L’obesità

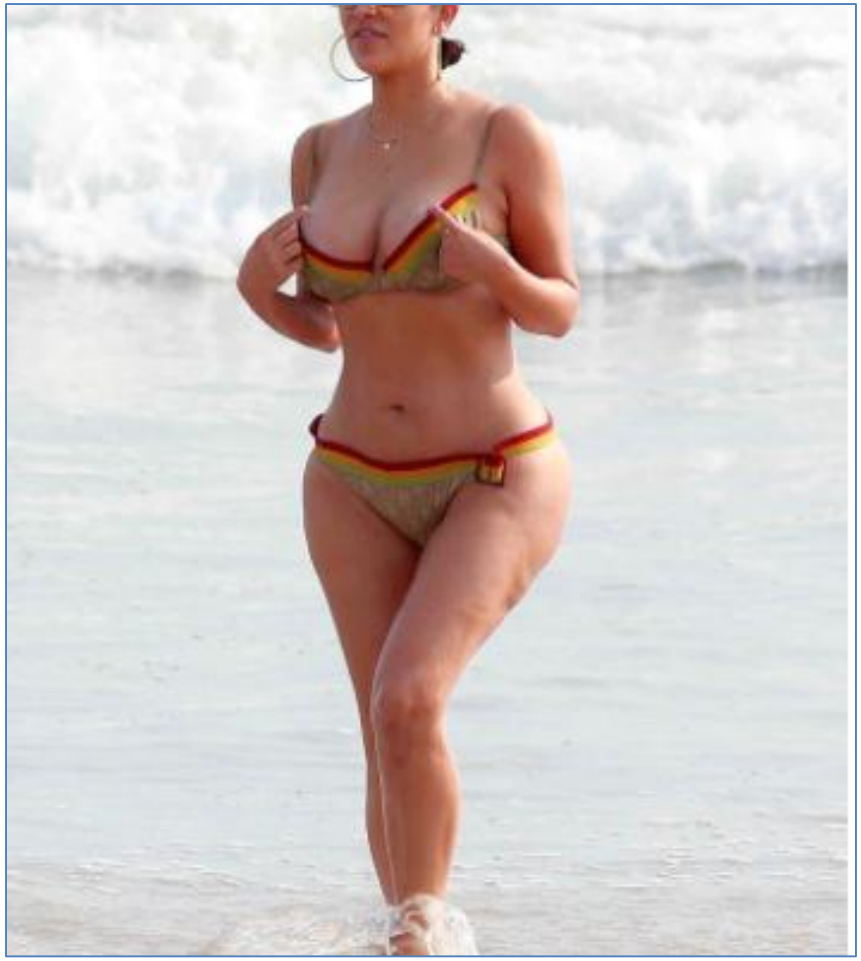
MALATTIA INFIAMMATORIA?

11 cm

Venere di Willendorf
Realizzata da 25.000 a 26.000 anni fa

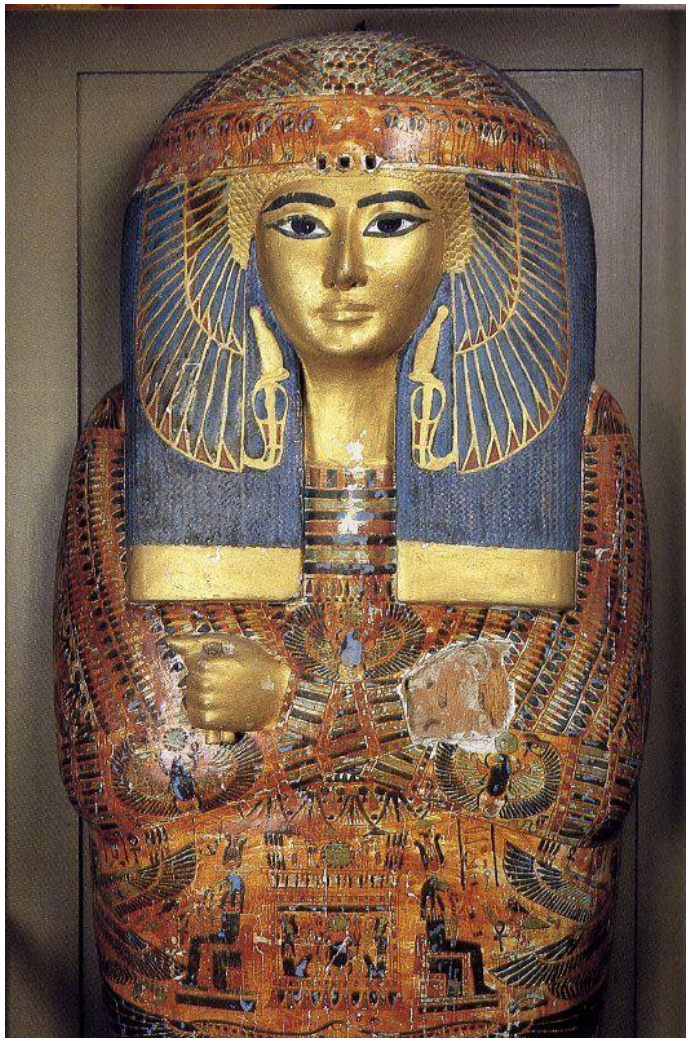
Obesità: ieri e oggi

Venere di Willendorf
25.000 AC



Kim Kardashian

Hatshepsut



Per oltre vent'anni (1490-1468, AC), sull'Egitto regnò una donna: Hatshepsut. Intelligente, abile, eccezionali capacità amministrative e spiccato senso politico, ma non aveva un aspetto regale:
era grassa e aveva due "enormi seni penduli" (Zahi Hawass, 1947 -).

Dieta dimagrante

Papiro di Ebers - 1500 a.C.

- Grani di frumento 1/8
- Farina d'avena integrale 1/8
- Terra di piombo verde 1/32
- Acqua 1/3
- *lasciare in infusione, filtrare; somministrarlo per 4 giorni*

- Ramoscelli della pianta Qadet 1/4
- Chicchi d'uva 1/8
- Miele 1/4
- Bacche dell'albero Uan 1/32
- Birra dolce 1/6
- *cuocere; filtrare e prendere per 2 giorni*

Il papiro di Ebers è una raccolta egiziana di testi di medicina risalenti circa al 1550 a.C., uno dei più antichi lavori di medicina conosciuti

Hippokrátēs

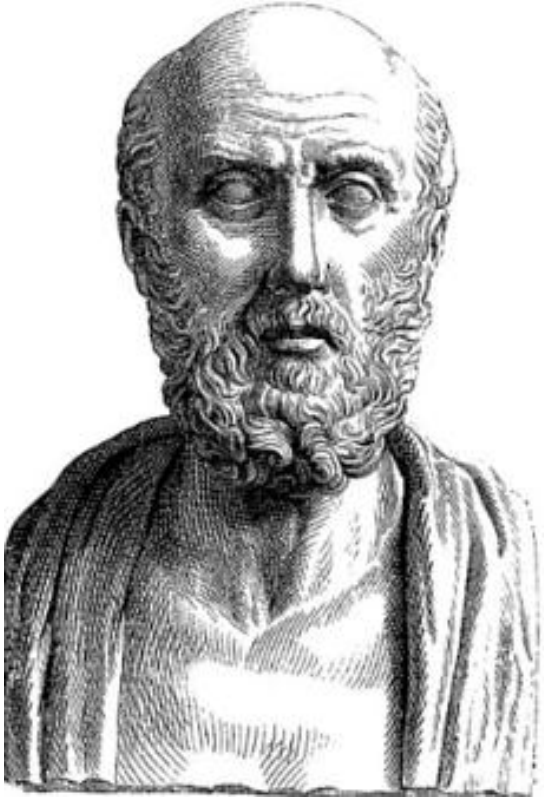
Coo, 460 aC – Larissa 377 aC

La corpulenza non è solo una malattia in sé, ma il presagio di altre.

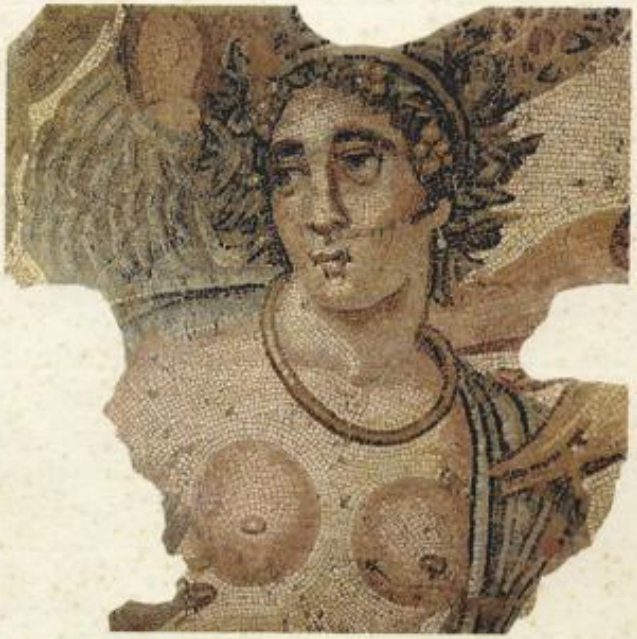
Le persone grasse vivono meno delle persone magre

Hippokrátēs

Coo, 460 aC – Larissa 377 aC



“se fossimo in grado di fornire a ciascuno la giusta dose di nutrimento ed esercizio fisico, né in difetto né in eccesso, avremmo trovato la strada per la salute”



GALENO

LA DIETA DIMAGRANTE

(170-180 d.C.)

S. F. FLACCOVIO EDITORE - PALERMO

Dublin LI. Relation of obesity to longevity.
N Engl J Med. 1953;248(23):971-4.
Uno studio su quattro milioni di cittadini USA, assistiti dalla MLIC e altre società di assicurazione sulla vita. E' stata esaminata la possibile esistenza di una associazione tra la durata della vita e altre variabili, tra cui altezza e peso, con l'obiettivo di stabilire, per l'assicurazione sulla vita, un eventuale vantaggio per l'azienda: maggiore quando le previsioni di sopravvivenza dell'assicurato sono più brevi. Dublin divise gli individui in tre gruppi in base alla "dimensione", piccola, media o grande: osservò che la probabilità di durata della vita era maggiore per coloro che avevano mantenuto per 25 anni un peso che rientrava nella dimensione media.

Build and Blood Pressure Study 1959,
vol I and vol II. Chicago: Society of Actuaries; 1959.
La più grande ricerca che avesse coinvolto la collaborazione di 26 compagnie di assicurazione, e che aveva lo scopo di individuare, in modo più affidabile, le correlazioni tra peso corporeo, pressione sanguigna e mortalità. Il concetto di peso ideale nasce dalle tabelle di questo studio, quale peso medio di una certa altezza e dimensione del corpo, statisticamente associata alla maggior speranza di vita. Per molti anni la diagnosi di obesità venne eseguito da queste tabelle: cioè, quando il peso reale superava di almeno il 20% l'ideale. Si può dire che la moderna medicalizzazione dell'obesità è iniziata in quegli anni. Soprattutto ha richiamato una forte attenzione sugli effetti economici del fenomeno.

Le tabelle (MLICs) di peso ideale sono state ritirate verso la fine del secolo scorso: sono state sostituite dall'indice di massa corporea (BMI), proposto nel 1972 da Ancel Keys et al.

Keys A, Fidanza F, Karvonen MJ, et al. Indices of relative weight and obesity. Journal of chronic diseases. 1972; 25(6): 329-43

$$\frac{\textbf{Peso (kg)}}{\textbf{Altezza (m)}^2}$$

E' stato, in verità, un ritorno al passato, perché l'indice di massa corporea è stato inventato da Adolphe Quetelet nel 1832.

Quetelet A. Du système social et des lois qui le régissent. Paris: Guillaumin et Cie, Libraires; 1848.

Indice di Quetelet

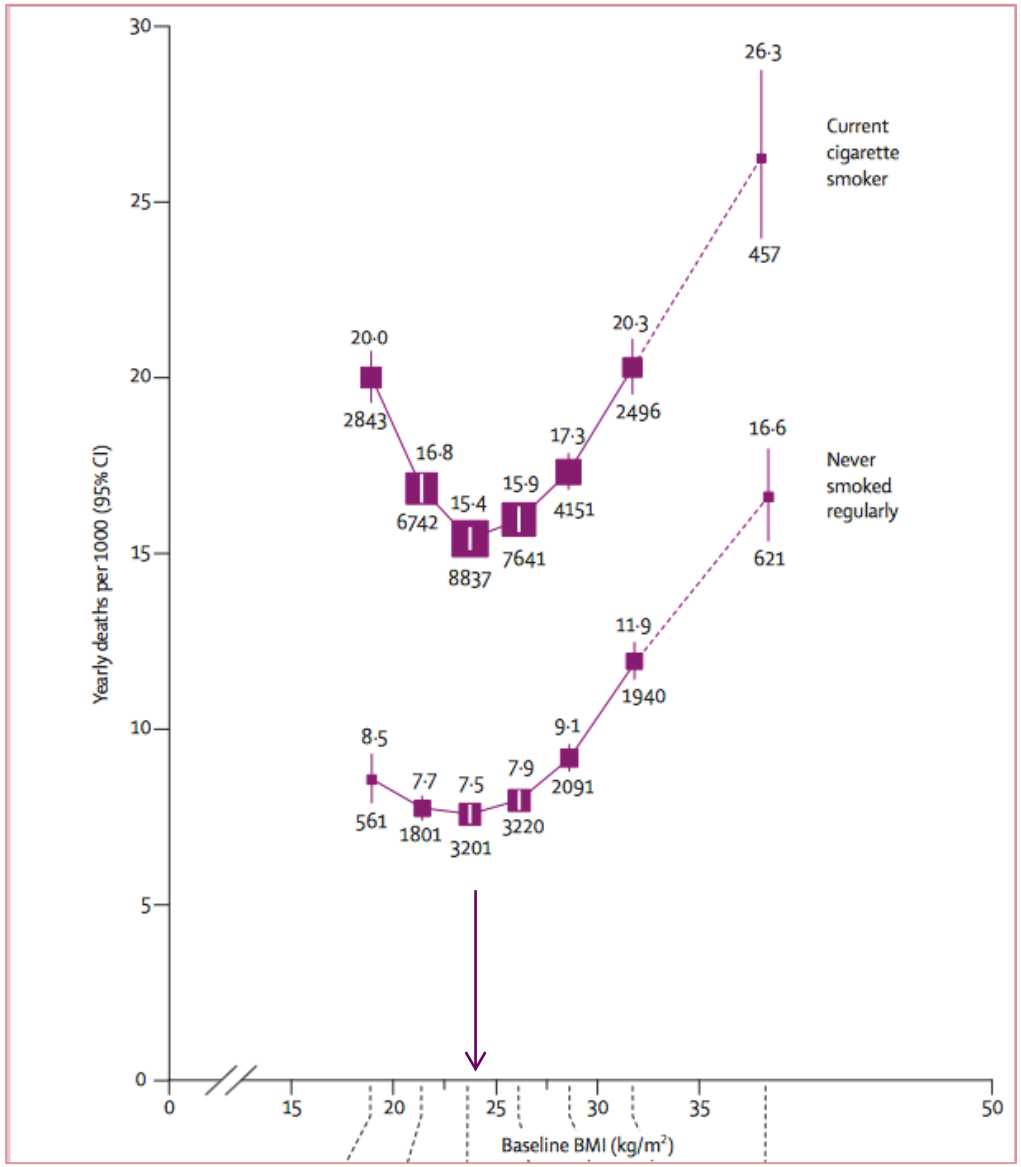
$$\frac{\textbf{Poid (kg)}}{\textbf{Taille (m)}}$$

Body Mass Index - BMI
Classificazione

$\frac{\text{Peso (kg)}}{\text{Altezza (m)}^2}$	BMI
Sottopeso	< 18.5
Normopeso	18.5-25
Sovrappeso	25-30
Obesità grado1°	30-35
Obesità grado2°	35-40
Obesità grado3°	> 40

WHO - OMS, 1998

BMI and cause-specific mortality in 900 000 adults: analyses of 57 prospective studies (excl first 5 years follow-up)

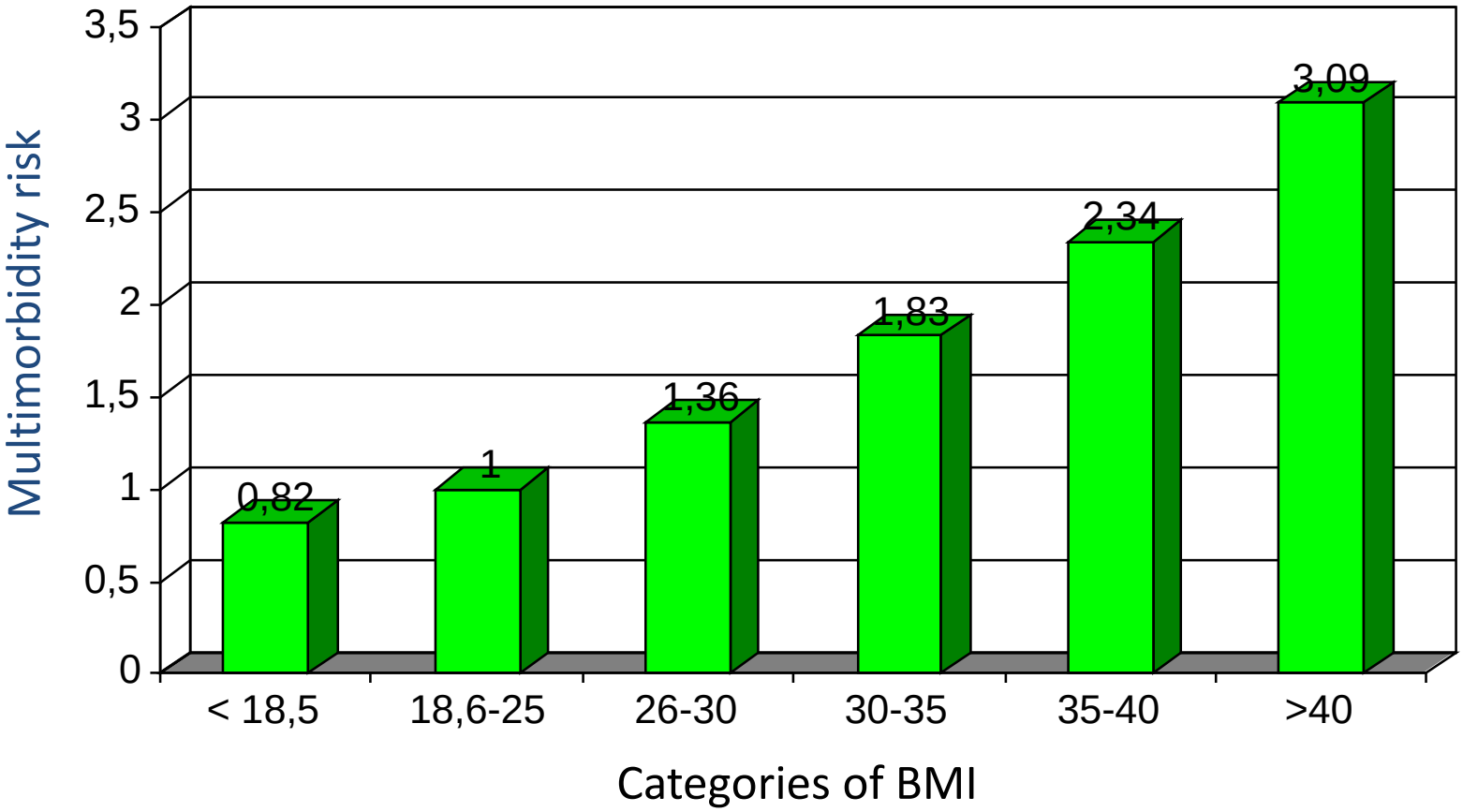


Prospective Studies Collaboration, Lancet, *373, 1083-1096, 2009*

Impact of BMI on prevalence of multimorbidity.

Cohort study on UK 300 006 adults,

adjusted for gender, age, smoking and SE status.



Booth HP et al. *Family Practice*, 2014, 31, 38–43

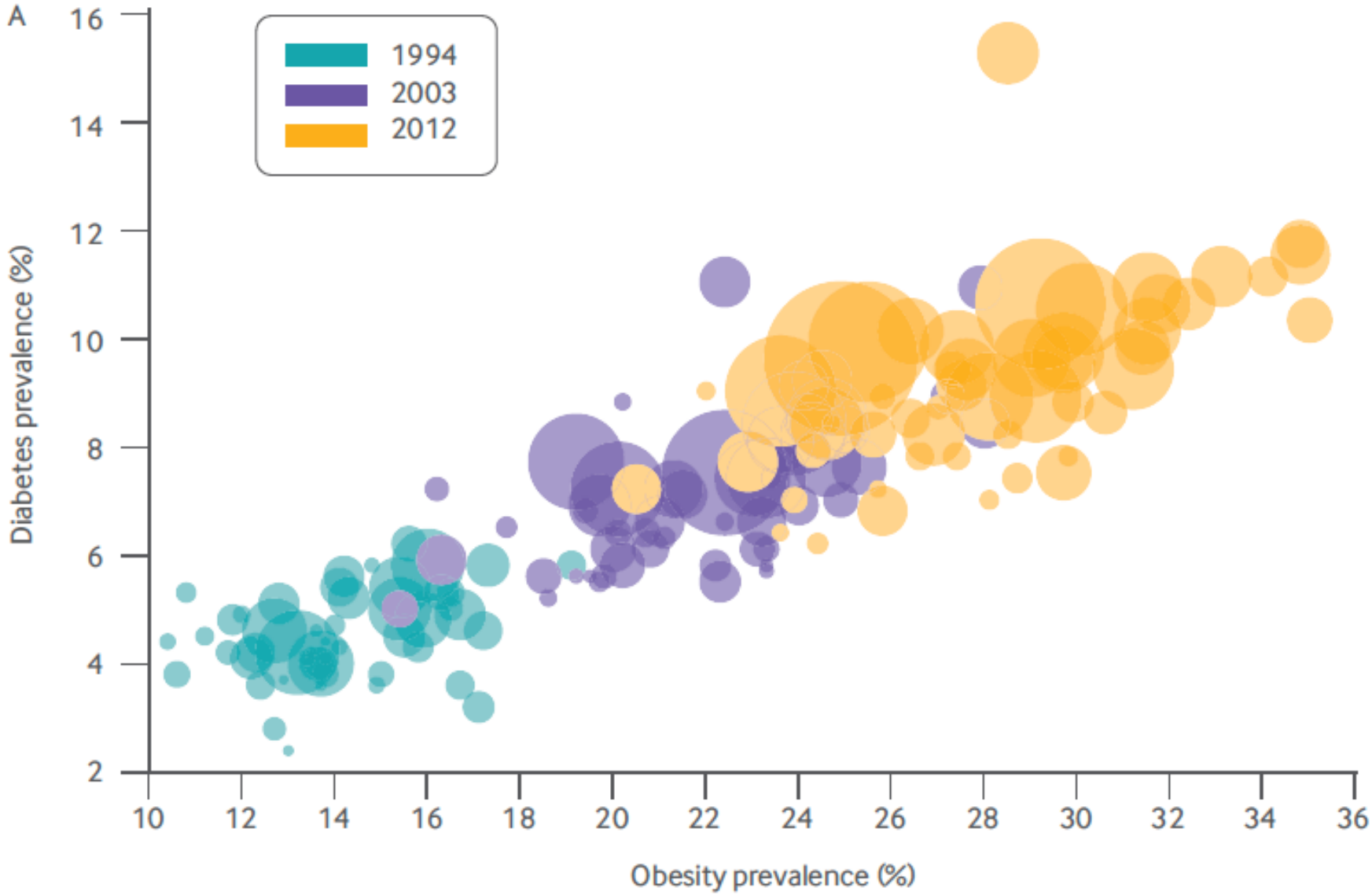


Fig 1 | Age adjusted prevalence of obesity and diabetes by US state in 1994, 2003, and 2012. The area of the circles represents the number of obese people (BMI ≥30) in the specific states

Jamy Ard, *BMJ* 2015;350:g7846

International Agency for Research on Cancer

World Health Organization

IARC Handbooks Volume 2016 – Questions and Answers

- In April 2016, the International Agency for Research on Cancer (IARC) reevaluated the impact of weight on cancer risk.
- Being overweight or obese is already known to increase the risk for certain cancers, but this association has just become much wider. Another 8 cancers have been added to the list, joining the 5 already there.
- Meta-analyses or pooled analyses showed relative risks of 1.2 to 1.5 for overweight and 1.5 to 1.8 for obesity for cancers of the colon, gastric cardia, liver, gallbladder, pancreas, and kidney, and up to 4.8 for a BMI of 40 kg/m^2 or more for esophageal adenocarcinoma.
- Findings were similar based on waist circumference

BJC

Freisling H et al.

British Journal of Cancer (2017) 116, 1486–1497 | doi: 10.1038/bjc.2017.106

Keywords: CHANCES consortium; ageing; cohort; obesity; body fat distribution; cancer; prevention

Comparison of general obesity and measures of body fat distribution in older adults in relation to cancer risk: meta-analysis of individual participant data of seven prospective cohorts in Europe

An analysis of data on more than 43,000 individuals revealed that, while increases in BMI raised the risk of developing a group of 10 obesity-related cancers by 11%, similar increases in waist circumference and waist-to-hip ratio (WHR) raised the risk by 13% and 15%, respectively.

BMJ 2017;356:j908 doi: 10.1136/bmj.j908 (Published 2017 February 28)

EDITORIALS

Check for updates

Fresh evidence links adiposity with multiple cancers

The association is now clear; it's time to get serious about prevention

Yikyung Park *associate professor*, Graham A Colditz *professor*

American Medical Association (AMA) Statement

"Obesity is a pathophysiologic disease.

There is a treatment for this disease; it involves behavioral modifications, medications, and surgeons.

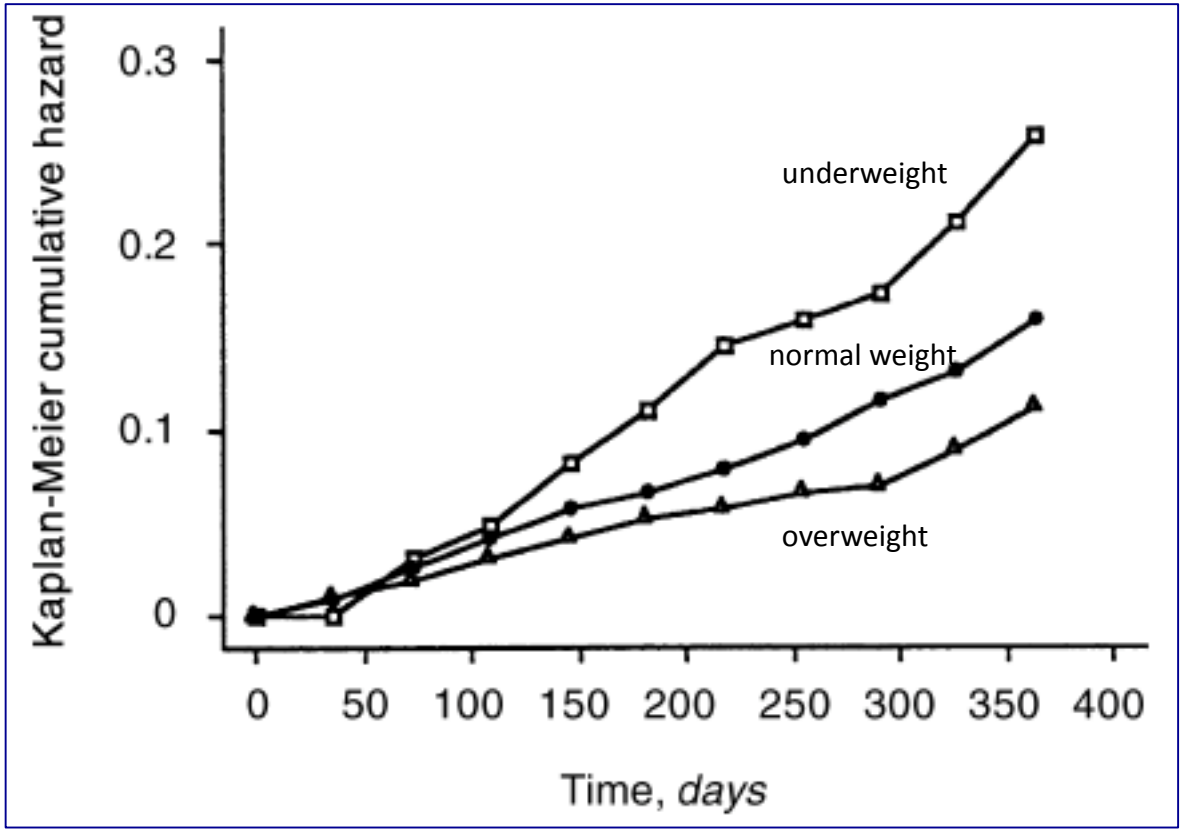
The scientific evidence is overwhelming."

2013-Annual Meeting AMA

Influence of excess weight on mortality and hospital stay in 1346 hemodialysis patients

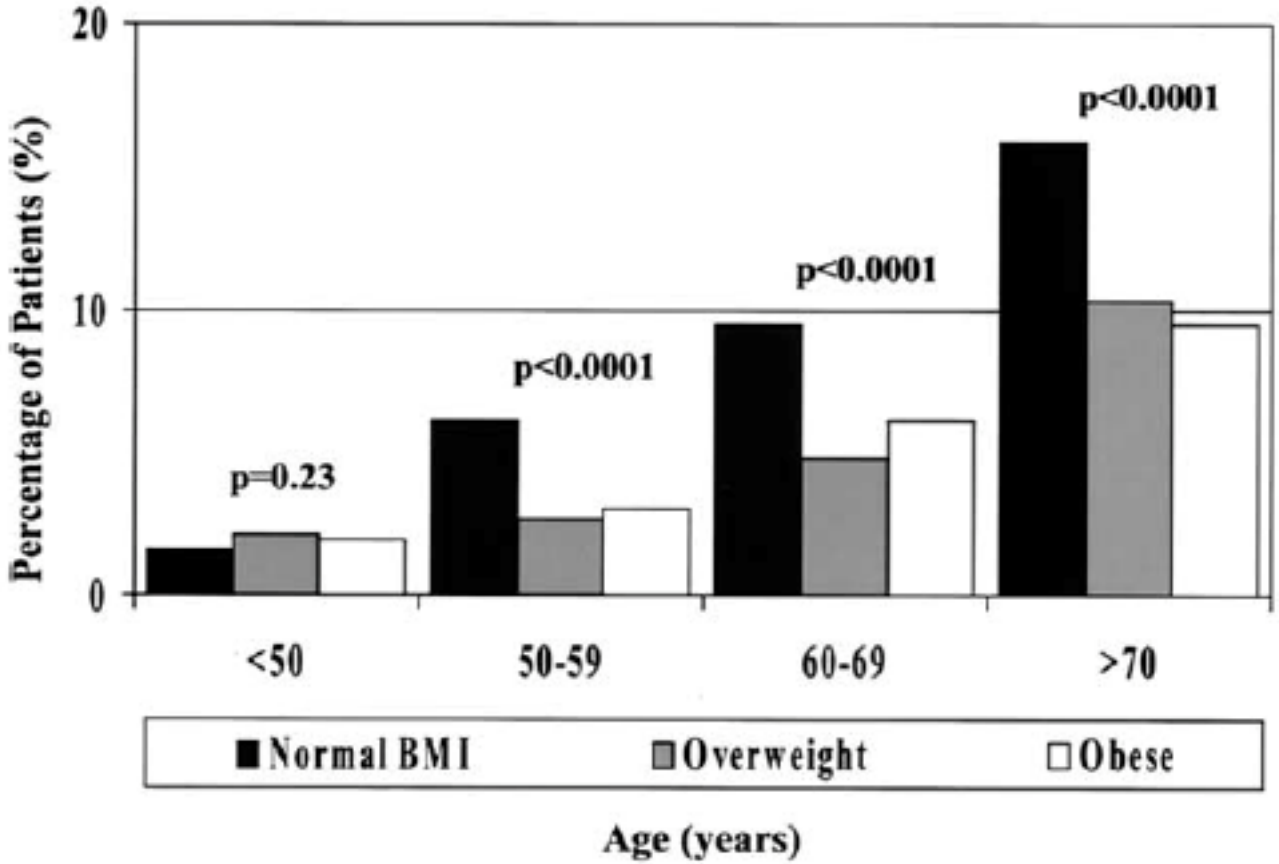
ERWIN FLEISCHMANN, NANCY TEAL, JOHN DUDLEY, WARREN MAY, JOHN D. BOWER, and ABDULLA K. SALAHUDEEN[1]

Kidney International, Vol. 55 (1999), pp. 1560–1567



Cumulative hazard for the underweight, normal weight, and overweight groups.

The Impact of Obesity on the Short-Term and Long-Term Outcomes After Percutaneous Coronary Intervention: The Obesity Paradox?



One-year mortality rates from all causes adjusted for age and BMI

Gruberg L et al, J Amer Coll Cardiol. 39, 578-584, 2002

When Thinner Means Sicker
and Heavier Means Healthier

The

OBESITY PARADOX

CARL J. LAVIE, MD

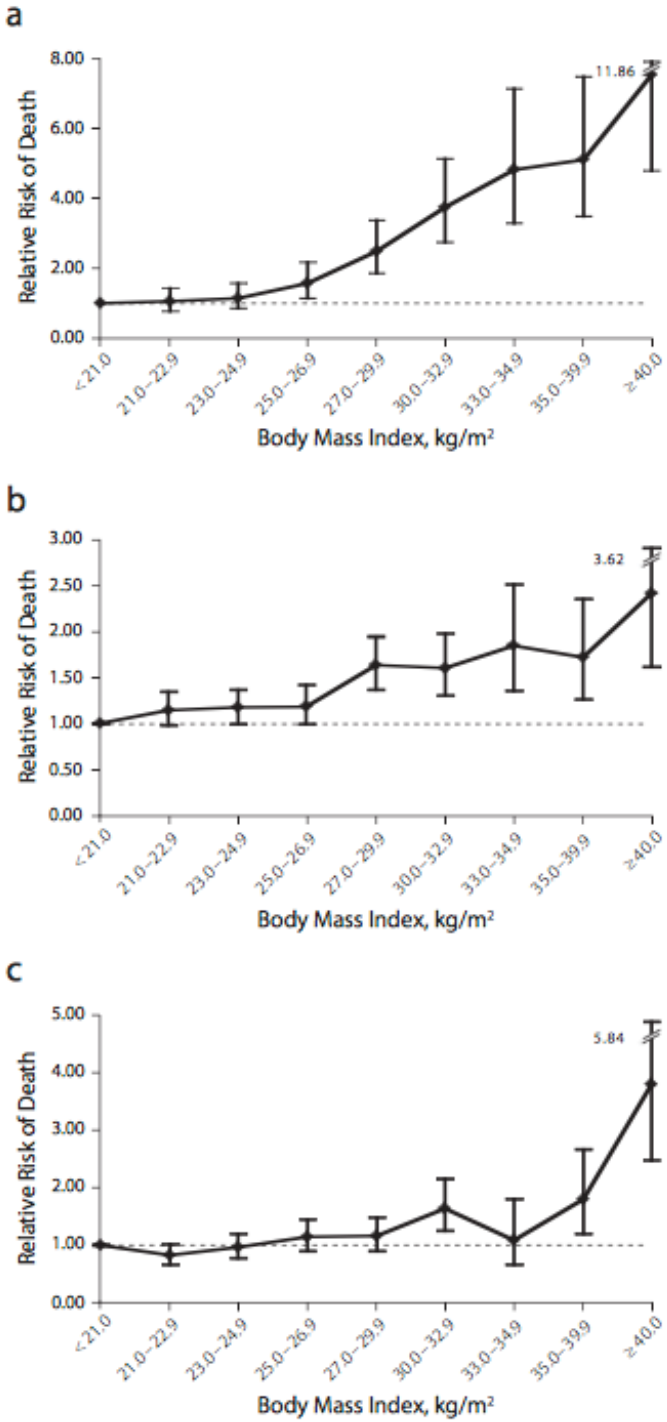
with Kristin Loberg

Hudson Street Press, New York, 2014

Determinants and Consequences of Obesity

Hunby A et al, Am J Public Health. 2016;106:1656–1662

- Some researchers have suggested that excess weight is protective against mortality, but this "obesity paradox" is likely observed because of confounding by smoking and existing or preclinical conditions that lead to weight loss preceding death (i.e., reverse causation).
- When all methodological issues are correctly accounted for, as in NHS analyses (200 000 participants followed up to 40 years), BMI in the overweight or obese range is associated with a higher risk of premature death among generally healthy individuals at baseline.



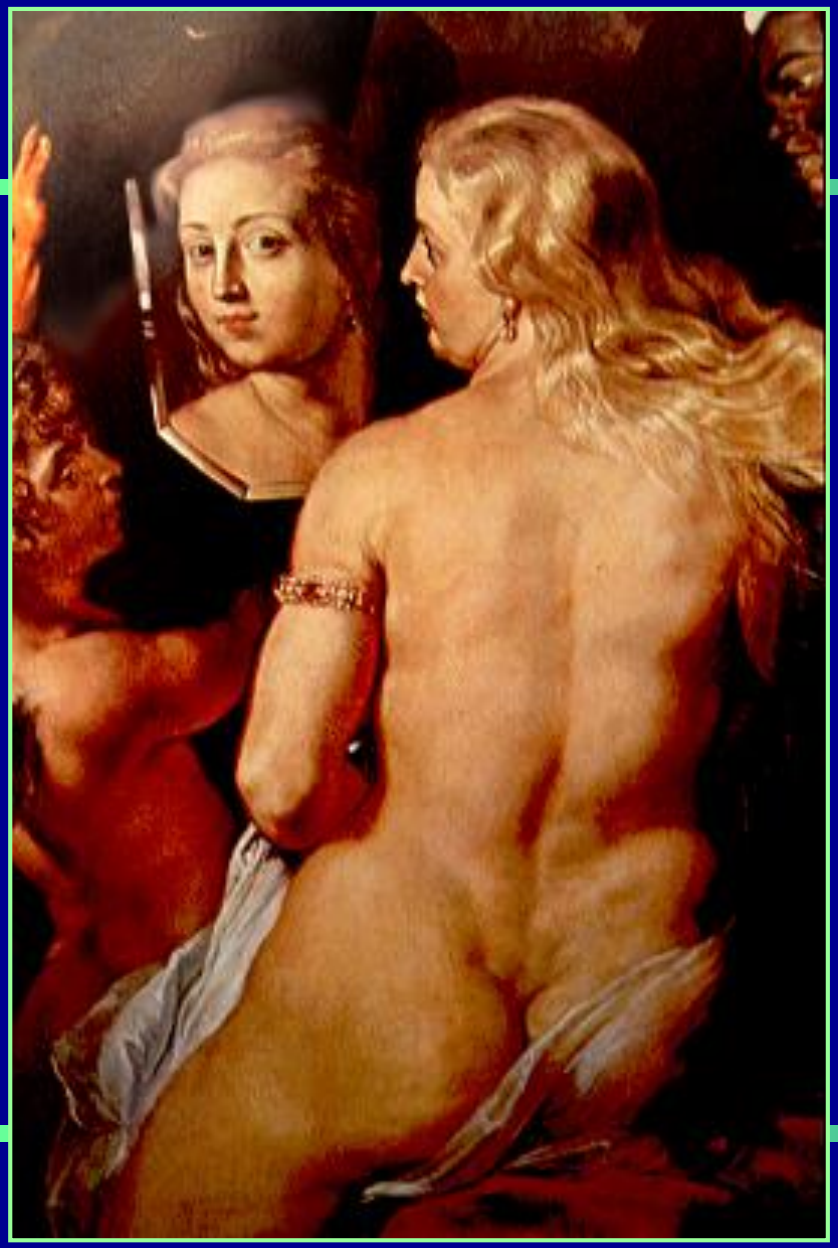
Relative Risk of Death From (a) Cardiovascular Disease, (b) Cancer, and (c) Other Causes According to Body Mass Index Among Women in the Nurses' Health Study Who Had Never Smoked: United States, 1976–2000

Hunby A et al, Am J Public Health. 2016;106:1656–1662

Journals should no longer accept “obesity paradox” articles

- La maggior parte degli articoli pubblicati sul "paradosso dell'obesità" non sono in grado di rispondere alla domanda che si prefiggono : quali livelli di rischio futuro per la salute (es. mortalità) conferisce l'obesità a coloro che hanno una malattia associata all'obesità?
- L’associazione di bias impedisce di rispondere a questa domanda utilizzando individui con malattie correlate all'obesità. Se vogliamo comprendere il ruolo del peso sulla sopravvivenza in popolazioni con una malattia correlata all'obesità, le riviste mediche devono richiedere studi studiati per affrontare questa domanda.
- E rifiutare i futuri studi sul paradosso dell'obesità che cadono nella trappola di associazione di bias.

Peeters A, 2017, inter J obes, doi: 10.1038/ijo.2017.259.

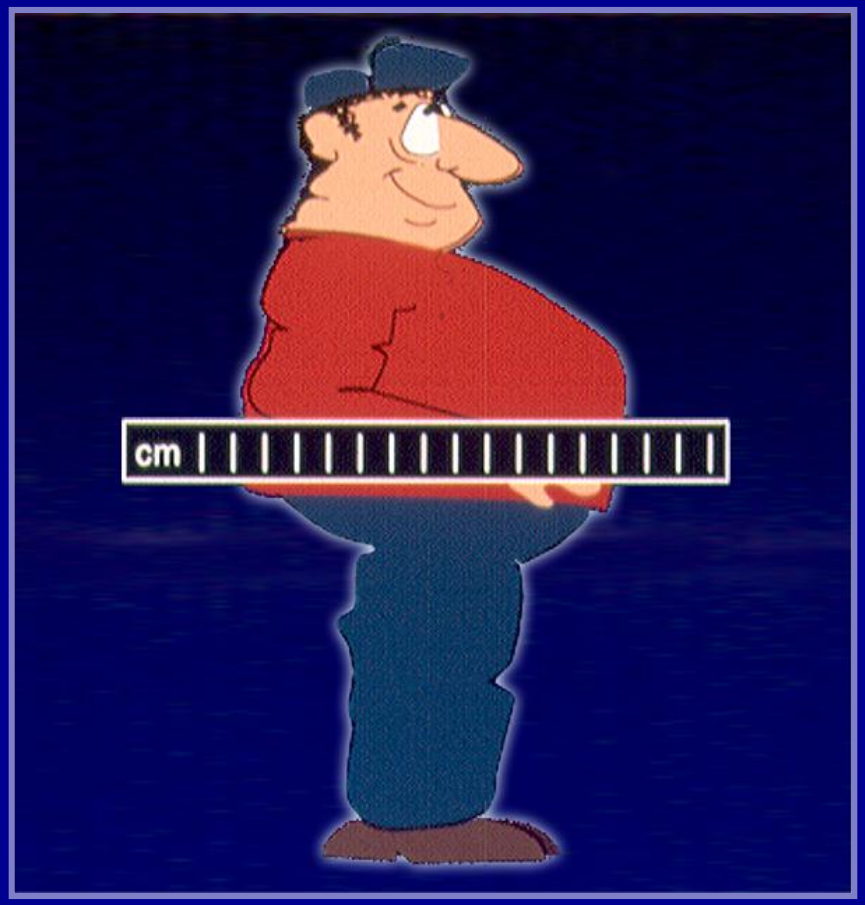


Indicatori di distribuzione del grasso corporeo

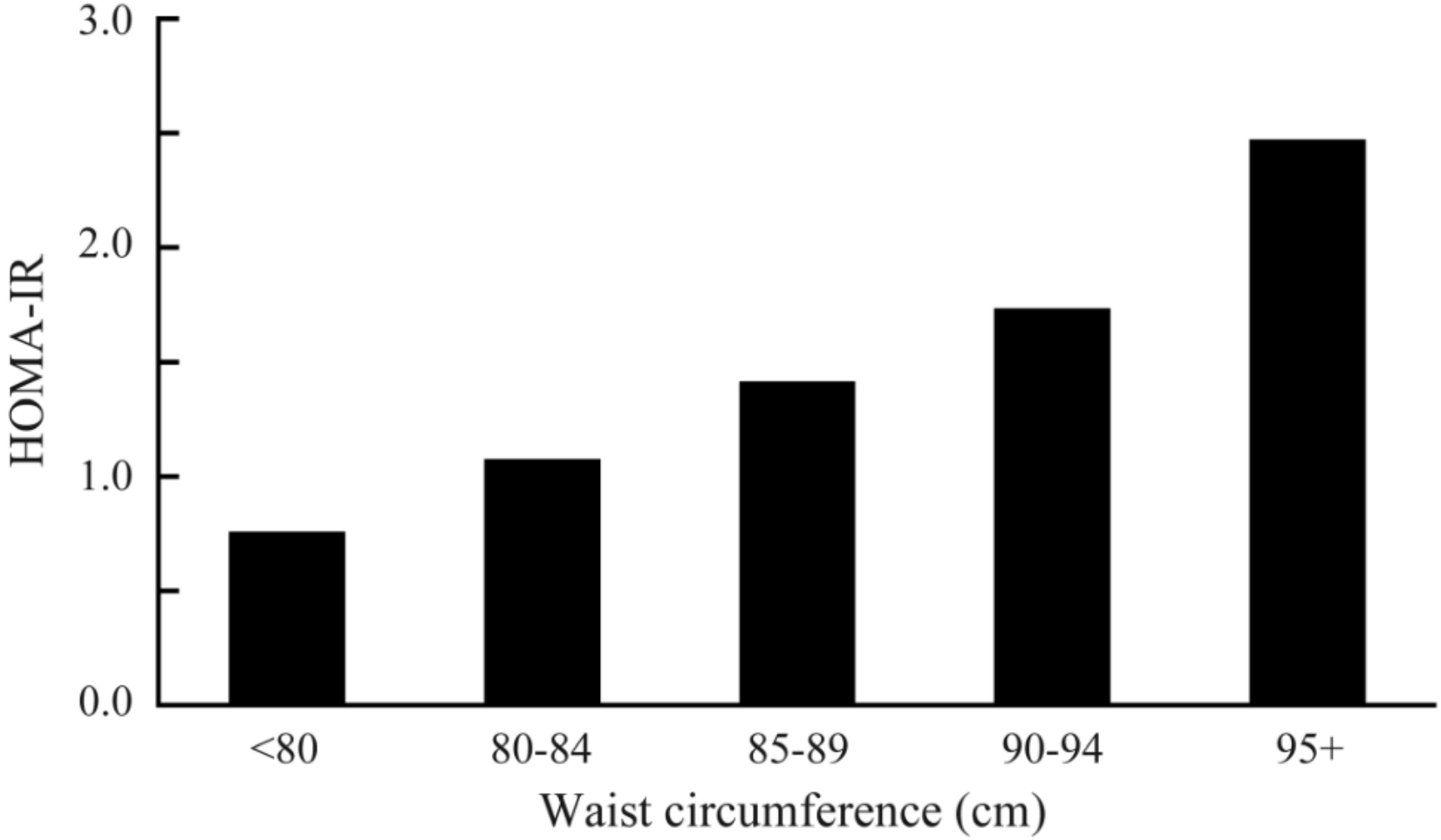
- Waist circumference (circonferenza della vita in cm)
- WHR = Waist/Hip Ratio (rapporto tra circonferenza della vita e circonferenza dei fianchi).
- Diametro sagittale addominale antero posteriore.
- TAC addome (L4-L5)

Waist circumference is a surrogate marker of visceral fat

Michael Lean et al, 1998

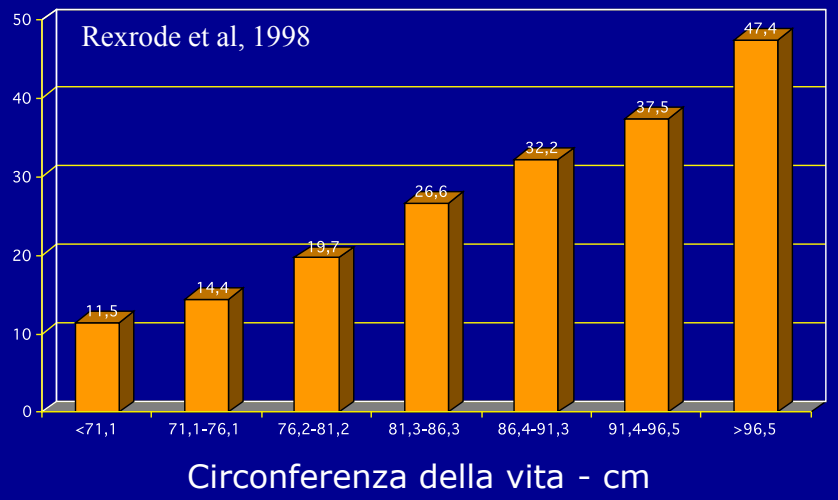


Waist circumference and insulin resistance
a cross-sectional study on 4800 Japanese

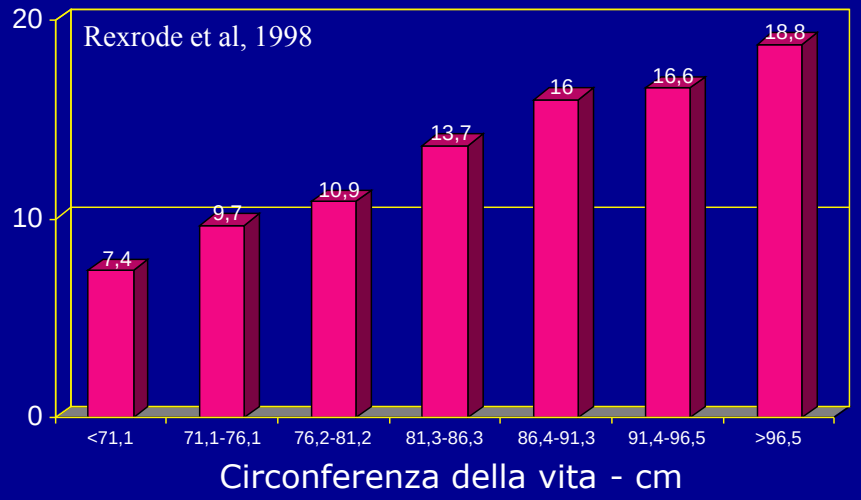


Tabata S et al, *BMC Endocrine Disorders* 2009, **9**:1

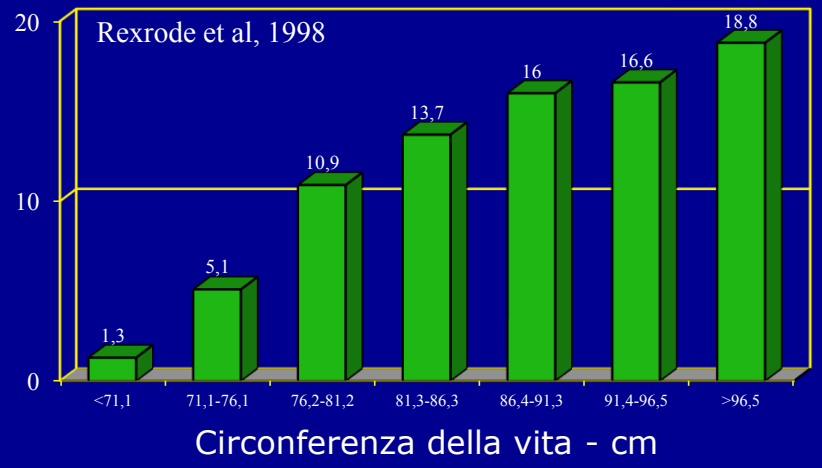
Ipertensione



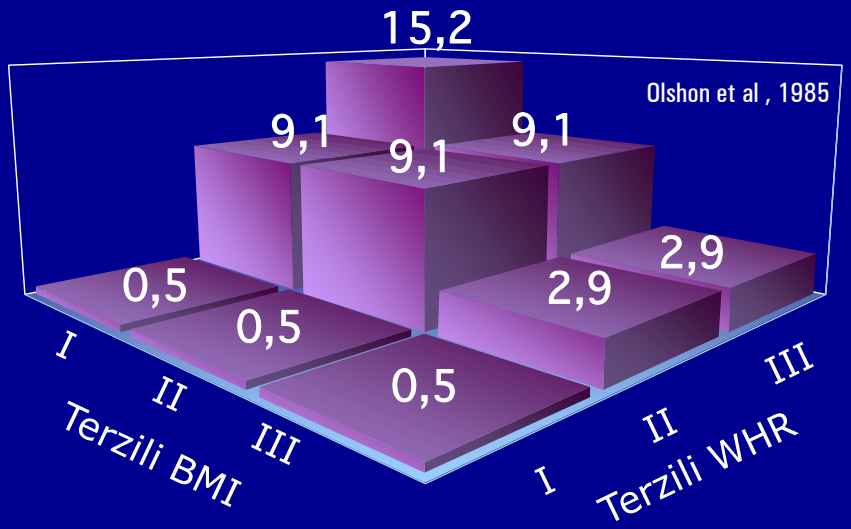
Ipercolesterolemia



Diabete

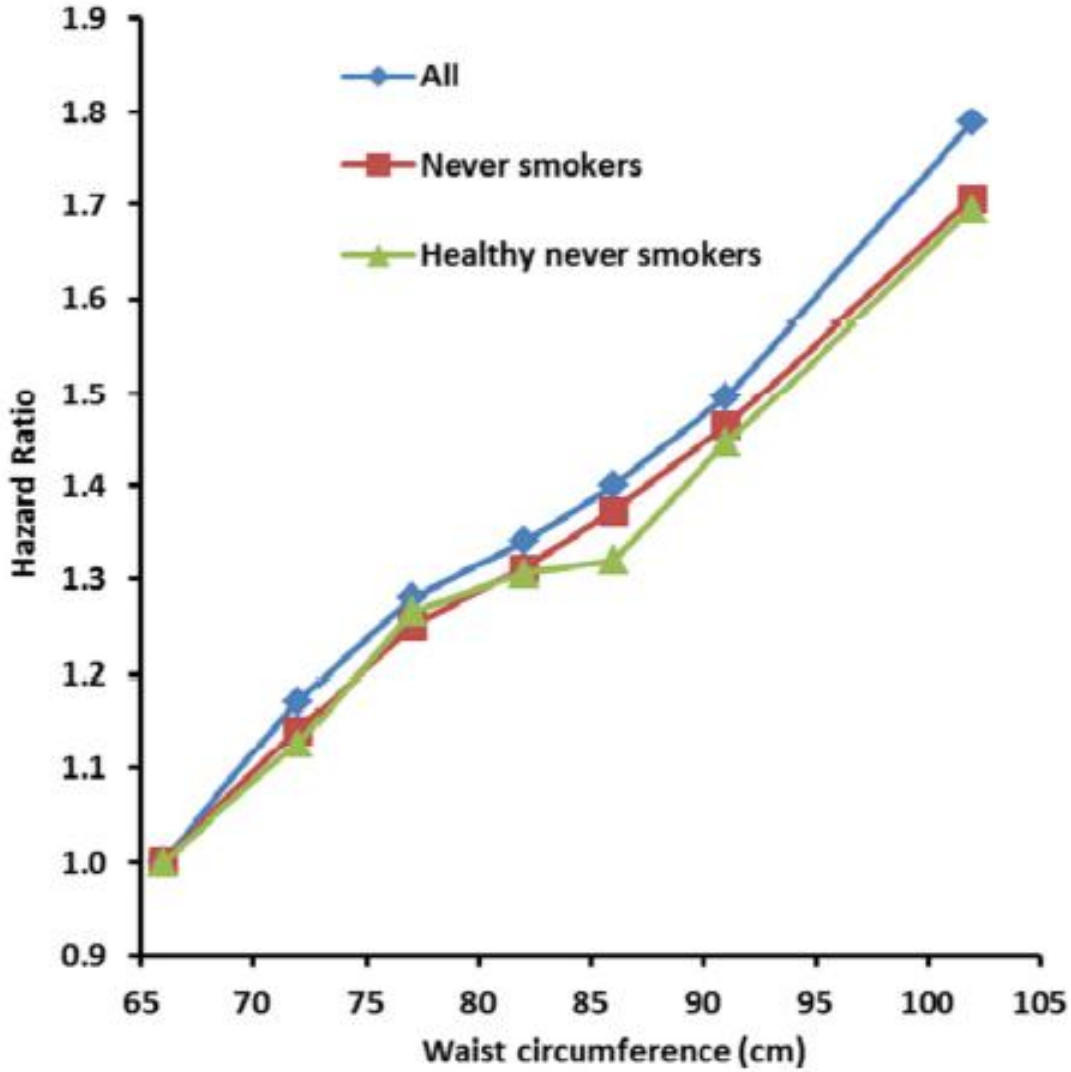


Prevalenza diabete



HR for Waist Circumference and All-Cause Mortality in in 650,000 Adults.

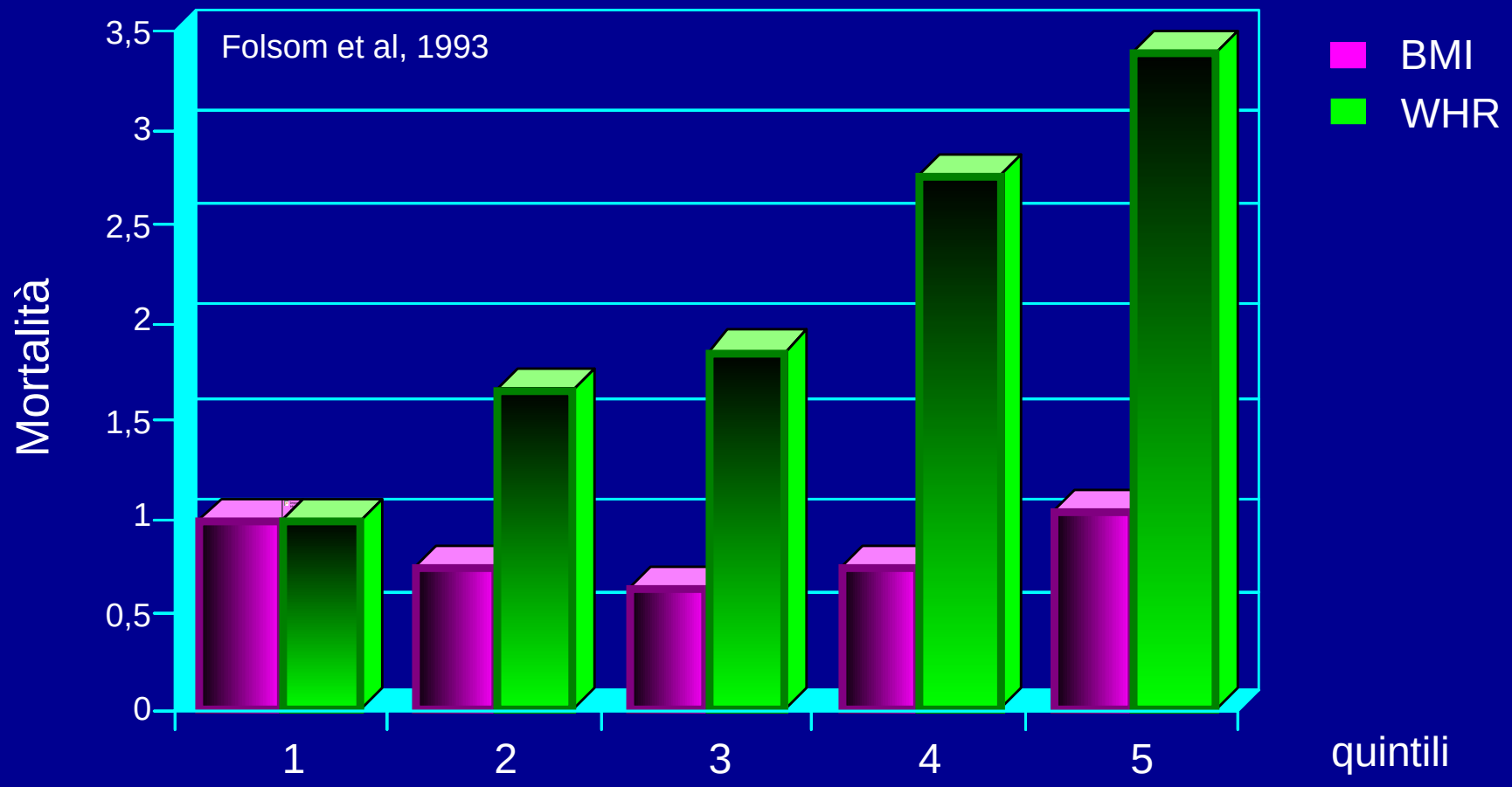
Adjusted for Education, Marital Status, Smoking Status, Alcohol Consumption, Physical Activity ***and for BMI****.*



Cerhan JC, *Mayo Clin Proc*. 2014; 89: 335–345

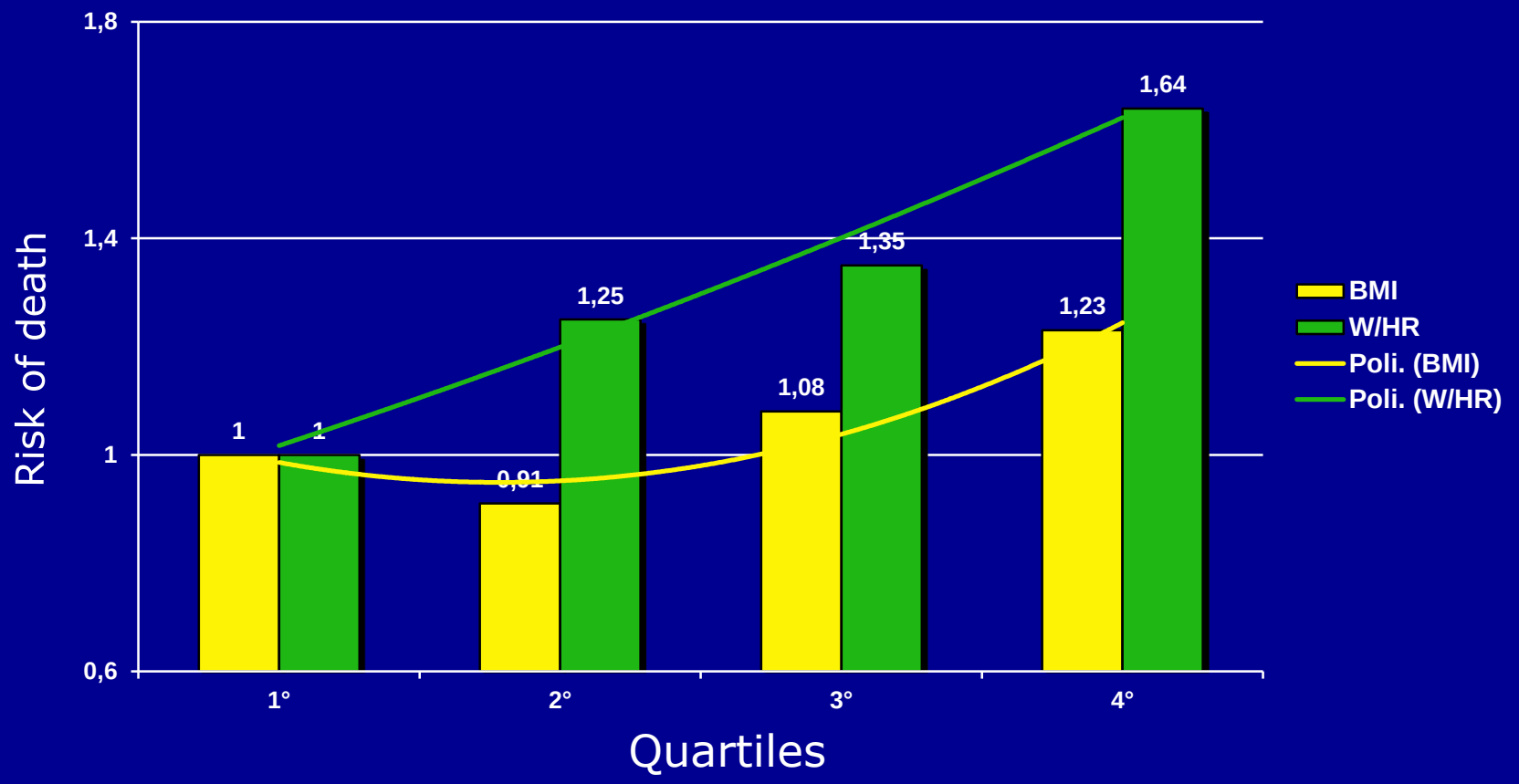
Mortalità/1000/anno in donne non fumatrici

(età 55-70 a.: follow-up 5 anni. BMI e WHR rispettivamente pareggiati)



Valori pareggiati per età, livello culturale, alcool ed estrogeni

Risk of death from CVD among aged 20-79 years. Associations with BMI and W/HR mutually adjusted.



Petursson H et al, 2011

The Predictive Value of Different Measures of Obesity for Incident Cardiovascular Events and Mortality

Schneider HJ et al, J Clin Endocrinol Metab 95: 1777-1785, 2010

Waist Circumference represents the best predictor of cardiovascular risk and mortality.

These results discourage the use of the BMI.

Waist Circumference Thresholds for Abdominal Obesity

POPULATION	ORGANIZATION	MEN	WOMEN
Europid	IDF	≥94 cm ≥37 inches	≥80 cm ≥31 inches
Caucasian *	WHO	≥94 cm (↑ risk) ≥37 inches ≥102 cm (↑↑ risk) ≥40 inches	≥80 cm (↑ risk) ≥31 inches ≥88 cm (↑↑ risk) ≥35 inches
United States	AHA/NHLBI (ATPIII)	≥102 cm ≥40 inches	≥88 cm ≥35 inches
Canada	Health Canada	≥102 cm ≥40 inches	≥88 cm ≥35 inches
European	European Cardiovasc. Societies	≥102 cm ≥40 inches	≥88 cm ≥35 inches
Asian (including Japanese)	IDF	≥90 cm ≥35 inches	≥80 cm ≥31 inches
Asian	WHO	≥90 cm ≥35 inches	≥80 cm ≥31 inches
Japanese	Japanese Obesity Society	≥85 cm ≥33 inches	≥90 cm ≥35 inches
China	Cooperative Task Force	≥85 cm ≥33 inches	≥80 cm ≥31 inches
Middle East, Mediterranean	IDF	≥94 cm ≥37 inches	≥80 cm ≥31 inches
Sub-Saharan African	IDF	≥94 cm ≥37 inches	≥80 cm ≥31 inches
Ethnic Central and South American	IDF	≥90 cm ≥35 inches	≥80 cm ≥31 inches

Body Composition Determinants of Metabolic Phenotypes of Obesity in Nonobese and Obese Postmenopausal Women

Peppa M et al, Obesity (2013) 21, 1807-1814.

- Anche se l'obesità è in genere associata ad aumento del rischio cardiovascolare, un sottogruppo di individui obesi mostrano un profilo metabolico normale (’’obesi metabolicamente sani”, MHO) e viceversa, un sottogruppo di soggetti non obesi presenta anomalie cardiometaboliche tipiche dell'obesità (''normopeso metabolicamente obesi”, MONW).
- In entrambi i gruppi obesi e non obesi, i "fenotipi non sani” si caratterizzano per più elevati marcatori biochimici di *insulino-resistenza*, steatosi epatica e infiammazione, e più elevati indici antropometrici - DXA-derivati - di *adiposità centrale*.

MHO individuals and at risk obese individuals

Metabolically Healthy Obese (MHO)	"At Risk" Obese
	
Low Visceral Fat	High Visceral Fat
High BMI	High BMI
High Fat mass	High Fat mass
High Insulin Sensitivity	Low Insulin Sensitivity
High HDL	Low HDL
Low Triglycerides	High Triglycerides

Karelis AD et al, ICEM 2004, 89(6):2569–2575

The Natural Course of Healthy Obesity Over 20 Years

Joshua A. Bell, et al
Department of Epidemiology & Public Health
University College London

J Am Coll Cardiol, 2015, 65 ,101-102 ,

- La progressione da obesità sana a non sana aumenta costantemente con l'aumentare della durata di follow-up.
- I risultati di questo studio, ottenuto con un più lungo, più dettagliato follow-up di qualsiasi studio precedente, suggeriscono che la stabilità a lungo termine è l'eccezione, non la norma.
- Il corso naturale di una obesità sana è la progressione del deterioramento metabolico.

MONW individuals and normal healthy individuals

Metabolically Obese Normal Weight (MONW)

High Visceral Fat

Low BMI

High Fat mass

Low Lean Body Mass

Low Insulin Sensitivity

High Liver Fat

High Triglycerides

Metabolically Healthy

Low Visceral Fat

Low BMI

Low Fat mass

High Lean Body Mass

High Insulin Sensitivity

Low Liver Fat

Low Triglycerides

Karelis AD et al, ICEM 2004, 89(6):2569–2575

Changes in Waist Circumference among German Adults over Time – Compiling Results of Seven Prospective Cohort Studies

Haftenberger M et al, Obes Facts 2016;9:332–343

- L'aumento della circonferenza della vita e dell'obesità centrale *"over time"* è preoccupante dal momento che una distribuzione del grasso centrale aumenta il rischio di malattie croniche come le malattie cardiovascolari o T2D.
- I programmi di prevenzione dell'obesità devono concentrarsi anche sull'obesità addominale poiché la maggior parte dei partecipanti, senza obesità centrale alla prima osservazione, sviluppano obesità centrale entro 10 anni.

Association of All-Cause Mortality With Overweight and Obesity Using Standard Body Mass Index Categories

A Systematic Review and Meta-analysis

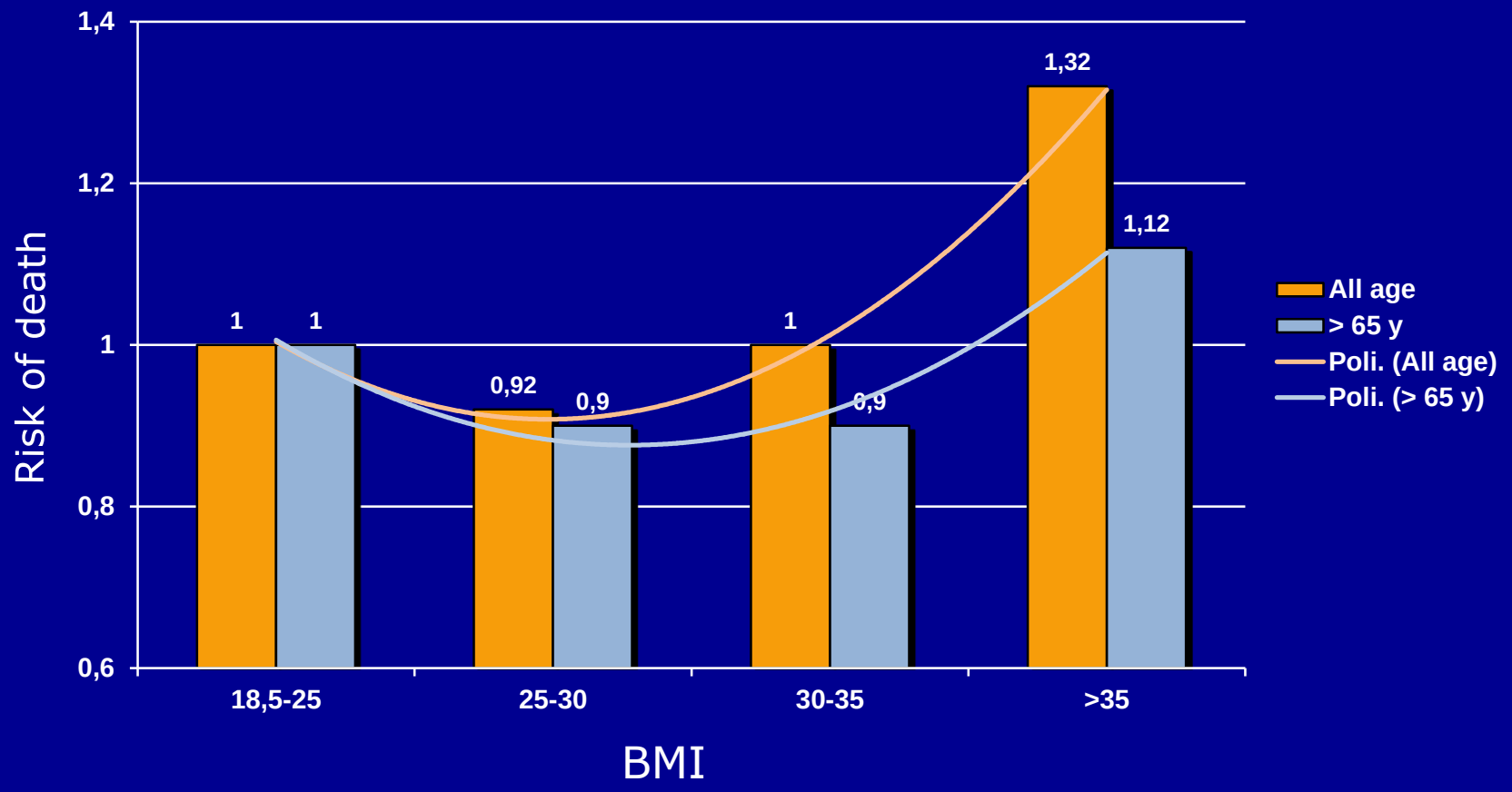
Katherine M. Flegal, PhD
Brian K. Kit, MD
Heather Orpana, PhD
Barry I. Graubard, PhD

National Center for Health Statistics, Centers for Disease Control and Prevention, CDC

- **Rispetto al peso normale, l'obesità di grado1 non è risultata associata a più elevata mortalità, e il sovrappeso è associato a mortalità significativamente più bassa per qualsiasi causa.**
- **I Gradi 2 e 3 di obesità sono associati a mortalità significativamente più alta per qualsiasi causa.**

JAMA. 2013;309(1):71-82

All-Cause Mortality for Overweight and Obesity Relative to Normal Weight



Flegal KM, *et al, JAMA. 2013; 309: 71-82*

Overweight, Obesity, and All-Cause Mortality

Walter C. Willett, MD, DrPH
Frank B. Hu, MD, PhD
Michael Thun, MD, MS

JAMA, 2013, 309, **1679**

Department of Nutrition, Harvard School of Public Health, Boston, Massachusetts

- Lo studio di Katherine Flegal e collaboratori è profondamente viziato.
- Il gruppo di confronto (BMI di 18.5-25) contiene persone che sono magra e attive, forti fumatori, e gravemente malati con perdita di peso, così come popolazioni asiatiche.
- I gruppi dei sovrappeso (BMI di 25-30) e obesi (BMI> 30) sono confrontati con questo gruppo eterogeneo, cosicchè i rischi relativi per i gruppi di BMI più elevati vengono sottostimati, creando un artefatto di riduzione della mortalità nel gruppo sovrappeso.
- Dovrebbero essere considerati anche indicatori di adiposità diversi dal BMI, tra cui la circonferenza addominale e l'aumento di peso.
- Nello studio di Flegal non sono disponibili dettagli sulle precedenti variazioni di peso negli anni, il fumo, le condizioni cliniche e l'età.
- Contrariamente alle conclusioni di Flegal, la letteratura fornisce la prova evidente che anche un modesto eccesso di adiposità ha molte conseguenze avverse per la salute, negative ricadute sociali, tra cui bassa qualità della vita, maggiori costi di assistenza sanitaria, oltre a mortalità elevata.

RESEARCH NEWS

Waist measurement, not BMI, is stronger predictor of death risk, study finds

BMJ 2017;357:j2033 doi: 10.1136/bmj.j2033 (Published 2017 April 26)

Jacqui Wise

People with a normal body mass index (BMI) but a large waist circumference have worse long term survival than people who are overweight or obese but who do not carry their weight around the middle, a study has found. The finding is consistent with previous research but is from a much larger sample of adults in the general population.

Explaining these findings is challenging.

The possibility is that overweight and obese persons have greater amounts of subcutaneous fat in the hips and legs—that is, fat linked to healthier metabolic profiles.

Impact of weight loss on waist circumference and the components of the metabolic syndrome

Rothberg AE et al, Open Diabetes Research and Care 2017;5:e000341

A study, examining 15 184 adults from the NHANES reported that individuals with higher WC had higher long-term mortality across BMI categories between 20 and 50 kg/m2, even after adjusting for other risk factors.

When both BMI and WC are examined as continuous variables, WC but not BMI explained obesity-related health risks.

In this intensive weight management program, greater relative decrease in WC is associated with greater improvements in CV and mortality risk factors, even after adjusting for other risk factors.

Monitoring changes in WC during weight loss interventions may provide useful prognostic informations.

Ectopic fat deposition

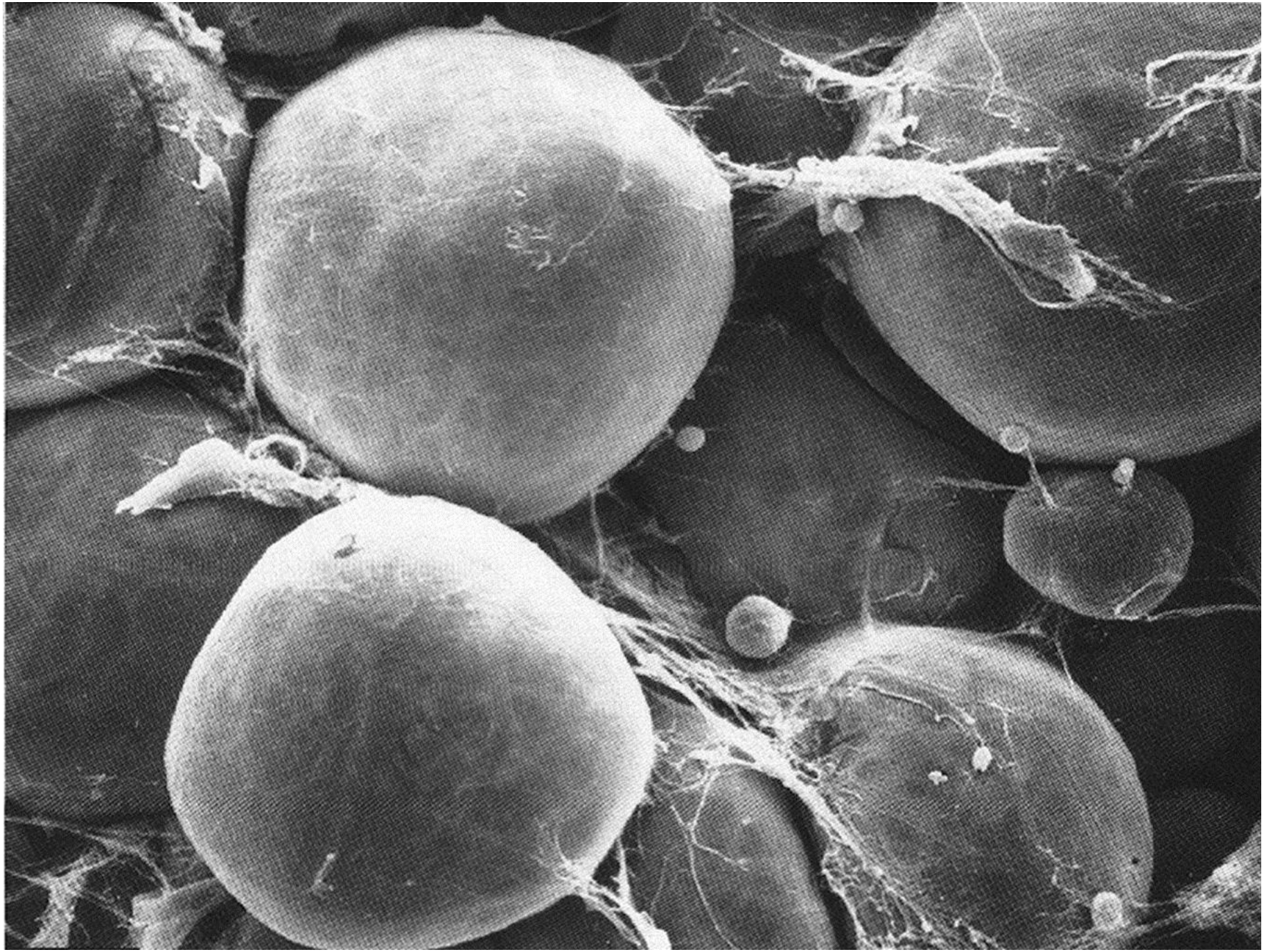
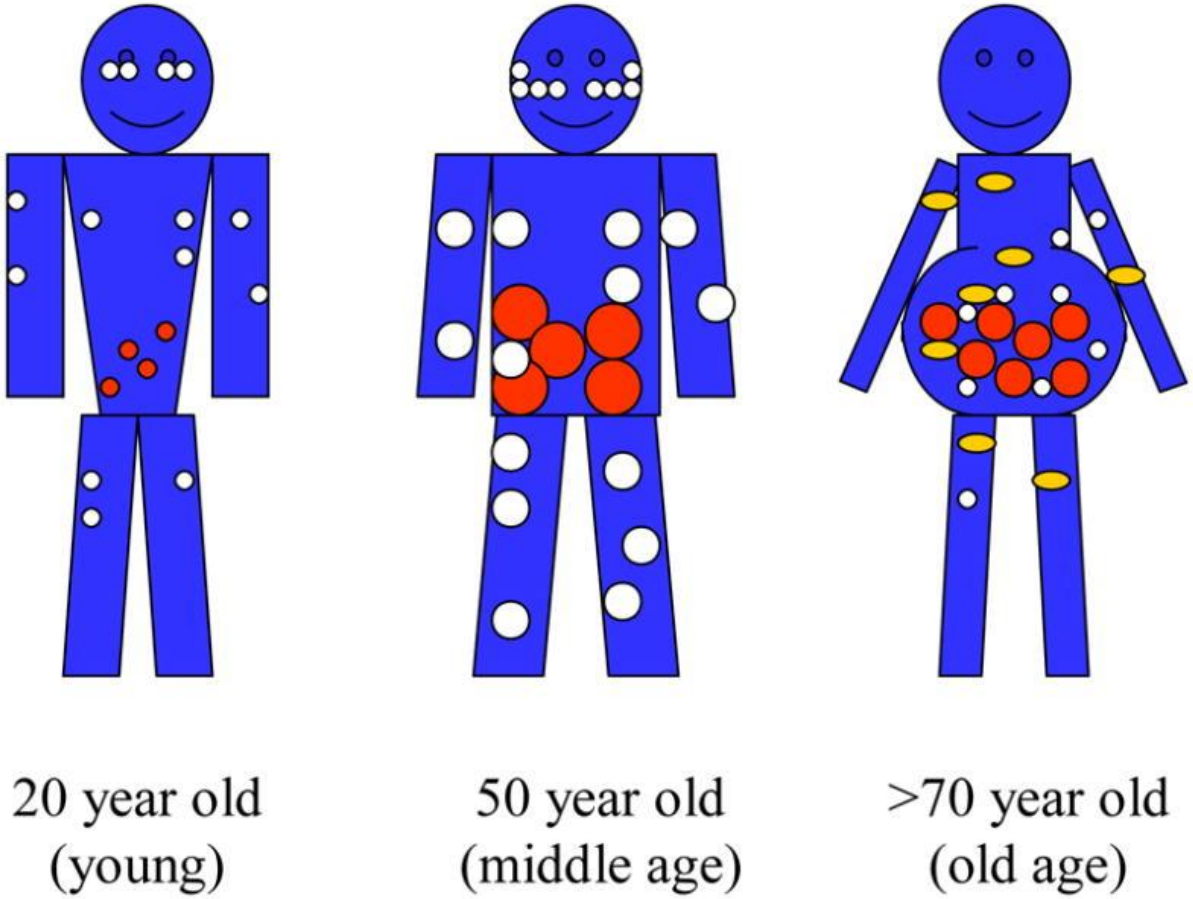


Diagram of age-associated changes in fat distribution

Fat mass reaches a peak by middle or early old age, followed by a substantial decline in advanced old age. Aging causes a loss of subcutaneous fat (peripherally first and then centrally), accumulation of visceral fat, and ectopic fat deposition (in muscle, liver, bone marrow, and elsewhere).



White circles = subcutaneous fat
Red circles = visceral fa
Orange circles = fat in non adipose tissue

Cartwright M J et al, 2007

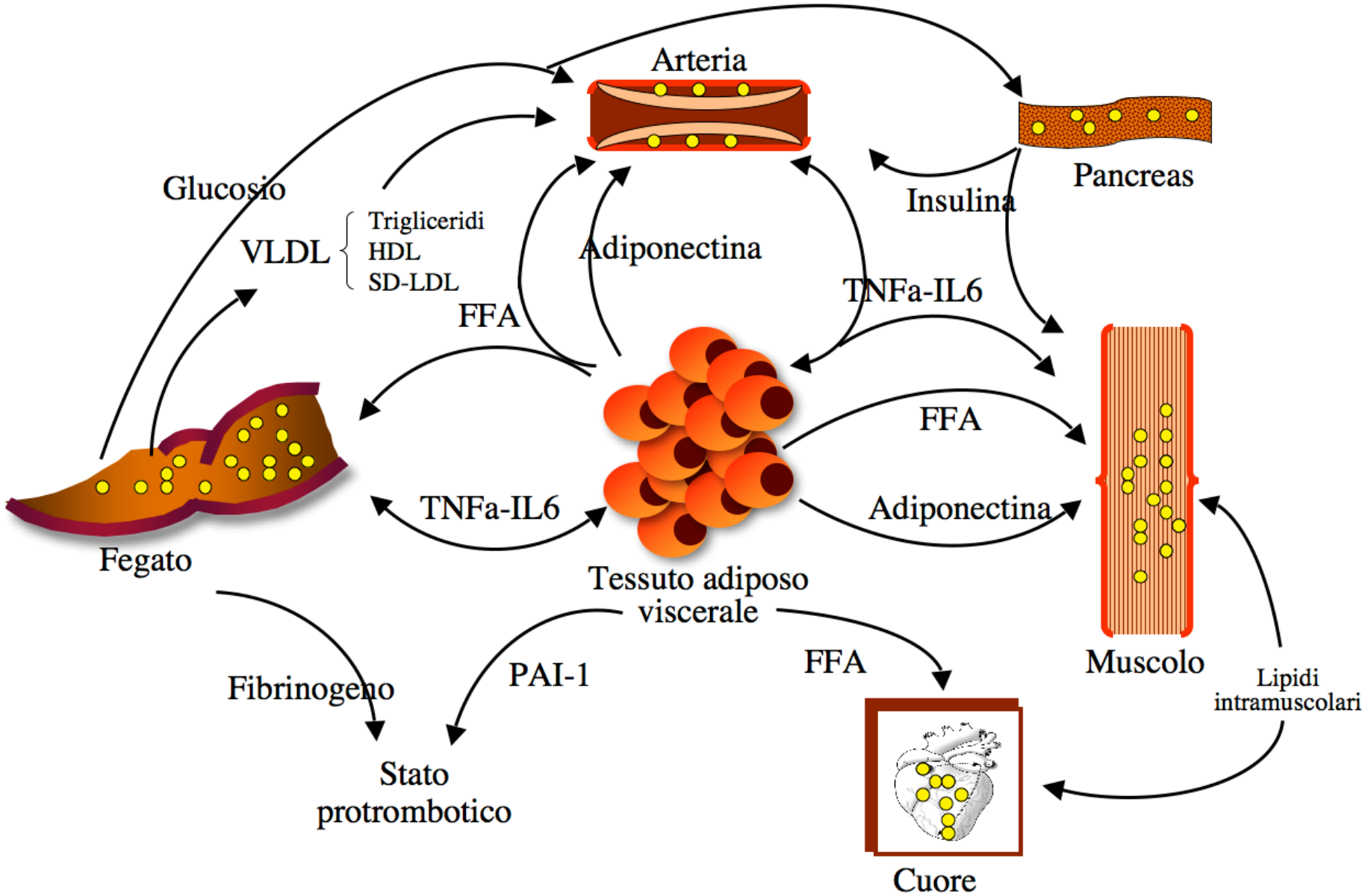
Adiposopathy

Is "Sick Fat" a Cardiovascular Disease?

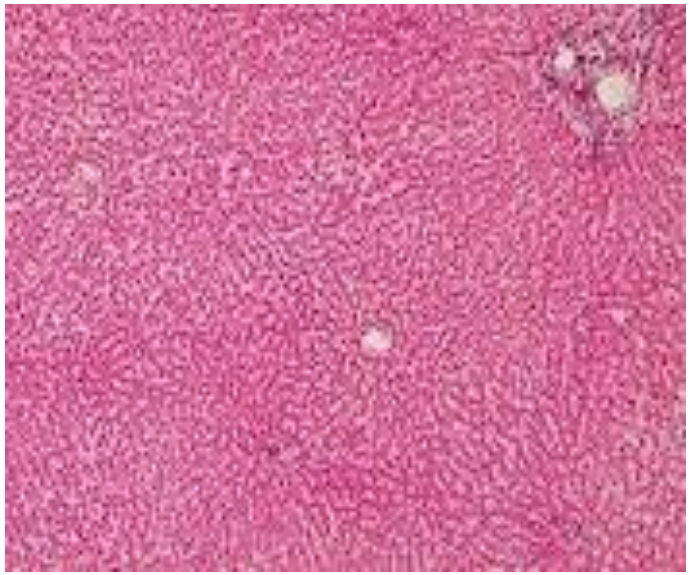
- Se durante un bilancio calorico positivo , il tessuto adiposo sottocutaneo (SAT) è in grado di attivare la proliferazione e la differenziazione degli adipociti, allora questo può rallentare un eccesso di flusso energico verso altri depositi di grasso.
- Viceversa, se durante un bilancio calorico positivo il SAT non è in grado di proliferare e differenziare adeguatamente, allora *l'overflow* di energia può promuovere l'accumulo di grasso in altri depositi adiposi (*in primis*, il tessuto adiposo viscerale, VAT), poi il grasso pericardico, il grasso perivascolare e all'interno di vari organi e apparati), contribuendo a molteplici alterazioni metaboliche, e aumentando il rischio cardiovascolare.

Bays H, Curr Atheroscler Rep (2014) 16:409

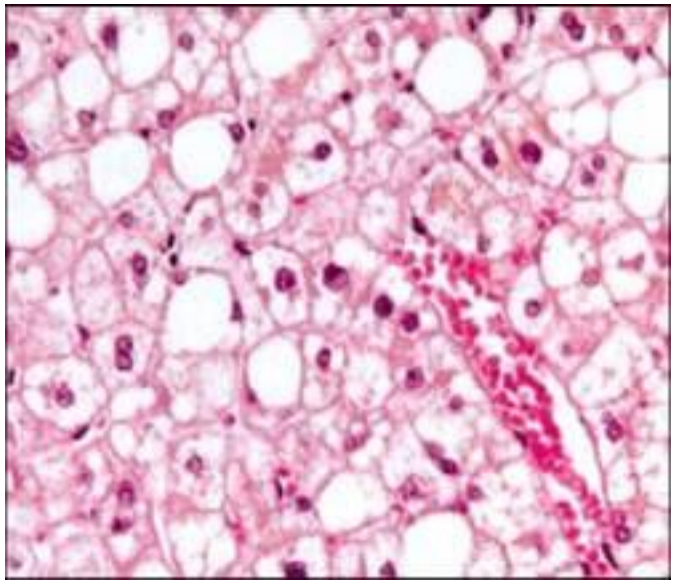
"ectopic fat deposition"

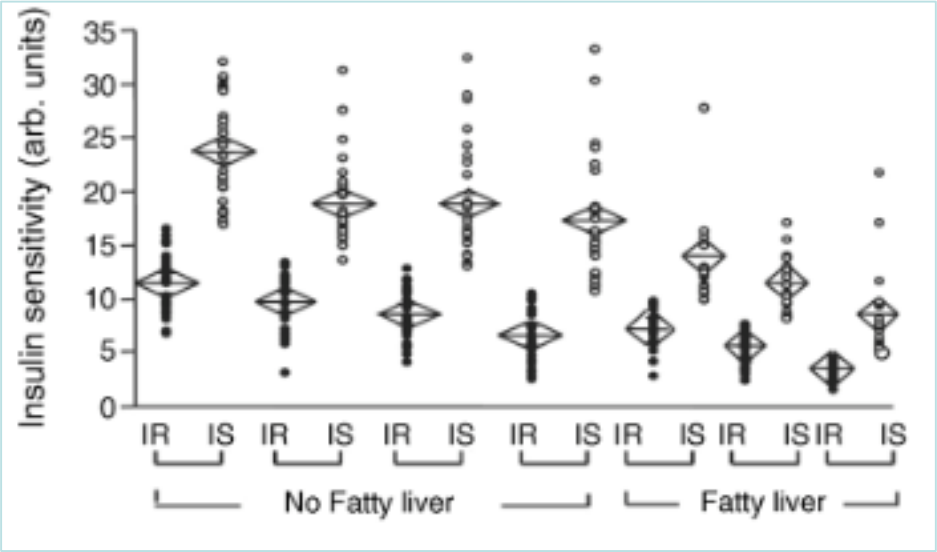


Fegato normale



Epatosteatosi

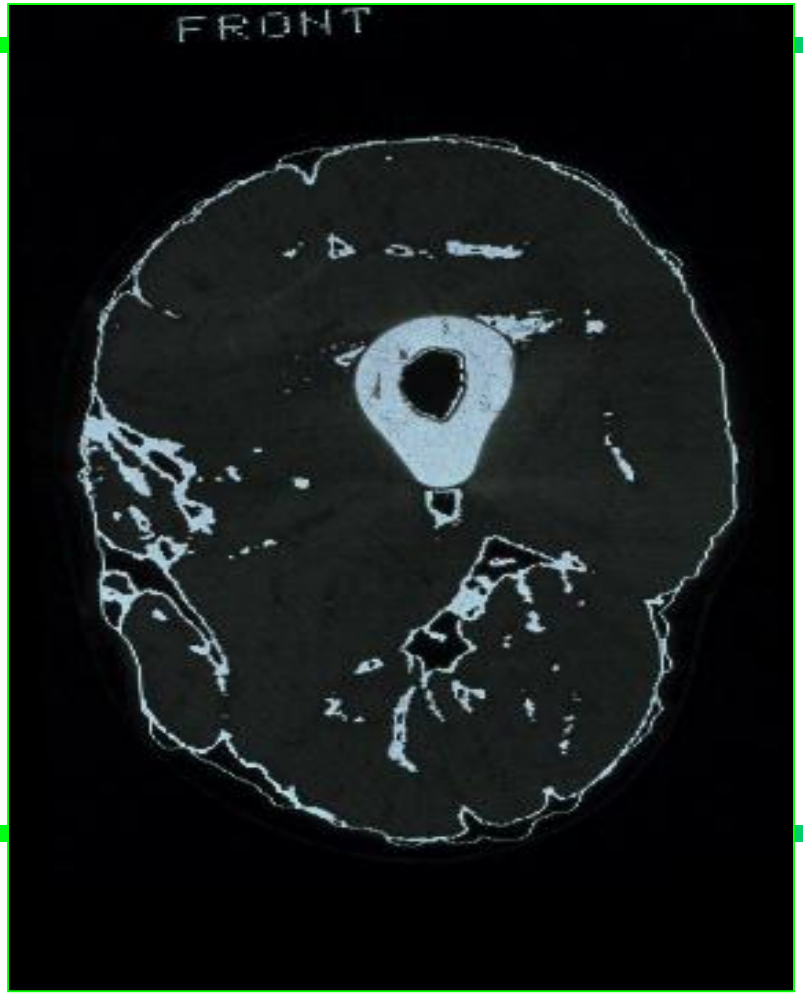




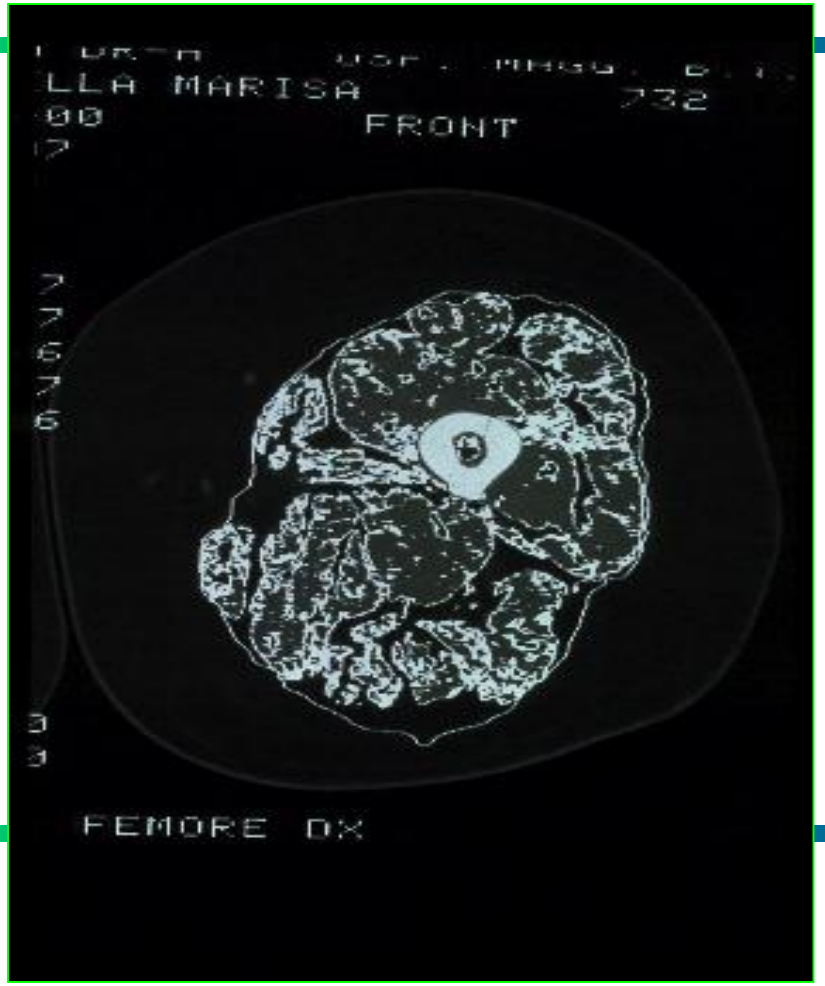
Association of insulin resistance with the amount of liver fat.

Häring HU, Diabetologia (2016) 59:1806–1818

anni 35, F, W 70 cm

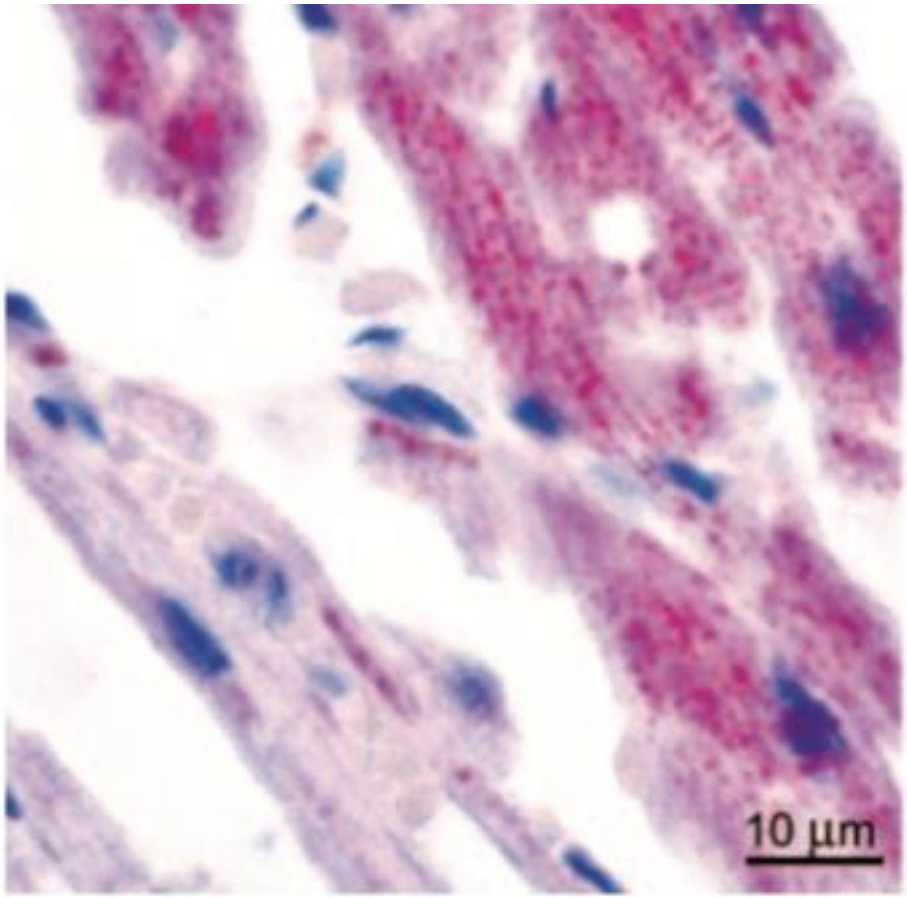


anni 59, F, W 121 cm

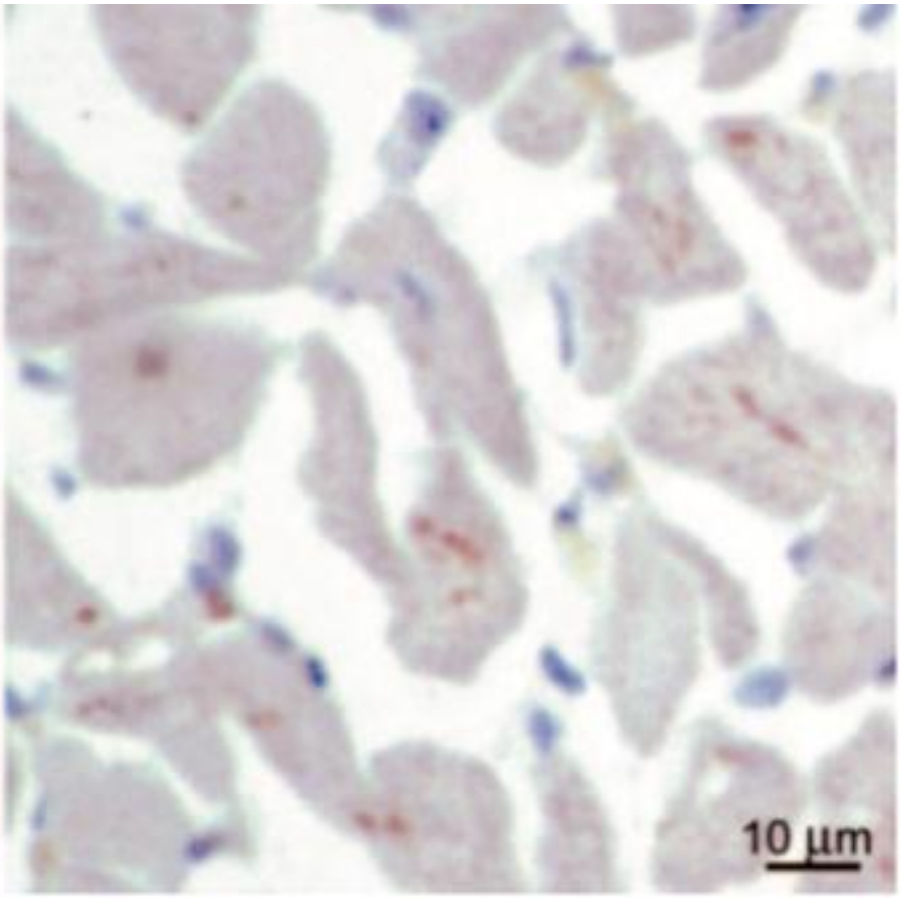


TAC coscia

Cardiac muscle



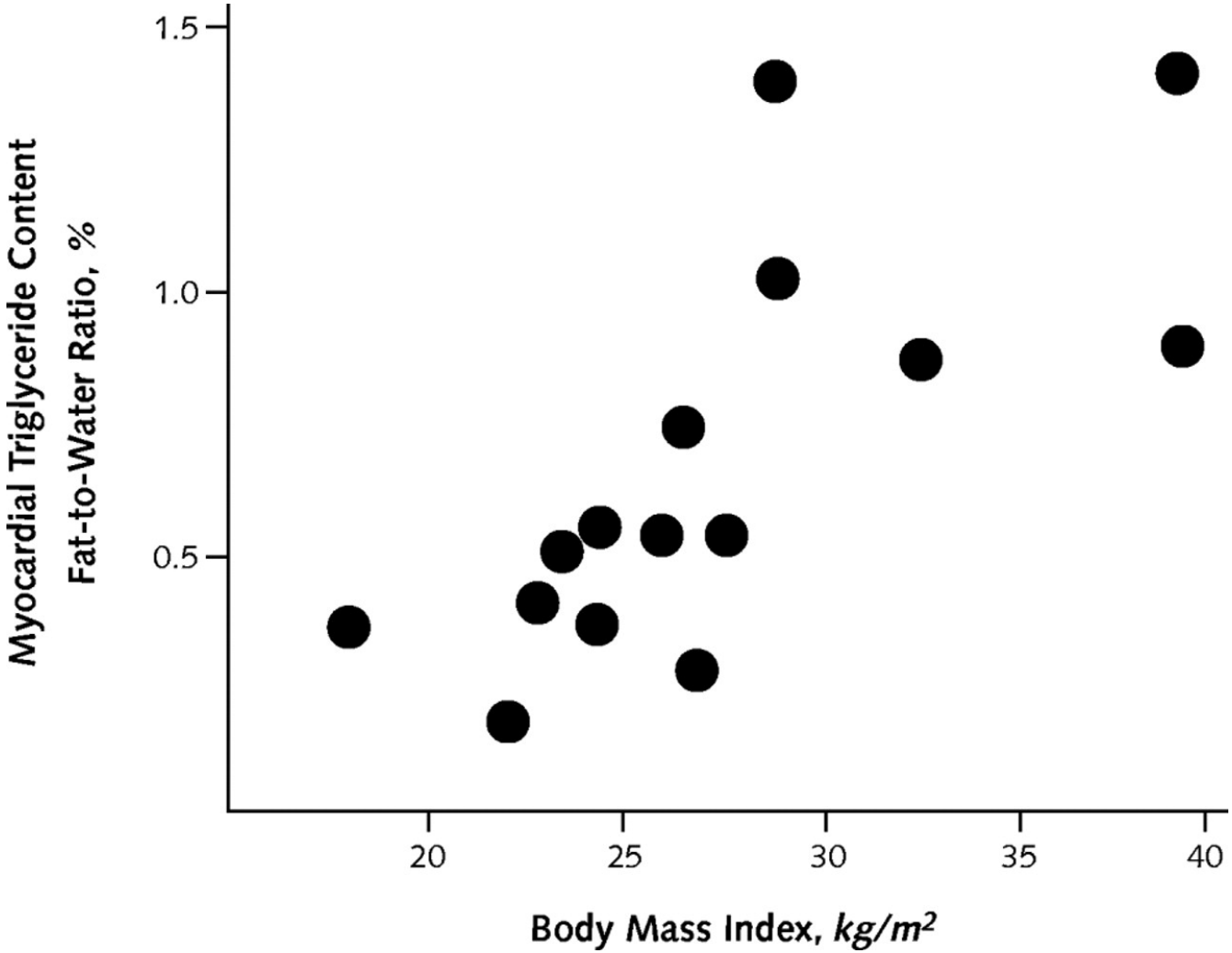
Cardiac muscle



Oil red staining for lipids of hearts from an obese (male, Waist 121) and a nonobese human (female, Waist 82).

Szczepaniak LS et al, *Circ Res.* 2007;101:759-767

Myocardial triglyceride levels correlate positively with body mass index

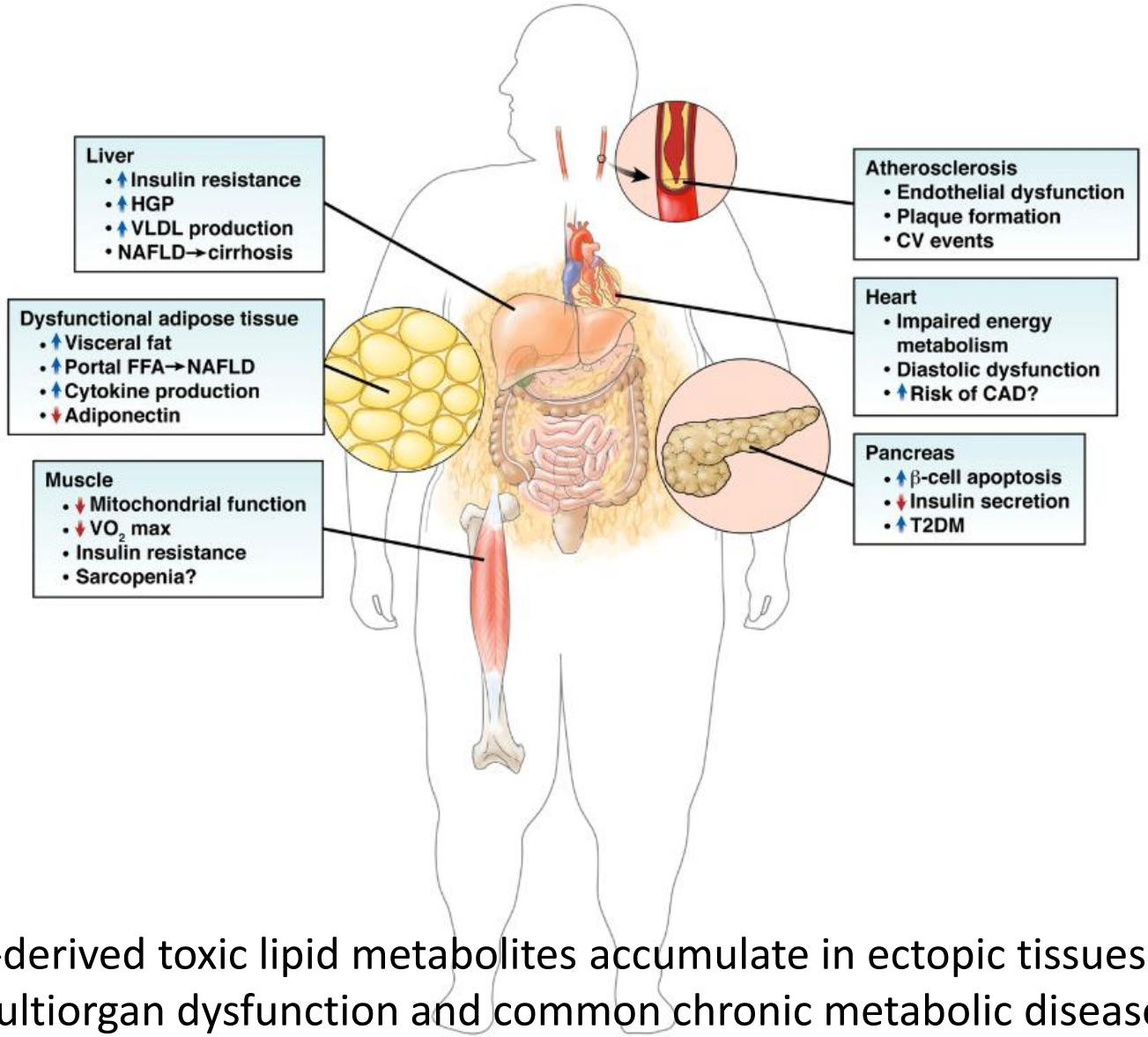


McGavock, J. M. et. al. Ann Intern Med 2006;144:517-524

Annals of Internal Medicine

Role of Obesity and Lipotoxicity Pathophysiology and Clinical Implications

Cusi K, Gastroenterology, 2012;142:711–725



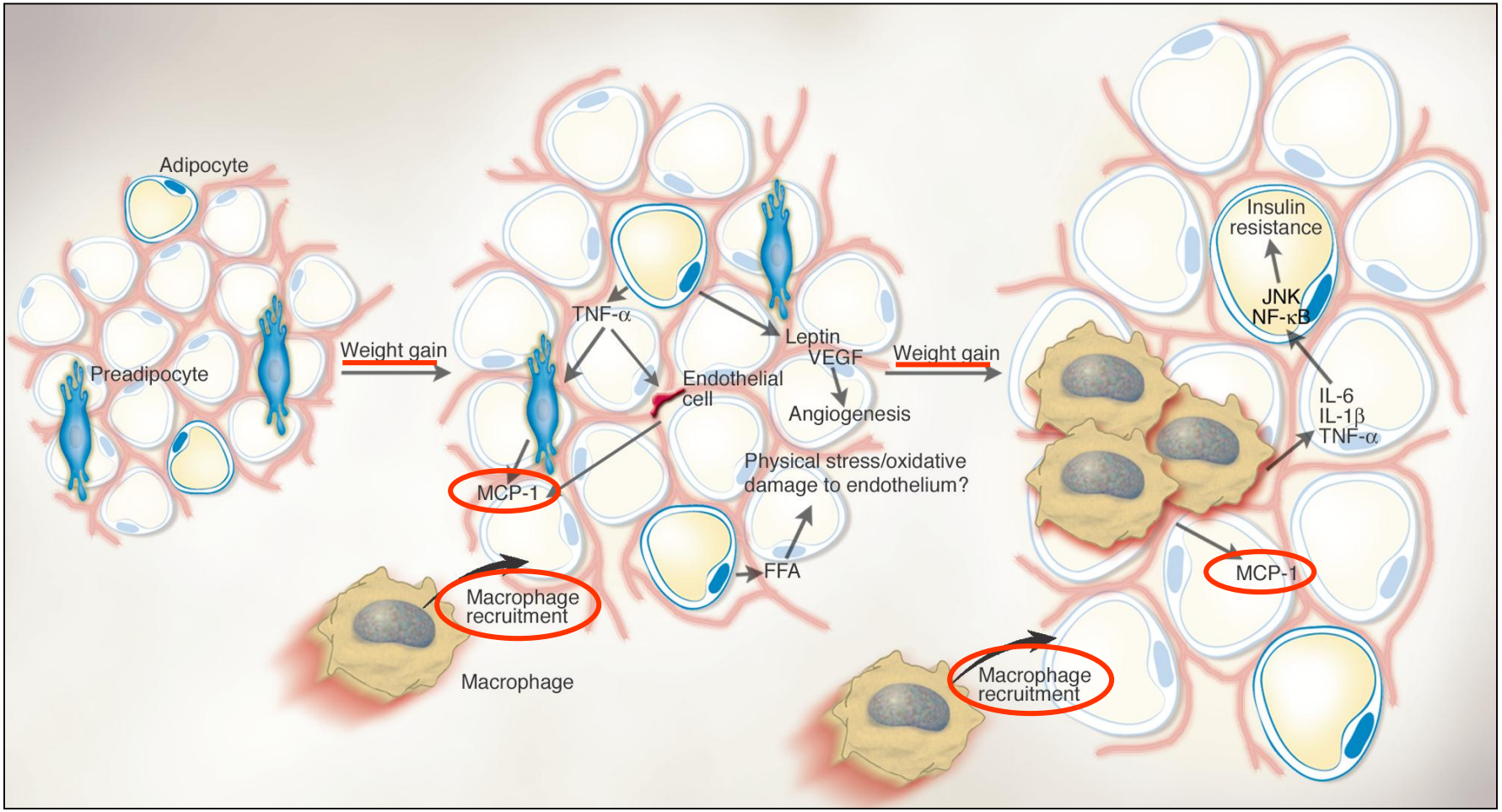
Triglyceride-derived toxic lipid metabolites accumulate in ectopic tissues and lead to multiorgan dysfunction and common chronic metabolic diseases

Obesity is associated with macrophage accumulation in adipose tissue

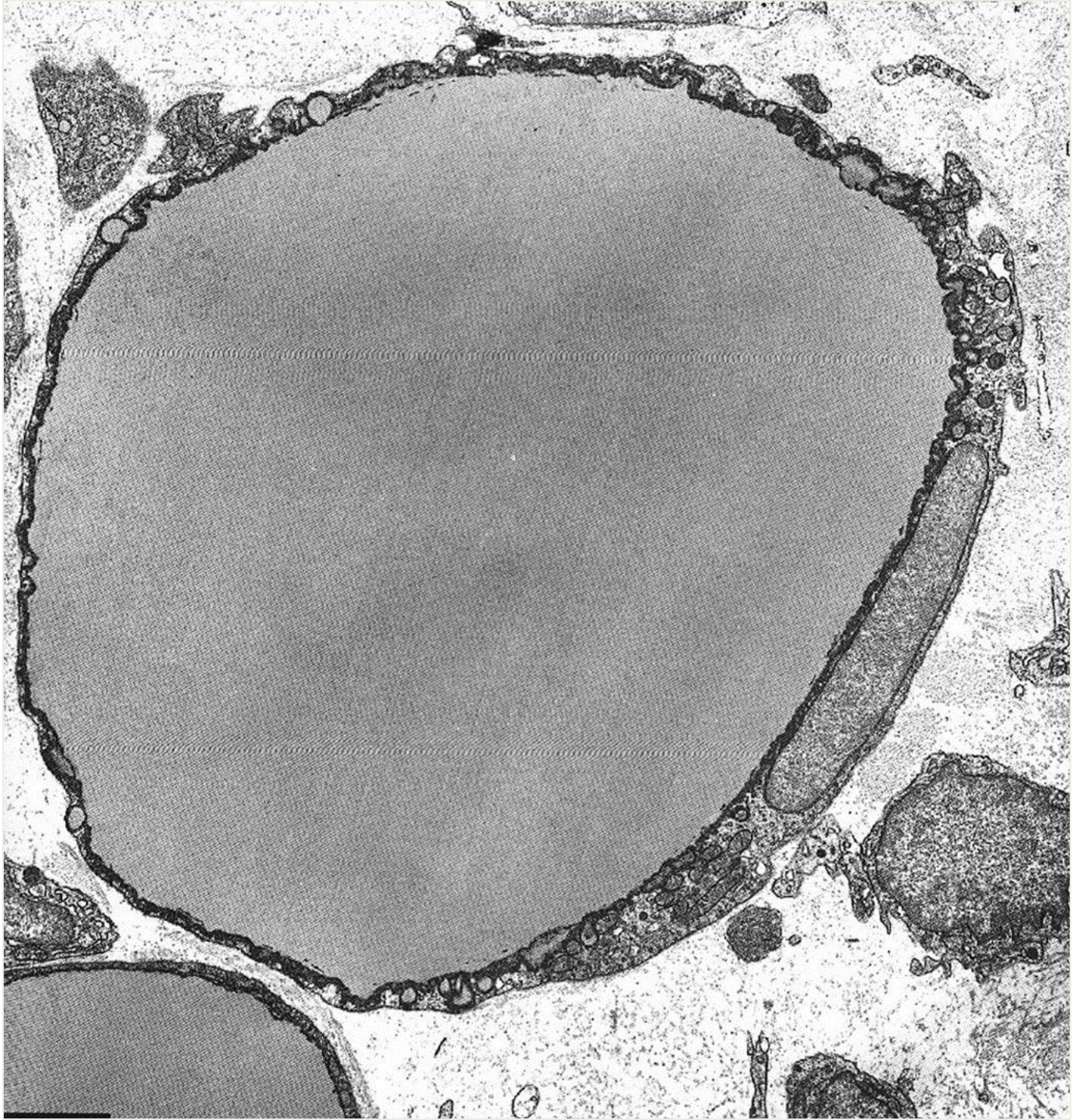
Weisberg SP et al, *J. Clin. Invest.* **112**:1796–1808 (2003). doi:10.1172/JCI200319246

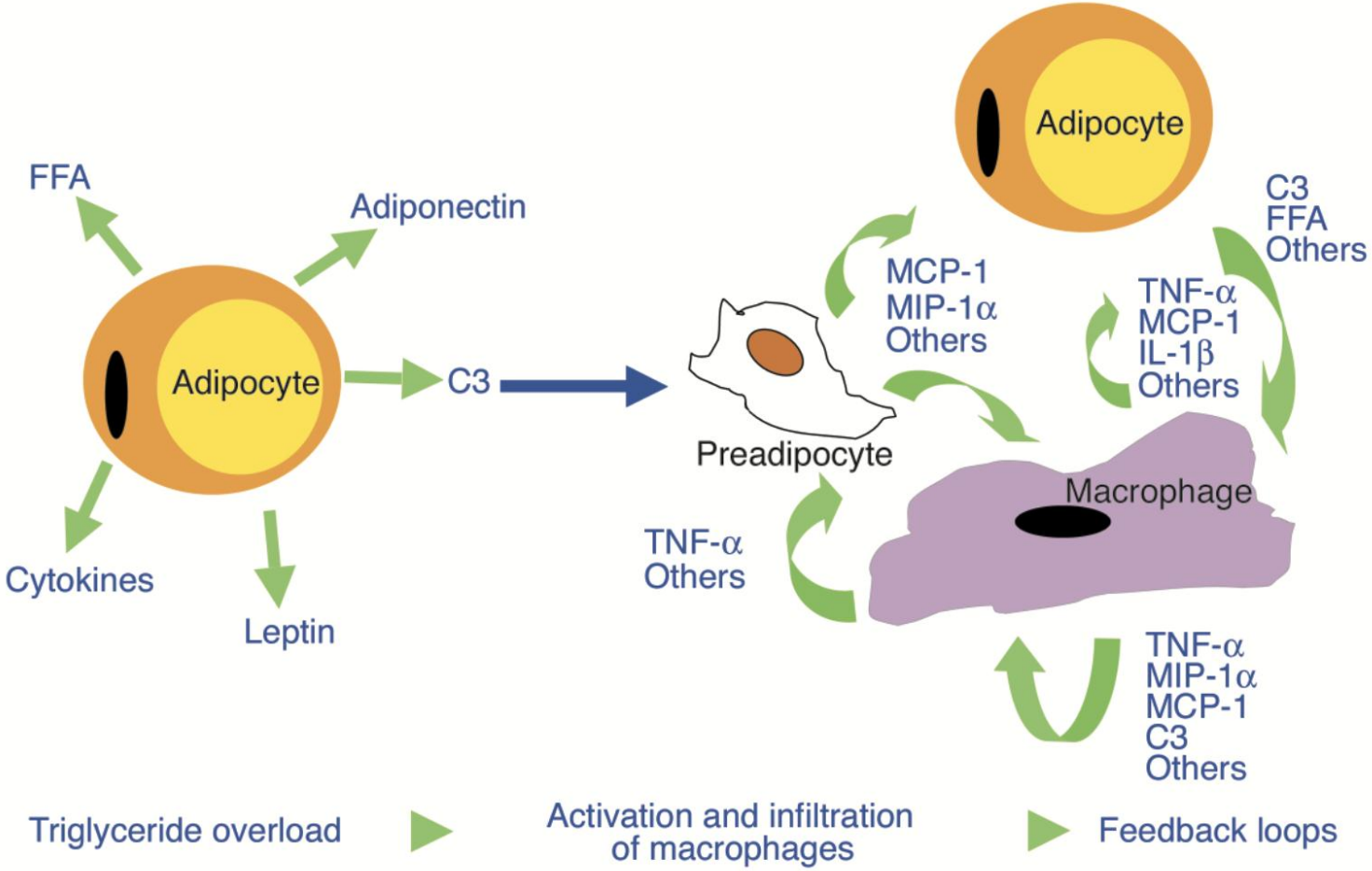
Adipose tissue macrophage numbers increase in obesity and participate in inflammatory pathways that are activated in adipose tissues of obese individuals. Inflammation induces insulin resistance through a variety of molecular mechanisms.

Obesità, infiammazione e infiltrazione macrofagica del tessuto adiposo



Wellen et al., 2003





Recently it was reported that preadipocytes could be converted to macrophages under certain conditions. When adiposity reaches a certain threshold, factors derived from adipocytes induce macrophage activation and infiltration. Activated macrophages secrete cytokines that can stimulate further activation and infiltration of peripheral monocytes and macrophages into fat.

Xu X et al, j clin invest, **112**:1821–1830 (2003).

Adapting to obesity with adipose tissue inflammation

Nature, 2017, 13, **63**

Shannon M. Reilly and Alan R. Saltiel

Adipose tissue not only has an important role in the storage of excess nutrients but also senses nutrient status and regulates energy mobilization.

An overall positive energy balance is associated with overnutrition and leads to excessive accumulation of fat in adipocytes. Preadipocytes are primed and ready to differentiate into mature adipocytes to increase the storage capacity of adipose tissue.

These cells respond by initiating an inflammatory response that, although maladaptive in the long run, might initially be a physiological response to the stresses obesity places on adipose tissue.

AACE & ACE 2016

POSITION STATEMENT

Adiposity-Based Chronic Disease

A New Name for Obesity?

Body-mass index and all-cause mortality: individual-participant-data meta-analysis of 239 prospective studies in four continents

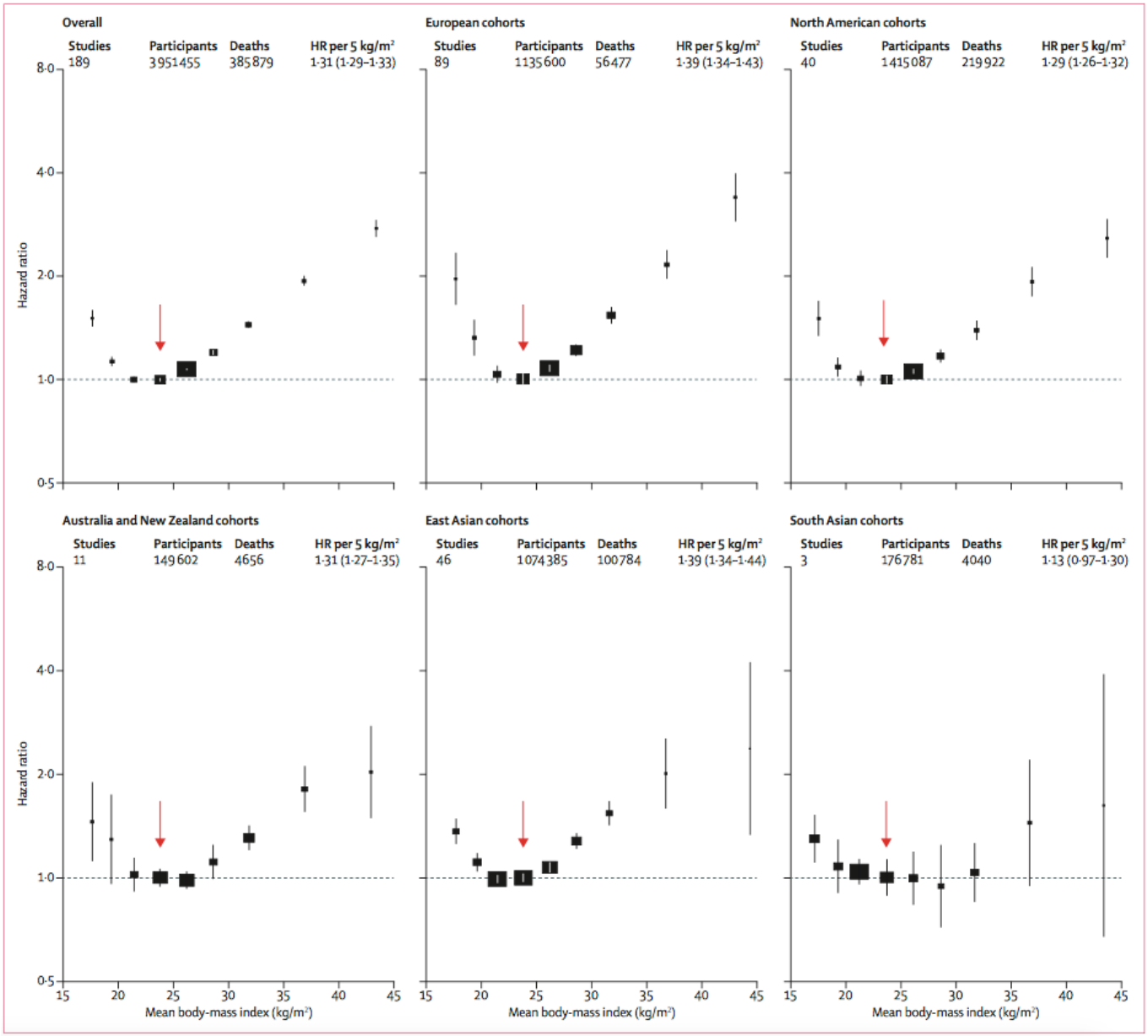
The Global BMI Mortality Collaboration* *Lancet* 2016; 388: 776–86

Metodi

- 10 625 411 partecipanti in Asia, Australia e Nuova Zelanda, Europa e Nord America, provenienti da 239 studi prospettici.
- Le analisi principali hanno riguardato la mortalità e lo studio del rischio relativo (HR), pareggiato per sesso ed età, rispetto al BMI 22,5-25,0.

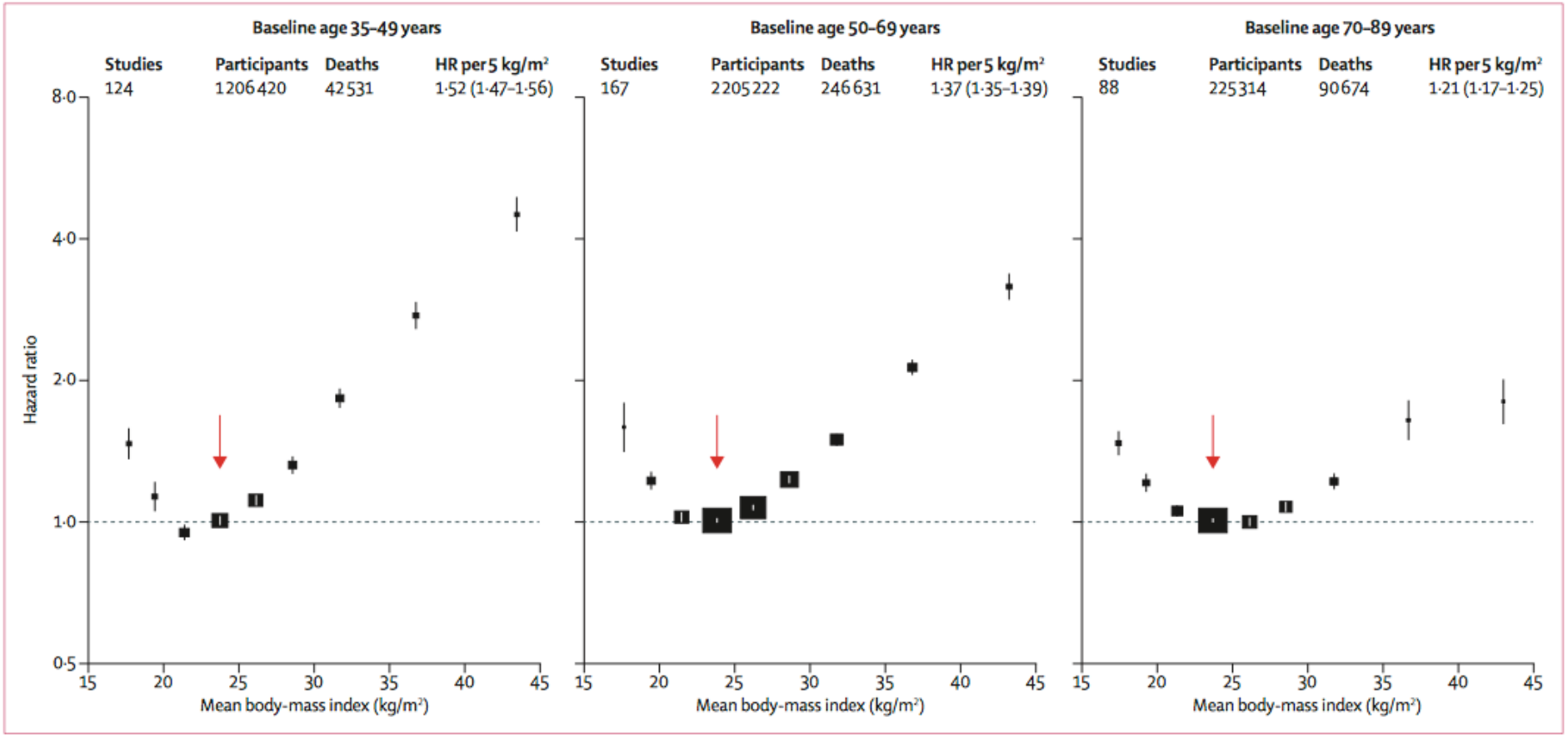
Interpretazione

- Le associazioni di entrambi, sovrappeso e obesità, con una maggiore mortalità per qualsiasi causa, sono risultate sostanzialmente in linea nei quattro continenti.
- Queste osservazioni supportano le strategie per combattere l'intero spettro dell'eccesso di adiposità in popolazioni molteplici.
- Questi risultati mettono in discussione le recenti ipotesi che sovrappeso e obesità moderata non siano associati a maggiore mortalità, bypassando le speculazioni su ipotetici effetti metabolici protettivi di un aumento del grasso corporeo in individui apparentemente sani.



Association of body-mass index with all-cause mortality, by geographical region

The Global BMI Mortality Collaboration, Lancet. 2016; 388(10046): 776–786.



Association of body-mass index with all-cause mortality, by baseline age group

The Global BMI Mortality Collaboration, Lancet. 2016 ; 388(10046): 776–786.

Body Mass Index

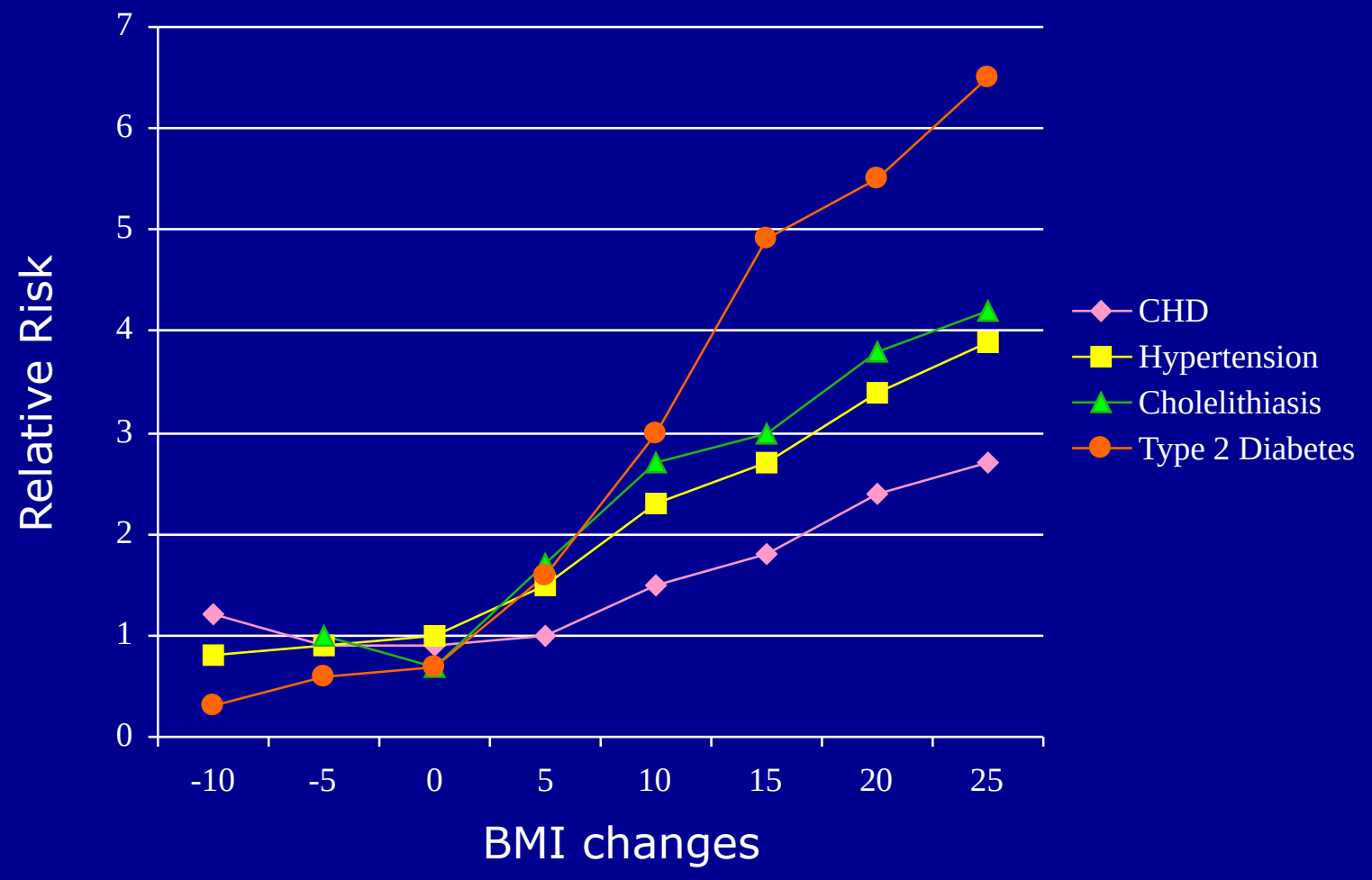
or

Waist Circumference?

Un aspetto cruciale e sottovalutato

L'aumento di peso

Relation between Changes in Weight and Relative Risk of disease in women



Willett W et al, 1999

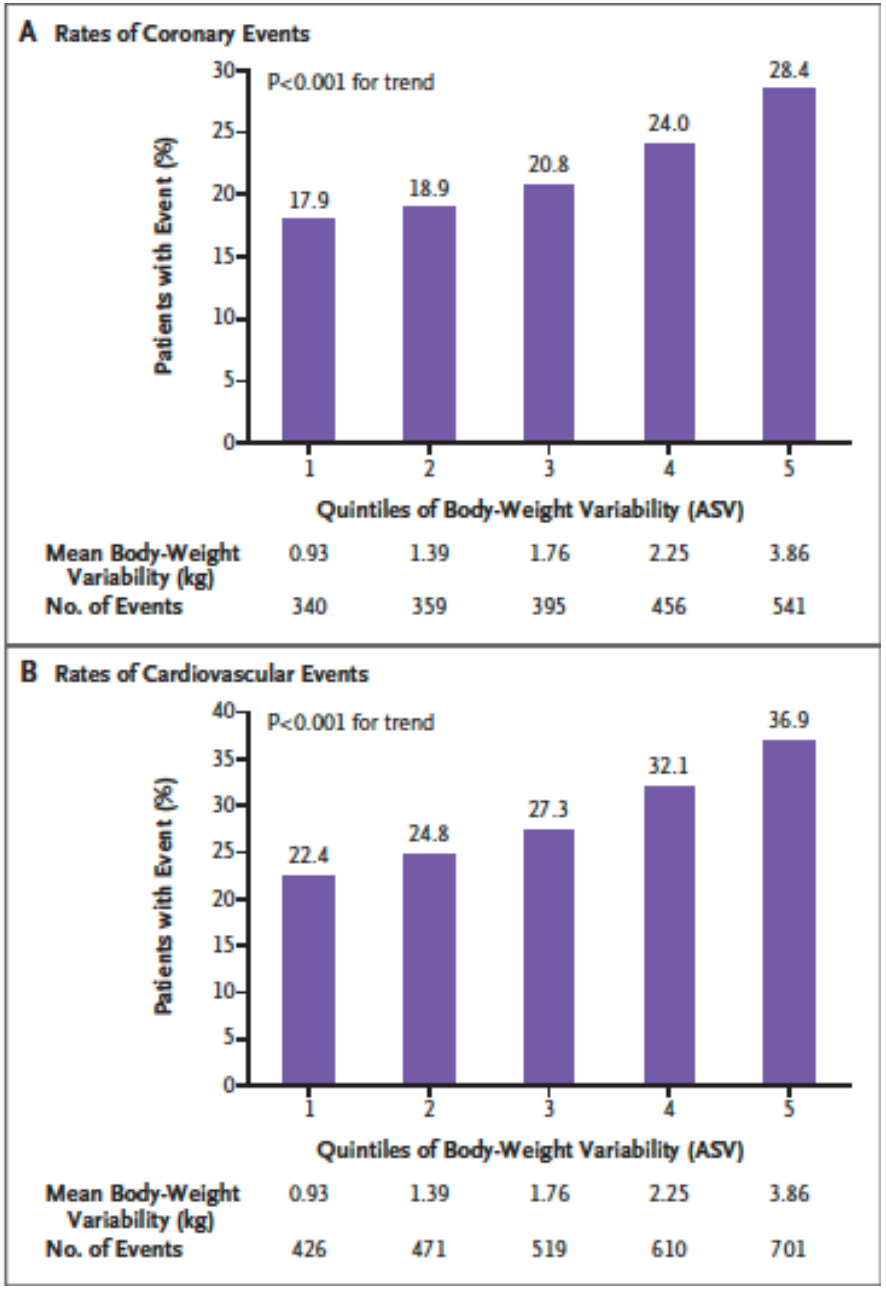
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Body-Weight Fluctuations and Outcomes in Coronary Disease

Bangalore S et al, N Engl J Med 2017;376:1332-40

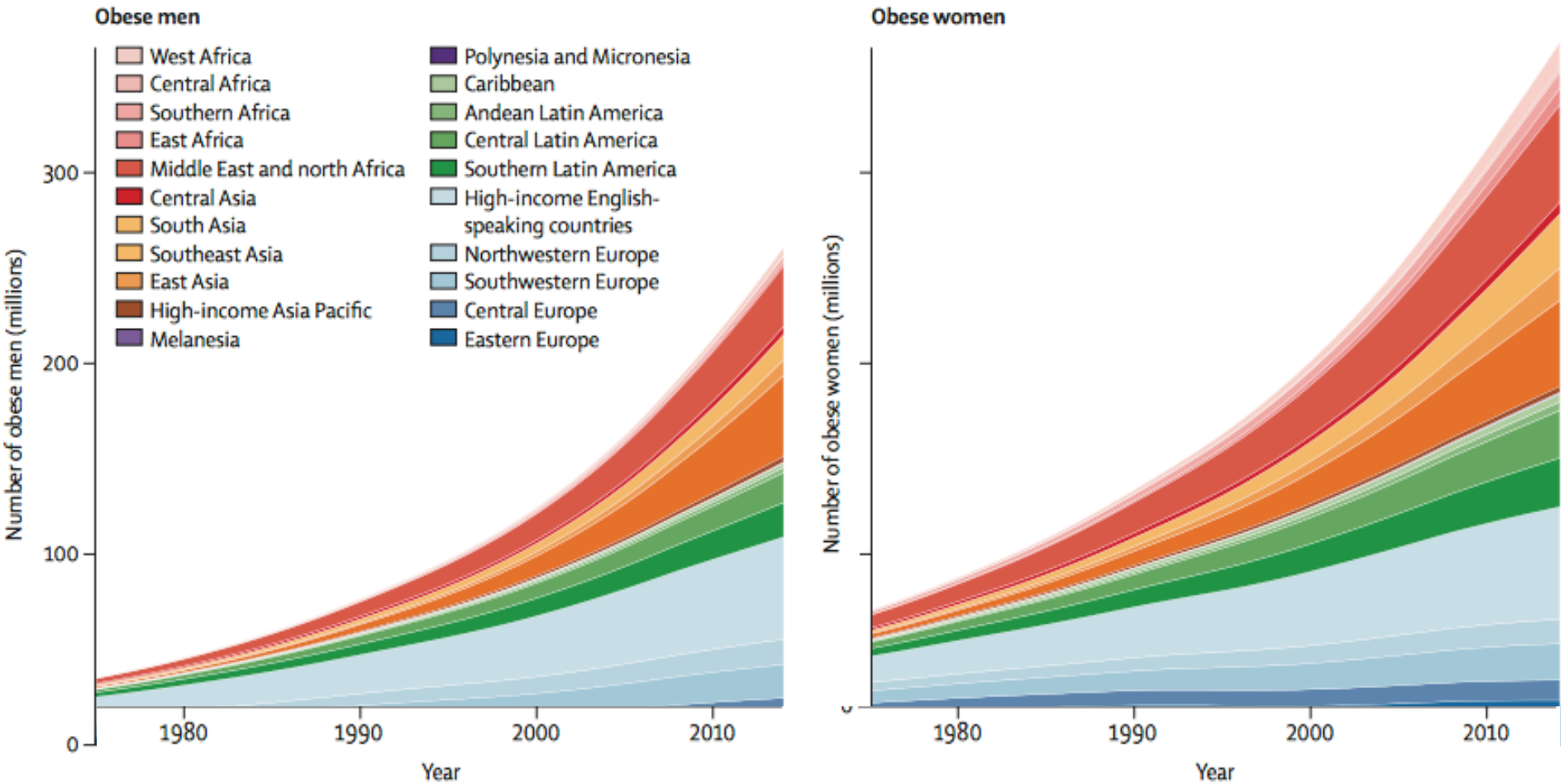
Fluctuation in body weight was associated with higher mortality and a higher rate of cardiovascular events



Bangalore S et al, N Engl J Med 2017;376:1332-40

Trends in adult body-mass index in 200 countries from 1975 to 2014
19,2 million participants

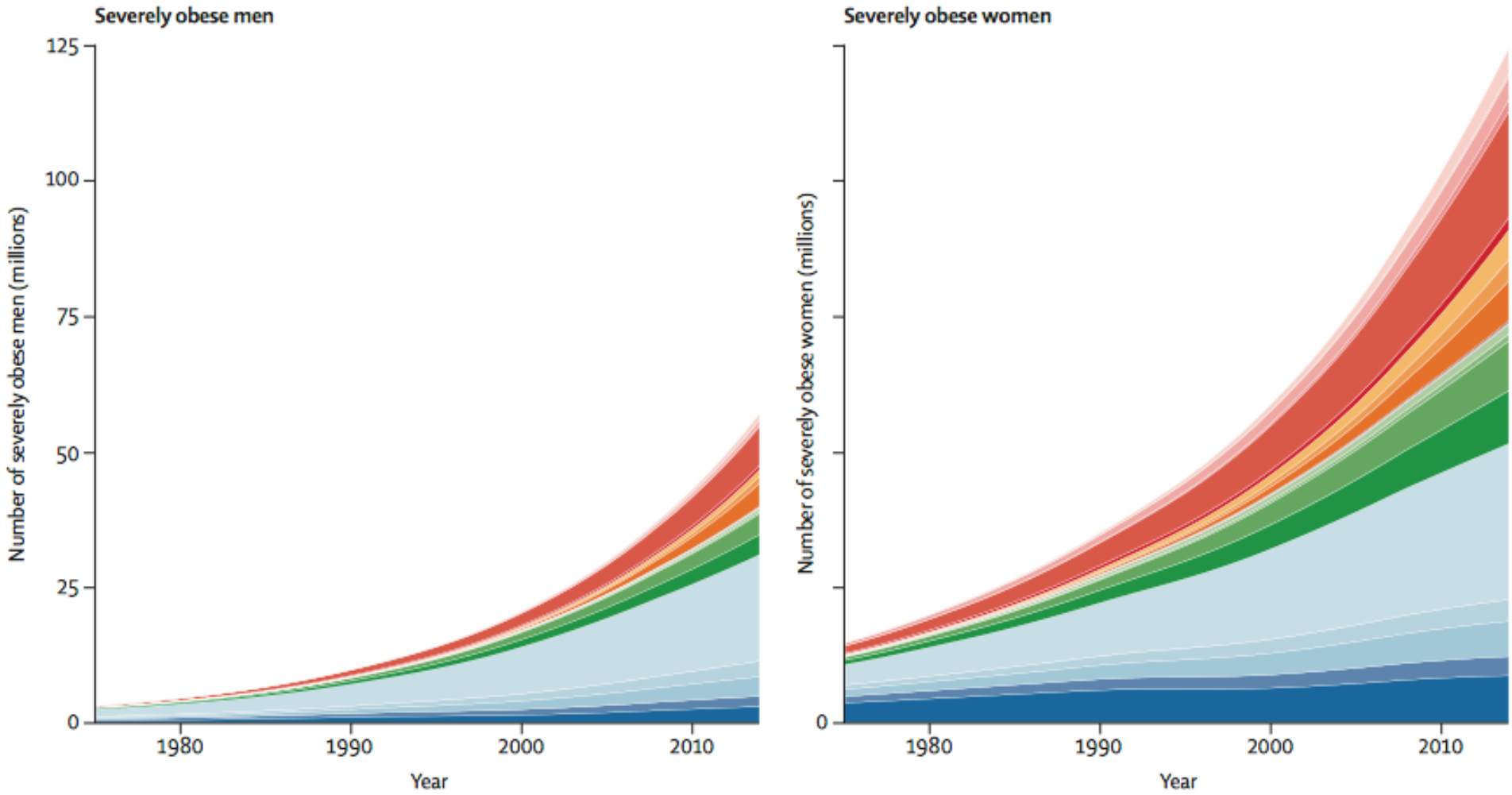
NCD Risk Factor Collaboration (NCD-RisC)



Lancet 2016; 387: 1377–96

Trends in adult body-mass index in 200 countries from 1975 to 2014
19,2 million participants

NCD Risk Factor Collaboration (NCD-RisC)



Lancet 2016; 387: 1377–96

Geographies of Obesity
Environmental Understandings of the Obesity Epidemic

L'obesità è diventata la più grave e diffusa epidemia sanitaria del mondo.

Overseas Development Institute, 2016

Determinants and Consequences of Obesity

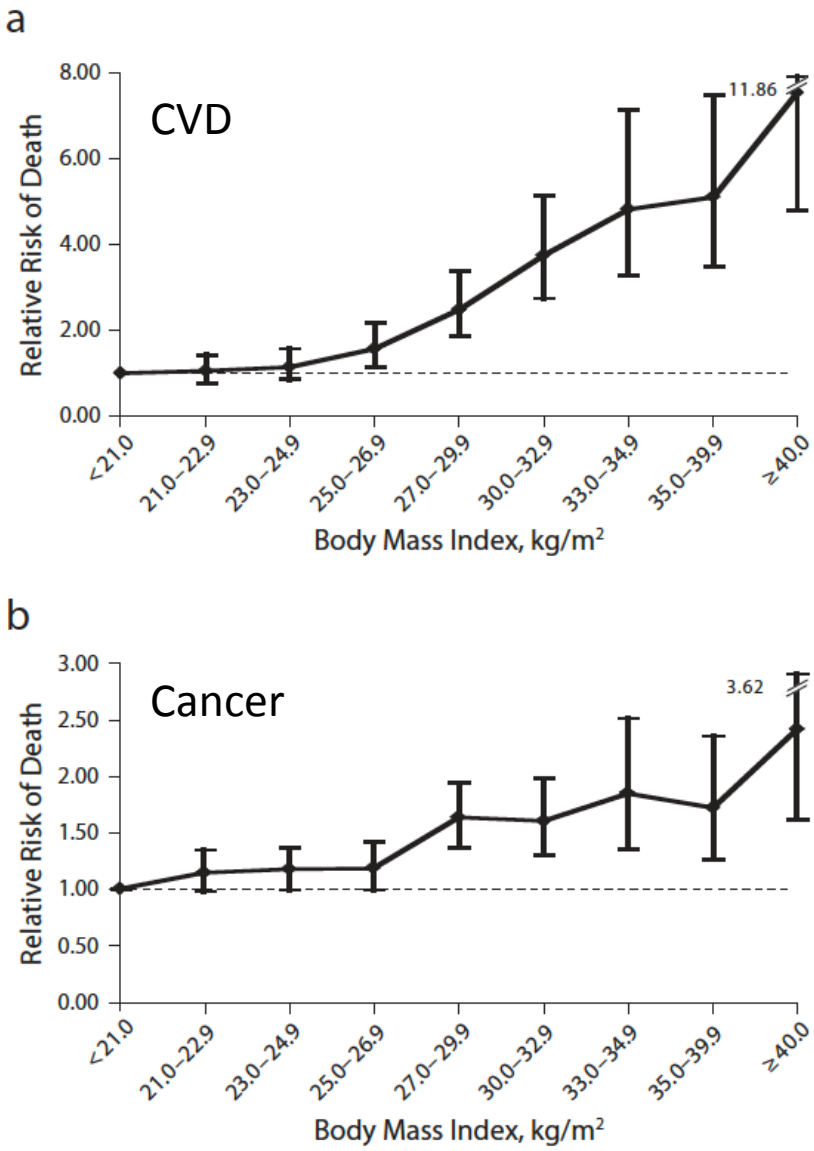
Adela Hruby, PhD, MPH, JoAnn E. Manson, MD, DrPH, Lu Qi, MD, PhD, Vasanti S. Malik, ScD, Eric B. Rimm, ScD, Qi Sun, MD, ScD, Walter C. Willett, MD, DrPH, and Frank B. Hu, MD, PhD

Am J Public Health. 2016;106:1656–1662.

Conclusions

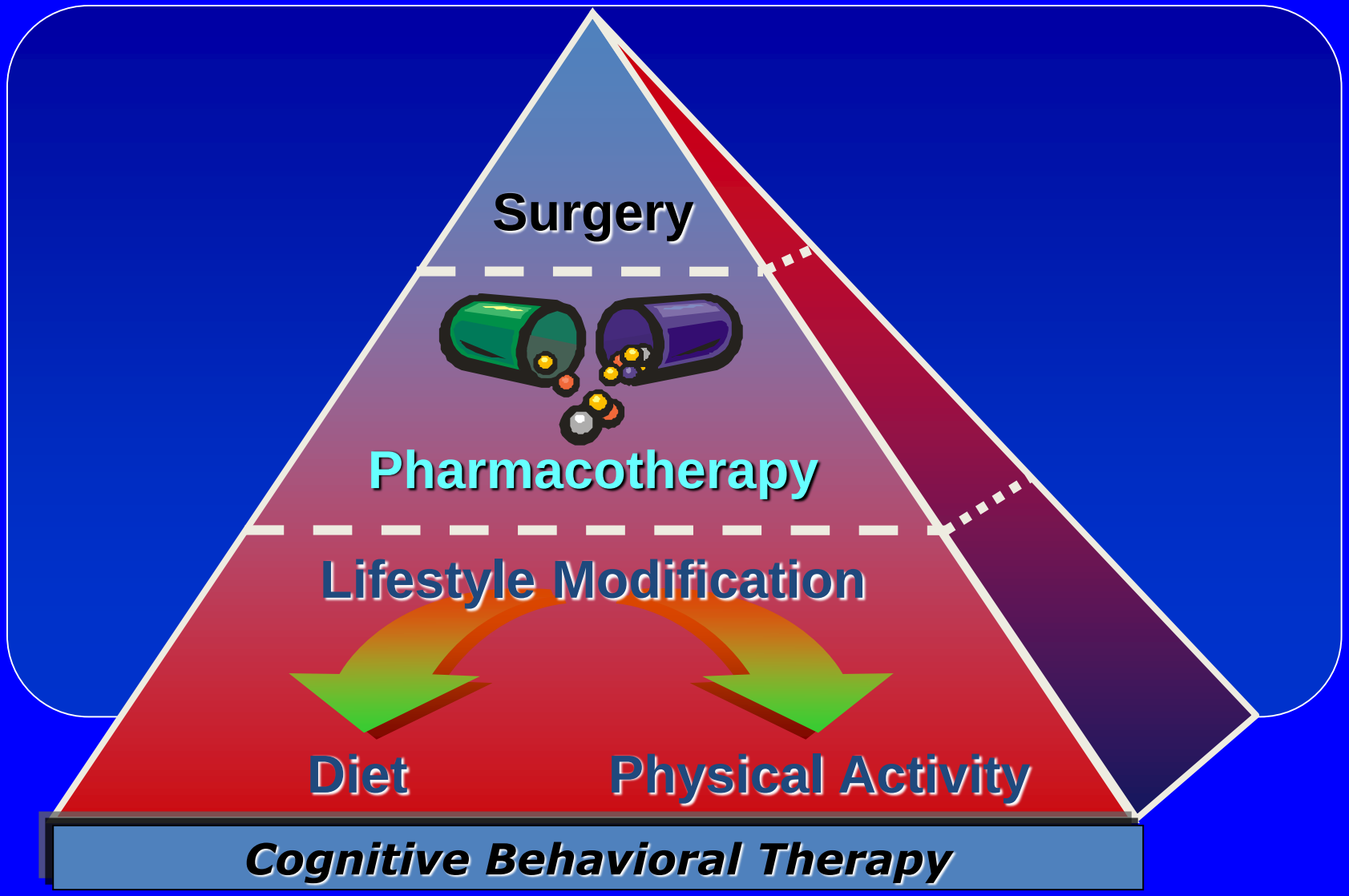
- With more than 200 000 participants followed up to 40 years, NHS investigators now have millions of self-reported anthropometric measures.
- Although participants tended to underreport their weight by 1,5 kg, NHS participants have tended to gain weight through midlife, roughly 0.4 kilograms per year.

Relative Risk of Death From (a) Cardiovascular Disease, (b) Cancer, According to BMI in Women in the NHS Who Had Never Smoked: US 1976–2000

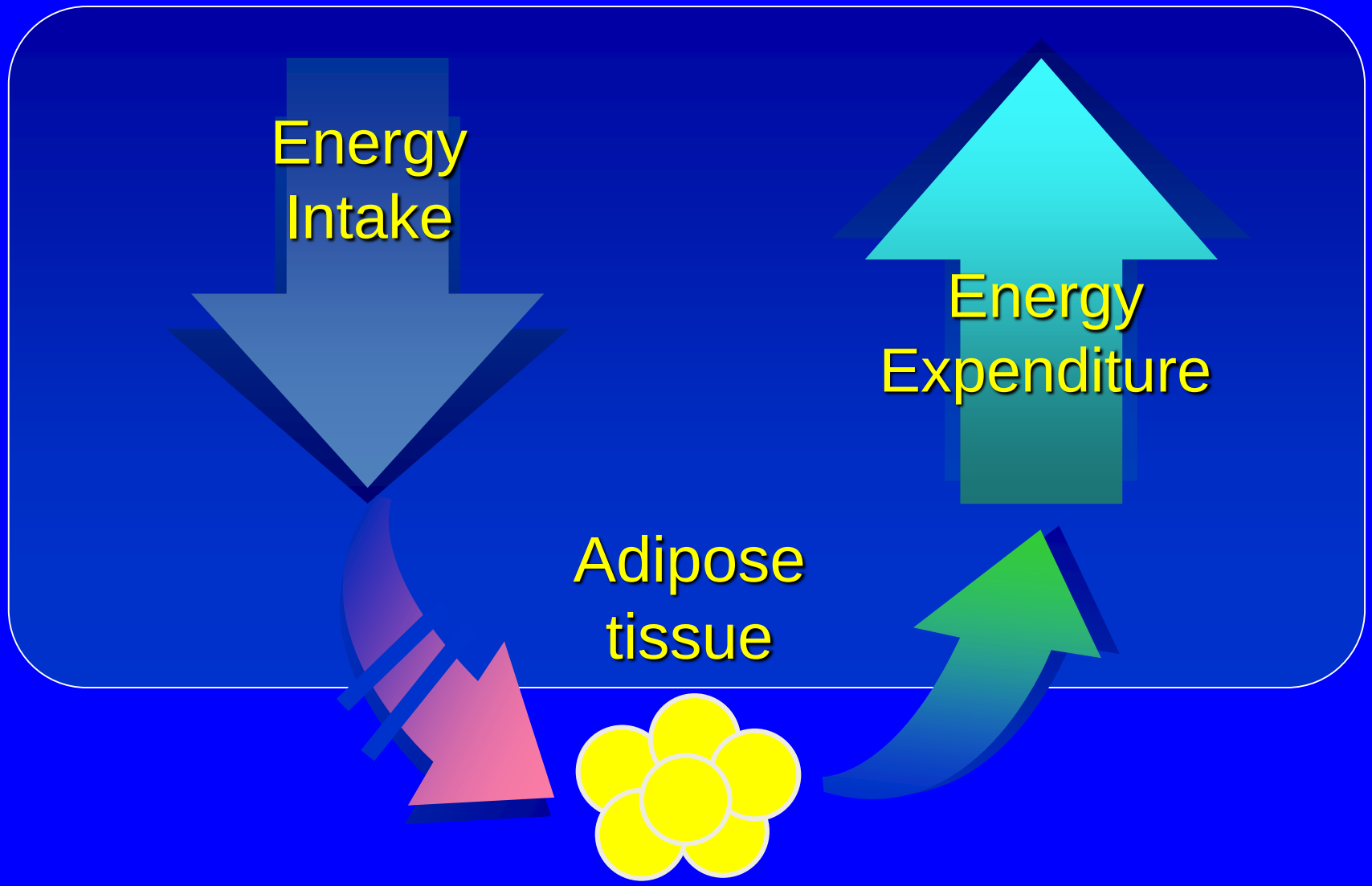


Hunby A et al, Am J Public Health. 2016;106:1656–1662

Obesity Treatment Pyramid



Obesity Therapy



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

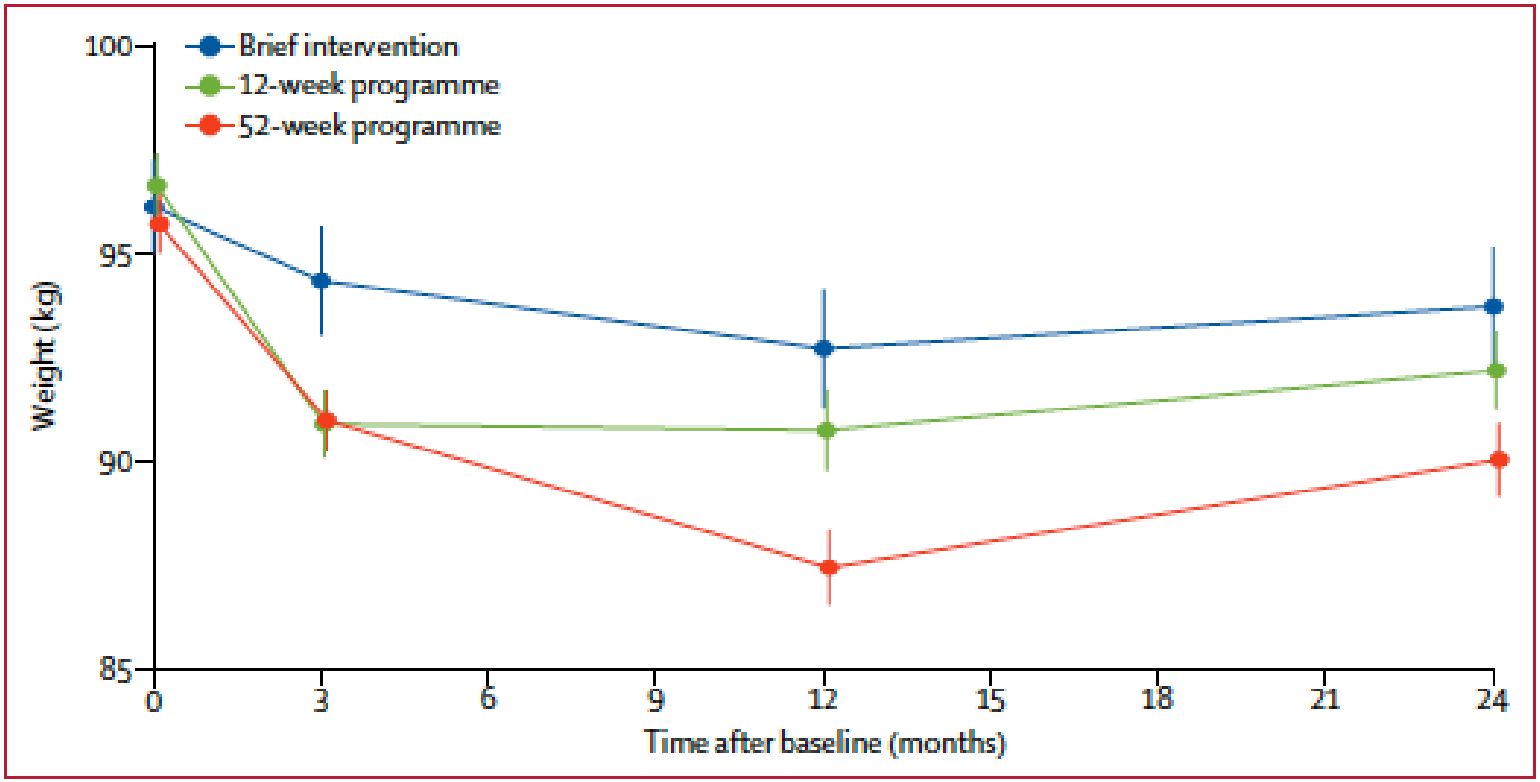
A Randomized Trial

Conclusions

- 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.

Dansinger ML et al, *JAMA. 2005;293:43-53*

Extended and standard duration weight-loss programme referrals for adults in primary care (WRAP): a randomised controlled trial



Body weight over 24 months of follow-up

Ahern AL et al, The Lancet May 3, 2017 http://dx.doi.org/10.1016/S0140-6736(17)30647-5

BMJ 2014;349:g7654 doi: 10.1136/bmj.g7654 (Published 15 December 2014)

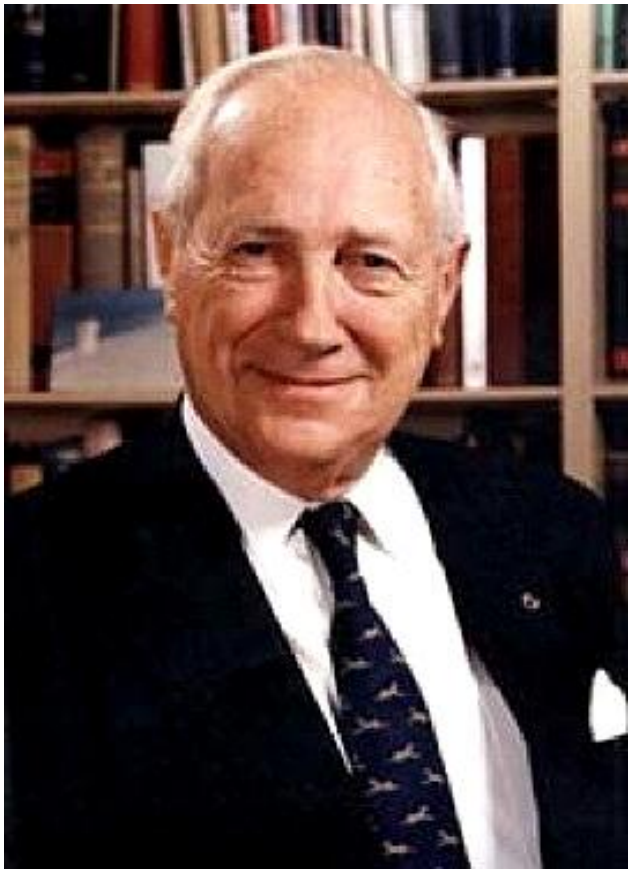
FEATURE

Are some diets "mass murder"?

From low fat to Atkins and beyond, diets that are based on poor nutrition science are a type of global, uncontrolled experiment that may lead to bad outcomes, concludes **Richard Smith**

Richard Smith *chair, Patients Know Best*

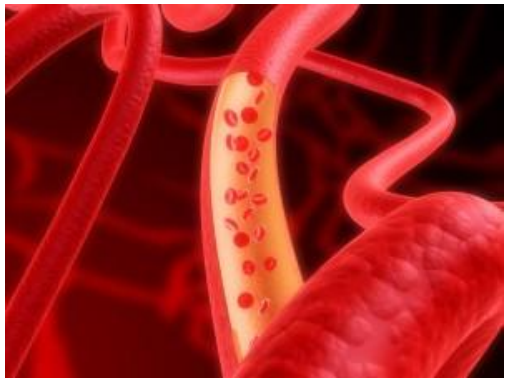
Are some diets “mass murder”?



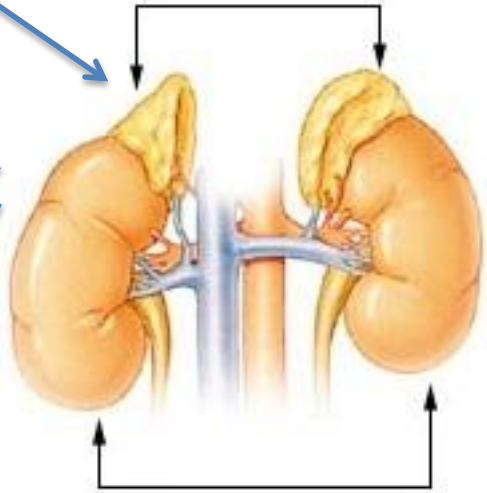
Jean Mayer, uno dei "grandi" della scienza della nutrizione, ha detto nel 1965, in un linguaggio colorito, che la prescrizione al pubblico di una dieta ristretta in carboidrati è l'equivalente di un **"omicidio di massa"**.

Richard Smith, *BMJ* 2014;349:g7654

Il cervello ha bisogno di almeno 100 grammi di glucosio al giorno



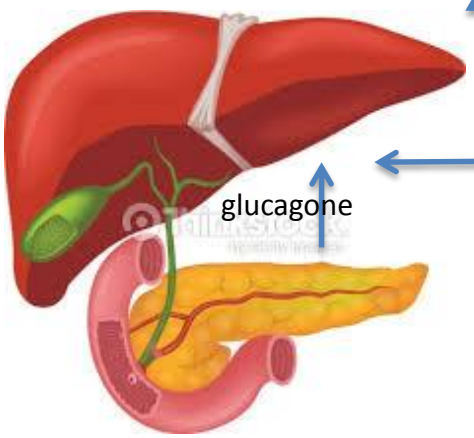
GLICEMIA



adrenalina

neoglucogenesi

cortisolo



glucagone

aminoacidi

STRESS

Un concetto

Endocrino - metabolico - nutrizionale

International Journal of Epidemiology, 2017, 293–302
doi: 10.1093/ije/dyw045
Advance Access Publication Date: 10 May 2016
Original article

Education

Does an elite education benefit health? Findings from the 1970 British Cohort Study

David Bann,[1]* Mark Hamer,[2,3] Sam Parsons,[1] George B Ploubidis[1] and Alice Sullivan[1]

Conclusions

Private school and higher-status university attendance were related to better self-rated health, lower BMI and multiple favourable health behaviours in midlife.

Findings suggest that type or status of education may be an important under-researched construct to consider when documenting and understanding socioeconomic inequalities in health.

CANCER RESEARCH UK

UK HEALTH PREVENTION FIRST FORUM

This report predicts that if trends of being overweight and obese continue:

3 IN 4

Almost 3 in 4 adults will be overweight or obese by 2035

670,000

Over the next 20 years rising levels of obesity would lead to an additional 670,000 cases of cancer

£2.5bn

This level of obesity would lead to an additional £2.5bn in NHS and social care costs in 2035

A national strategy to reduce obesity should include:

Introducing a 6am to 9pm watershed ban on TV advertising of foods high in fat, sugar and salt

Examining the case for further taxes on food high in fat, sugar and salt, and increasing the affordability of healthy alternatives

Extending front-of-pack nutritional traffic light labelling to as many food and drink products as possible

A Government framework for businesses to reduce the fat, calorie and sugar content in their foods

Increase funding for cycling and walking

CANCER RESEARCH UK