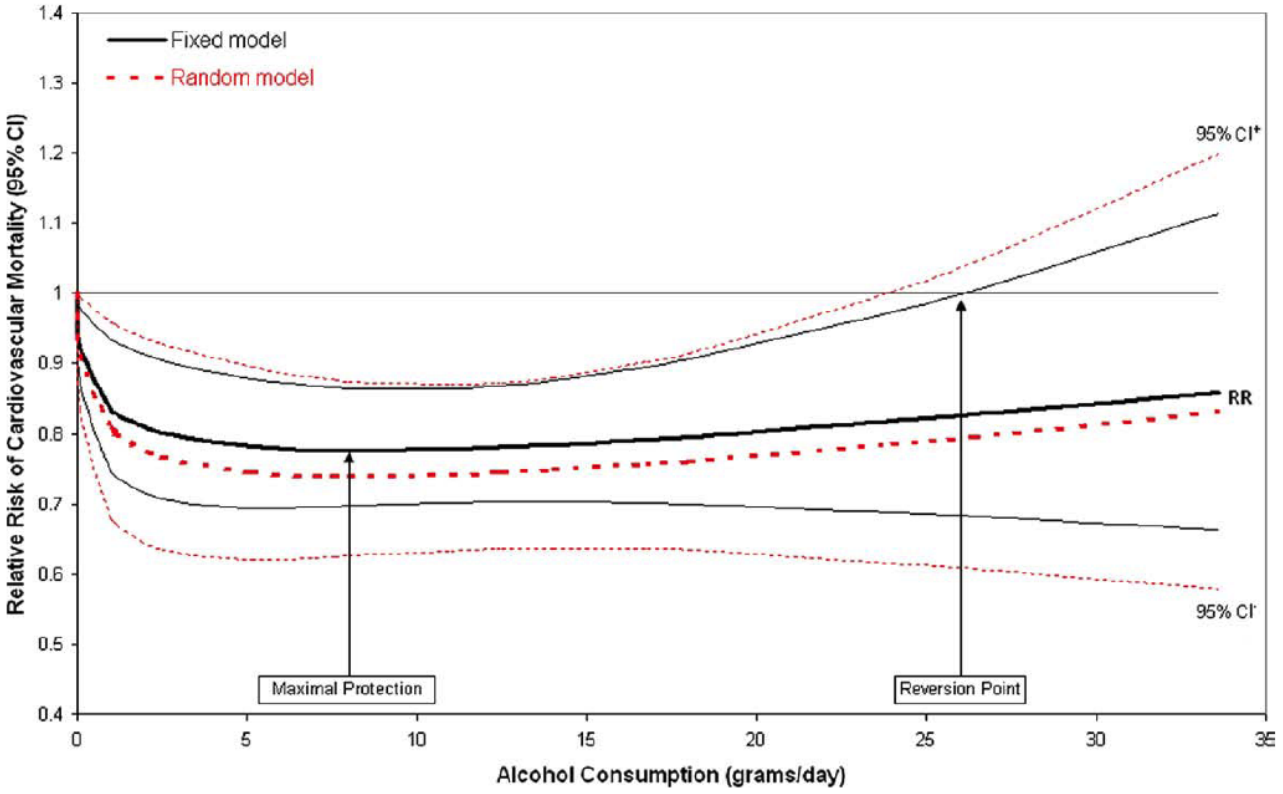



**Figure 3** **Alcohol Consumption in Relation to Cardiovascular Mortality in Cardiovascular Disease Patients**

Pooled curves of relative risk of cardiovascular mortality and alcohol intake, extracted from 7 independent relationships using fixed **(solid lines)** and random **(dotted lines)** models. RR = relative risk; 95% $CI^-$ = lower value of confidence interval; 95% $CI^+$ = upper value of confidence interval.

Costanzo S et al, *JACC* 2010

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

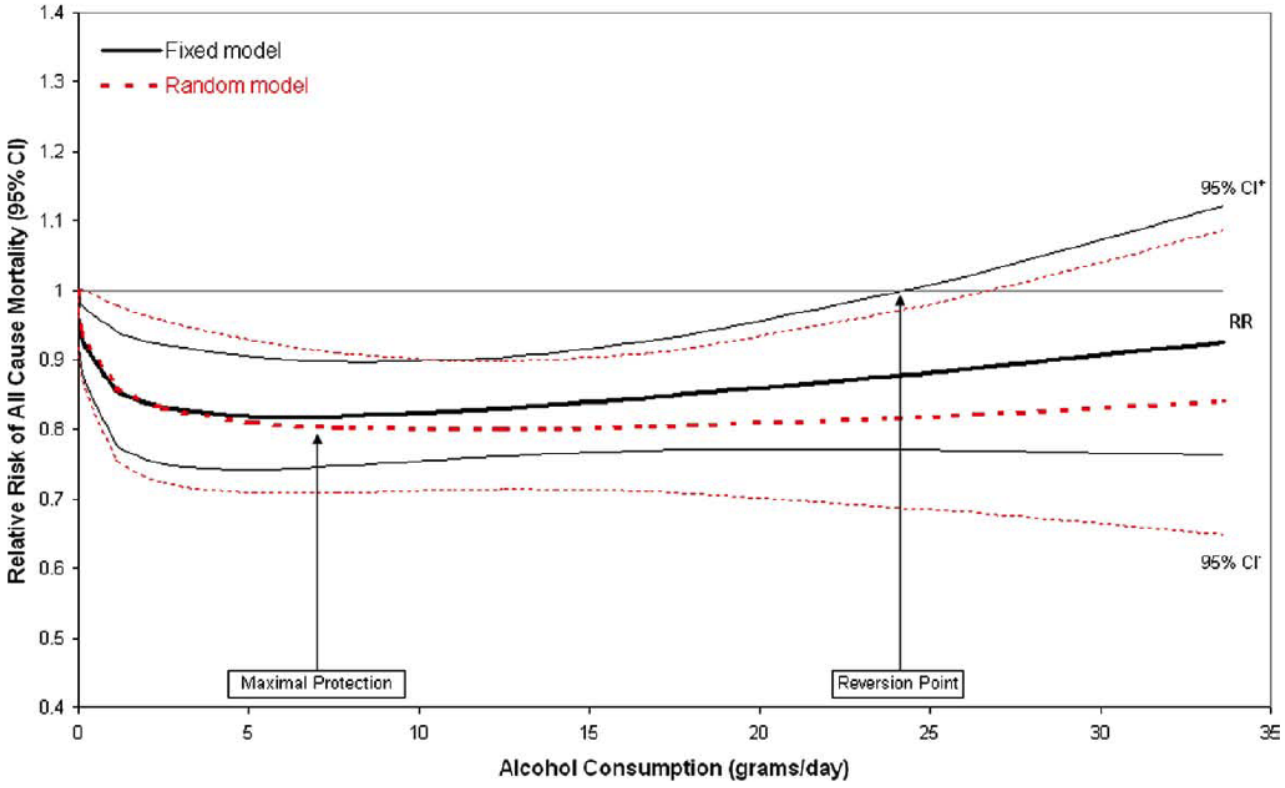


**Figure 4** **Alcohol Consumption in Relation to All-Cause Mortality in Cardiovascular Disease Patients**

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.

Costanzo S et al, *JACC* 2010