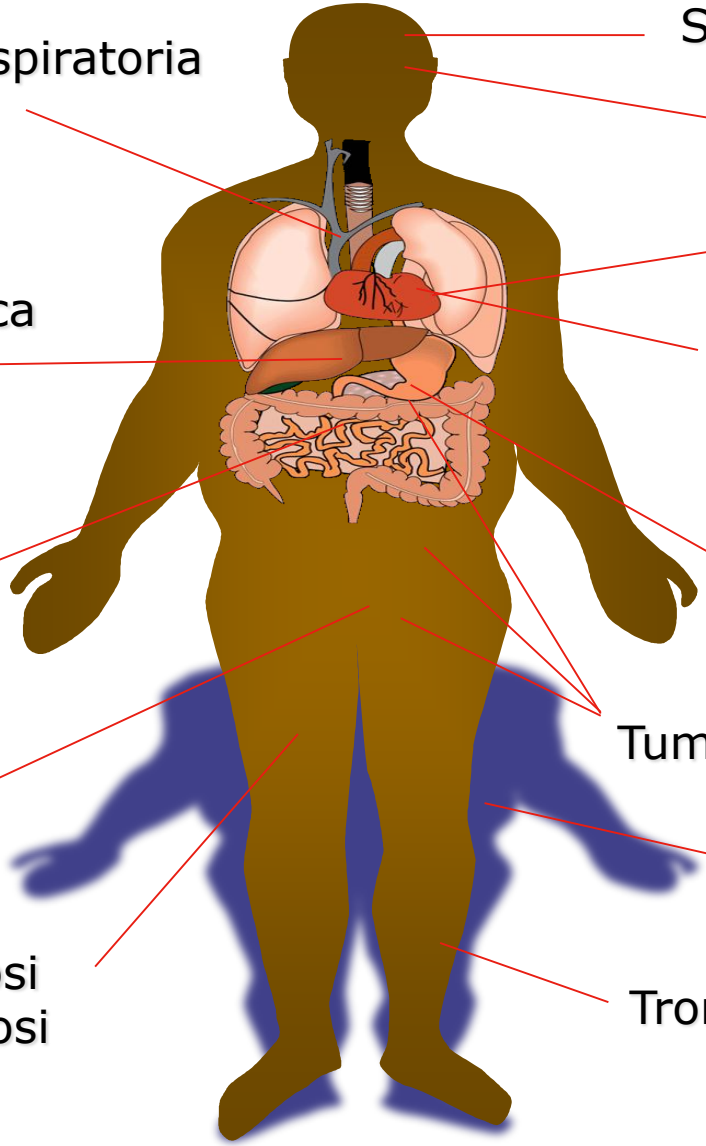
Le complicanze e la patologia associata

Diseases associated with or caused by obesity
Type 2 diabetes mellitus
Metabolic syndrome
Cancers of the uterus, breast, and colon
Non-alcoholic fatty liver disease
Cholelithiasis
Gastroesophageal reflux disease
Polycystic ovarian syndrome
Urinary incontinence
Obstructive sleep apnea
Obesity hypoventilation
Osteoarthritis
Gout
Pseudotumor cerebri
Dyslipidemia
Coronary heart disease
Congestive heart failure
Hypertension
Stroke
Depression

Jamy Ard, *BMJ* 2015;350:g7846

Patologie associate all'obesità ed età-correlate



- Insufficienza respiratoria
- BPCO
- OSAS

Stroke

Cataratta

IMA
Scompenso cardiaco

Aterosclerosi

Epatopatia cronica steatosica

- Sindrome metabolica
- Diabete tipo 2
- Dislipidemia
- Ipertensione

Colelitiasi

Tumori

Incontinenza urinaria

Disabilità fisica

Osteoartosi
Osteoporosi

Trombosi venosa

Family Practice, 2014, Vol. 31, No. 1, 38–43
doi:10.1093/fampra/cmt061
Advance Access publication 16 October 2013

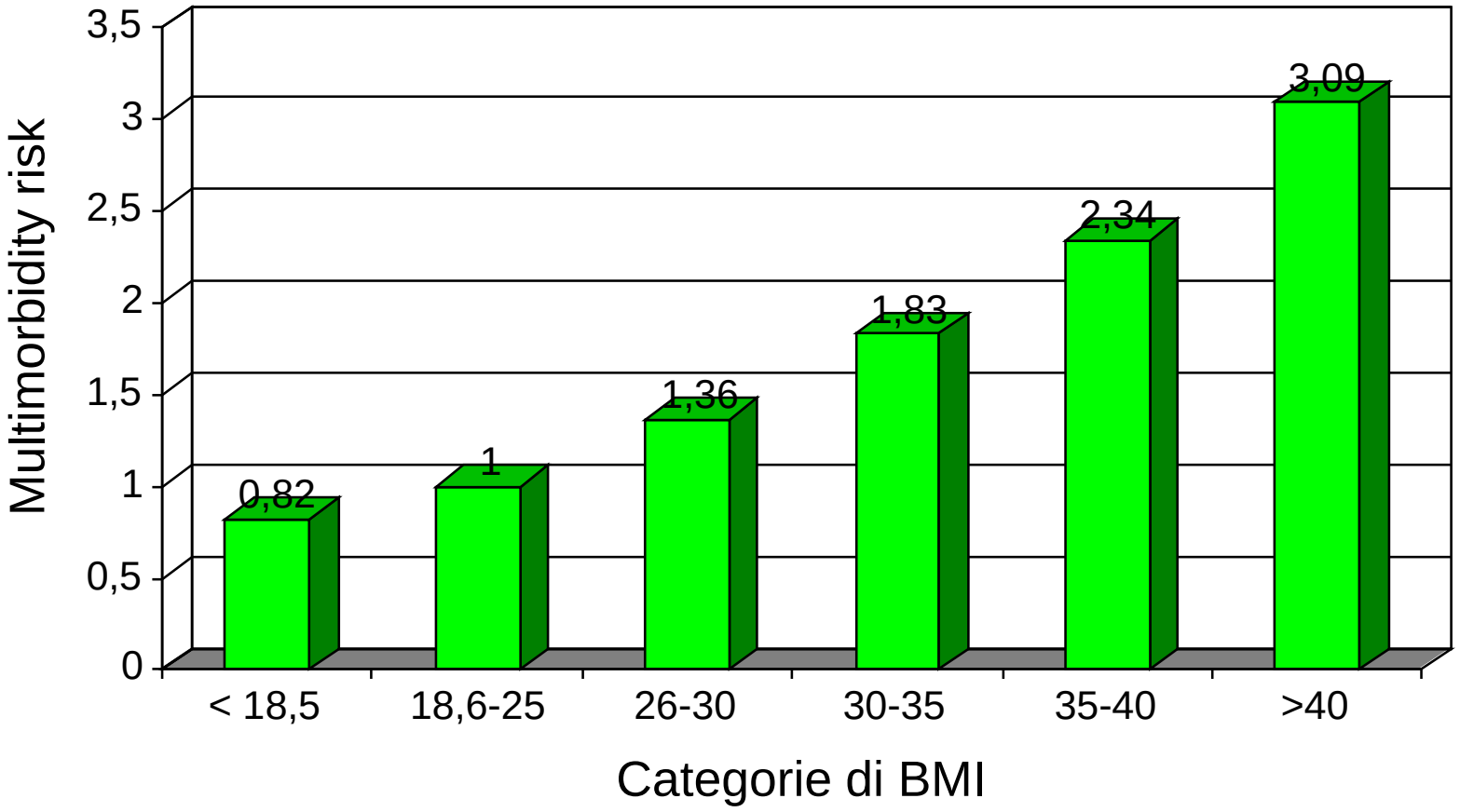
Impact of body mass index on prevalence of multimorbidity in primary care: cohort study

Helen P Booth*, A Toby Prevost and Martin C Gulliford

Department of Primary Care and Public Health Sciences, King's College London, London, UK.

Conclusions. Una multipla morbilità è altamente associata con l'aumento delle categorie del BMI e, quindi, con l'obesità, mettendo in evidenza il potenziale di interventi di prevenzione primaria e secondaria mirate alle cure primarie.

Impatto delle categorie del BMI sul crescente livello di multimorbilità (tre o più) dopo aggiustamento per variabili confondenti

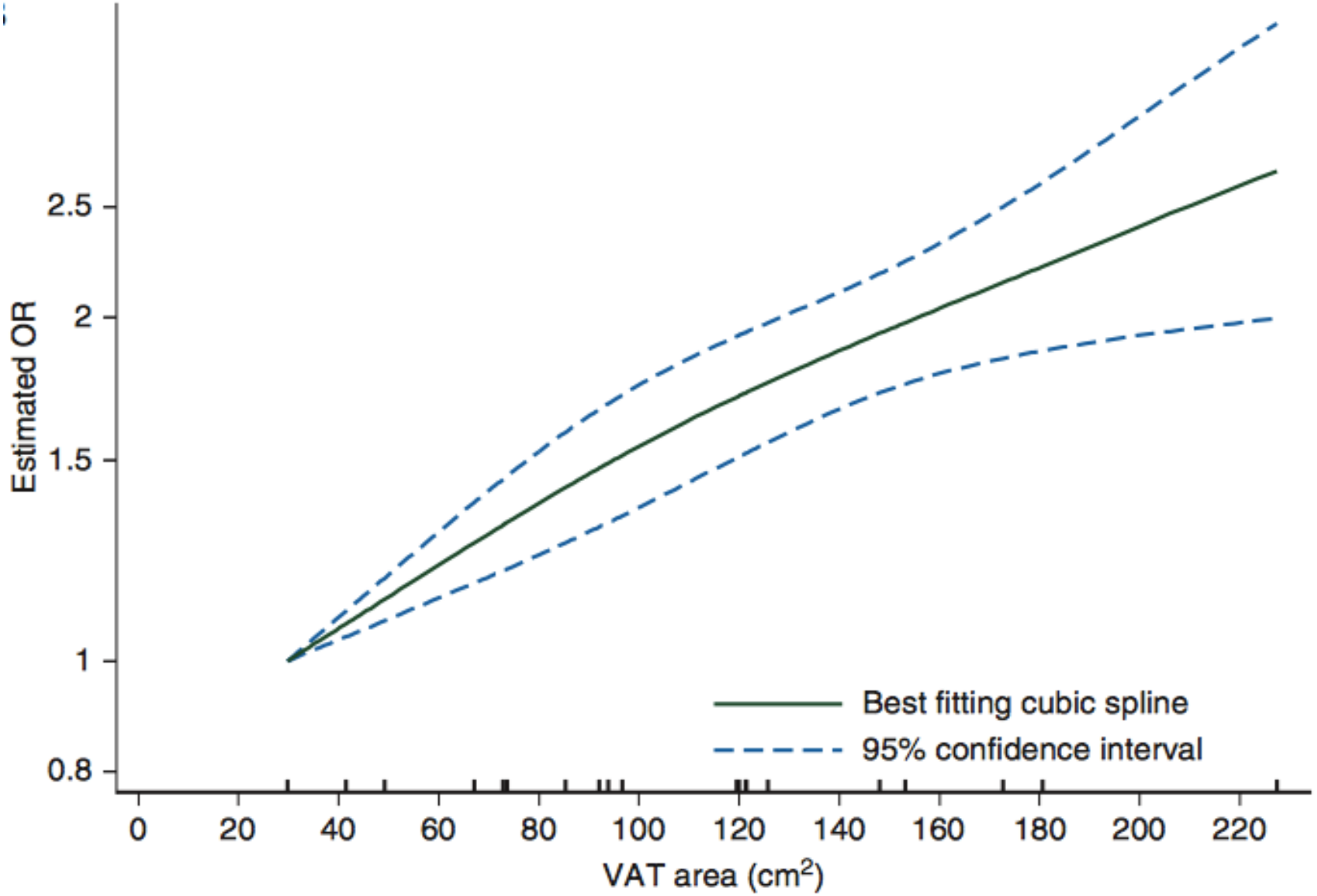


Booth HP et al. *Family Practice*, 2014, 31, 38–43

The Story Continues: Eight More Cancers Linked to Obesity

- In April 2016, the International Agency for Research on Cancer (IARC) reevaluated the impact of weight control through dietary and lifestyle risk factors on lowering 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

N Engl J Med. 2016;375:794-798



Meta-analyses of VAT area and colorectal adenomas

Keum N et al, Ann Oncol, 26: 1101–1109, 2015

Obesity Weighs down Memory through a Mechanism Involving the Neuroepigenetic Dysregulation of Sirt1

Frankie D. Heyward, Daniel Gilliam, Mark A. Coleman, Cristin F. Gavin, Jing Wang, Garrett Kaas, Richard Trieu, John Lewis, Jerome Moulden, and J. David Sweatt

The Journal of Neuroscience, January 27, 2016 • 36(4):1324 –1335

"L'obesità è un fattore di rischio indipendente per lo sviluppo di declino cognitivo, in generale, e disturbi della memoria, in particolare, sia nelle persone di mezza età sia anziane."

RESEARCH

Unhealthy behaviours and disability in older adults

Fanny Artaud et al, *BMJ* 2013;347:f4240,1-15

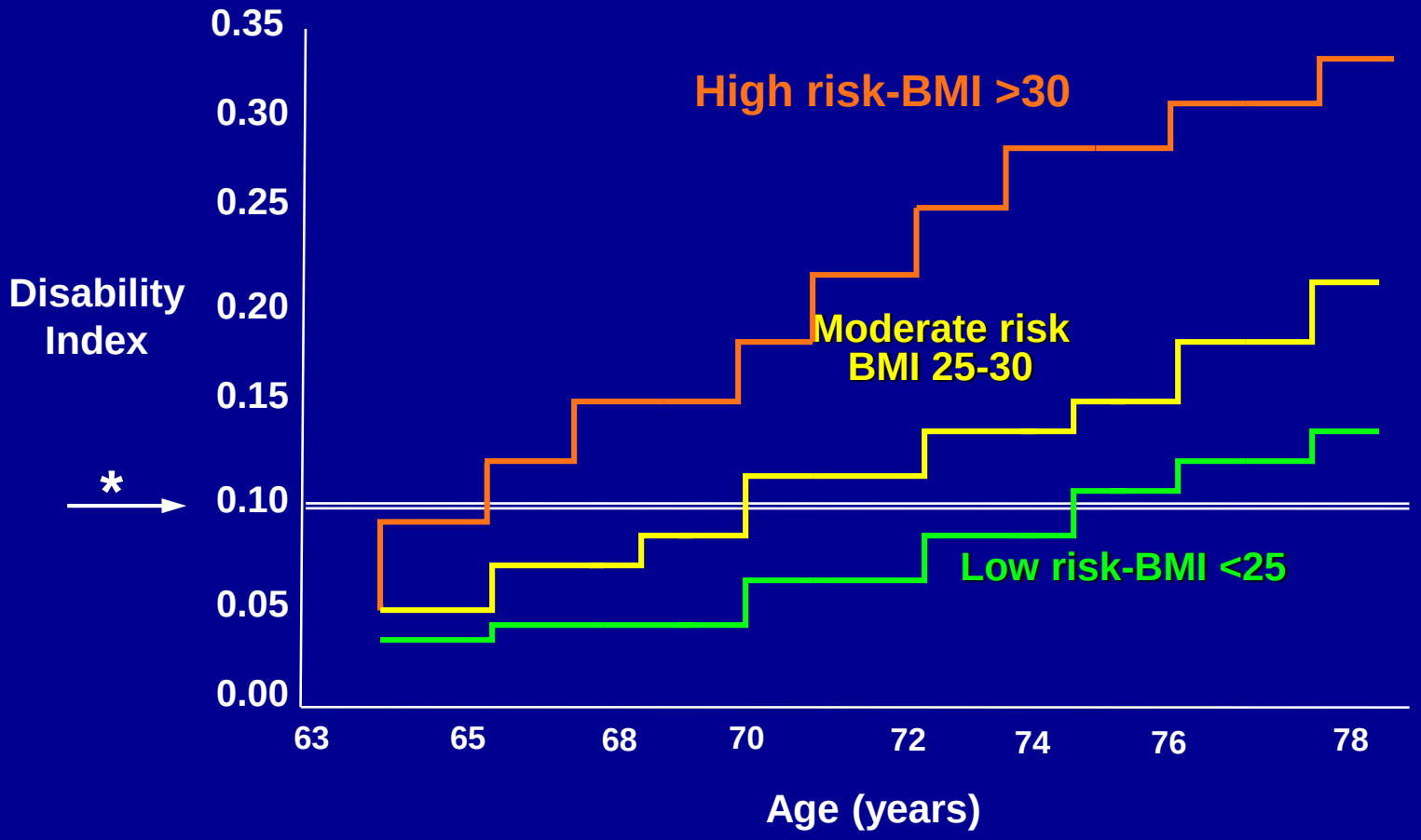
Quanto è già noto su questo argomento

Alcuni dati dimostrano che i comportamenti non salutari sono associati ad aumento del rischio di disabilità nelle persone anziane, ma il loro contributo indipendente per la disabilità rimane poco chiaro.

Quanto aggiunge questo studio

Ridotta attività fisica, dieta povera di frutta e verdura e il fumo, sono indipendentemente associati ad aumentato rischio di disabilità. Condizioni croniche, sintomi depressivi, traumi e BMI, spiegano in parte questa associazione. Il rischio di disabilità aumenta progressivamente con il numero di comportamenti non salutari; persone con tre comportamenti non salutari hanno più di un duplice rischio di disabilità.

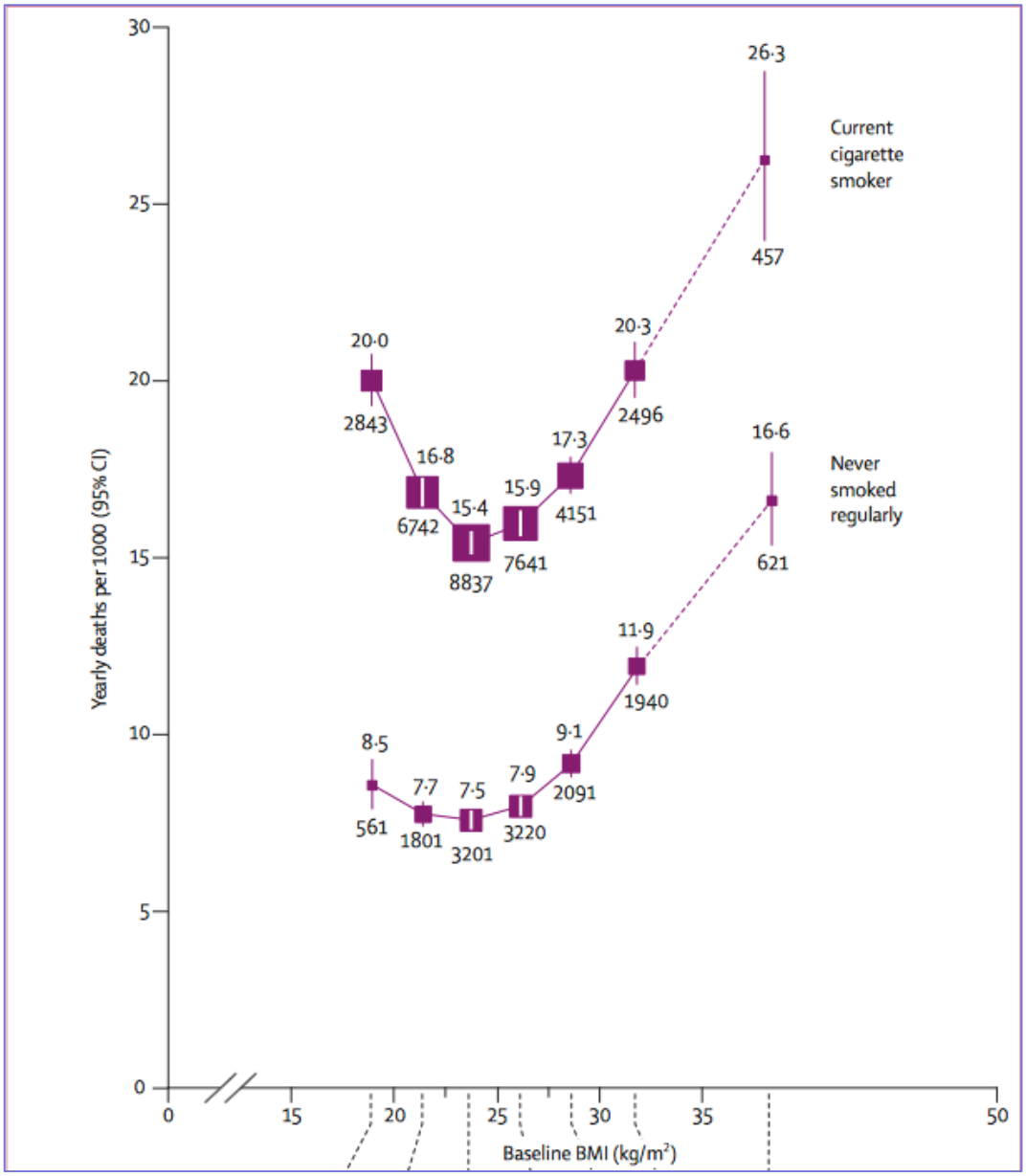
Disability risk with ageing in relation to relative class of BMI risk



* Cut off of disability

Vita et al., 1998

All-cause mortality at 35–79 yrs vs BMI (15–50), by smoking status (excl first 5 years follow-up)



Prospective Studies Collaboration, lancet, 2009

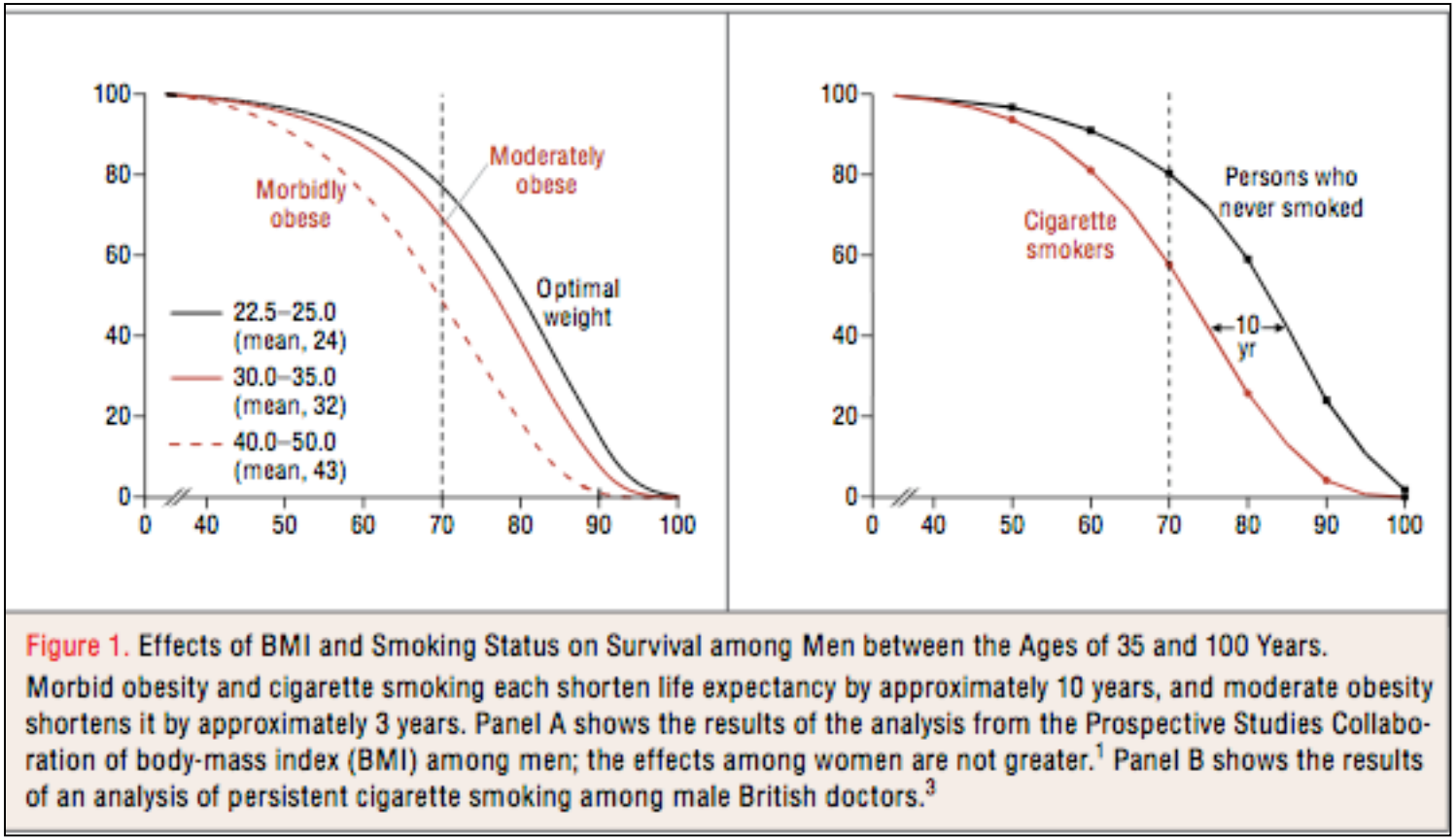


Figure 1. Effects of BMI and Smoking Status on Survival among Men between the Ages of 35 and 100 Years.
Morbid obesity and cigarette smoking each shorten life expectancy by approximately 10 years, and moderate obesity shortens it by approximately 3 years. Panel A shows the results of the analysis from the Prospective Studies Collaboration of body-mass index (BMI) among men; the effects among women are not greater.[1] Panel B shows the results of an analysis of persistent cigarette smoking among male British doctors.[3]

1 - Prospective Studies Collaboration, Lancet, 2009
2 - Doll R, BMJ, 2004

Peto R et al, NEJM, 2010

Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4·4 million participants

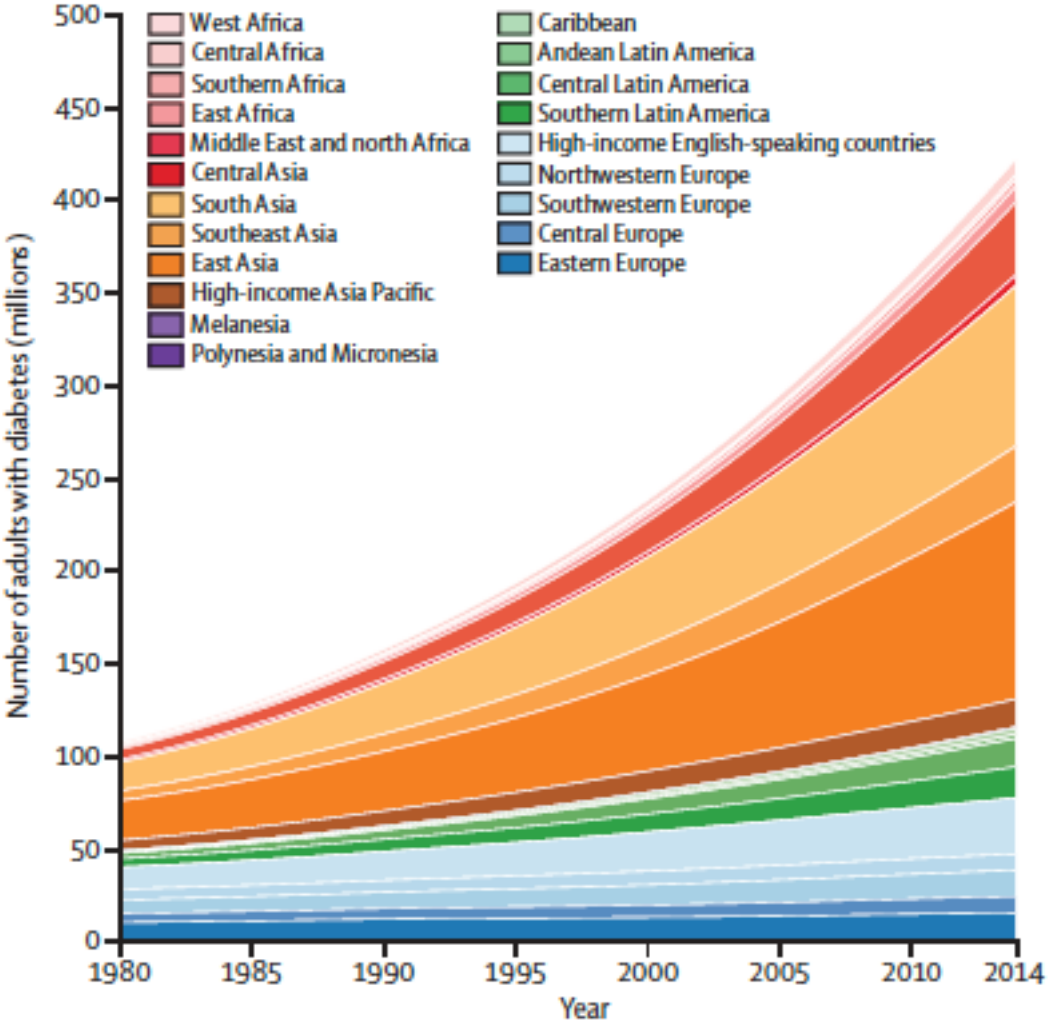
*NCD Risk Factor Collaboration (NCD-RisC)**

Il maggior aumento della prevalenza del diabete nei paesi a basso e medio reddito piuttosto che in quelli ad alto reddito, e la tendenza più stabile in Europa (soprattutto nord-occidentale), potrebbe essere causato in primo luogo all'obesità, che è aumentata sostanzialmente, ed è ora più elevata, in molti paesi a basso e medio reddito e nei paesi dell'Asia e del Pacifico (in particolare nelle donne) piuttosto che in Europa continentale e nei paesi ad alto reddito.

***Lancet* 2016; 387: 1513–30**

Worldwide trends in diabetes since 1980 – 4,4 million participants

NCD Risk Factor Collaboration (NCD-RisC)



***Lancet* 2016; 387: 1513–30**

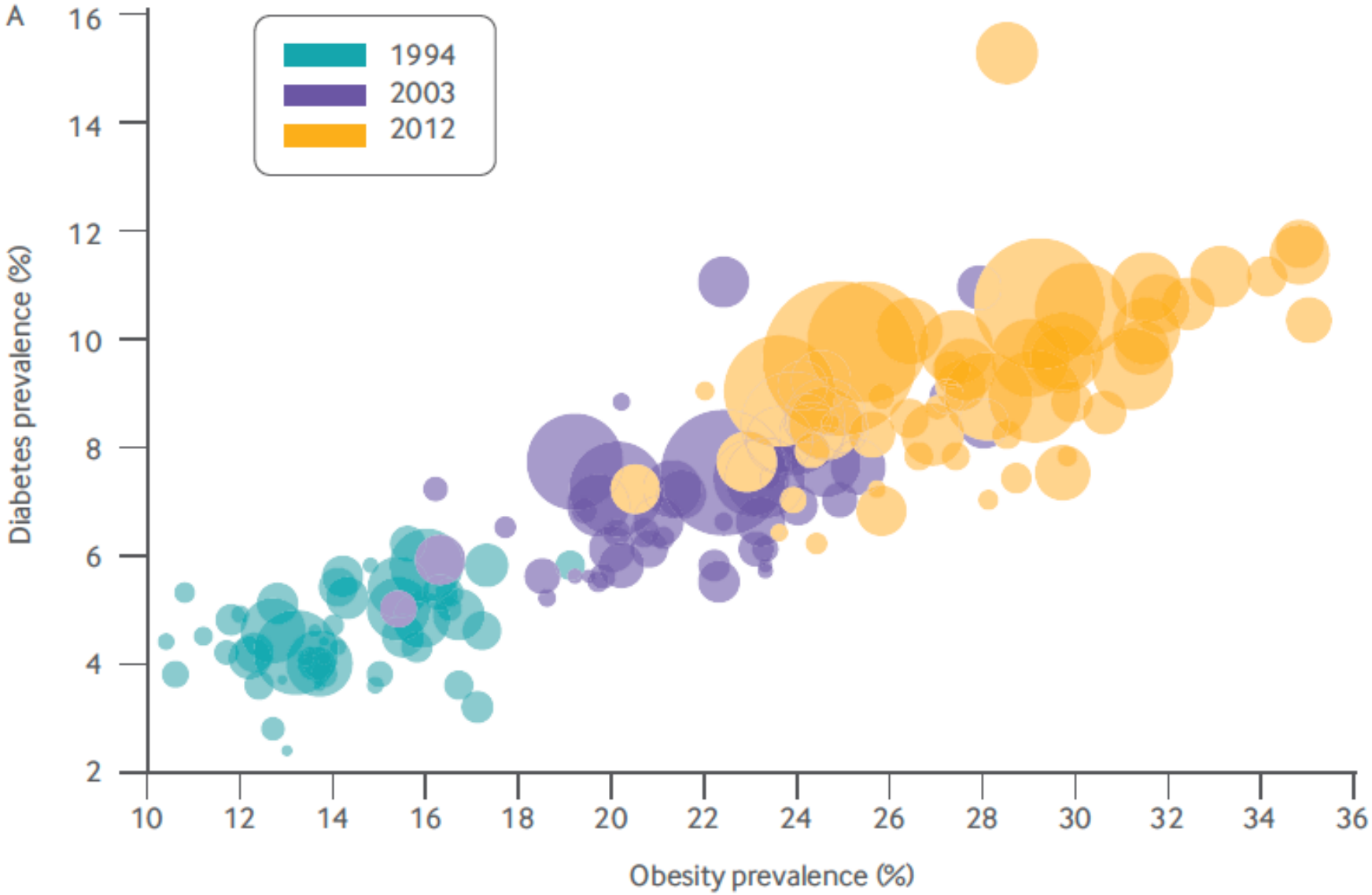


Fig 1 | Age adjusted prevalence of obesity and diabetes by US state in 1994, 2003, and 2012. The area of the circles represents the number of obese people (BMI ≥30) in the specific states

Jamy Ard, *BMJ* 2015;350:g7846

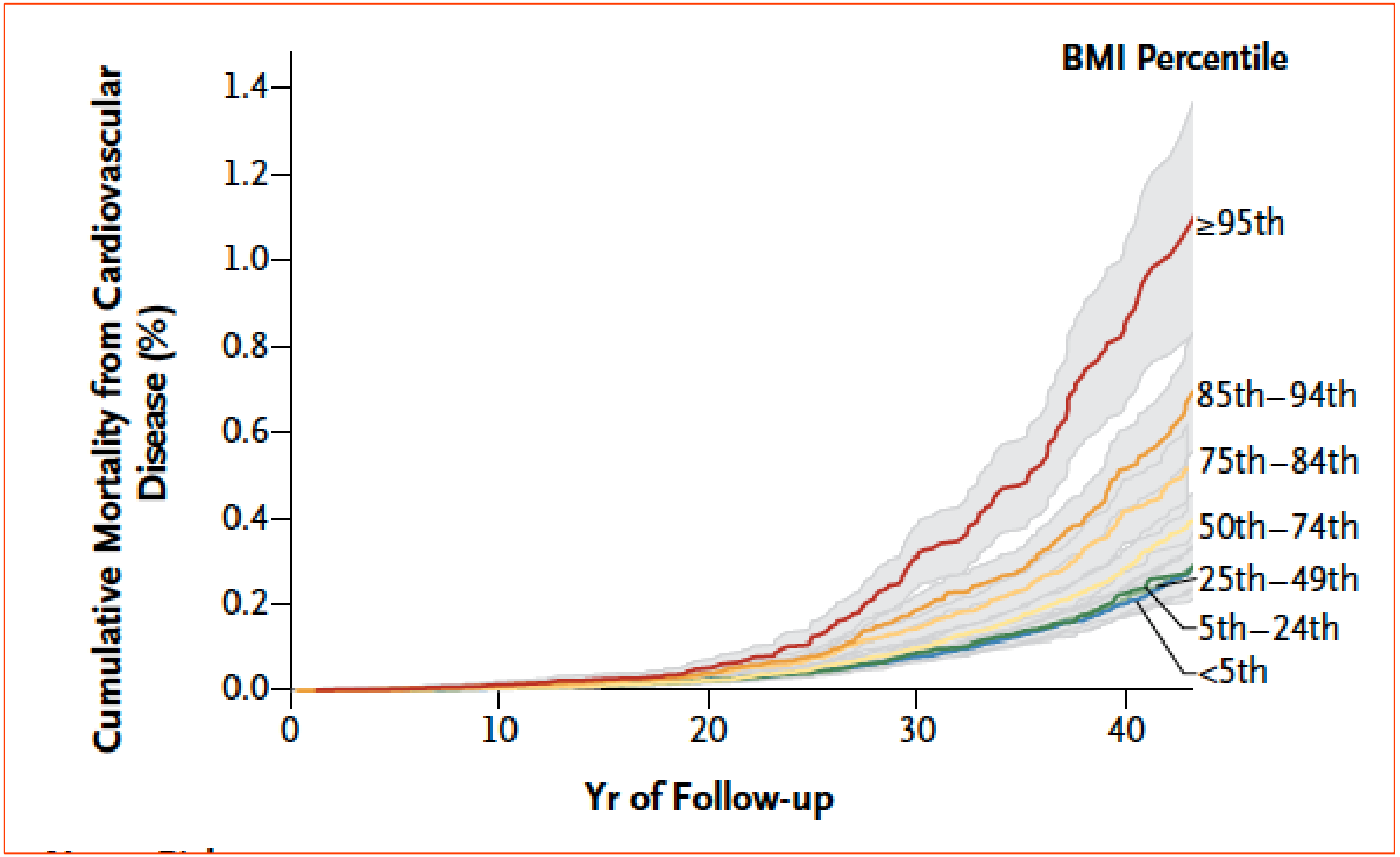
Nei bambini obesi è comparso il diabete di tipo 2

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

Gilad Twig, M.D., Ph.D., Gal Yaniv, M.D., Ph.D., Hagai Levine, M.D., M.P.H., Adi Leiba, M.D., M.H.A., Nehama Goldberger, M.Sc., Estela Derazne, M.Sc., Dana Ben-Ami Shor, M.D., Dorit Tzur, M.B.A., Arnon Afek, M.D., M.H.A., Ari Shamiss, M.D., M.P.H., Ziona Haklai, M.A., and Jeremy D. Kark, M.D., Ph.D.

The New England Journal of Medicine, april 13, 2016, DOI: 10.1056/NEJMoa1503840

Increased BMI in late adolescence, even within the currently accepted normal range, was strongly associated with cardiovascular mortality in young adulthood or midlife.
The rising prevalence of overweight and obesity among adolescents may account for a substantial and increasing future burden of cardiovascular disease, particularly coronary heart disease.

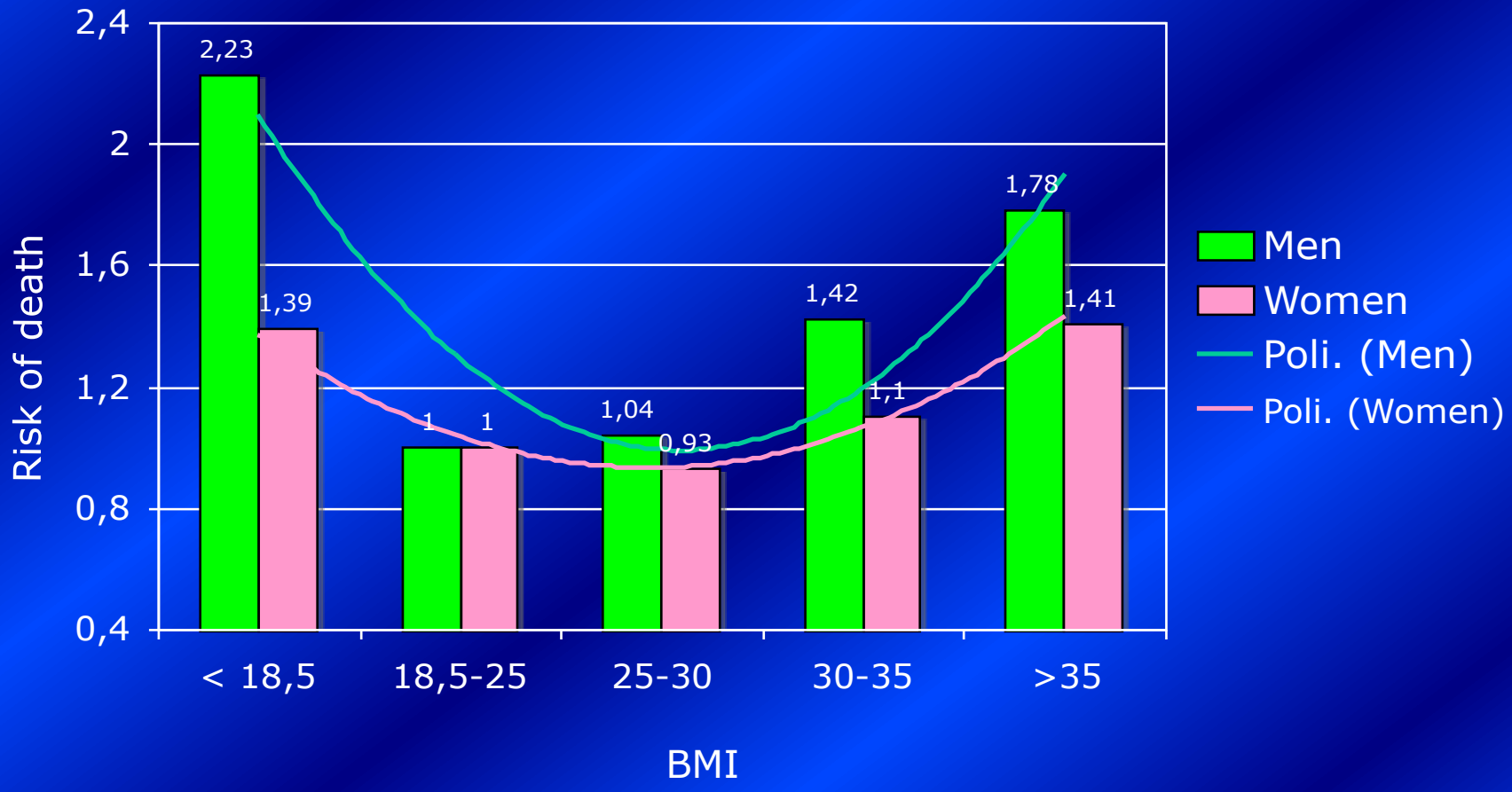


Body-Mass Index (BMI) during Adolescence and Subsequent Cardiovascular Mortality.

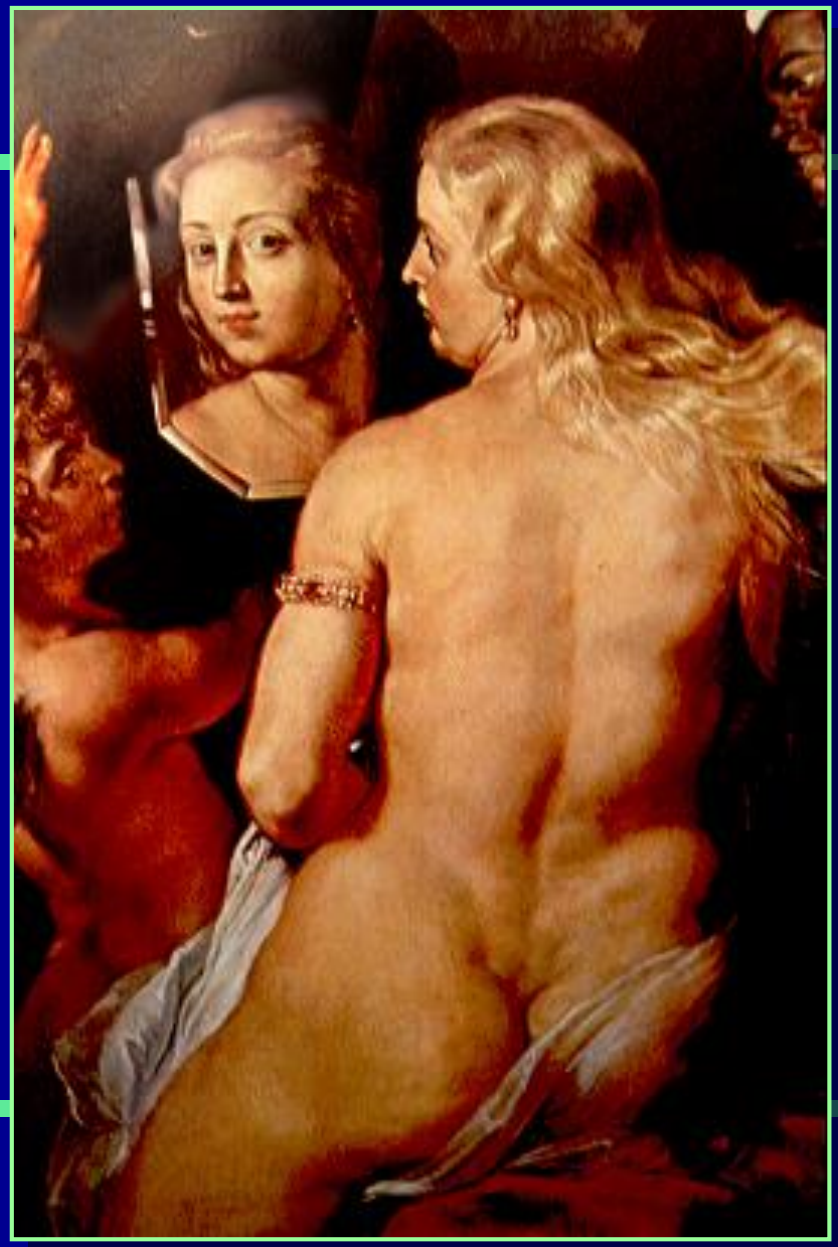
Gilad Twig et al, NEJM, april 13, 2016

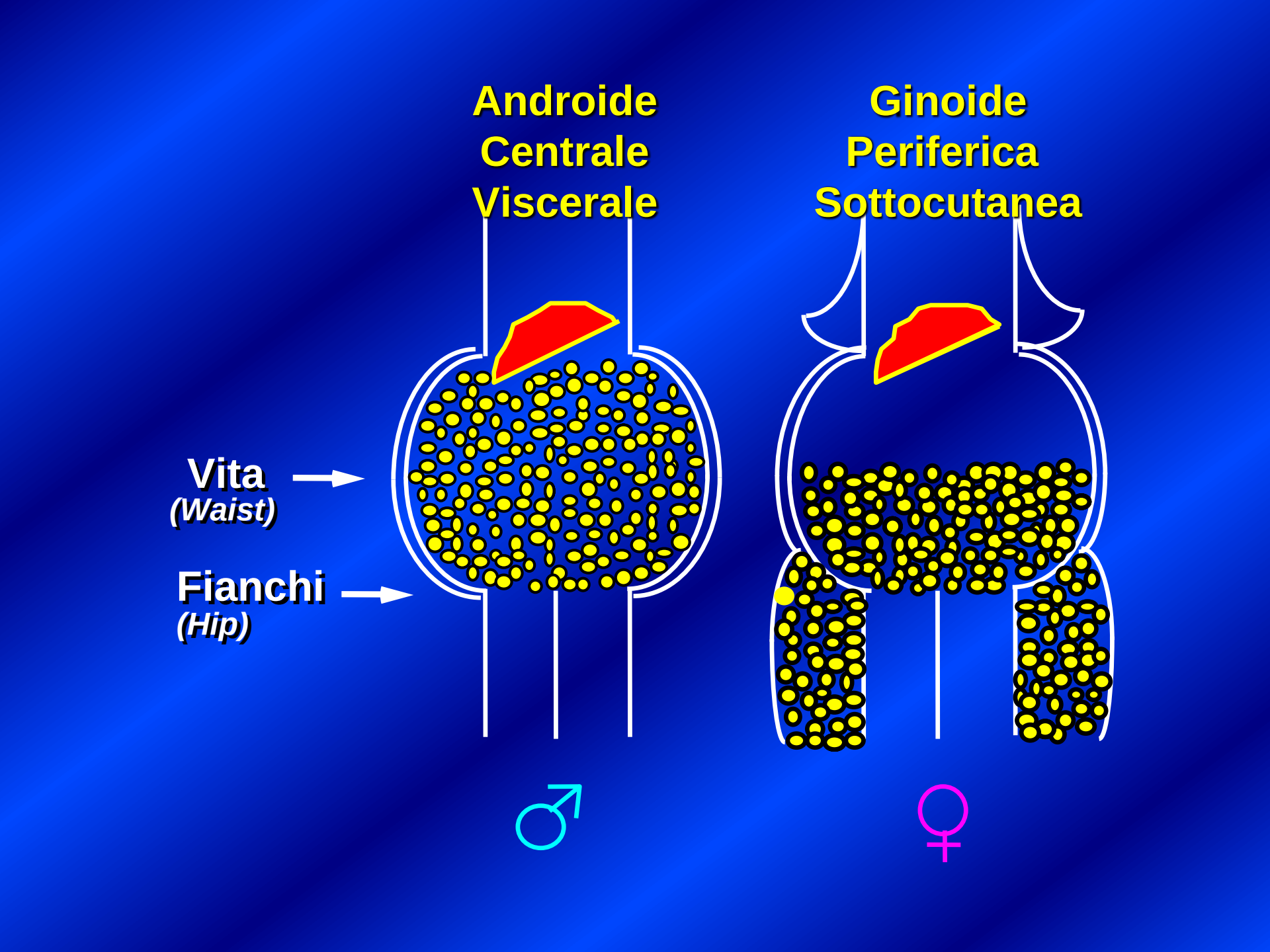
Risk of death among people aged 20-79 yrs

12 Year Follow-Up of 62,223 Norwegian



Petursson H et al, 2011



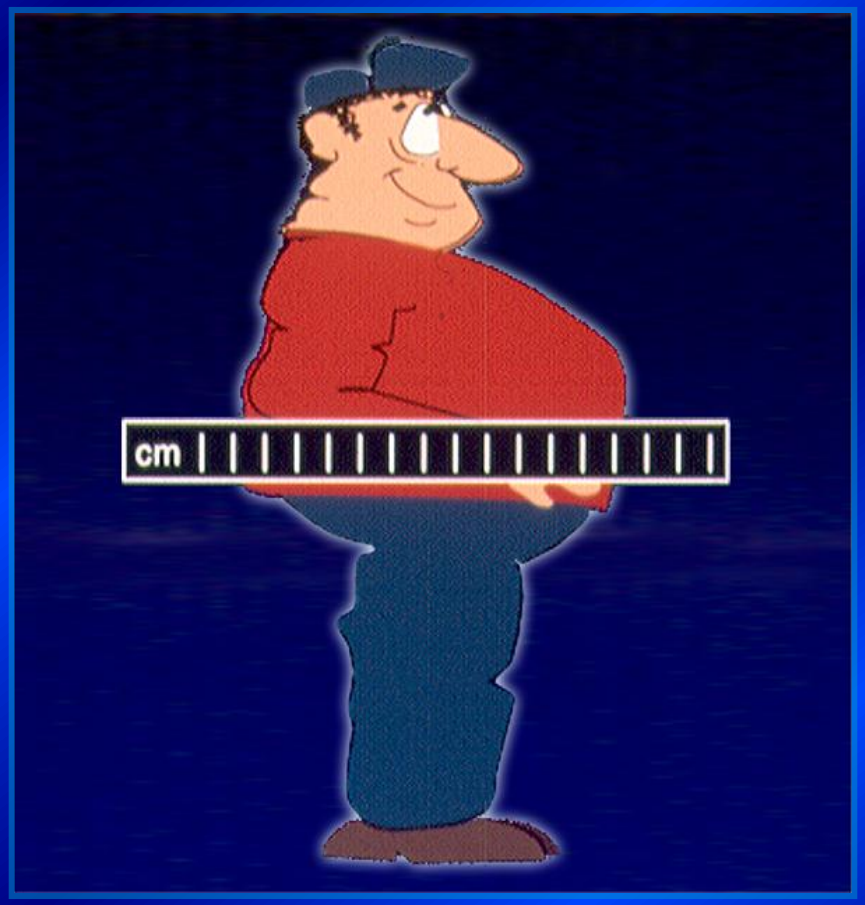

Androide
Centrale
Viscerale
Ginoide
Periferica
Sottocutanea
Vita
(Waist)
Fianchi
(Hip)
♂
♀

Indicatori di distribuzione del grasso corporeo

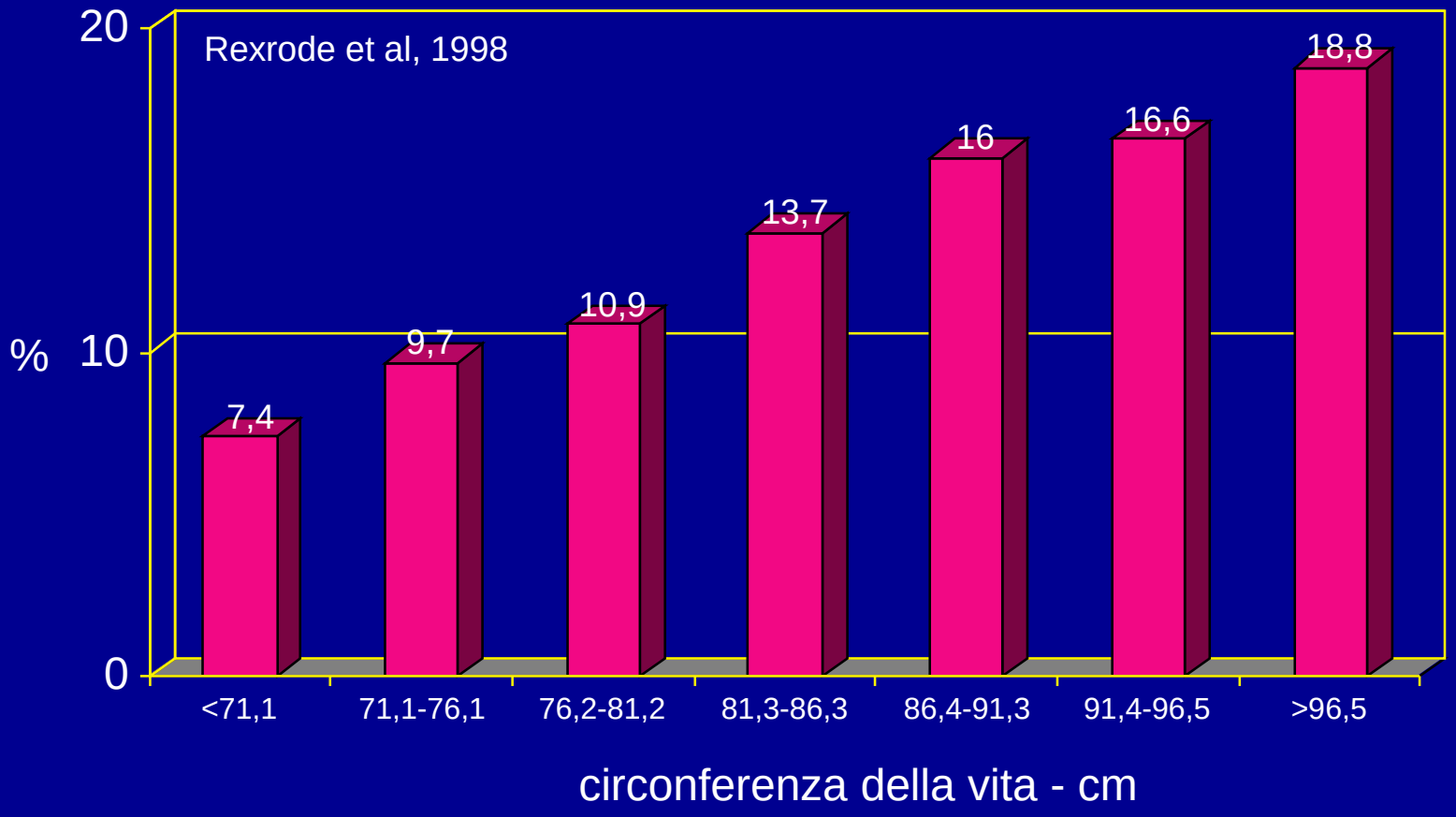
- WHR = Waist/Hip Ratio (rapporto tra circonferenza della vita e circonferenza dei fianchi).
- Waist circumference (circonferenza della vita in cm)
- Diametro sagittale addominale antero posteriore.
- TAC addome (L4-L5)

Waist circumference is a surrogate marker of visceral fat

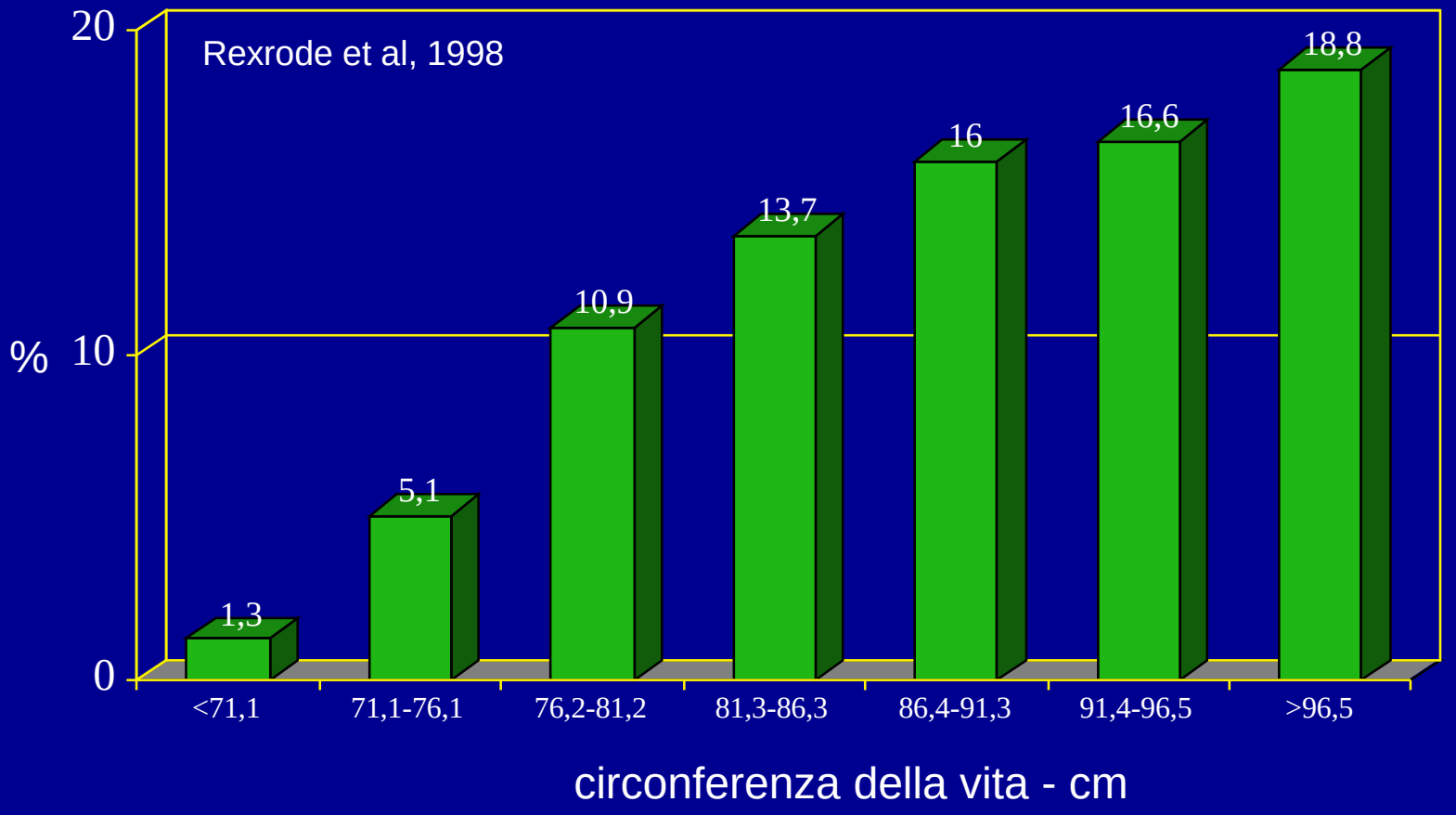
Lean et al, 1998



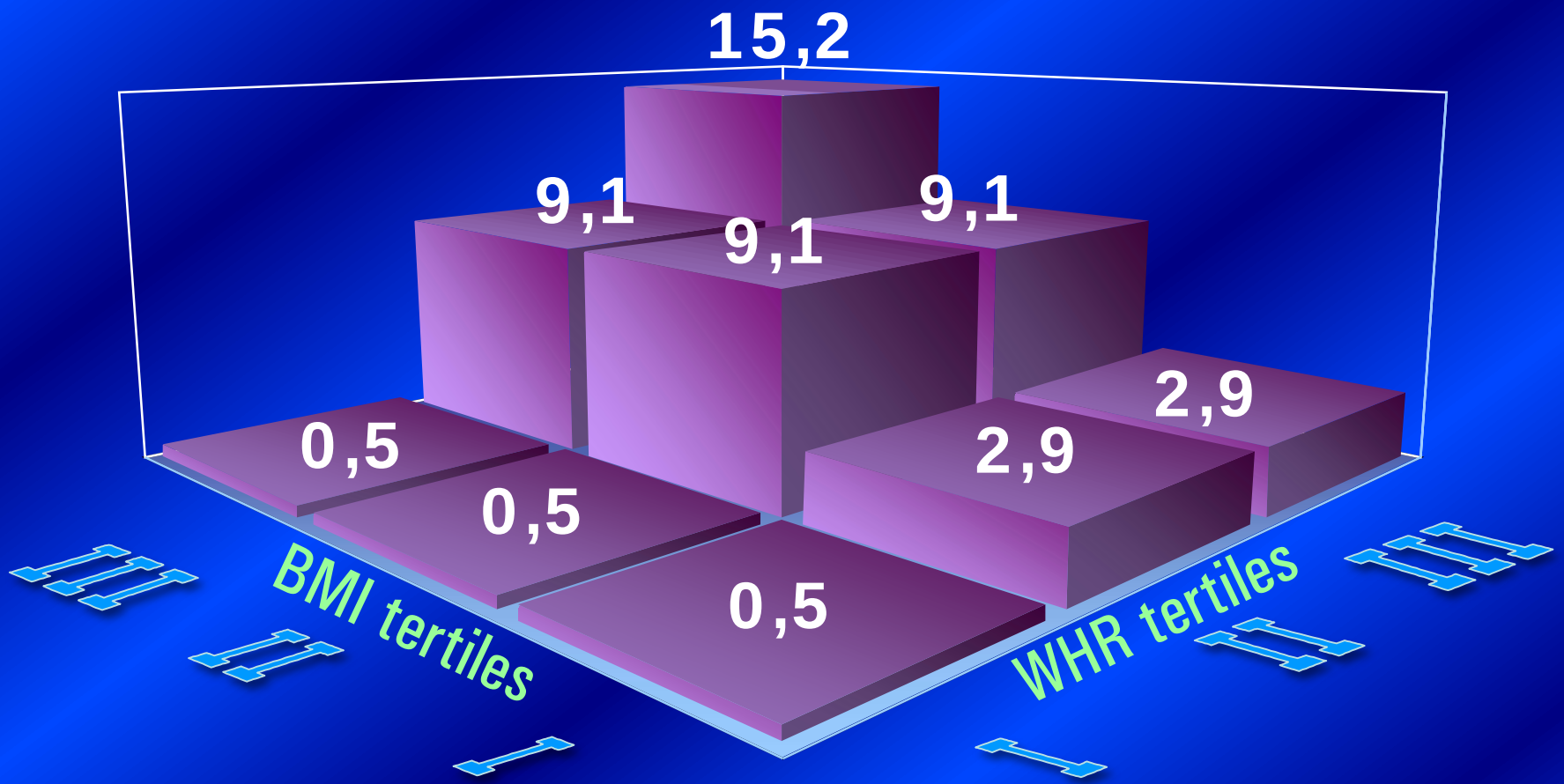
Valori di circonferenza della vita e prevalenza di ipercolesterolemia



Valori di circonferenza della vita e prevalenza di diabete

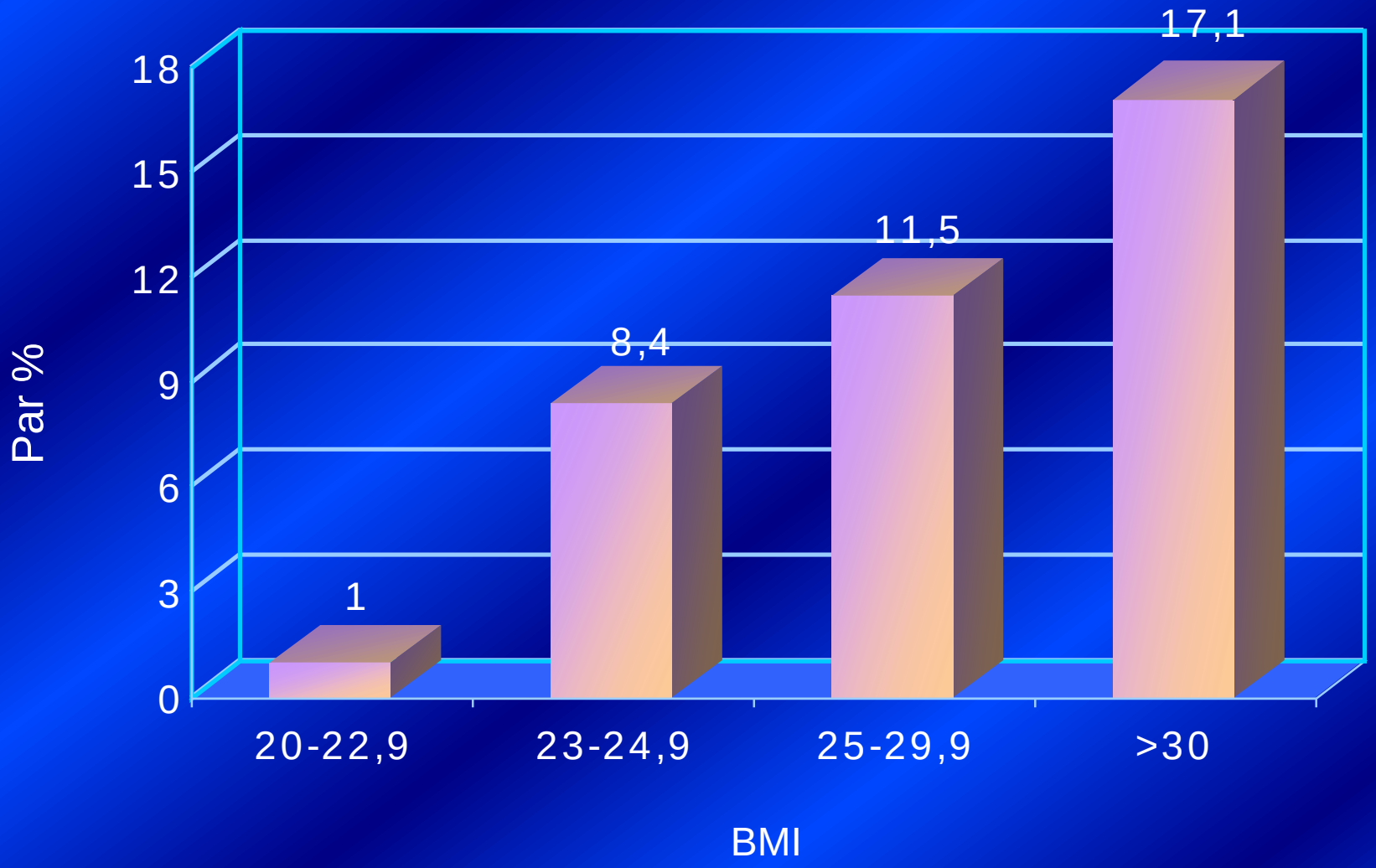


Risk (%) of developing diabetes mellitus
by initial BMI and WHR for men aged 54 at entry



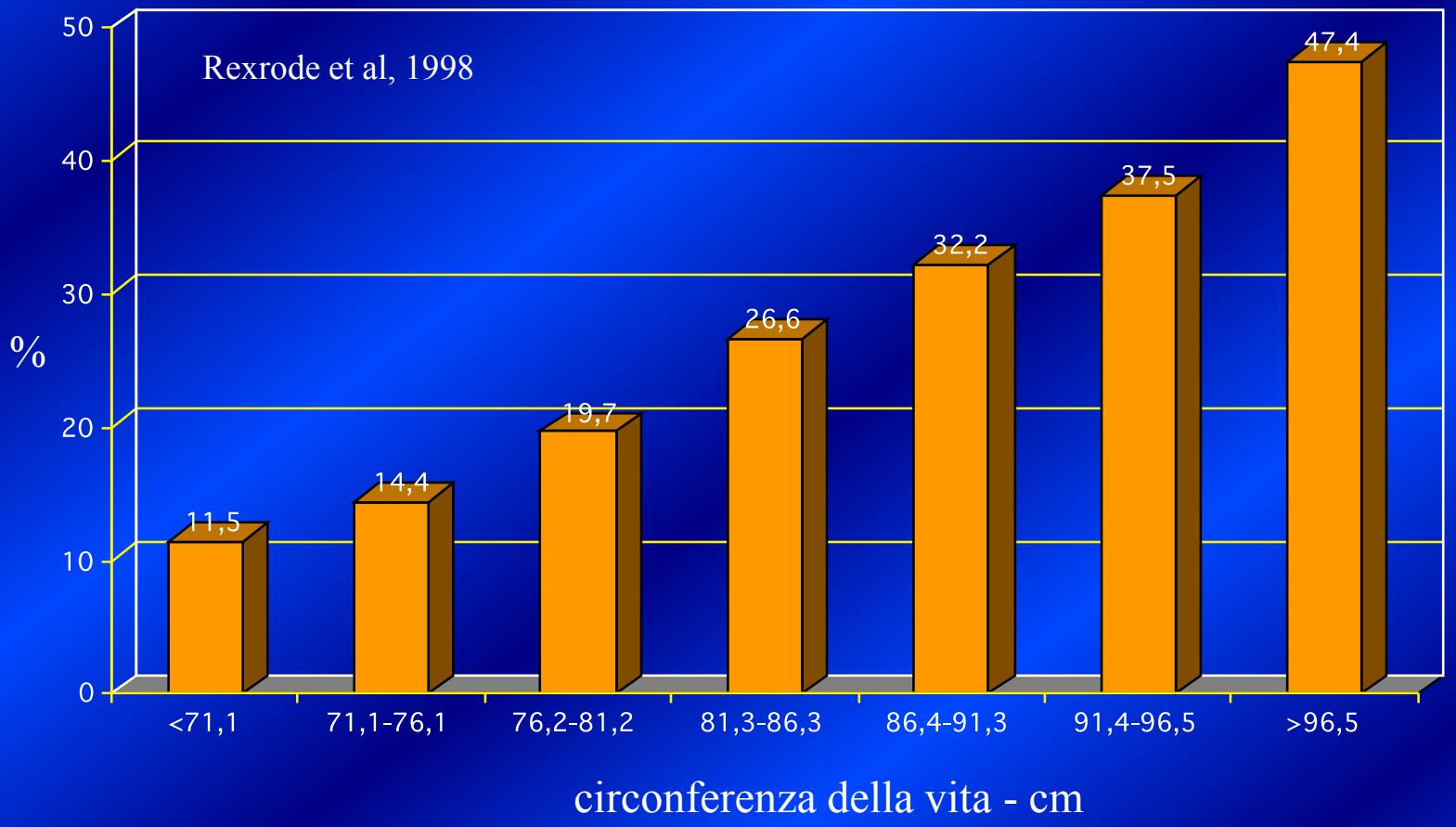
Olshon et al , 1985

Percentuale di rischio per ipertensione arteriosa, per categorie di BMI vs BMI<23



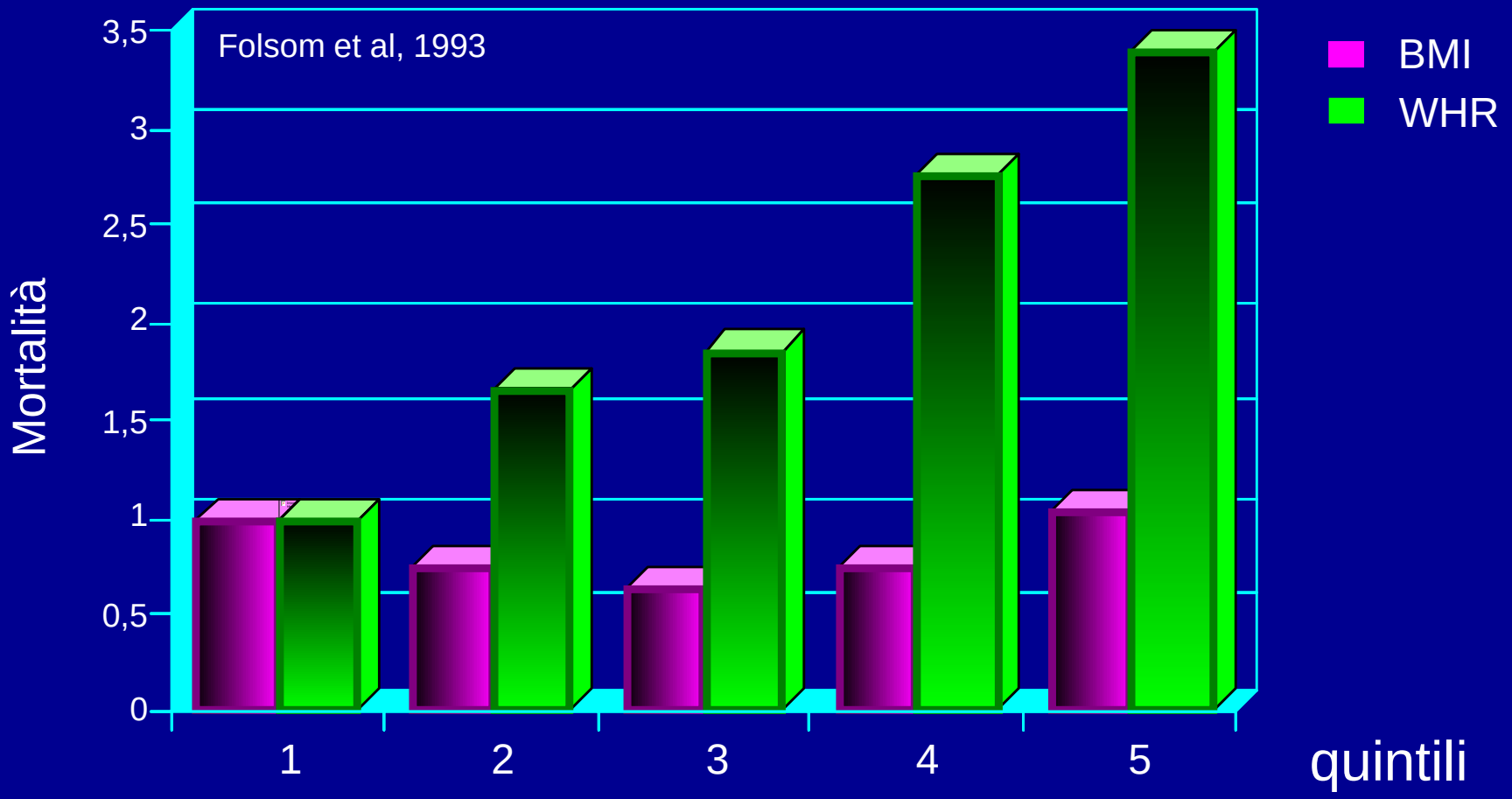
Wolf e Colditz, 1996

Valori di circonferenza della vita e prevalenza di ipertensione



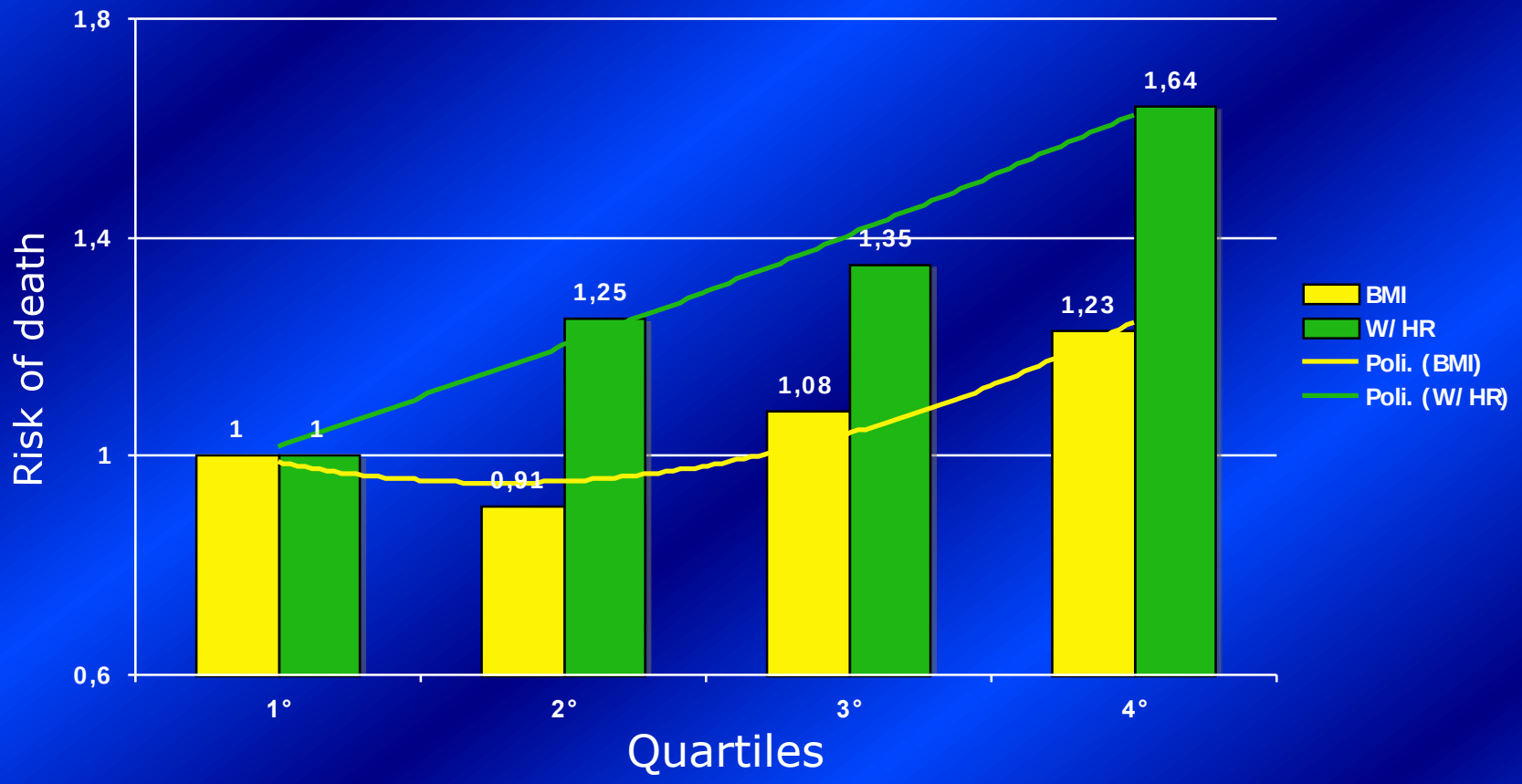
Mortalità/1000/anno in donne non fumatrici

(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

Waist Circumference represents the best predictor of cardiovascular risk and mortality. These results discourage the use of the BMI.

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

Ectopic fat deposition

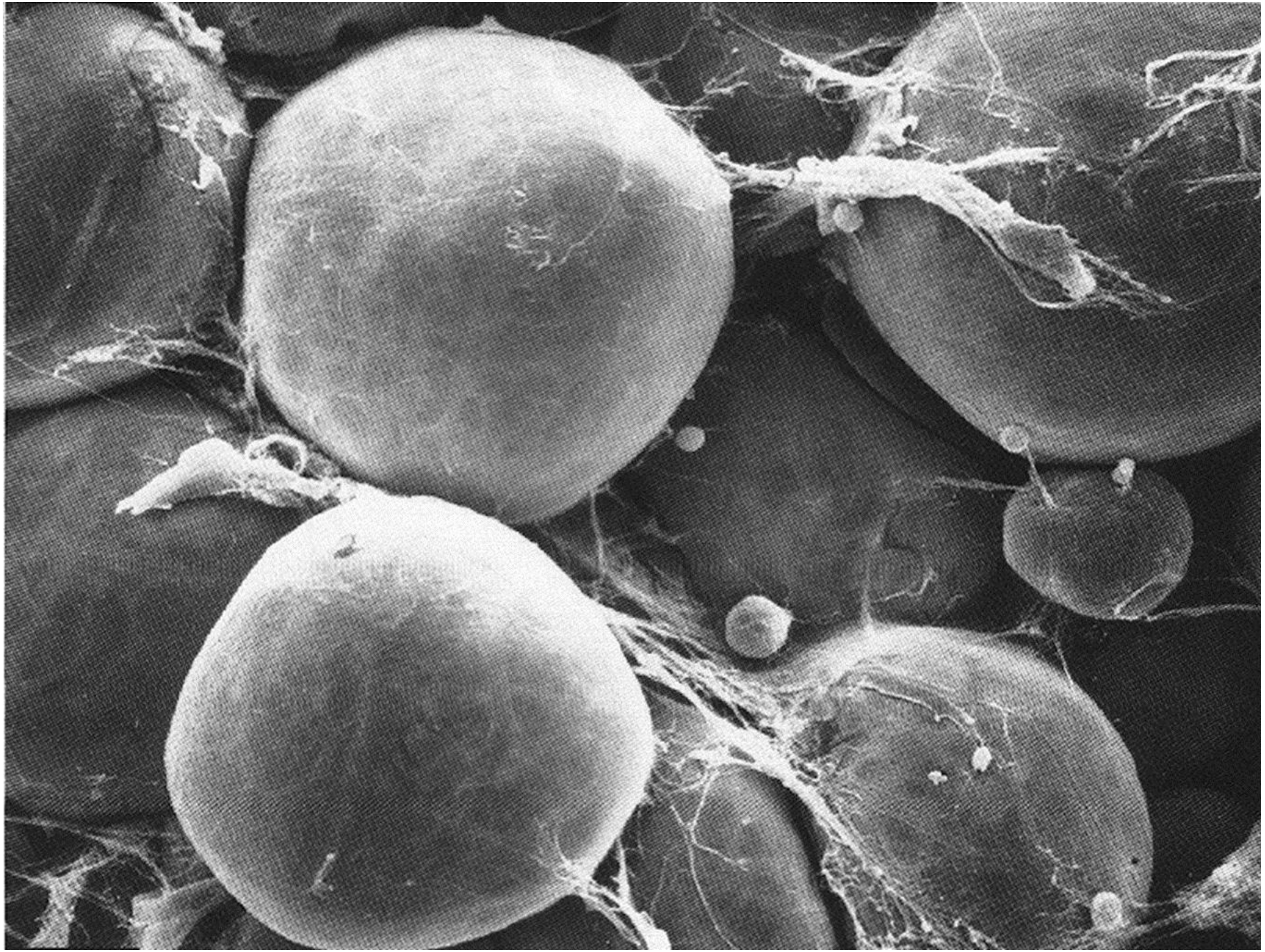
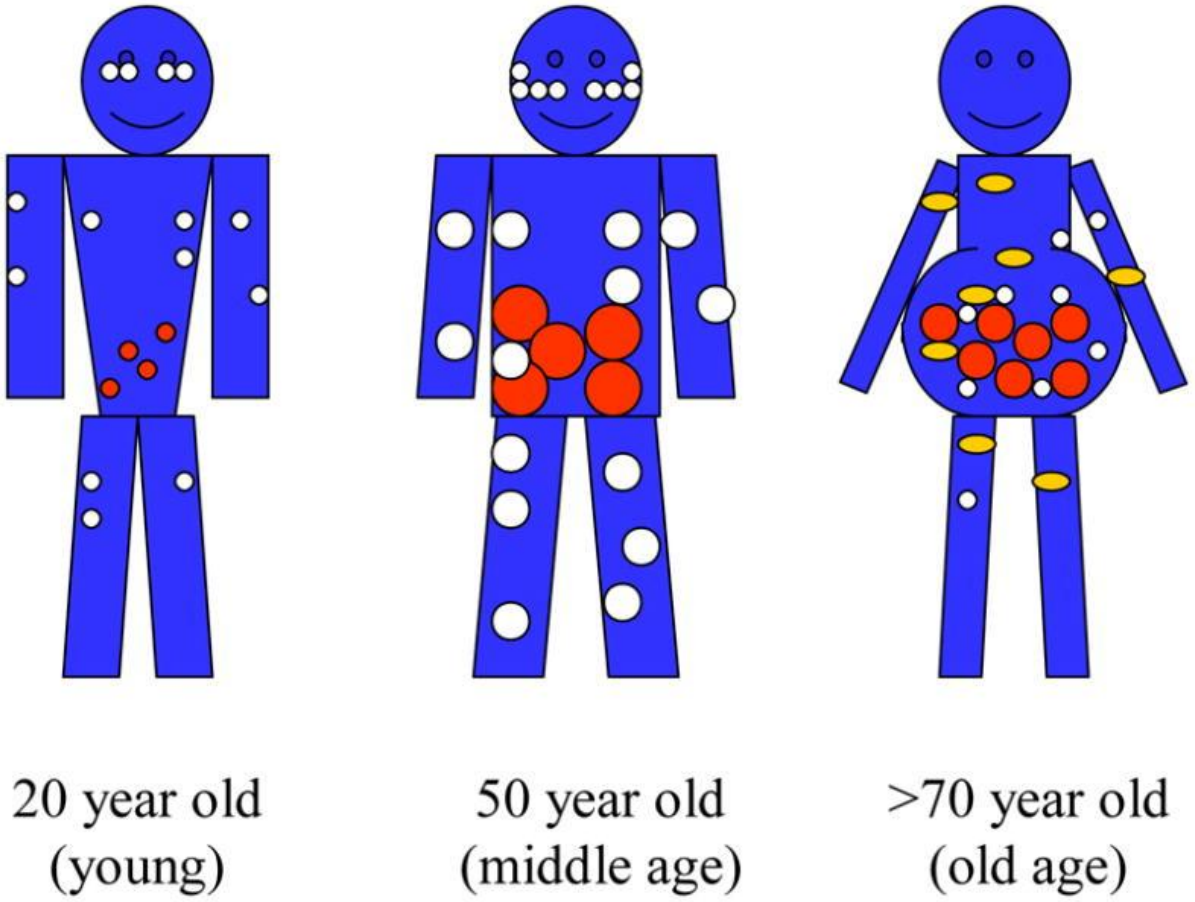


Diagram of age-associated changes in fat distribution

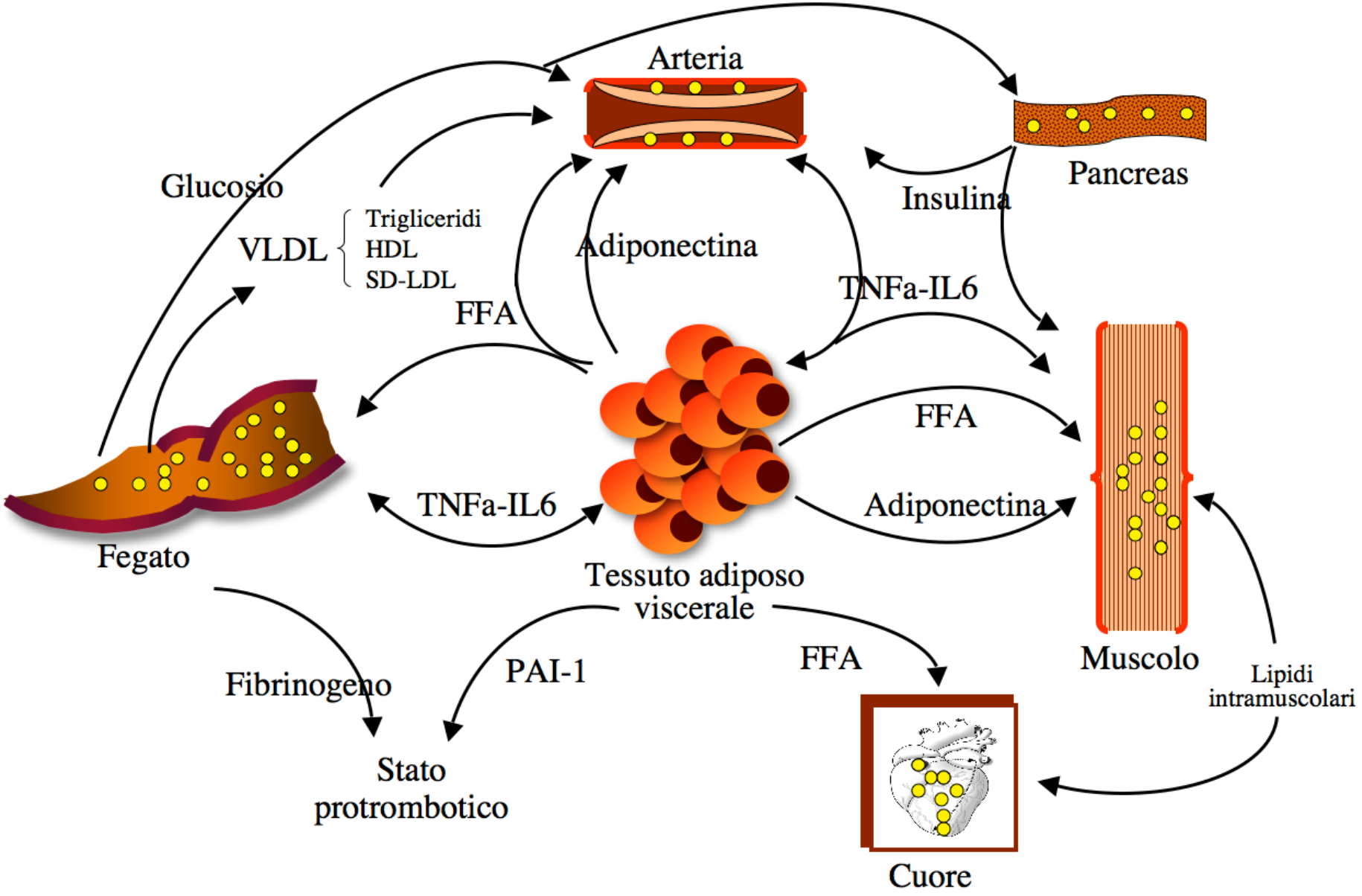
Fat mass reaches a peak by middle or early old age, followed by a substantial decline in advanced old age. Aging causes a loss of subcutaneous fat (peripherally first and then centrally), accumulation of visceral fat, and ectopic fat deposition (in muscle, liver, bone marrow, and elsewhere).



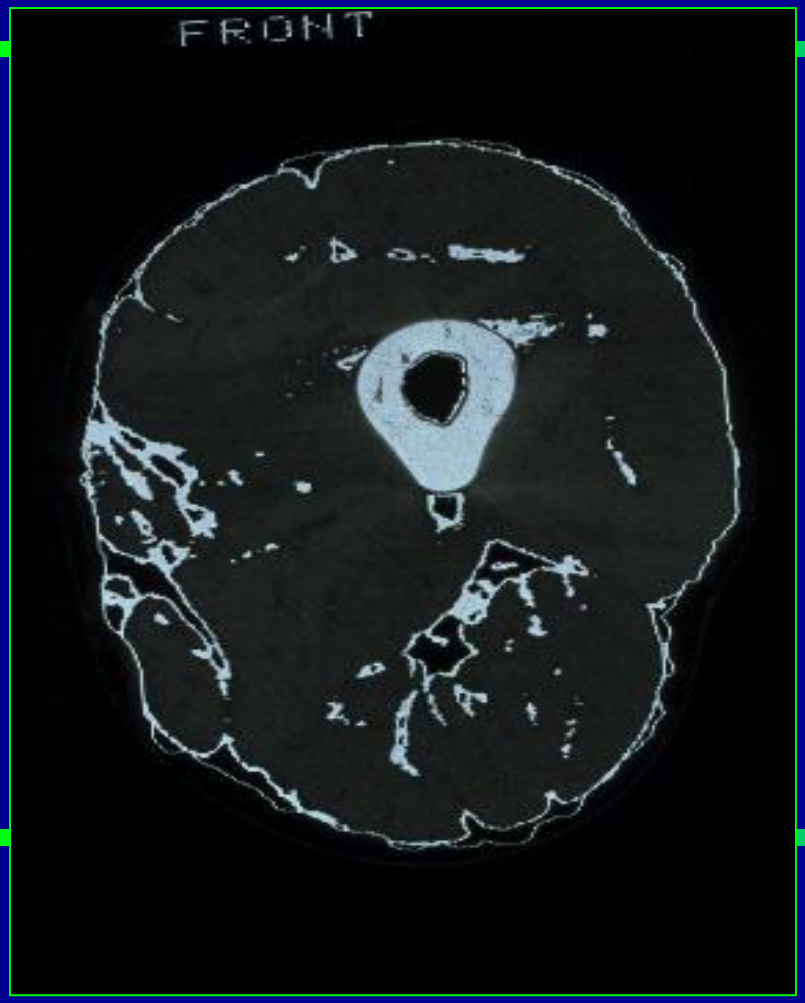
White circles = subcutaneous fat
Red circles = visceral fa
Orange circles = fat in non adipose tissue

Cartwright M J et al, 2007

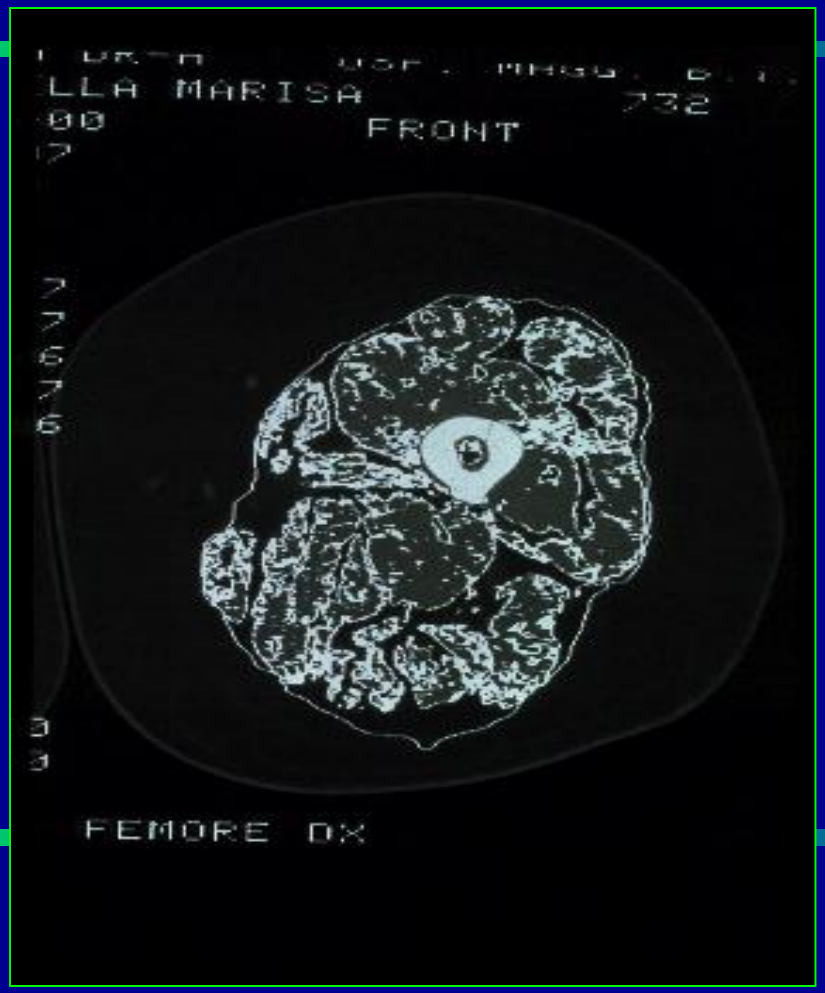
"ectopic fat deposition"

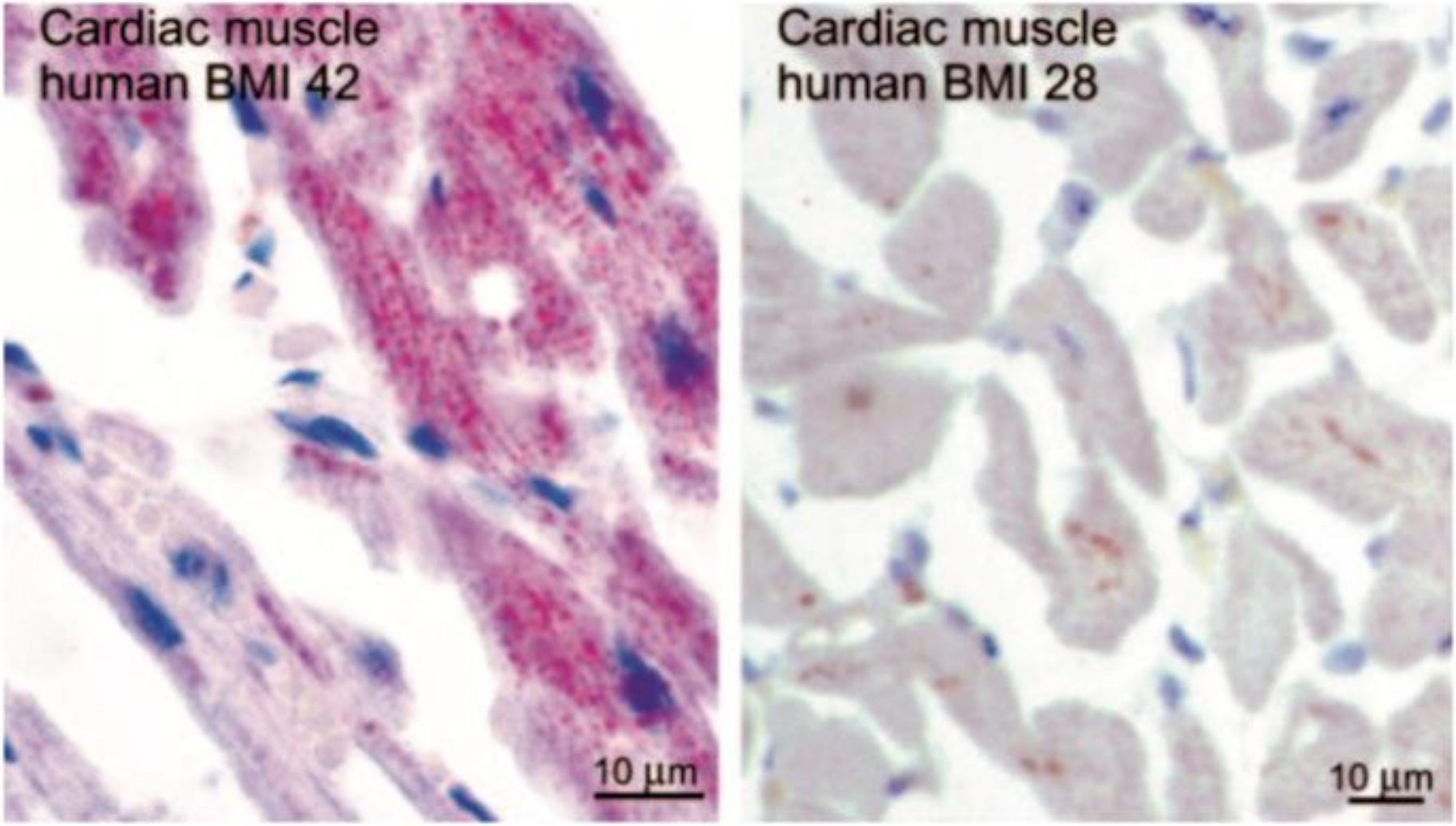


anni 35, F,
BMI 20, W 70 cm



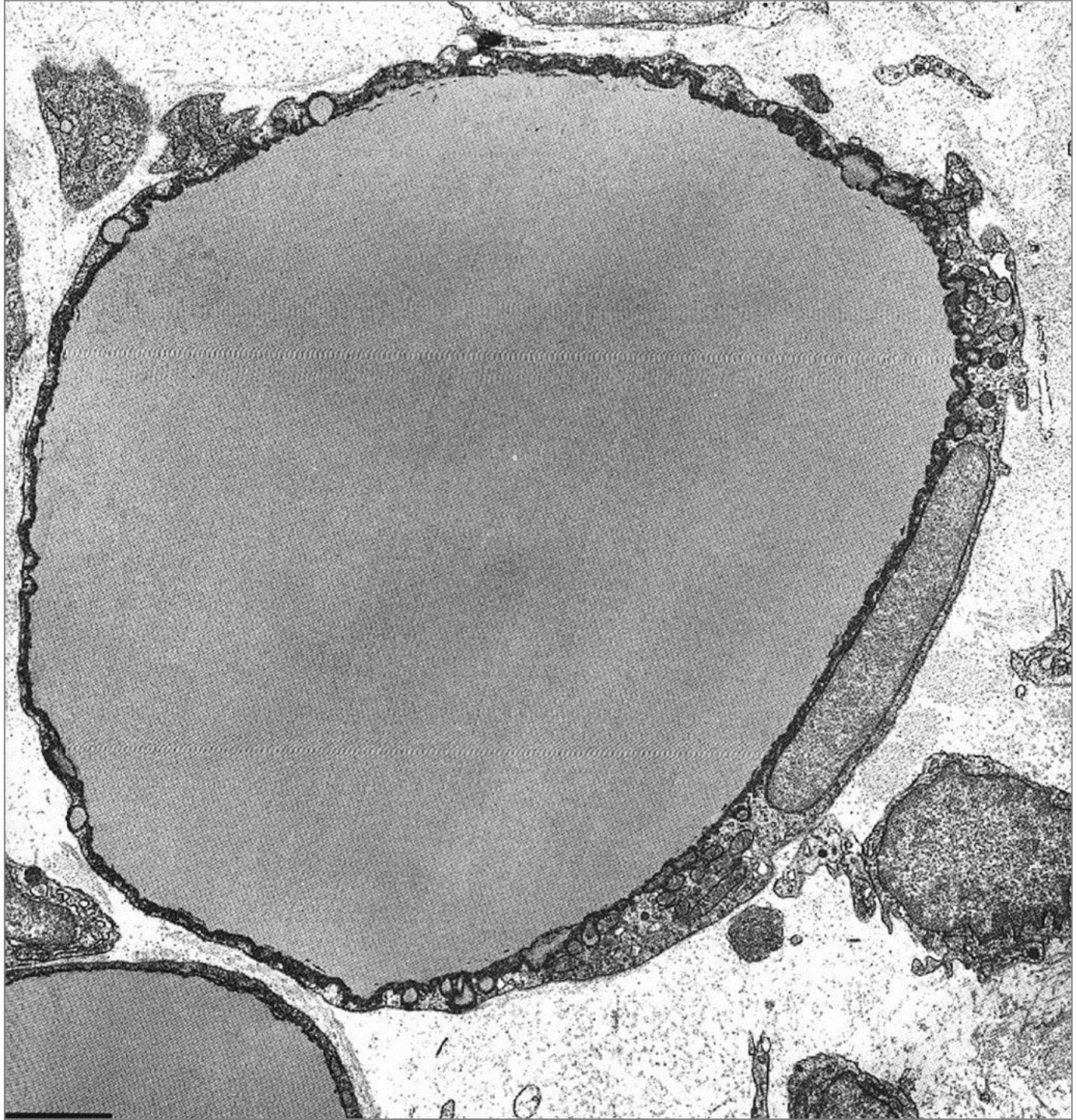
anni 59, F, BMI 37,
W 121 cm (S.Metabolica)



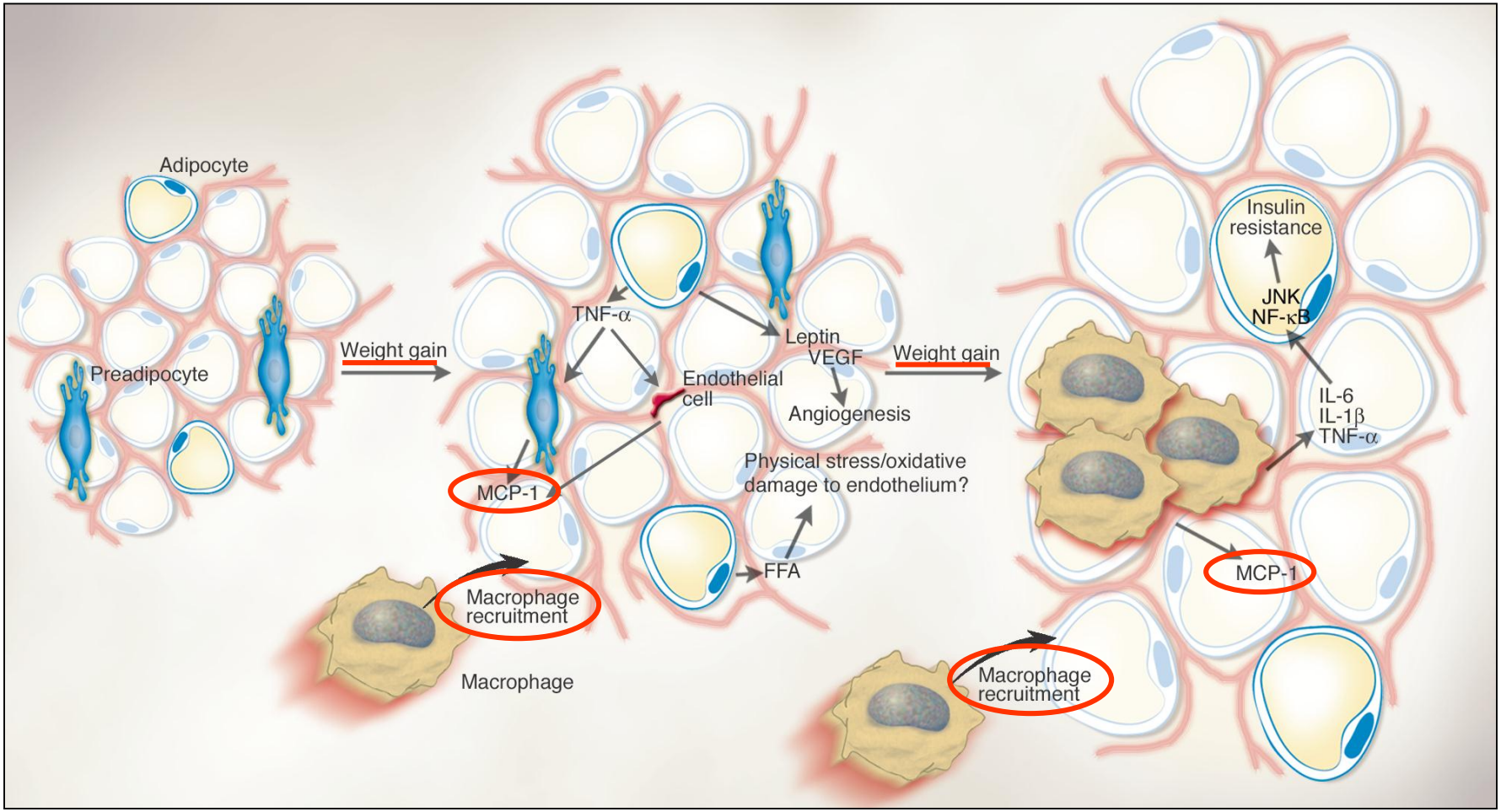


Oil red staining for lipids of hearts from an obese (body mass index, 42) and a nonobese human (body mass index, 28).

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



Obesità, infiammazione e infiltrazione macrofagica del tessuto adiposo

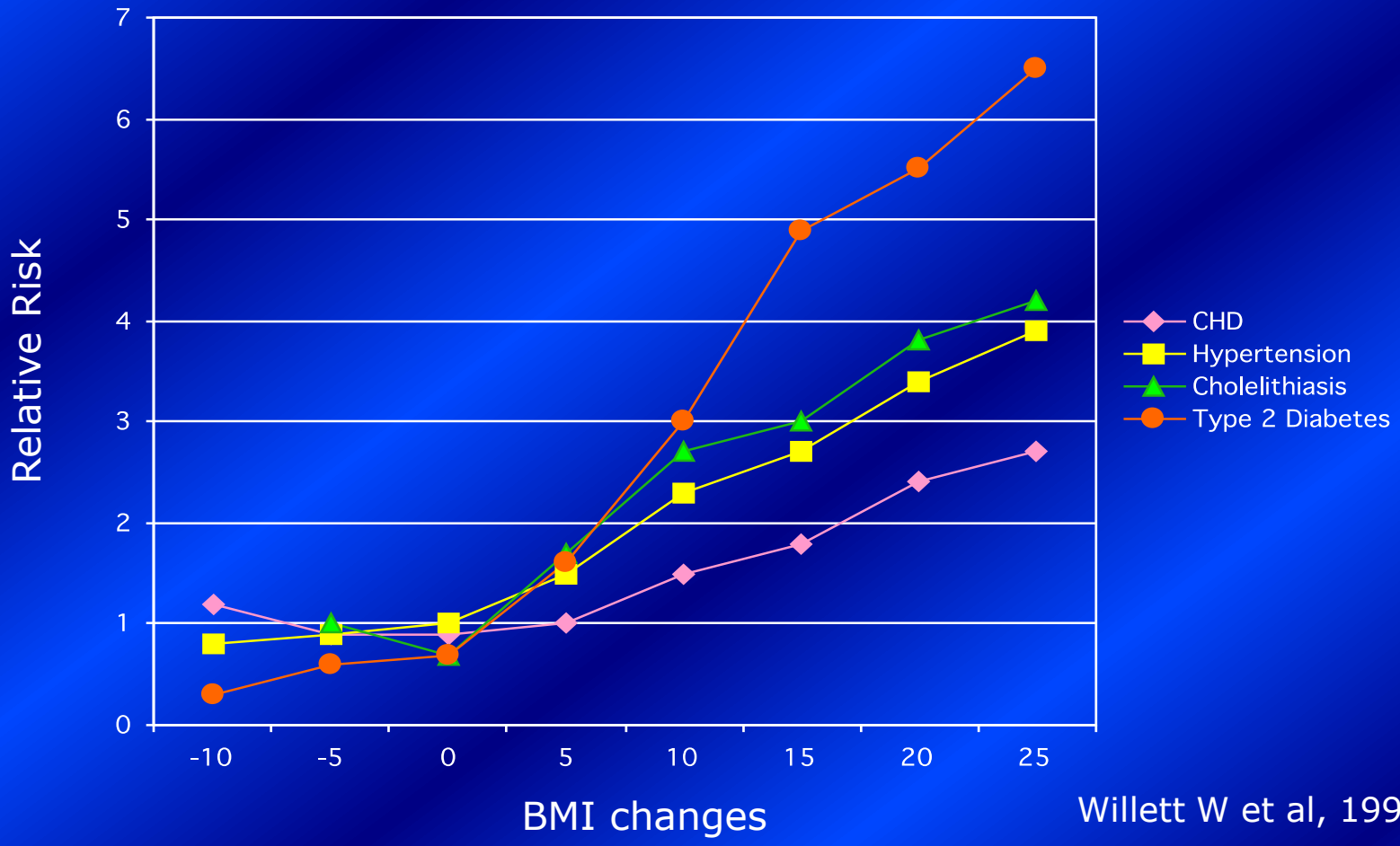


Wellen et al., 2003

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