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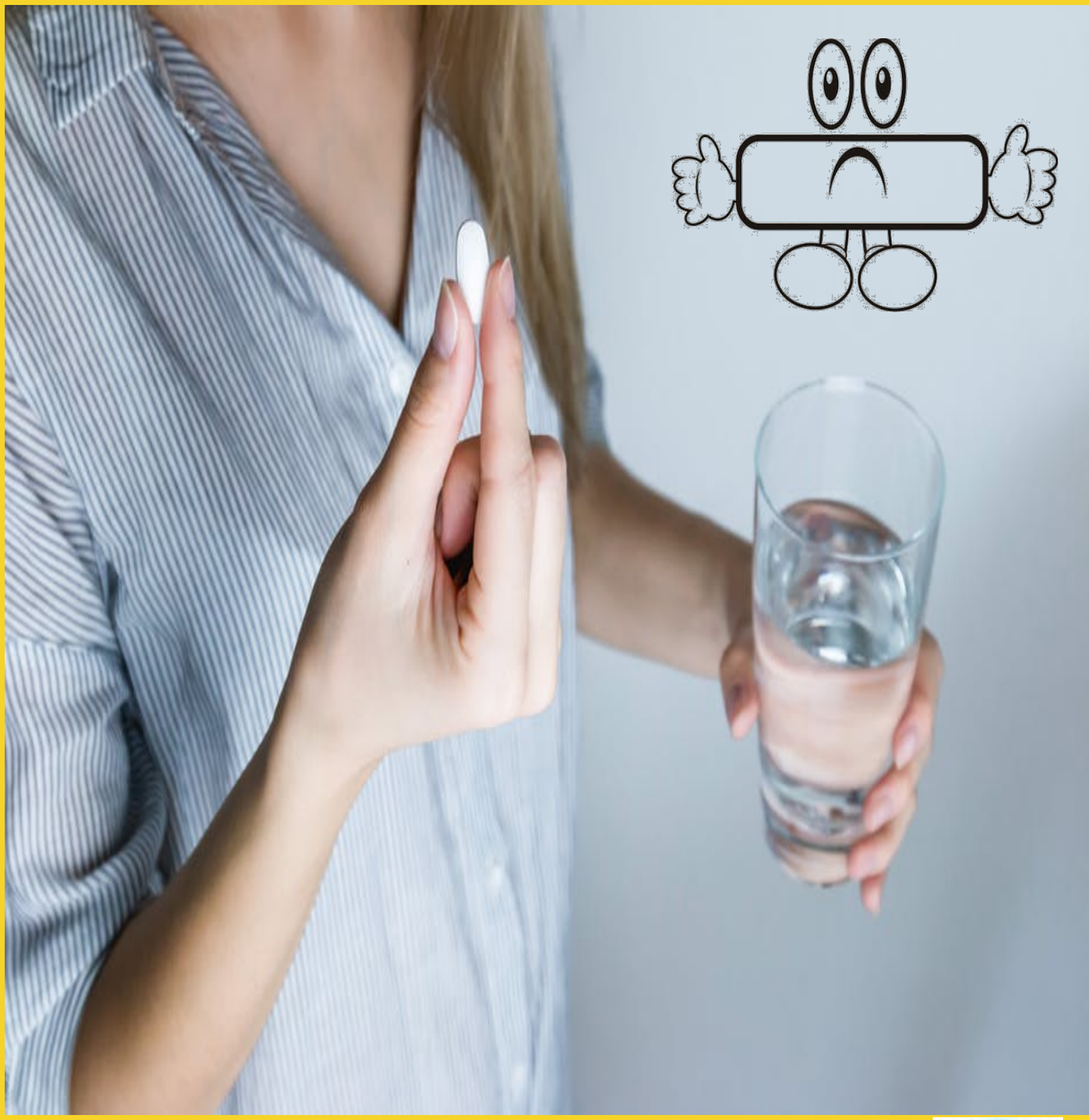


ACTA PHYSIOLOGICA

Acta Physiol 2016, 216, 15–41

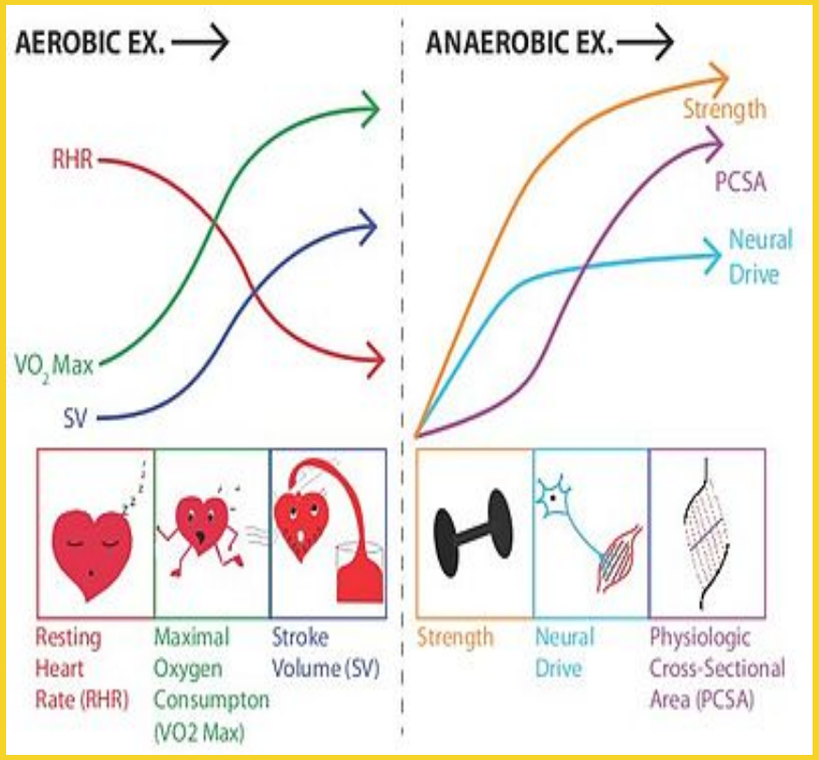
REVIEW

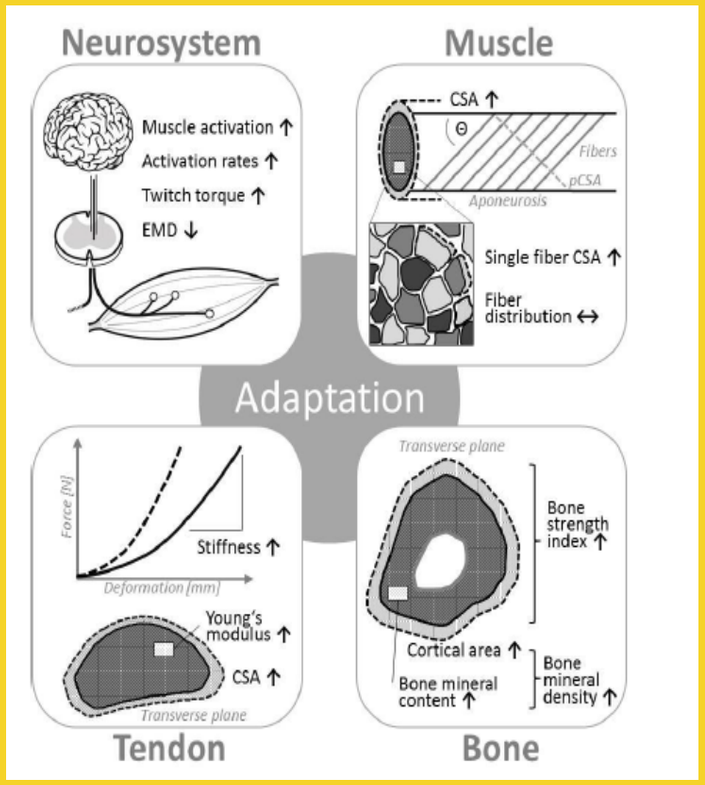
# Skeletal muscle homeostasis and plasticity in youth and ageing: impact of nutrition and exercise

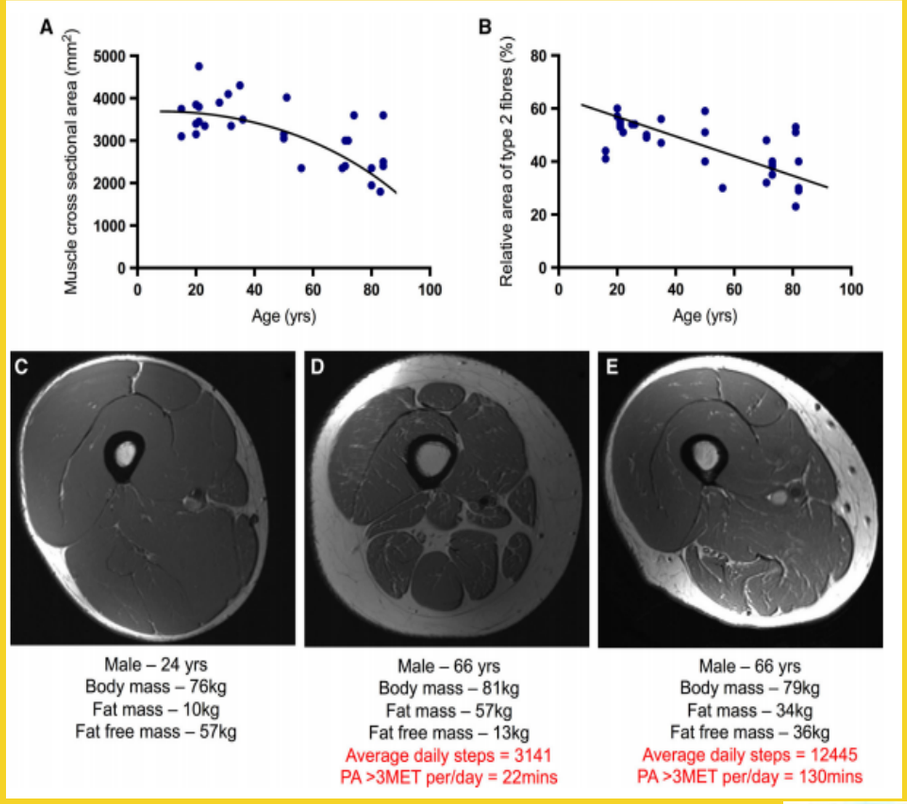
**M. S. Brook,[1,*] D. J. Wilkinson,[1,*] B. E. Phillips,[1] J. Perez-Schindler,[2] A. Philp,[2] K. Smith[1] and P. J. Atherton[1]**

*1 MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, Clinical Metabolic and Molecular Physiology, University of Nottingham, Royal Derby Hospital Centre, Derby, UK*

*2 MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, UK*



# Benefits of physical exercise

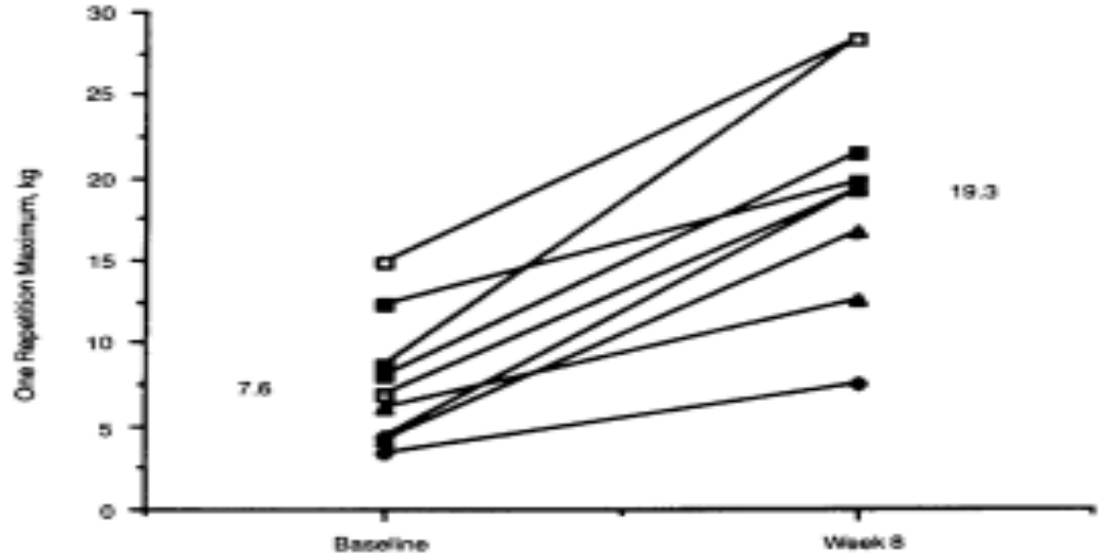
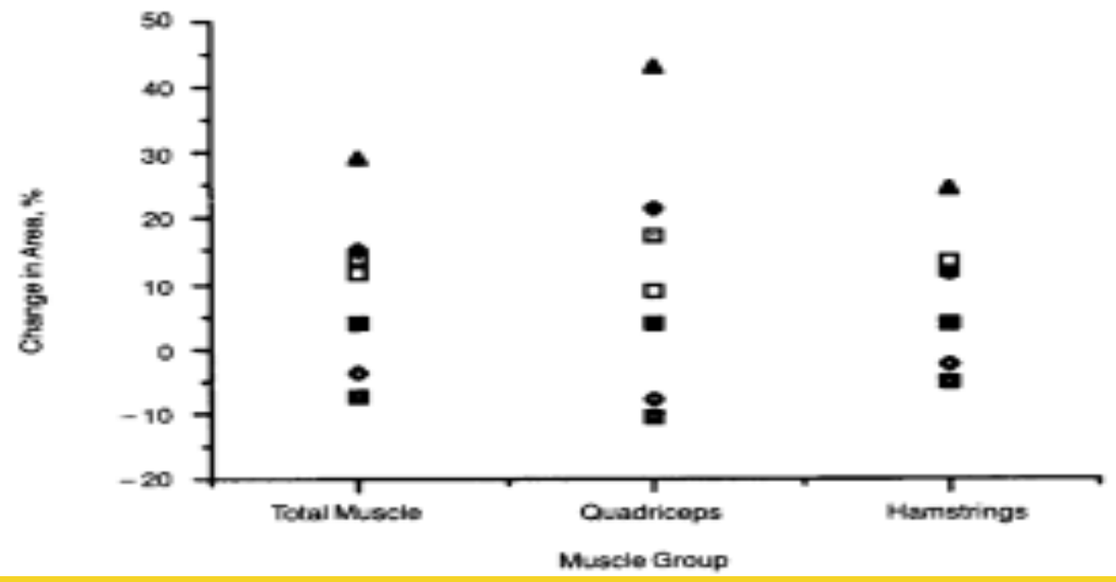



Fig 3. — Effects of weight training on knee extensor strength. Maximum left knee extensor strength before and after 8 weeks of high-intensity progressive-resistance training in nine subjects aged 87 to 96 years ($P < .0001$ compared with baseline). Similar strength gains were seen in the right leg (see text). Symbols represent individual subjects.




# High-Intensity Strength Training in Nonagenarians

## Effects on Skeletal Muscle

Maria A. Fiatarone, MD; Elizabeth C. Marks, MS; Nancy D. Ryan, DT; Carol N. Meredith, PhD; Lewis A. Lipsitz, MD; William J. Evans, PhD

# Physical Inactivity Sedentary Death Syndrome

# IMPORTANC

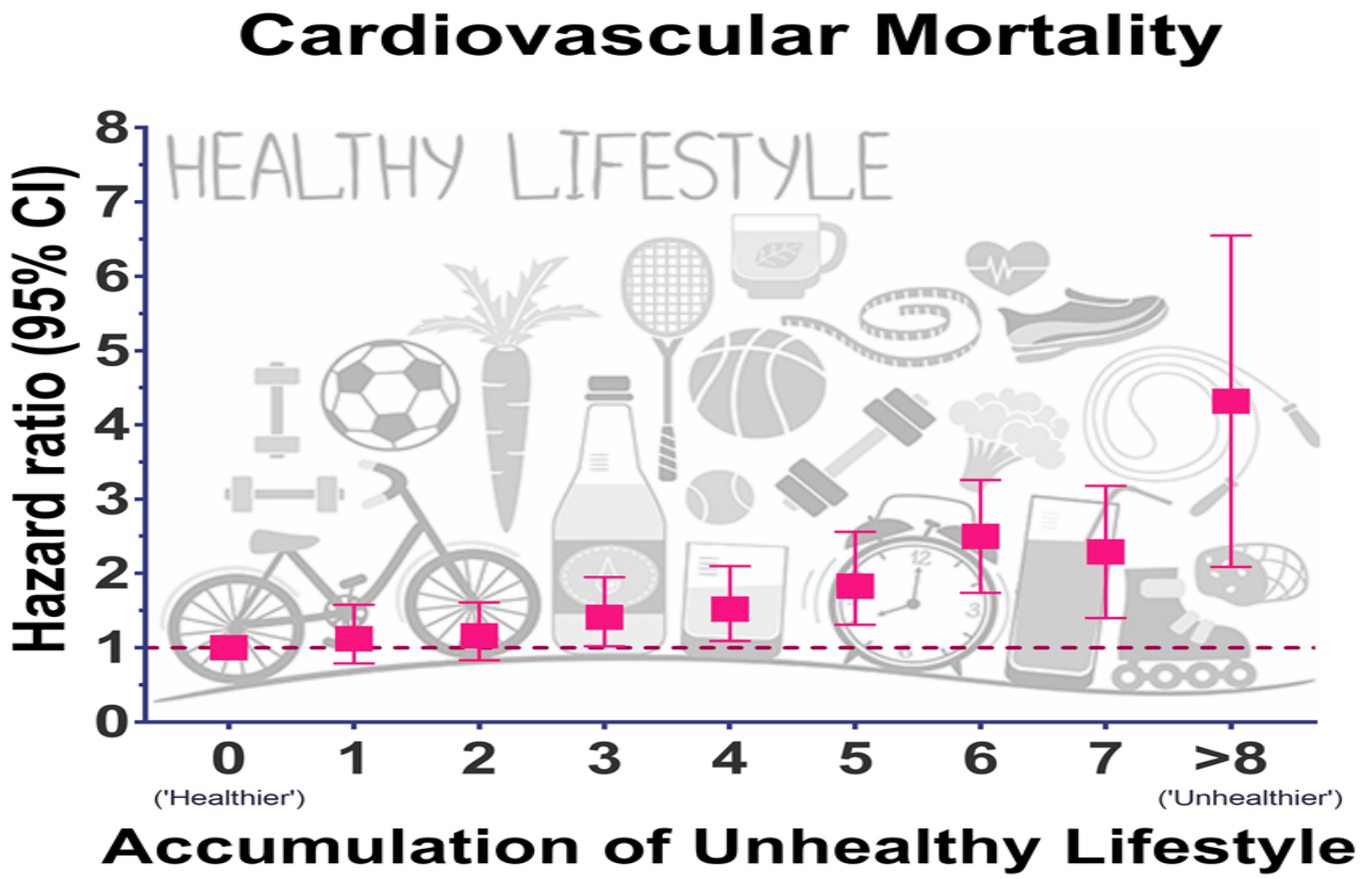
European Journal of Epidemiology
https://doi.org/10.1007/s10654-018-0374-z

META-ANALYSIS

## Lifestyle factors, cardiovascular disease and all-cause mortality in middle-aged and elderly women: a systematic review and meta-analysis

Verônica Colpani[1,2,3,4] · Cristina P. Baena[1,5] · Loes Jaspers[1] · Gabriella M. van Dijk[1] · Ziba Farajzadegan[1] · Klodian Dhana[1] · Myrte J. Tielemans[1] · Trudy Voortman[1] · Rosanne Freak-Poli[1] · Gilson G. V. Veloso[1] · Rajiv Chowdhury[6] · Maryam Kavousi[1] · Taulant Muka[1] · Oscar H. Franco[1]

Received: 8 December 2016 / Accepted: 28 February 2018

| Rank | Cause of Death | Percent of Deaths |
|---|---|---|
| 1 | High Blood Pressure | 12.8% |
| 2 | Tobacco Use | 8.7% |
| 3 | High Blood Glucose | 5.8% |
| **4** | **Physical Inactivity** | **5.5%** |
| 5 | Overweight & Obesity | 4.8% |
| 6 | High Cholesterol | 4.5% |
| 7 | Unsafe Sex | 4.0% |
| 8 | Alcohol Use | 3.8% |
| 9 | Childhood Underweight | 3.8% |
| 10 | Indoor Smoke Solid Fuels | 3.3% |

Source: WHO

World Health Organization

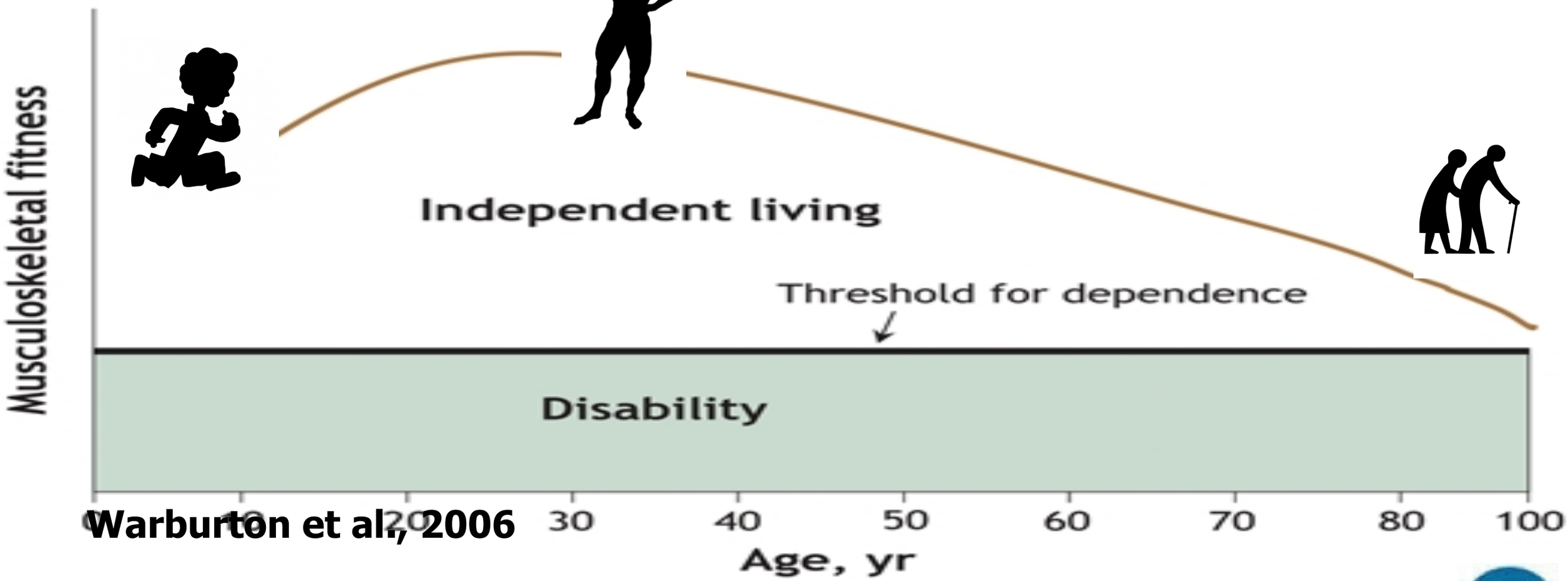
**D**inapenia

**O**besidad

**D**iabetes

**S**arcopenia

**O**steoporosis




**Warburton et al., 2006**

COMPREHENSIVE PHYSIOLOGY

# Lack of Exercise Is a Major Cause of Chronic Diseases

*Frank W. Booth,*[*1] *Christian K. Roberts,*[2] *and Matthew J. Laye*[3]

**Perspectives**

*Physiol Genomics* 28: 146–157, 2007.
First published October 10, 2006; doi:10.1152/physiolgenomics.00174.2006.

# Fundamental questions about genes, inactivity, and chronic diseases

**Frank W. Booth[1,2,3,4] and Simon J. Lees[1,3]**

*Departments of [1]Biomedical Sciences and [2]Medical Pharmacology and Physiology,*
*[3]Health Activity Center, [4]Dalton Cardiovascular Center, University of Missouri, Columbia, Missouri*

Submitted 7 August 2006; accepted in final form 2 October 2006

*J Appl Physiol* 93: 3–30, 2002;
10.1152/japplphysiol.00073.2002.

**invited review**

# Waging war on physical inactivity: using modern molecular ammunition against an ancient enemy

FRANK W. BOOTH,[1] MANU V. CHAKRAVARTHY,[2]
SCOTT E. GORDON,[3] AND ESPEN E. SPANGENBURG[1]

# SI NO LO USAS LO PIERDES

40 años
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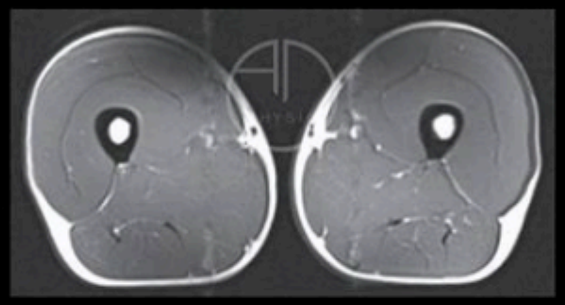
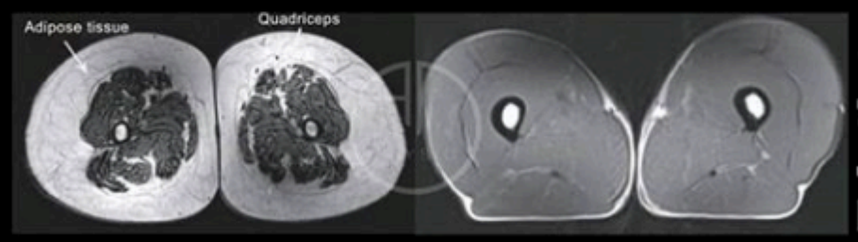


## 70 años...

Sedentario




Triatleta

# ¡TÚ DECIDES!

SPECIAL COMMUNICATIONS

# Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory, Musculoskeletal, and Neuromotor Fitness in Apparently Healthy Adults: Guidance for Prescribing Exercise

AMERICAN COLLEGE of SPORTS MEDICINE

POSITION STAND

This pronouncement was written for the American College of Sports Medicine by Carol Ewing Garber, Ph.D., FACSM, (Chair); Bryan Blissmer, Ph.D.; Michael R. Deschenes, Ph.D., FACSM; Barry A. Franklin, Ph.D., FACSM; Michael J. Lamonte, Ph.D., FACSM; I-Min Lee, M.D., Sc.D., FACSM; David C. Nieman, Ph.D., FACSM; and David P. Swain, Ph.D., FACSM.

**SUMMARY**

REVIEWS

PHYSIOLOGY 28: 330–358, 2013; doi:10.1152/physiol.00019.2013

# Exercise is the Real Polypill

Carmen Fiuza-Luces,[1,2] Nuria Garatachea,[3] Nathan A. Berger,[4] and Alejandro Lucia[1,2]

[1]Universidad Europea Madrid, Madrid, Spain; [2]Instituto de Investigación, Hospital 12 de Octubre, Madrid, Spain; [3]Facultad de Ciencias de la Salud y del Deporte, Universidad de Zaragoza, Huesca, Spain; and [4]Center for Science, Health and Society, Case Western Reserve University, School of Medicine, Cleveland, Ohio
alejandro.lucia@uem.es

The concept of a "polypill" is receiving growing attention to prevent cardiovascular disease. Yet similar if not overall higher benefits are achievable with regular exercise, a drug-free intervention for which our genome has been haped over evolution. Compared with drugs, exercise is available at low cost and relatively free of adverse effects. We summarize epidemiological evidence on the preventive/therapeutic benefits of exercise and on the main biological mediators involved.

## Conclusions:

-Physical activity is movement
-Structured movement is physical exercise
-The BEST EXERCISE IS MEDICINE !!!! [?] MORE SHOES ARE LESS PADS
-There are many types of exercise
-There are multiple variables that configure the internal load / stress that exercise implies and therefore modulates the organic response to it
-Adjust to the biological characteristics of each stage
-Do not forget diseases and therapeutic treatments
-SUPERVISION AND EDUCATION by a professional


ENTRENAMIENTO
CIERRA EL
CIRCULO
CON
JOSÉ VIDAL
FORMACIÓN
COACHING
FISIOTERAPIA
NUTRICIÓN