8th Annual Emirates Cardiac Society Conference

ACC Middle East Conference 2017

DUBAI

OCTOBER 19 – 21, 2017

UNIQUE EDUCATIONAL EXPERIENCE IN YOUR REGION

Physical Activity and Exercise in Health: Review of Literature……

and

Cardiac Rehab Data ?

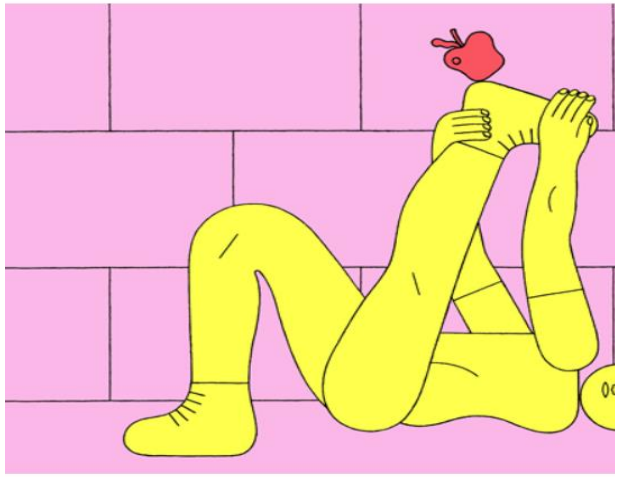
Physical Activity

Prevention”

The New York Time

THE UPSHOT

Closest Thing to a Wor
Drug? Try Exercise



DOMINIC KESTERTON

June 20, 2016

THE LANCET

Physical activity:
“Worldwide, we estimated that physical inactivity causes 6–10% of the major non-communicable diseases…physical inactivity seems to have an effect similar to that of smoking or obesity.”

Comment | World Report | Articles | Articles | Series

c Disease

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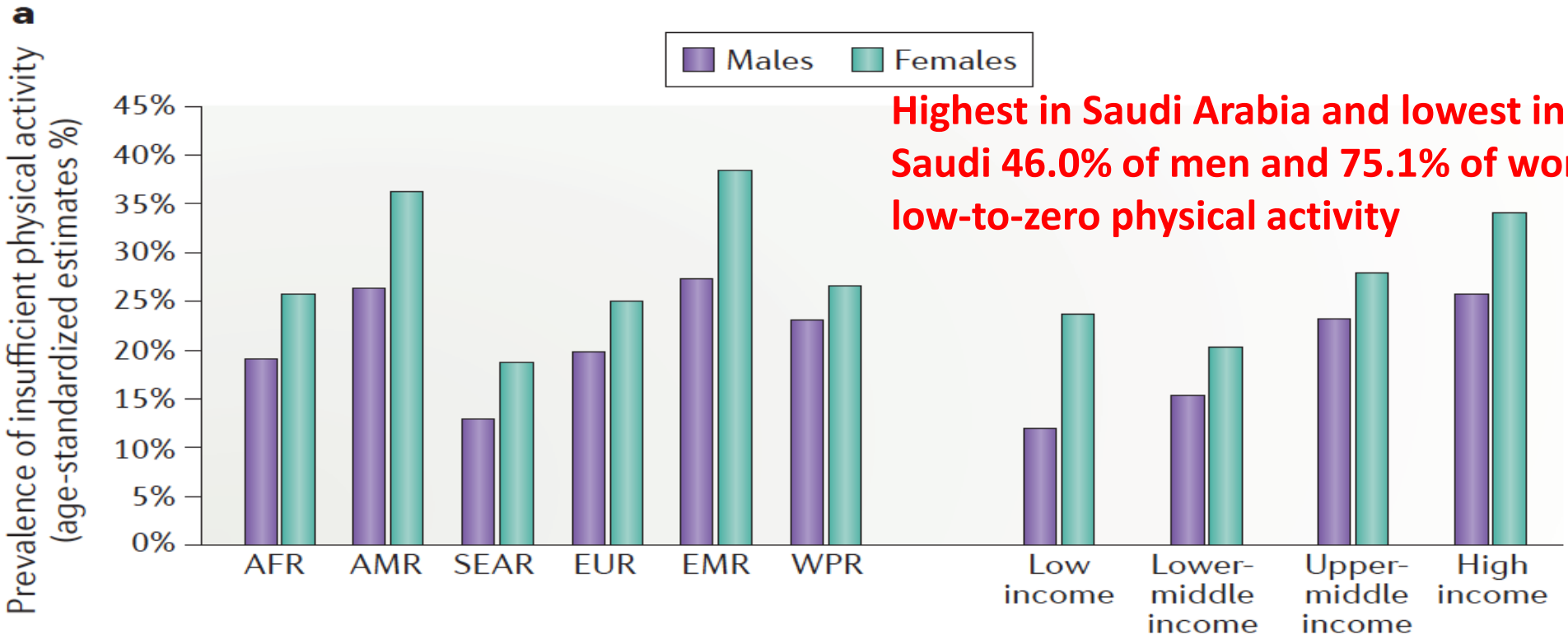
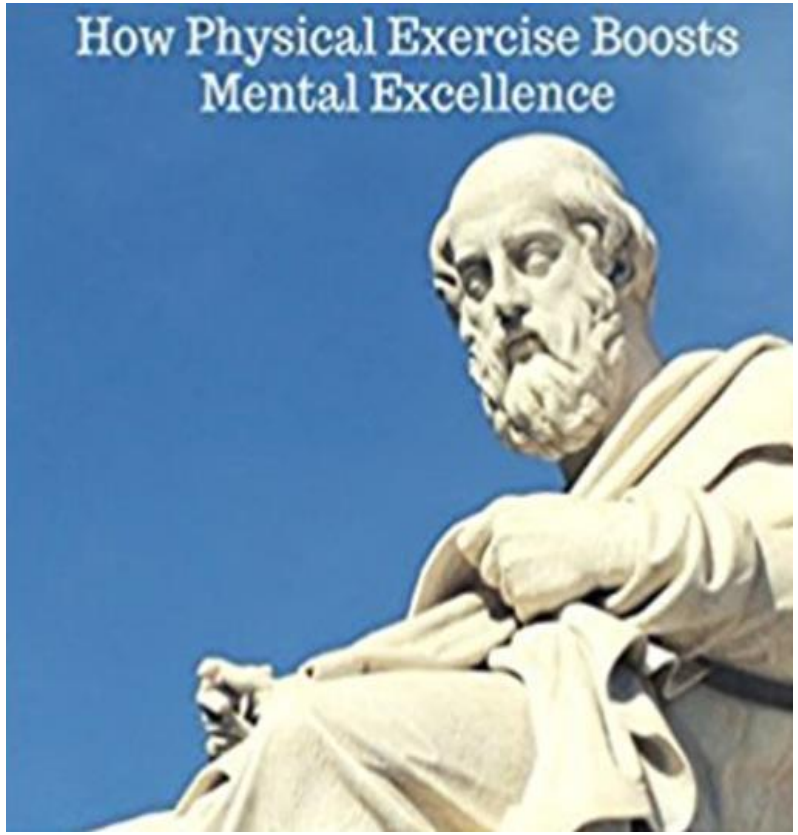


Highest in Saudi Arabia and lowest in Jordan
Saudi 46.0% of men and 75.1% of women engage in low-to-zero physical activity

Age-standardized prevalence of insufficient physical activity in adults aged ≥18 years by WHO region and World Bank income group. Insufficient physical activity is defined as <150 min of moderate intensity physical activity per week

Cardiovascular disease in the Eastern Mediterranean region: epidemiology and risk factor burden. Turk-Adawi K, Sarrafzadegan N. Nat Rev Cardiol. 2017 Sep 21

Plato 427-347 BC



Healthy physical condition is spoiled by inactivity and inertia, but on the whole, is preserved by exercise.

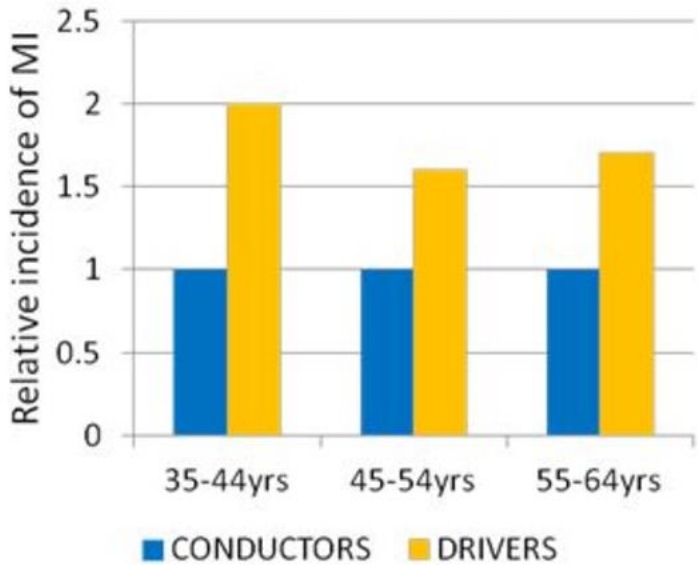
Plato

Exercise Is Bunk. If You Are Healthy, You Don't Need It: If You Are Sick You Should Not Take It.

- Henry Ford

Occupational physical activity and heart attacks

- Jerry Morris – compared heart attack incidence in drivers vs conductors



Morris et al (1953) "Coronary heart-disease and physical activity of work". Lancet 265 (6795): 1053–7

Ralph Paffenbarger- Harvard Alumni Study

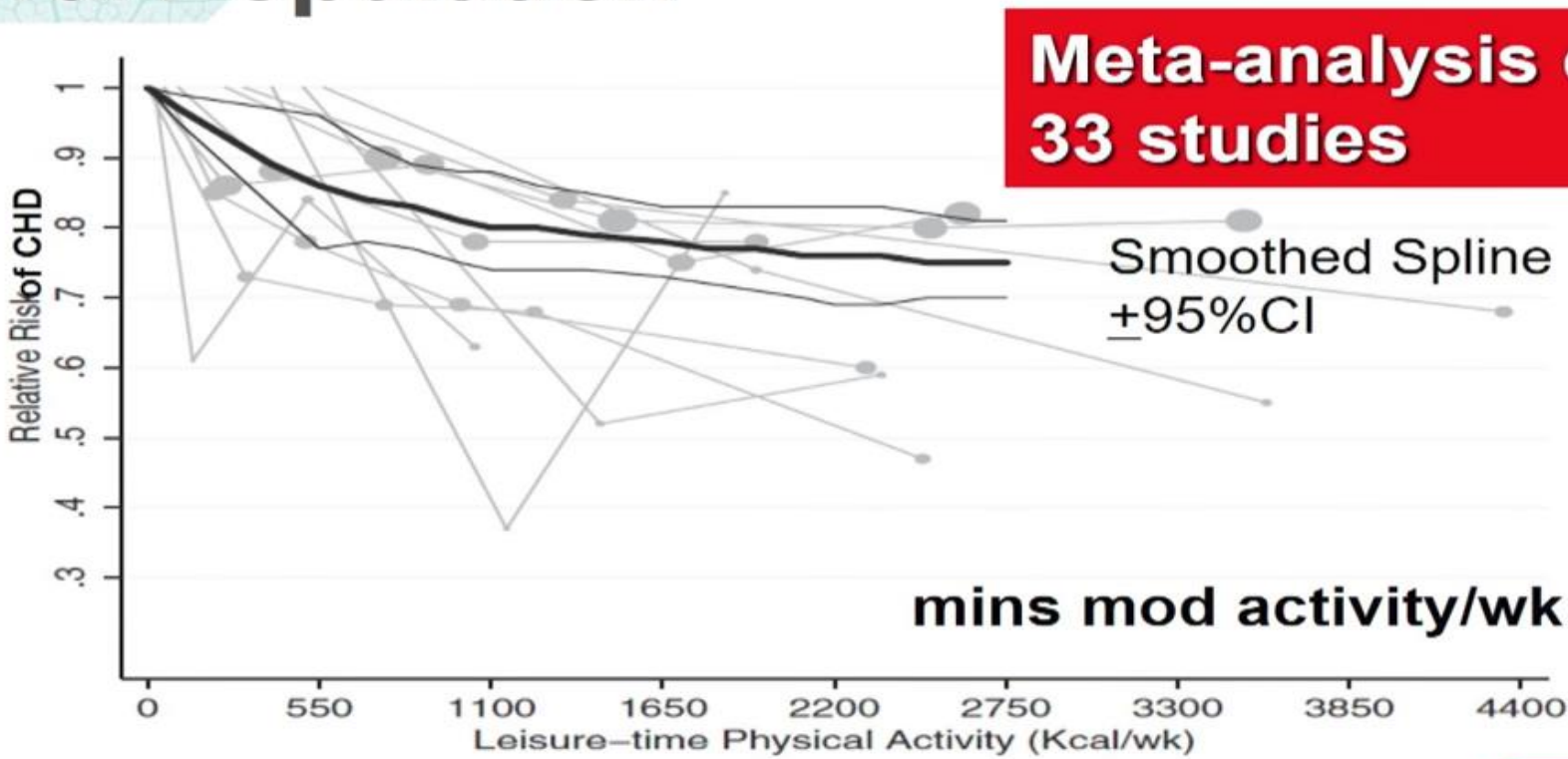
- Low Leisure time energy expenditure was strong risk factor for first heart attack
- Only grads who remained active were protected from heart attack
- Exercise offered protection even in the face of other coronary risk factors
- Vigorous exercise is best for MI protection
- Even when they had MI, exercisers had less mortality

Question 1

What level of weekly moderate to vigorous physical activity is associated with optimal CV benefit?

a. 75 mins per week
b. 150 mins per week
c. 300 mins per week
d. > 300 mins per week

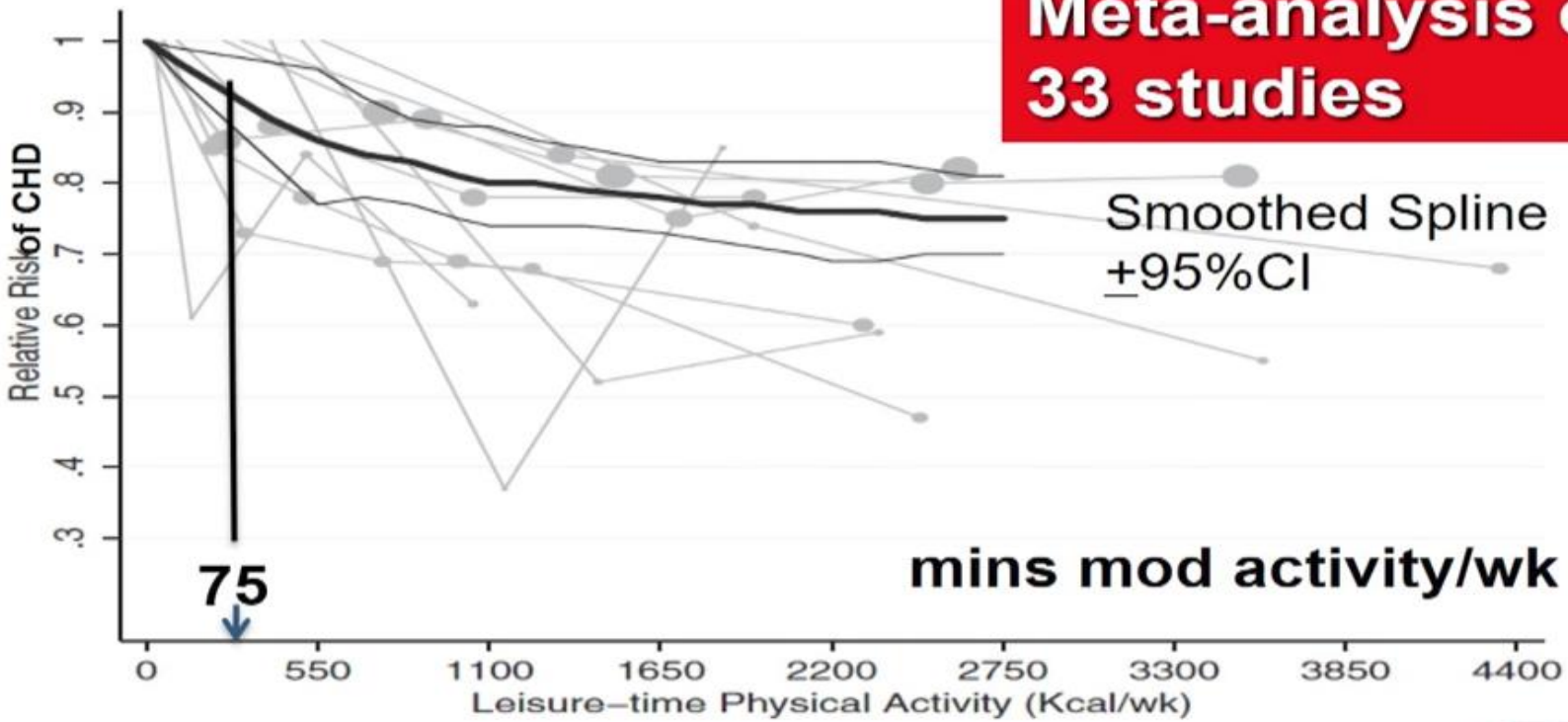
Physical Activity and Heart Disease in General Population



Sattelmair Circulation 2011;124:789-795

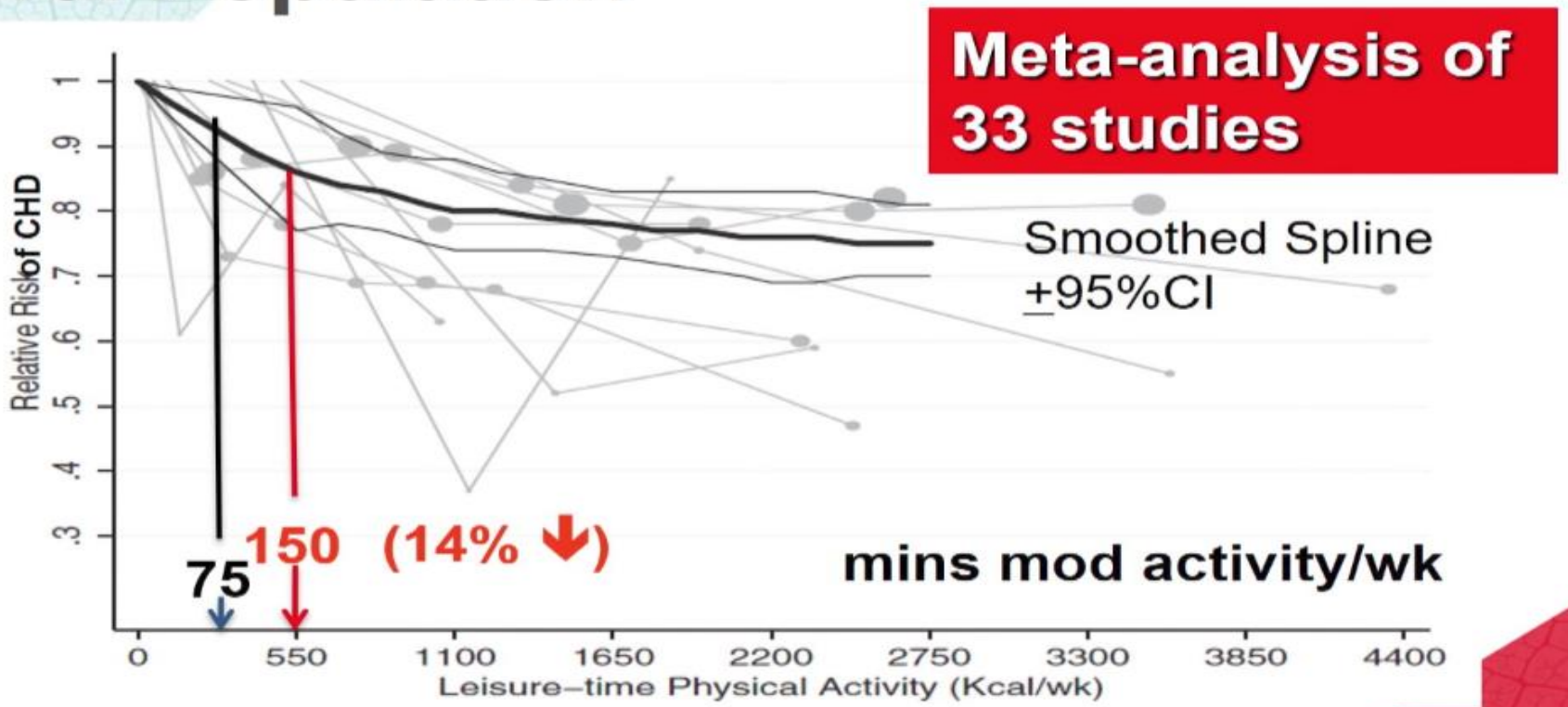
Physical Activity and Heart Disease in General Population

Meta-analysis of 33 studies



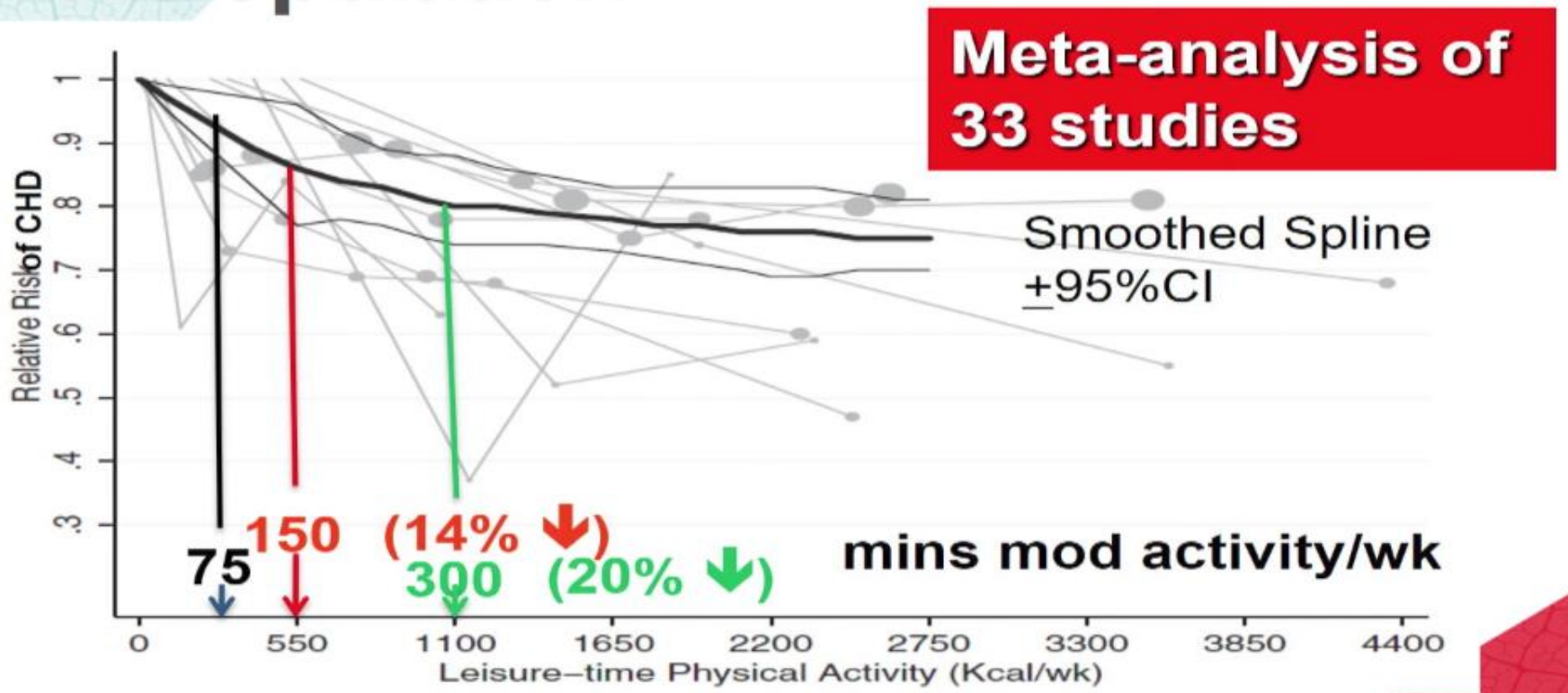
Sattelmair Circulation 2011;124:789-795

Physical Activity and Heart Disease in General Population



Sattelmair Circulation 2011;124:789-795

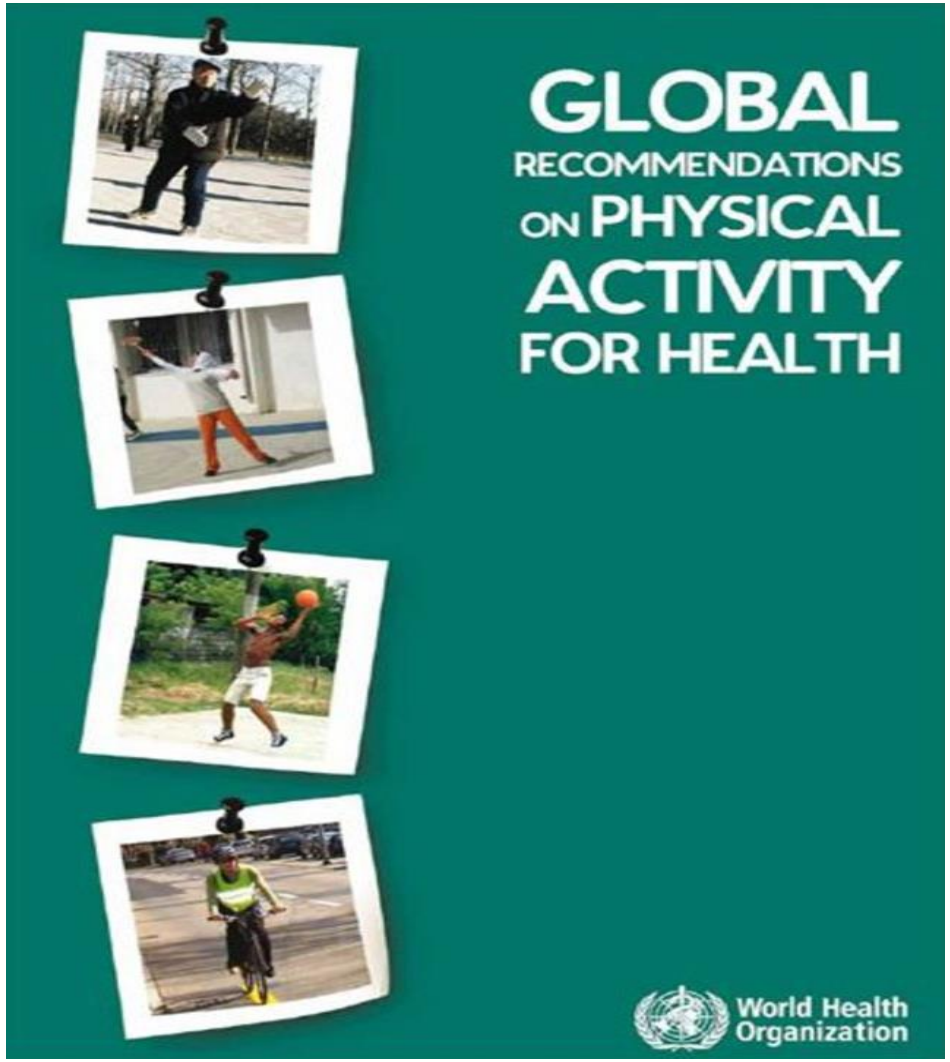
Physical Activity and Heart Disease in General Population



Sattelmair Circulation 2011;124:789-795

Physical Activity Guidelines for Americans 2nd Edition

Expected late 2018



How much do we need?

Key Guidelines – Adults

- Minimum levels a week:
  - 2 hours and 30 minutes (150 minutes) moderate-intensity aerobic activity; or
  - 1 hour and 15 minutes (75 minutes) vigorous-intensity aerobic activity; or
  - An equivalent combination
- Muscle-strengthening activities that involve all major muscle groups should be performed on 2 or more days of the week

Effects on cardiorespiratory fitness and progression of coronary atherosclerotic lesions

Regression
2200 kcal/wk
(90 mins/d)

Stabilization
1500 kcal/wk
(30-60 mins/d)

Regression
1400 kcal/wk
(<30 mins/d)

Minimal CAD

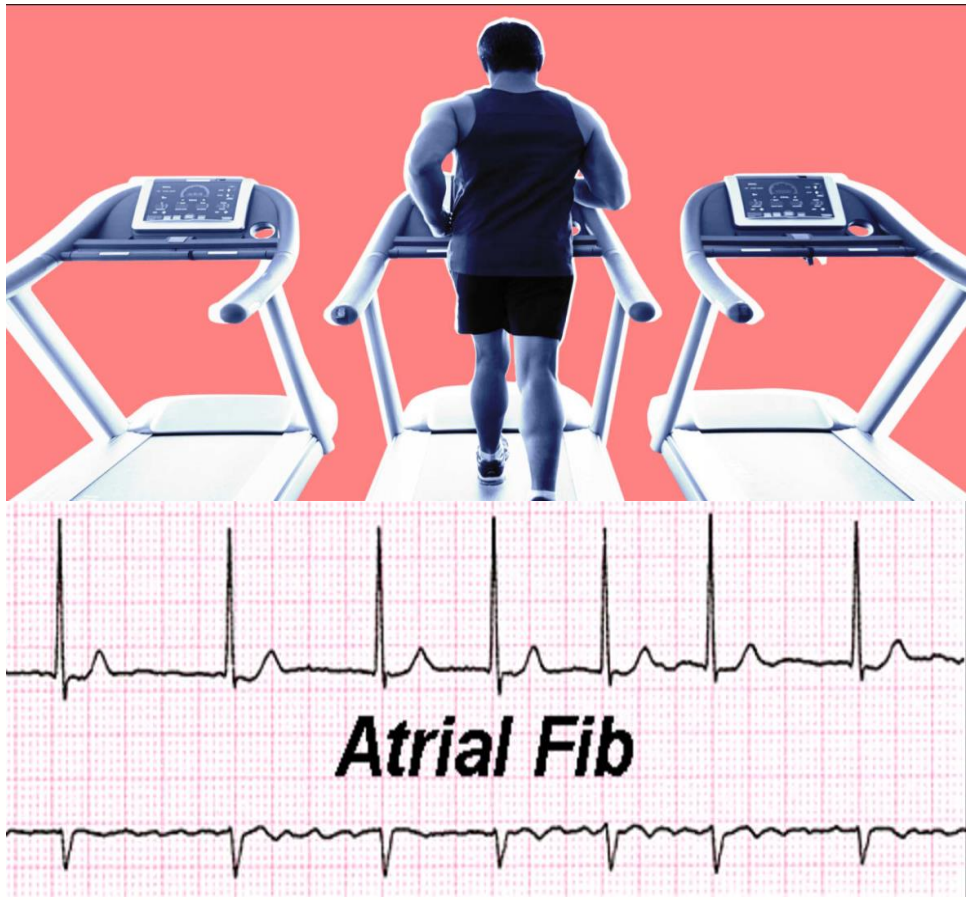
Moderate CAD

Severe CAD

Hambrecht R J Am Coll Cardiol. 1993 Aug;22(2):468-77

Cardiorespiratory Fitness and Risk of Incident Atrial Fibrillation. Results From the Henry Ford Exercise Testing (FIT) Project

- 64561 adults (mean age, 54.5±12.7 years; 46% female; 64% white) without AF underwent exercise treadmill testing at a tertiary care center
- During a median follow-up of 5.4 years (interquartile range, 3–9 years), 4616 new cases of AF were diagnosed
- 1 higher metabolic equivalent achieved during treadmill testing was associated with a 7% lower risk of incident AF (hazard ratio, 0.93; 95% confidence interval, 0.92–0.94; P



Qureshi WT Am J Cardiol. 2015

Dose of Jogging and Long-Term Mortality: The Copenhagen City Heart Study

1,098 healthy joggers and 3,950 healthy nonjoggers have been prospectively followed up for 14 yrs

Compared with sedentary nonjoggers

Optimal time: 1 to 2.4 h of jogging per week was associated with the lowest mortality (hazard ratio [HR]: 0.29; 95% confidence interval [CI]: 0.11 to 0.80).

The optimal frequency: 2 to 3 times per week (HR: 0.32; 95% CI: 0.15 to 0.69)

Conclusion: The findings suggest a U-shaped association between all-cause mortality, Light and moderate joggers have lower mortality than sedentary nonjoggers

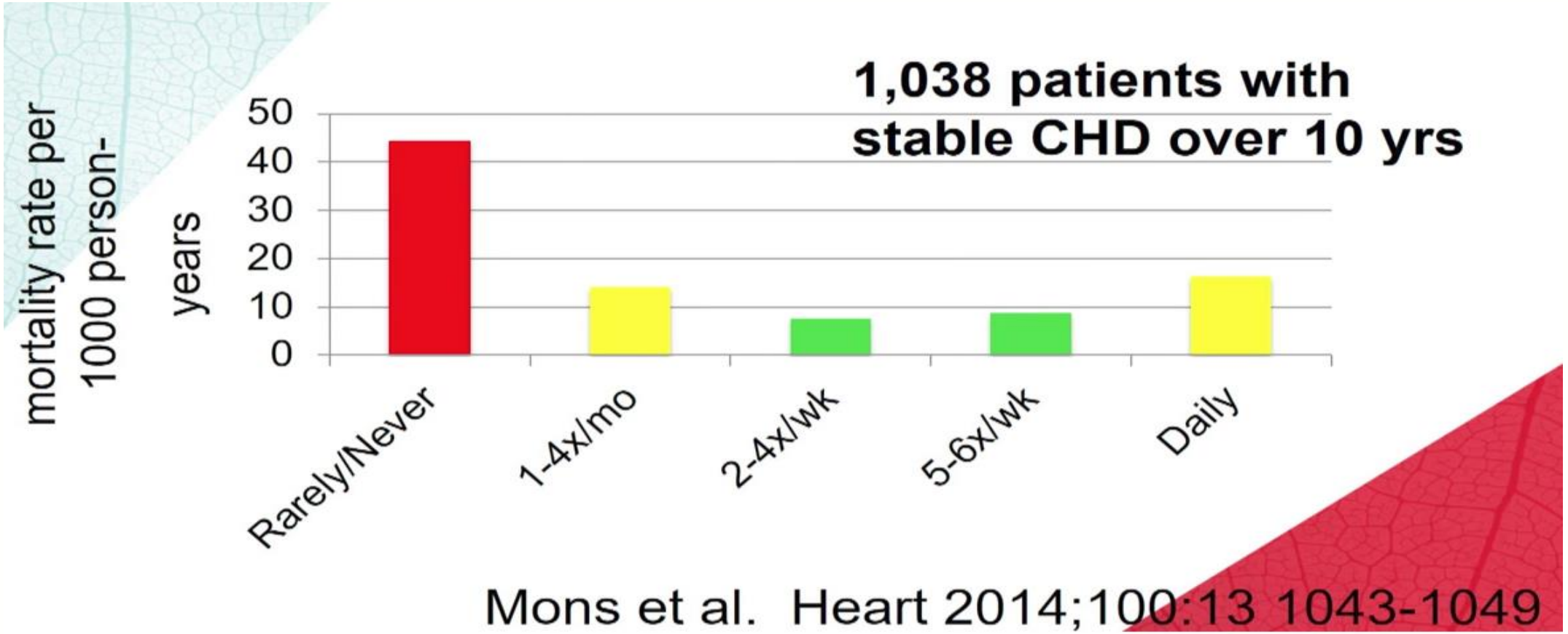
J Am Coll Cardiol 2015;65:411–9

Atrial fibrillation is associated with different levels of physical activity levels at different ages in men

- 4 410 AF-free men, aged 45–79 years
- Walking/bicycling at baseline was inversely associated with risk of AF (RR 0.87, 95% CI 0.77 to 0.97 for >1 h/day vs almost never
- The risk was even higher (RR 1.49, 95% CI 1.14 to 1.95) among the men who exercised >5 h/week compare to 1H/week

Drca N, et al. Heart 2014;100:1037–1042

A reverse J-shaped association of physical activity with prognosis in patients with stable coronary heart disease

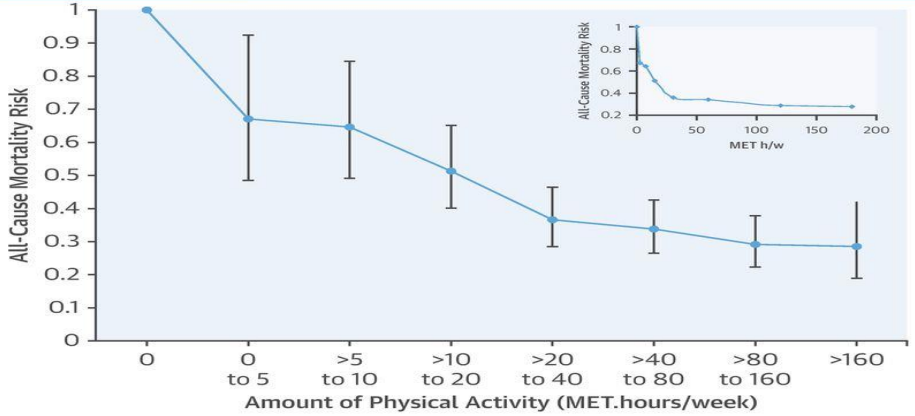


Mons et al. Heart 2014;100:13 1043-1049

Physical Activity and Mortality in Patients With Stable Coronary Heart Disease

CENTRAL ILLUSTRATION: Habitual Physical Activity and Mortality in Patients With Stable Coronary Artery Disease

All-cause mortality risk associated with each doubling of habitual physical activity volume, and by linear increase in physical activity



33 %

Characteristics associated with greatest potential to benefit from increase in physical activity

Sedentary

Limited by dyspnea

↑ ABC-CHD risk score

- ↑ Age
- Smoker
- Diabetes
- Peripheral artery disease
- ↑ Troponin T
- ↑ NT-proBNP
- ↑ LDL cholesterol

Stewart, R.A.H. et al. J Am Coll Cardiol. 2017;70(14):1689–700.

- **A total of 15,486 patients from 39 countries with stable CHD**
- **Questions at baseline on hours spent each week taking mild, moderate, and vigorous exercise**
- **Median follow-up of 3.7 years**

Cardiac Rehabilitation Data

Evidence for Cardiac Rehabilitation
Current ACC/AHA Guidelines

• Post CABG	• Class I, Level B
• STEMI	• Class I, Level C
• NSTEMI	• Class I, Level B
• Stable Angina	• Class I, Level B
• PCI	• Class I, Level B
• Heart Failure	• Class II, Level B

ACC/AHA Clinical Practice Guidelines

CVD Secondary Prevention with Medication

- Reduction of BP with a variety of drugs
- Lipid lowering with statins
- Antithrombotic treatment with DAPT
- Blockade of the RAAS with variety of agents
- Blockade of the SNS with B Blockers

  …. are beneficial in a wide spectrum of patients

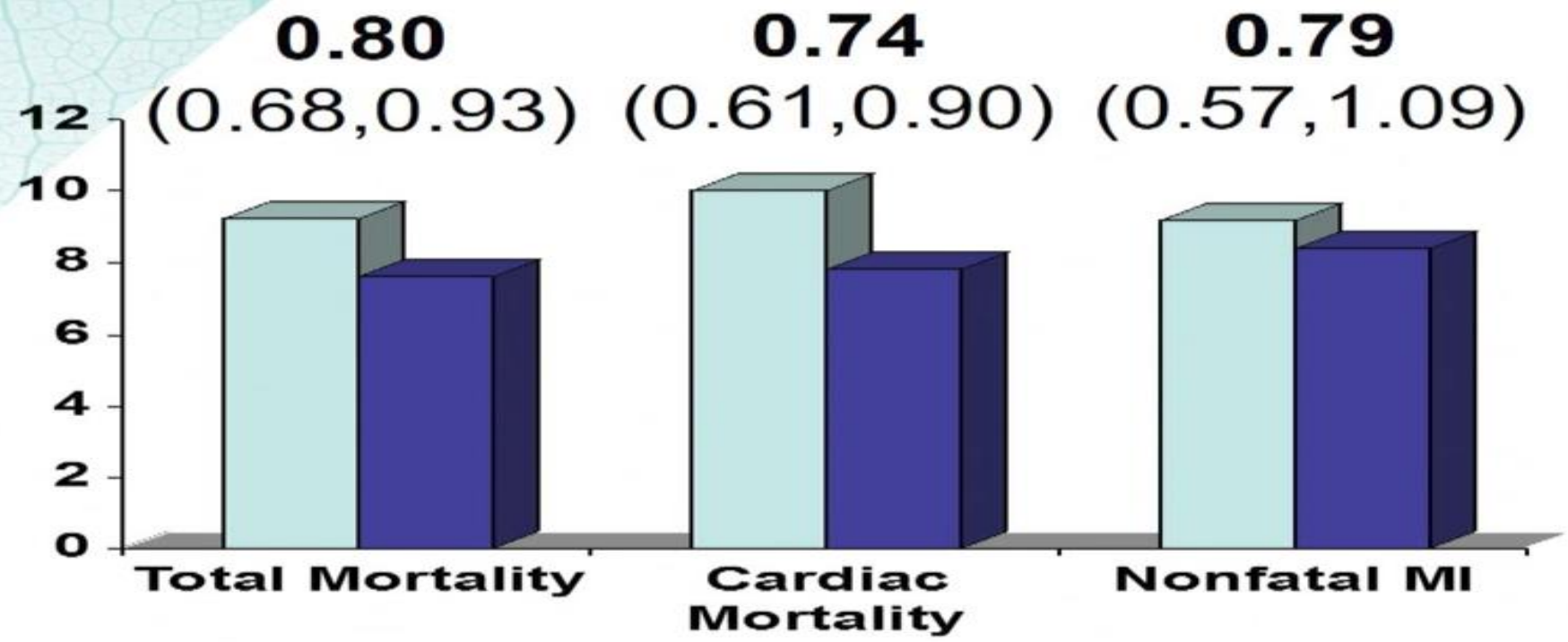
- They each produce, in general, approximately a 15 -20 % RRR in CV events over a period of 2 – 5 year

TABLE 4. **Indications for Early Outpatient Cardiac Rehabilitation and Exercise Training Programs**

Post–myocardial infarction and acute coronary syndrome[a]
Post–coronary artery bypass grafting [a]
Post–percutaneous coronary intervention[a]
Stable angina pectoris[a]
Valve replacement/repair[a]
Heart or heart/lung transplant[a]
Advanced heart failure[b]
Asymptomatic coronary heart disease
Patients with high risk of coronary heart disease

[a] Covered by Medicare and/or most insurance.
[b] Currently being considered for Medicare/insurance coverage.

Cardiac Rehab - Evidence



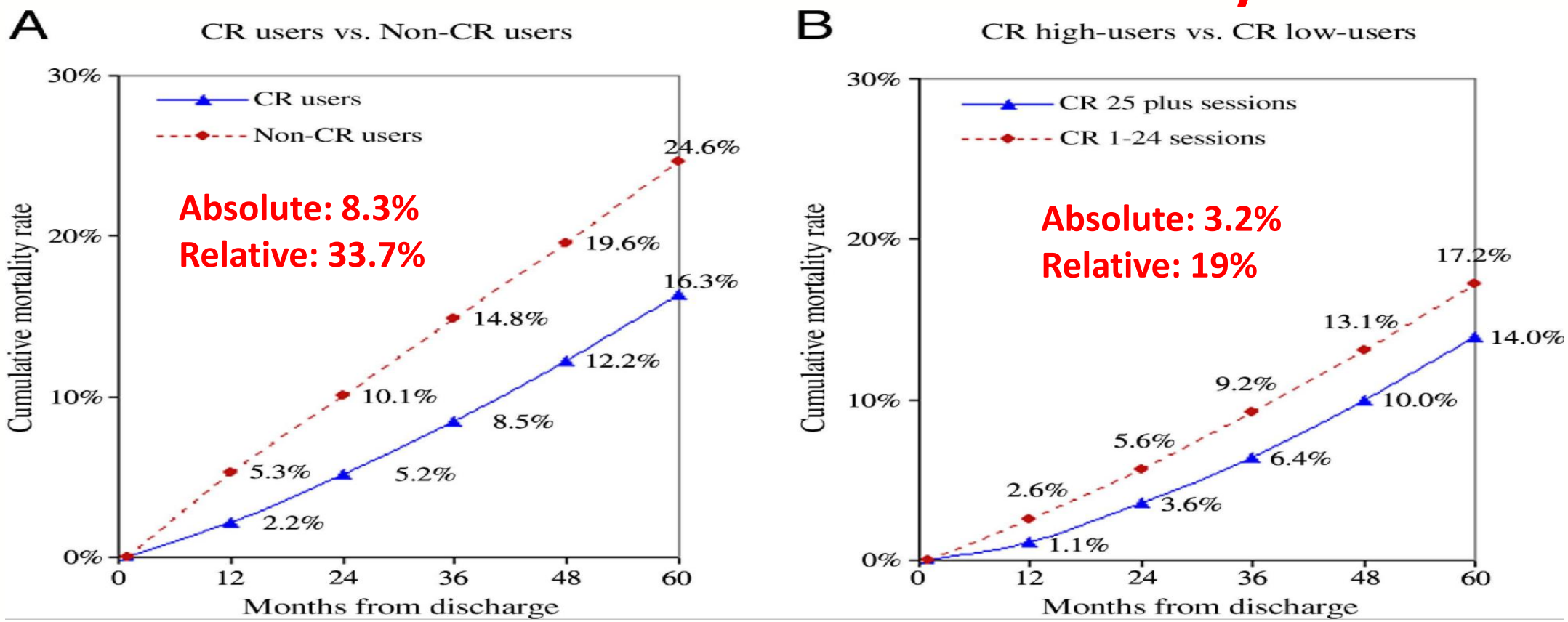
N=8,940
Rx 3 mos
FUP 15 mos

Mortality lowered by 20%

Taylor Am J Med 2004;116:682-692

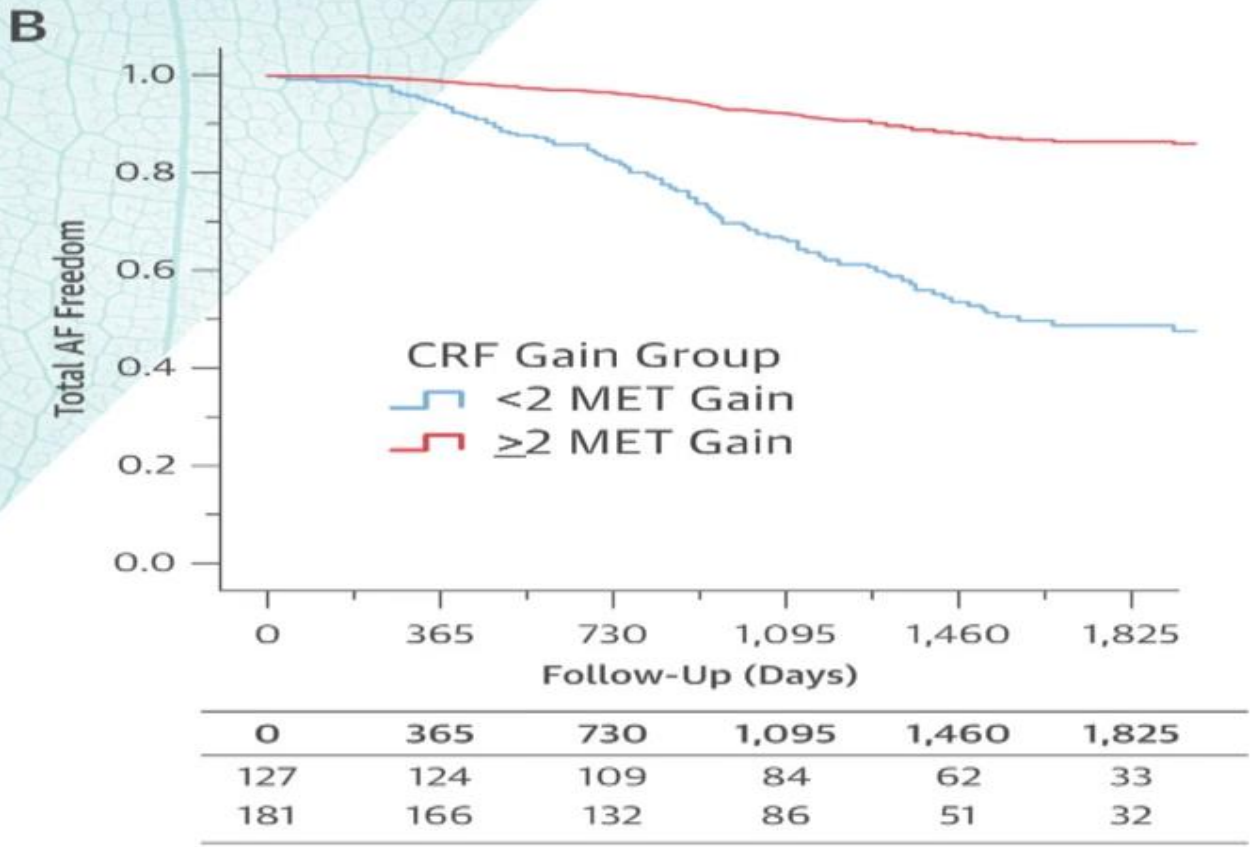
Cardiac Rehabilitation and Survival in Older Coronary Patients

Dramatic Reduction in Mortality



JA Suaya jacc.2009.01.078

Fitness and AF Freedom



0	365	730	1,095	1,460	1,825
127	124	109	84	62	33
181	166	132	86	51	32

- 308 patients
- symptomatic paroxysmal or persistent AF
- ablation and/or meds
- Adelaide, Australia
- BMI ≥ 27
- risk factor management and tailored exercise program

Pathak et al. Am Coll Cardiol 2015;66:985–96)

Health benefit from cardiac rehabilitation

Table I. Summary of impact of exercise-based cardiac rehabilitation by diagnosis

Diagnosis	Functional capacity	QOL	Morbidity	Mortality
AMI	+++	+++	++	+++
CABG surgery	+++	+++	++	++
Stable angina	+++	+++	+	+
PCI	+++	++	+	?
CHF	+++	++	+	+
Cardiac transplant	+++	++	?	?
Heart valve replacement	+++	++	?	?

+++ indicates clear evidence of benefit; ++, good evidence of benefit; +, limited evidence of benefit; ?, no clear evidence of benefit.

Williams MA, et al. Am **Heart** J**2006**;152:835241

What is the most dangerous part of this image?

1. Belly
2. Gender
3. Remote Control
   TV
4. Couch

Killer Chairs

Standing more, even at a desk job, could lower risk for obesity, illness and death, studies suggest

Scientific American Nov 2014

Annals of Internal Medicine
ESTABLISHED IN 1927 BY THE AMERICAN COLLEGE OF PHYSICIANS

20 January 2015, Vol 162, No. 2>

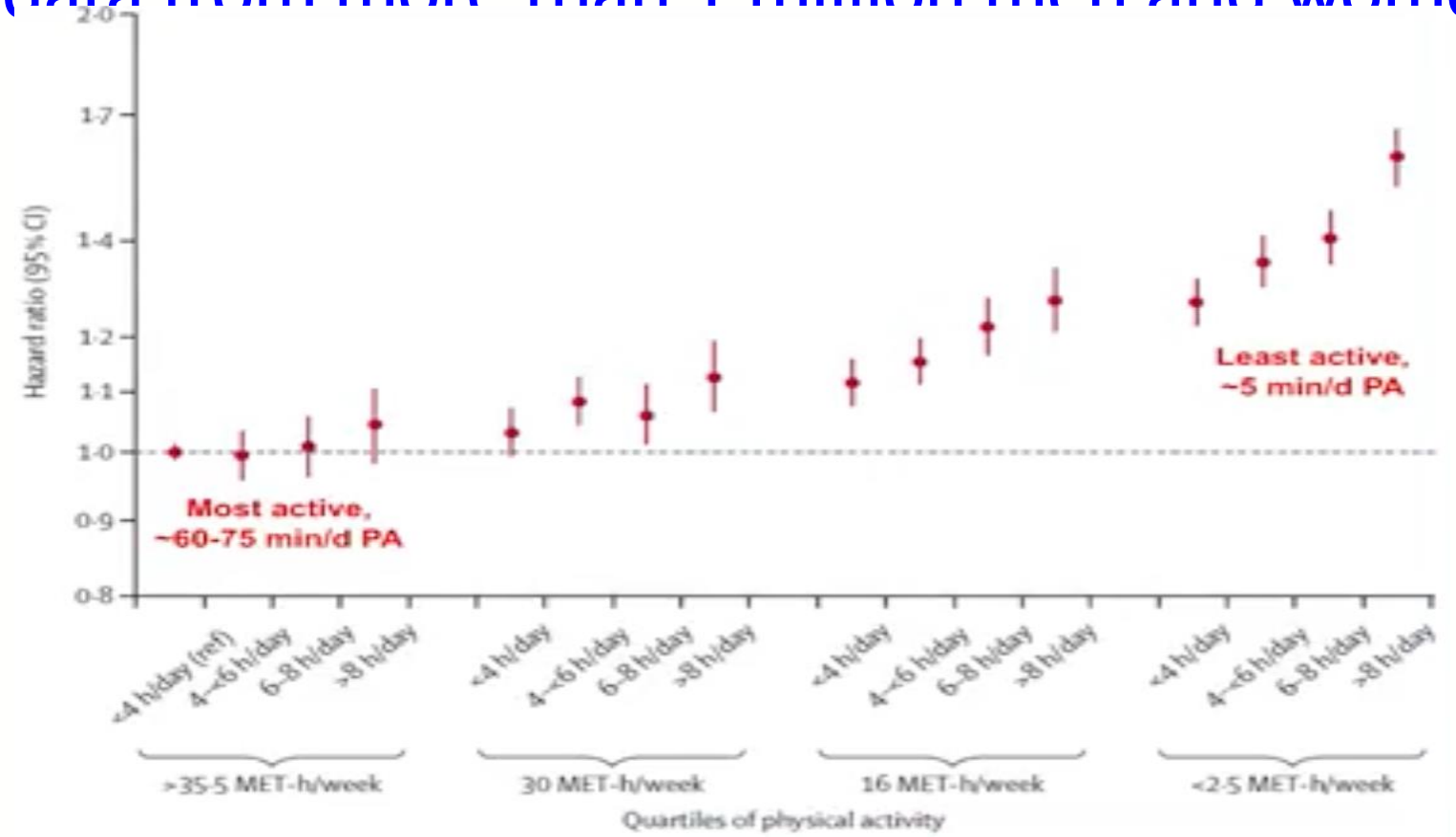
Sitting increases CVD, diabetes (2x) and death

Reviews | 20 January 2015

Sedentary Time and Its Association With Risk for Disease Incidence, Mortality, and Hospitalization in Adults: A Systematic Review and Meta-analysis

Aviroop Biswas, BSc; Paul I. Oh, MD, MSc; Guy E. Faulkner, PhD; Ravi R. Bajaj, MD; Michael A. Silver, BSc; Marc S. Mitchell, MSc; and David A. Alter, MD, PhD

Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women

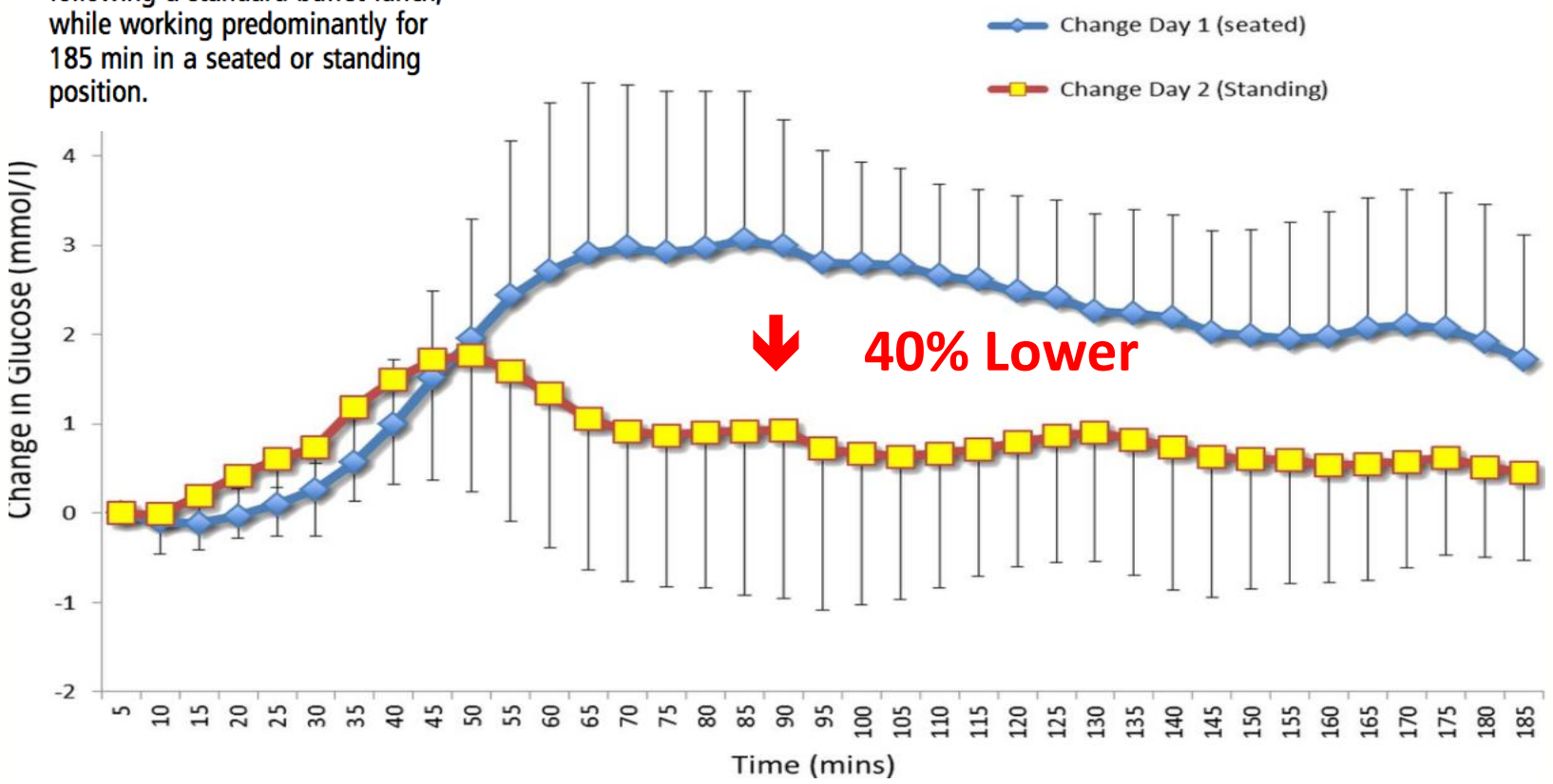


Data pooled across 13 studies

ACC Middle East Conference 2017 Ekelund U Lancet. 2016 Sep 24;388(10051):1302-10

Standing-based office work shows encouraging signs of attenuating post-prandial glycemic excursion

Figure 1 Change in blood glucose, following a standard buffet lunch, while working predominantly for 185 min in a seated or standing position.



Those who think they have no time for bodily exercise will sooner or later have to find time for illness.

Earl of Derby

Most Dangerous Place in at Home