Strategie terapeutiche preventive



PL. Temporelli

Fondazione Salvatore Maugeri, IRCCS, Veruno
Past President GICR-IACPR

Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

Salim Yusuf, Steven Hawken, Stephanie Ôunpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais,

Lancet 2004; 364: 937–52

…"Fumo, ipertensione, diabete, obesità, ridotto consumo di frutta e vegetali, e mancanza di attività fisica regolare sono responsabili della maggior parte degli infarti nel mondo intero, per entrambi i sessi e per tutte le aree abitate"

…"Questi dati suggeriscono che l'approccio alla prevenzione nel mondo si basa sugli stessi principi ed uno stile di vita corretto è ovunque in grado di prevenire la maggior parte di casi di infarto miocardico"

Risk factors for ischaemic and intracerebral haemorrhagic stroke in 22 countries (the INTERSTROKE study): a case-control study

*Martin J O'Donnell, Denis Xavier, Lisheng Liu, Hongye Zhang, Siu Lim Chin, Purnima Rao-Melacini, Sumathy Rangarajan, Shofiqul Islam, Prem Pais, Matthew J McQueen, Charles Mondo, Albertino Damasceno, Patricio Lopez-Jaramillo, Graeme J Hankey, Antonio L Dans, Khalid Yusoff, Thomas Truelsen, Hans-Christoph Diener, Ralph L Sacco, Danuta Ryglewicz, Anna Czlonkowska, Christian Weimar, Xingyu Wang, Salim Yusuf, on behalf of the INTERSTROKE investigators**

Lancet 2010; 376; 112–23

"Our findings suggest that targeted interventions that reduce blood pressure and smoking, and promote physical activity and a healthy diet, could substantially reduce the burden of stroke"

Attributable risks of AF in relation to optimal and borderline risk factors

The Atherosclerosis Risk in Communities (ARIC) Study

Huxley RR et al. Circulation 2011;123:1501-1508

	At Risk, n	Incident AF, n	IR	RH (95% CI)*	PAF, %	95% CI
Blood pressure, %						
Optimal	5626	381	3.93	0.55 (0.48–0.63)	0.00	…
Borderline	3317	304	4.72	0.65 (0.56–0.74)	2.89	−0.11–5.64
Elevated	1533	253	8.77	1 (Reference)	5.08	0.91–9.30
Smoking, %						
Optimal	6077	510	4.23	0.55 (0.48–0.62)	0.00	…
Borderline	4769	550	5.76	0.60 (0.52–0.68)	2.06	−2.05–6.05
Elevated	3752	460	7.45	1 (Reference)	9.78	6.74–12.9

Conclusion. As with other forms of cardiovascular disease, more than half of the AF burden is potentially avoidable through the optimization of cardiovascular risk factors levels

Potential risk factors for the development of atrial fibrillation

Mayo Clin Proc. ■ April 2013;88(4):394-409

- Metabolic syndrome
- Obesity
- Type 2 diabetes mellitus
- Hypertension
- Dyslipidemia
- Obstructive sleep apnea
- Alcohol consumption
- Excessive exercise or physical activity

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Elevated	5655	835	7.65	1 (Reference)	21.6	16.8–26.7
BMI, %						
Optimal	4889	389	4.27	0.65 (0.56–0.74)	0.00	…
Borderline	5767	591	5.28	0.70 (0.62–0.79)	5.16	0.93–9.26
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Diabetes mellitus, %						
Optimal	7558	645	4.68	0.67 (0.58–0.78)	0.00	…
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Development of a risk score for atrial fibrillation (Framingham Heart Study): a community-based cohort study

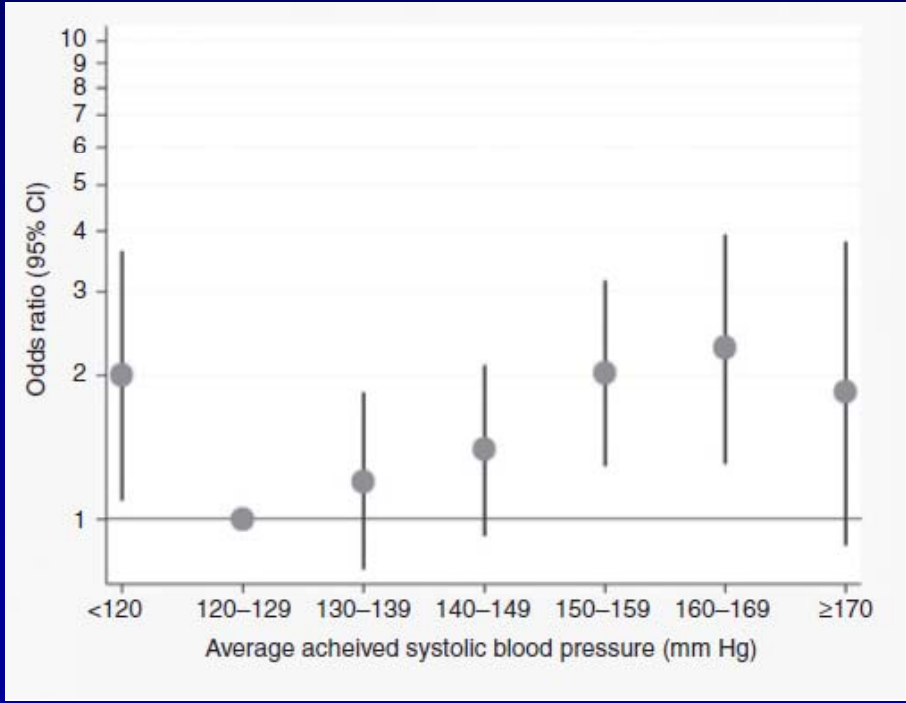
Renate B Schnabel, Lisa M Sullivan, Daniel Levy, Michael J Pencina, Joseph M Massaro, Ralph B D'Agostino Sr, Christopher Newton-Cheh, Jennifer F Yamamoto, Jared W Magnani, Thomas M Tadros, William B Kannel, Thomas J Wang, Patrick T Ellinor, Philip A Wolf, Ramachandran S Vasan, Emelia J Benjamin

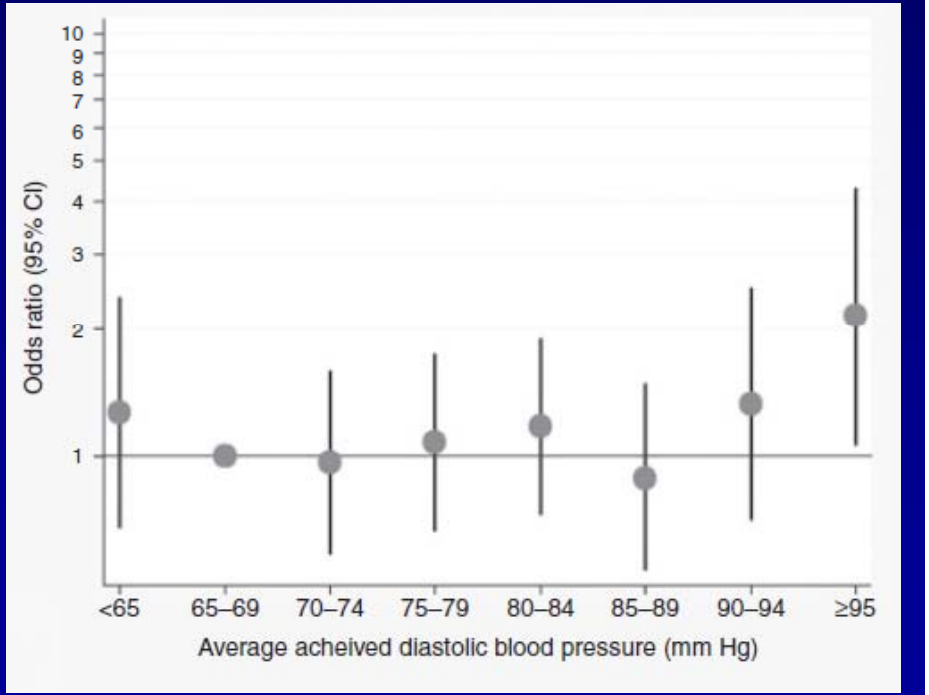
Lancet 2009; 373: 739–45

	Sample characteristics (n=8044 examinations)	Hazard ratio*	p value
Age (years)	60·9 (9·9)	2·28 (2·08–2·49)	0·0001
Men (*vs* women)†	3591 (45%)	1·90 (1·58–2·29)	0·0001
Current smokers	2563 (32%)	1·08 (0·88–1·33)	0·47
Alcohol consumption (number of drinks per week‡)	7·0 (10·4)	1·05 (0·96–1·16)	0·26
Moderate to heavy alcohol consumers	1749 (22%)	1·05 (0·83–1·32)	0·71
Body-mass index (kg/m^2)	26·3 (4·3)	1·19 (1·08–1·30)	0·0002
Height (m)	1·7 (0·1)	1·14 (1·00–1·30)	0·055
Systolic blood pressure (mm Hg)	136 (21)	1·21 (1·11–1·33)	0·0001
Diastolic blood pressure (mm Hg)	81 (11)	1·04 (0·95–1·14)	0·44
Pulse pressure (mm Hg)	55 (17)	1·25 (1·14–1·36)	0·0001
Treatment for hypertension	1941 (24%)	1·80 (1·48–2·18)	0·0001
Total cholesterol (mmol/L)	5·9 (1·1)	0·95 (0·86–1·05)	0·32
HDL cholesterol (mmol/L)	51·5 (15·8)	0·98 (0·88–1·09)	0·75
Triglycerides (mmol/L)	3·4 (3·2)	1·02 (0·89–1·16)	0·79
Diabetes	1124 (14%)	1·10 (0·87–1·38)	0·43
Left ventricular hypertrophy	182 (2%)	1·36 (1·03–1·80)	0·03

Blood Pressure Control and Risk of Incident Atrial Fibrillation

Thomas MC et al. Am J Hypertens 2008; 21:1111-1116





Attributable risks of AF in relation to optimal and borderline risk factors

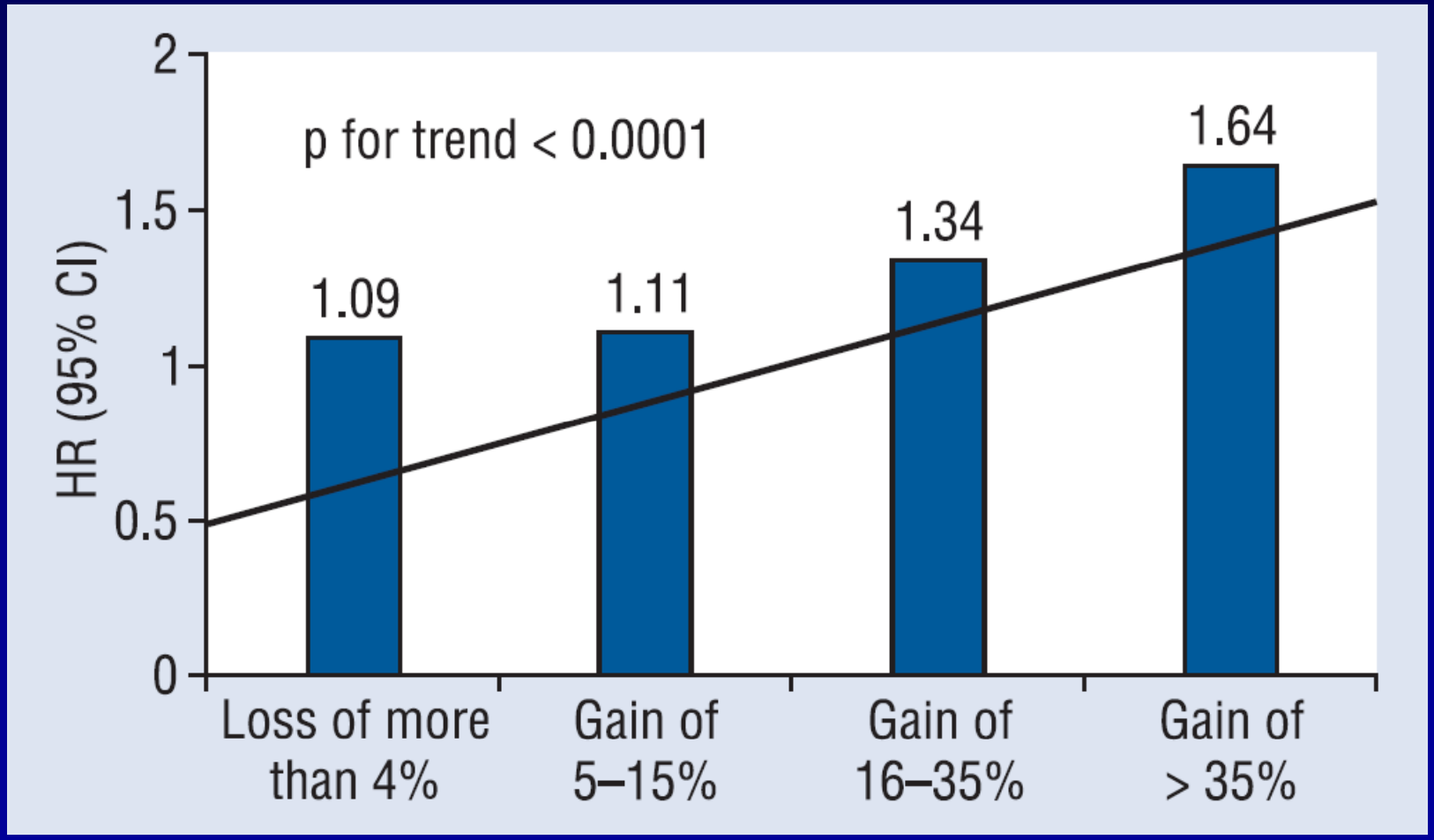
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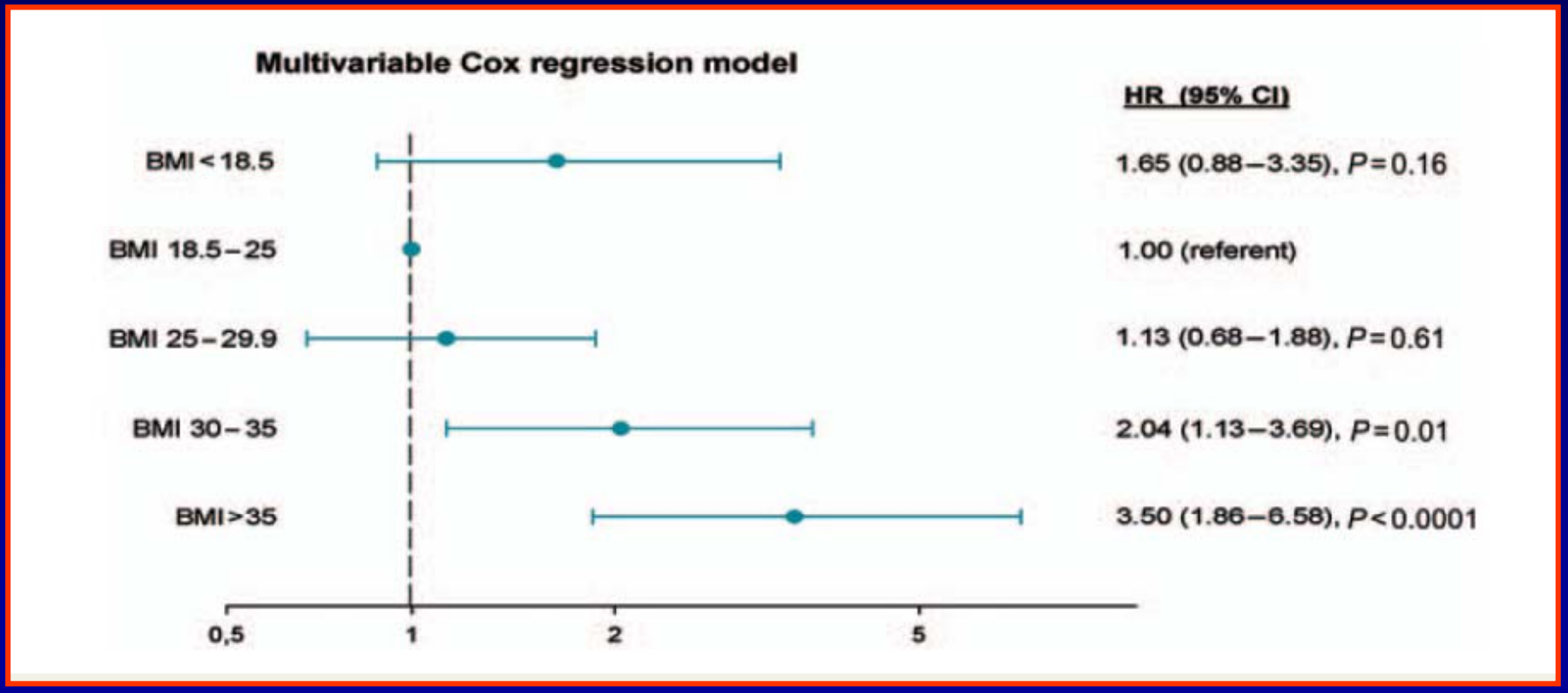
Big men and atrial fibrillation: effects of body size and weight gain on risk of AF in men

Rosengren A et al. Eur Heart J 2009;30:1113-1120



Obesity as a risk factor for atrial fibrillation among fertile young women: a nationwide cohort study

Karasoy D et al. Europace 2013; Jan 2



Attributable risks of AF in relation to optimal and borderline risk factors

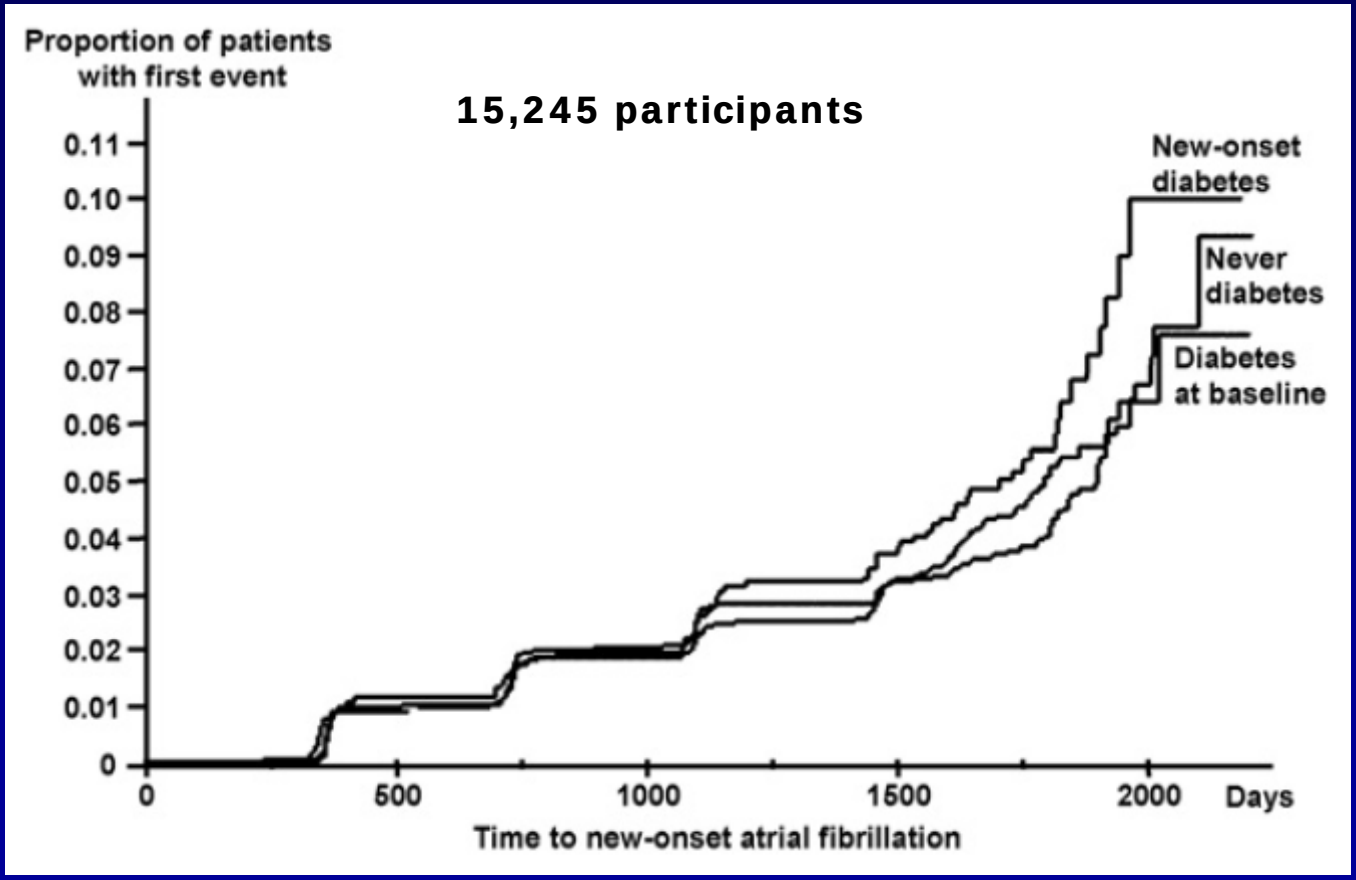
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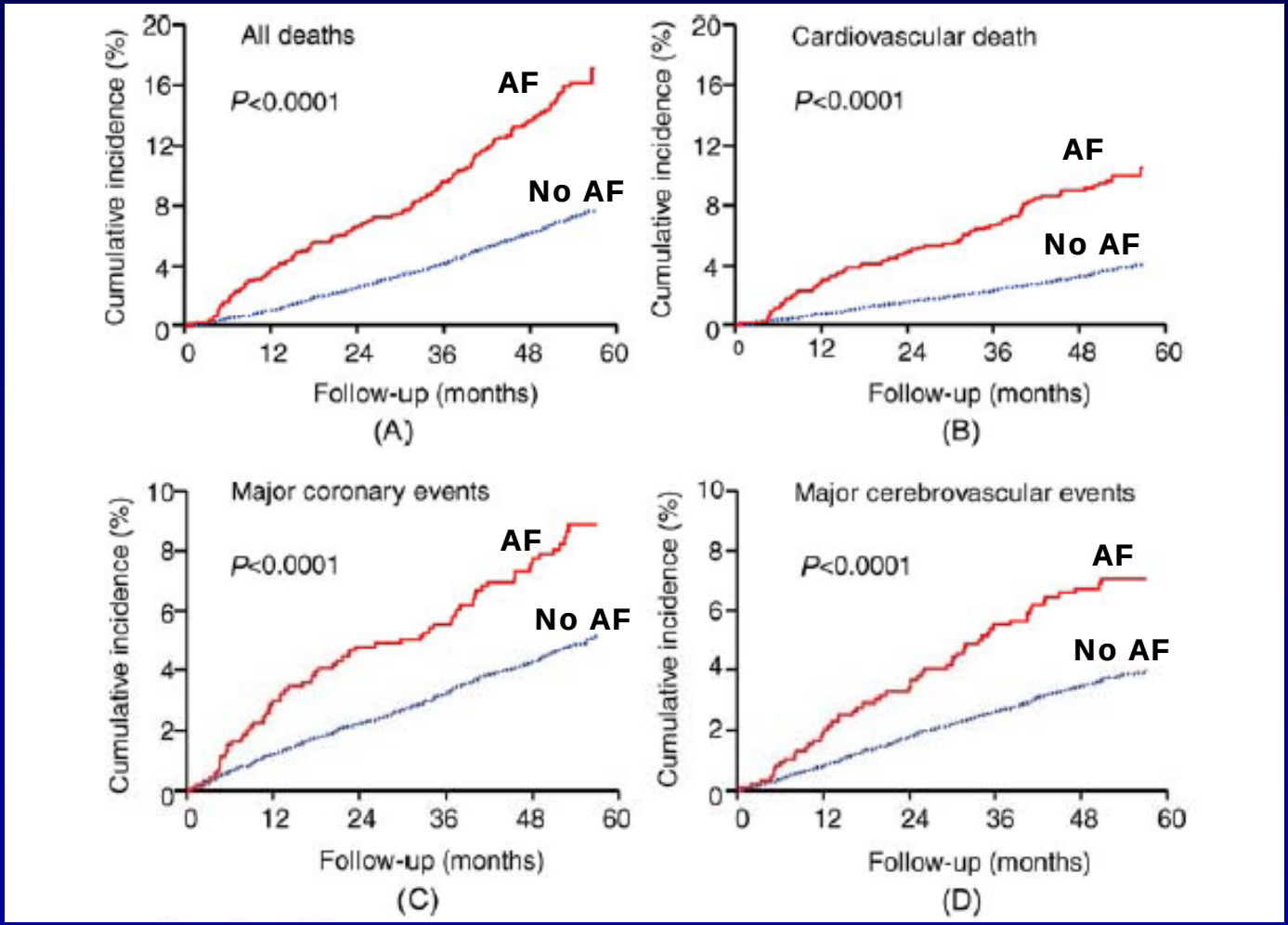
Impact of New-Onset Diabetes Mellitus on Development of Atrial Fibrillation in High-Risk Hypertension (from the VALUE Trial)

Aksnes TA et al. Am J Cardiol 2008;101:634-638



Risks of cardiovascular events among patients with type 2 diabetes and atrial fibrillation: the ADVANCE study

Du Xet al. Eur Heart J 2009;30:1128-35



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Independent risk factors for atrial fibrillation in a population-based cohort *The Framingham Heart Study*

Benjamin et al. JAMA, March 16 1994

Variable	Odds Ratio* (95% Confidence Interval) Men†	Women‡
Age (/10 y)	1.9§ (1.5-2.5)	1.7§ (1.4-2.1)
Cigarette smoking	1.3 (0.8-2.0)	1.1 (0.7-1.8)
Diabetes	1.7‖ (1.1-2.8)	1.4 (0.9-2.4)
Electrocardiographic left ventricular hypertrophy	1.9 (1.0-3.8)	1.2 (0.6-2.3)
Hypertension	1.2 (0.8-1.8)	1.3 (0.9-1.9)
Myocardial infarction	0.6 (0.3-1.1)	0.7 (0.3-1.3)
Congestive heart failure	4.6§ (2.6-8.2)	5.4§ (3.3-8.9)
Valve disease	1.7‖ (1.0-2.8)	3.9§ (2.6-5.9)

EUROPEAN SOCIETY OF CARDIOLOGY

POSITION PAPER ON THE

'TOBACCO PRODUCTS DIRECTIVE'

PROPOSAL FOR A DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
ON THE APPROXIMATION OF THE LAWS, REGULATIONS AND ADMINISTRATIVE PROVISIONS OF THE MEMBER STATES
CONCERNING THE MANUFACTURE, PRESENTATION AND SALE OF TOBACCO AND RELATED PRODUCTS

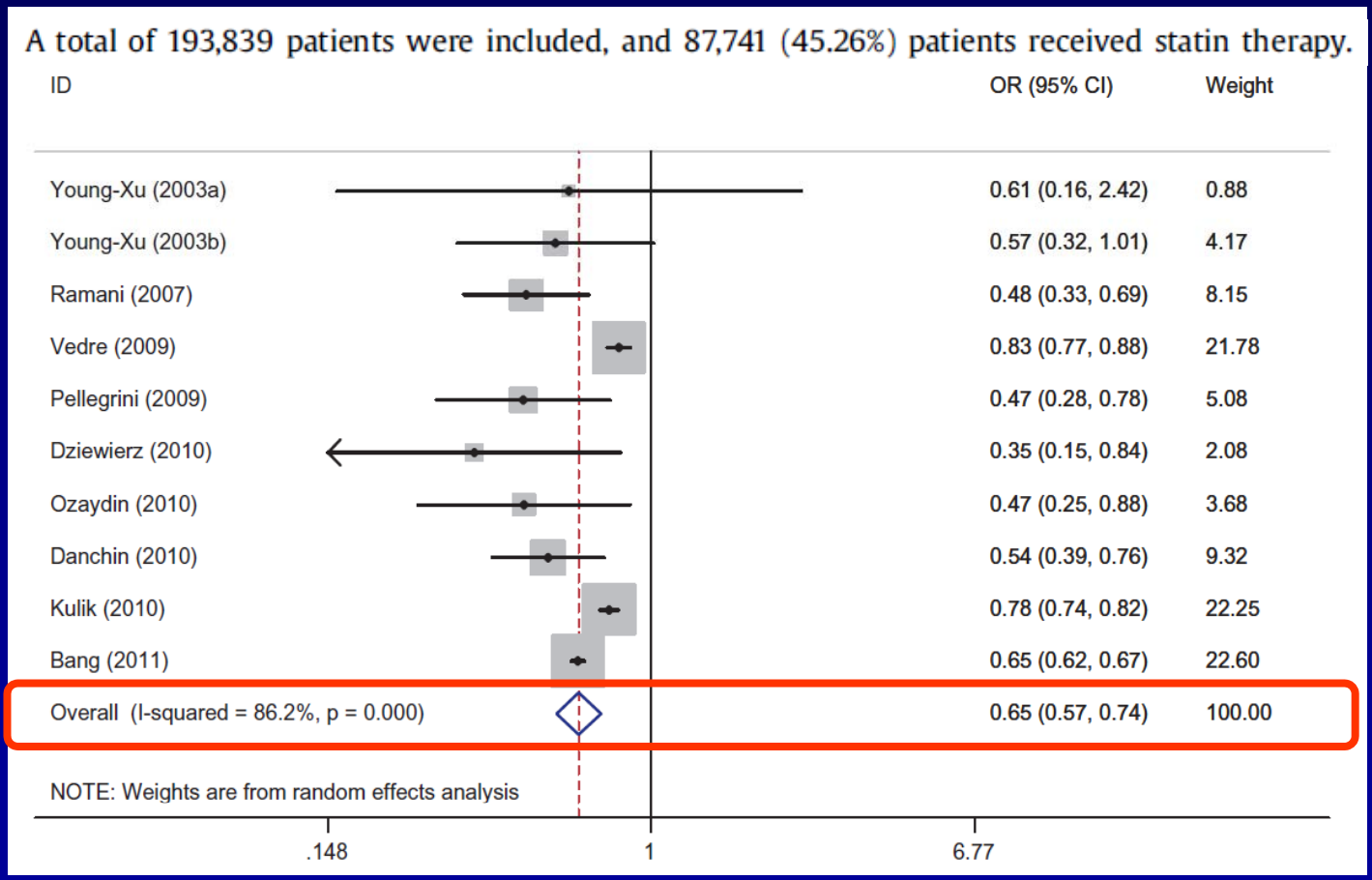
Potential risk factors for the development of atrial fibrillation

Mayo Clin Proc. ■ April 2013;88(4):394-409

- Metabolic syndrome
- Obesity
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- Dyslipidemia
- Obstructive sleep apnea
- Alcohol consumption
- Excessive exercise or physical activity

Statin therapy for the prevention of AF in patients with CAD: A meta-analysis

Zhou et al. European J of Pharmacology 2013;707:104-111



Potential risk factors for the development of atrial fibrillation

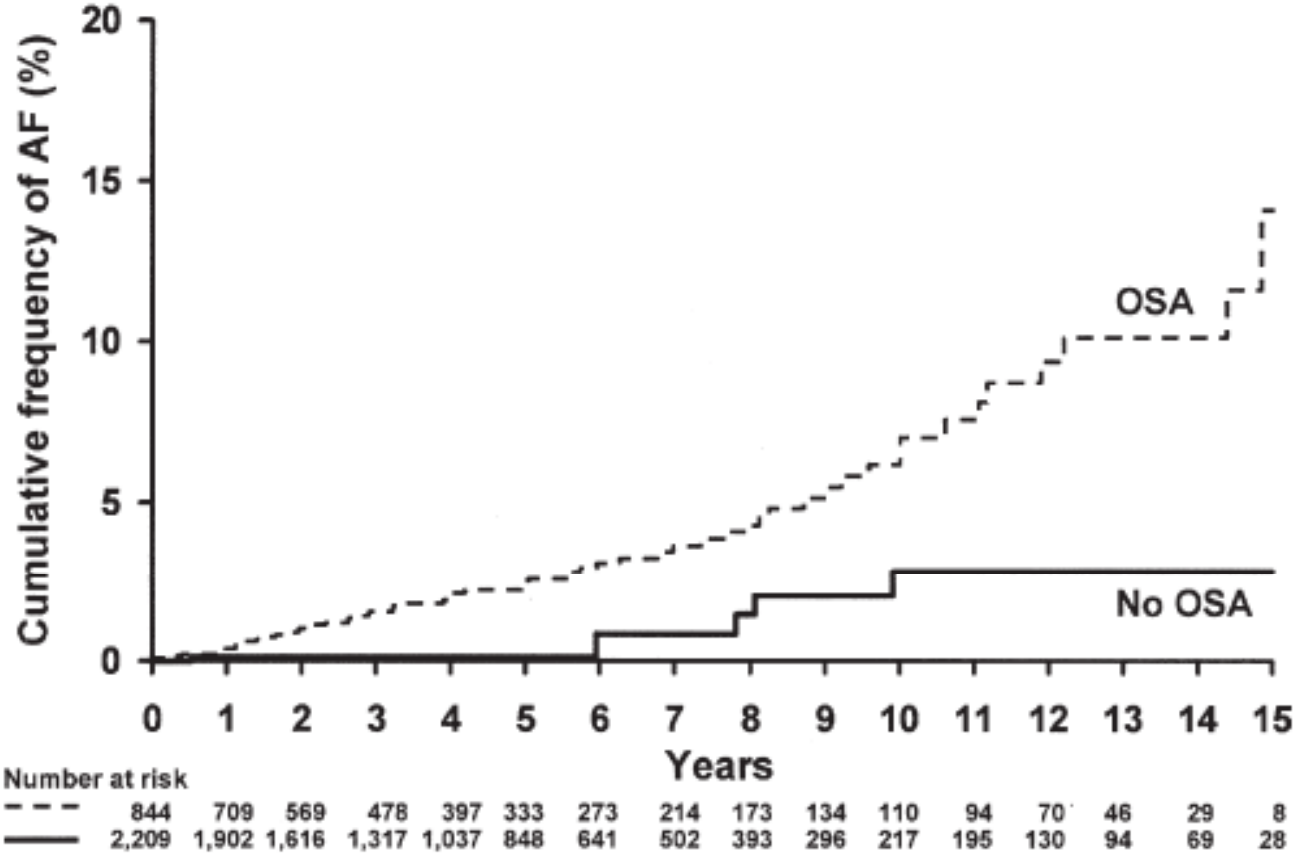
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JACC Vol. 49, No. 5, 2007

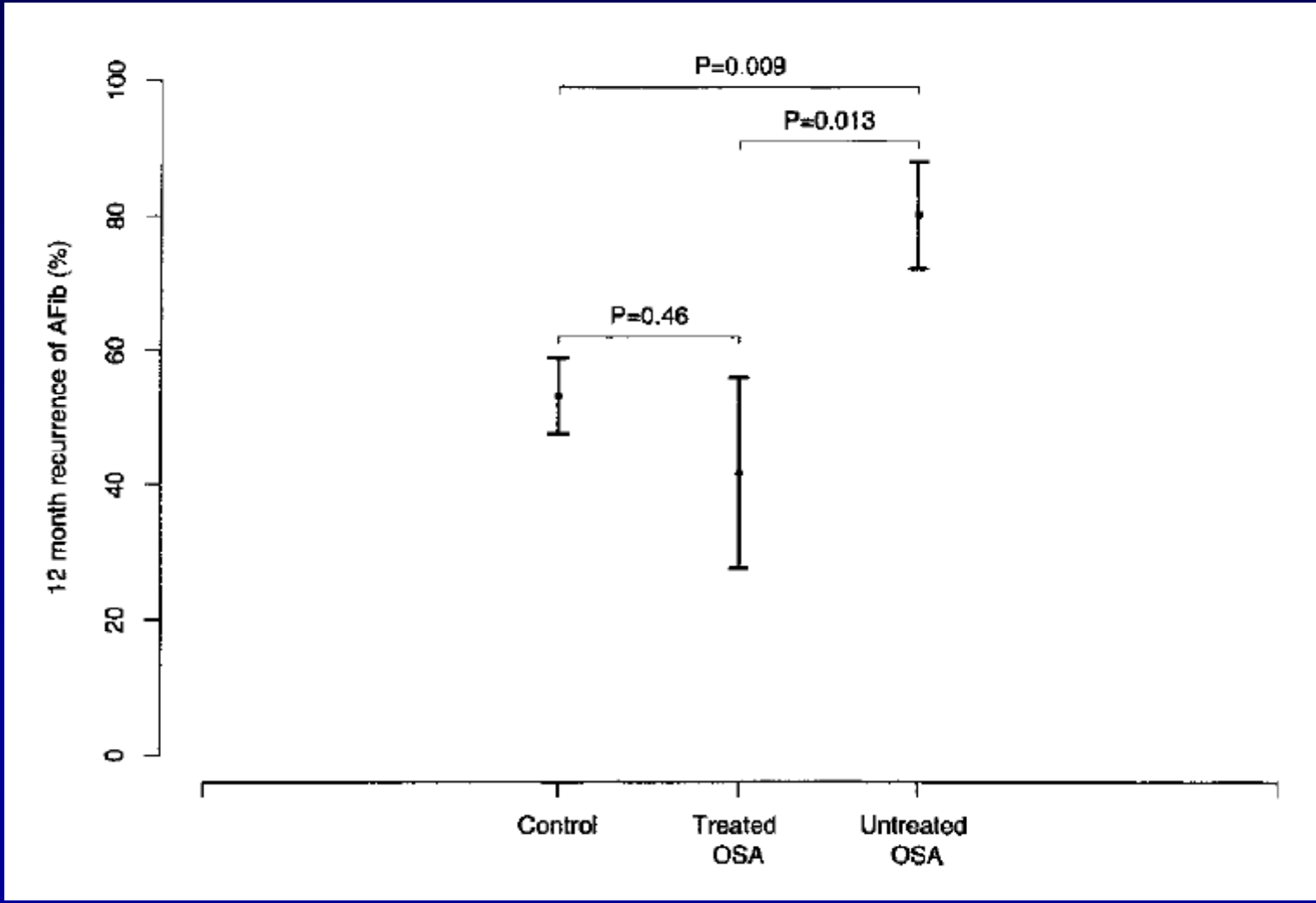
Obstructive Sleep Apnea, Obesity, and the Risk of Incident Atrial Fibrillation

Apoor S. Gami, MD,*† Dave O. Hodge, MS,‡ Regina M. Herges, BS,‡ Eric J. Olson, MD,†§
Jiri Nykodym, BS,*† Tomas Kara, MD,*† Virend K. Somers, MD, PHD, FACC*†‖
Rochester, Minnesota



Recurrence of AF at 12 months comparing patients with CPAP treated and with CPAP untreated OSA

Kanagala et al. Circulation 2003;107:2589-94



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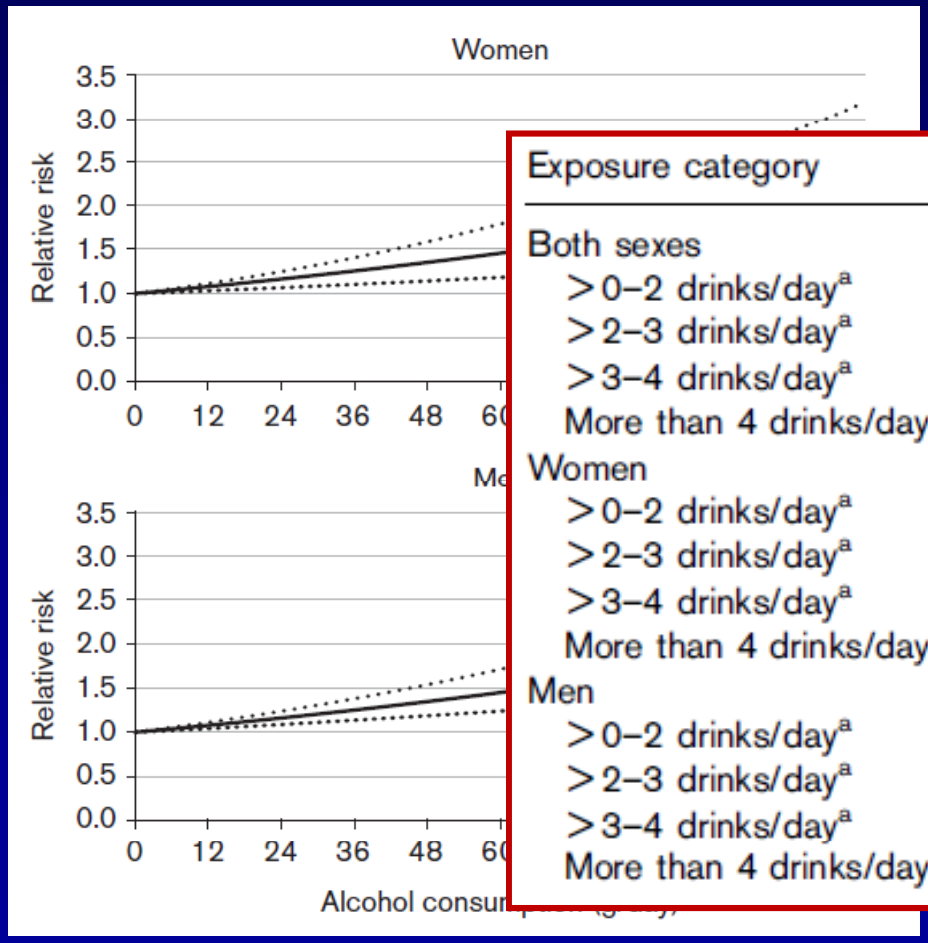
Arrhythmias and the “Holiday Heart”: Alcohol associated cardiac rhythm disorders

Ettinger et al. Am Heart J 1978: 95:555-62

….We studied 32 separate hospital admissions for dysrhythmias in 24 patients (20 men, 4 women) with heavy recent alcohol ingestion and prolonged excessive alcohol use. None had evidence of overt heart disease after treatment of arrhythmia. Episodes usually followed heavy weekend or holiday sprees, resulting in hospitalization between Sunday and Tuesday. Atrial fibrillation was most common, but atrial flutter, atrial tachycardia, multiple PVC's and ventricular tachycardia were also observed.

Alcohol consumption as a risk factor for AF : a systematic review and meta-analysis

Samokhvalov et al. Eur J Cardiovasc Prev Rehabil 2010;17:706–712



Exposure category	RR	*P* value	95% CI
Both sexes			
>0–2 drinks/day[a]	1.00	0.989	0.92–1.09
>2–3 drinks/day[a]	1.11	0.097	0.98–1.25
>3–4 drinks/day[a]	1.22	0.028	1.02–1.46
More than 4 drinks/day[a]	1.50	0.000	1.22–1.85
Women			
>0–2 drinks/day[a]	0.99	0.775	0.91–1.07
>2–3 drinks/day[a]	1.17	0.032	1.01–1.36
>3–4 drinks/day[a]	1.17	0.353	0.84–1.65
More than 4 drinks/day[a]	2.18	0.001	1.38–3.43
Men			
>0–2 drinks/day[a]	1.02	0.718	0.90–1.16
>2–3 drinks/day[a]	1.09	0.275	0.94–1.26
>3–4 drinks/day[a]	1.25	0.045	1.01–1.55
More than 4 drinks/day[a]	1.53	0.000	1.23–1.91

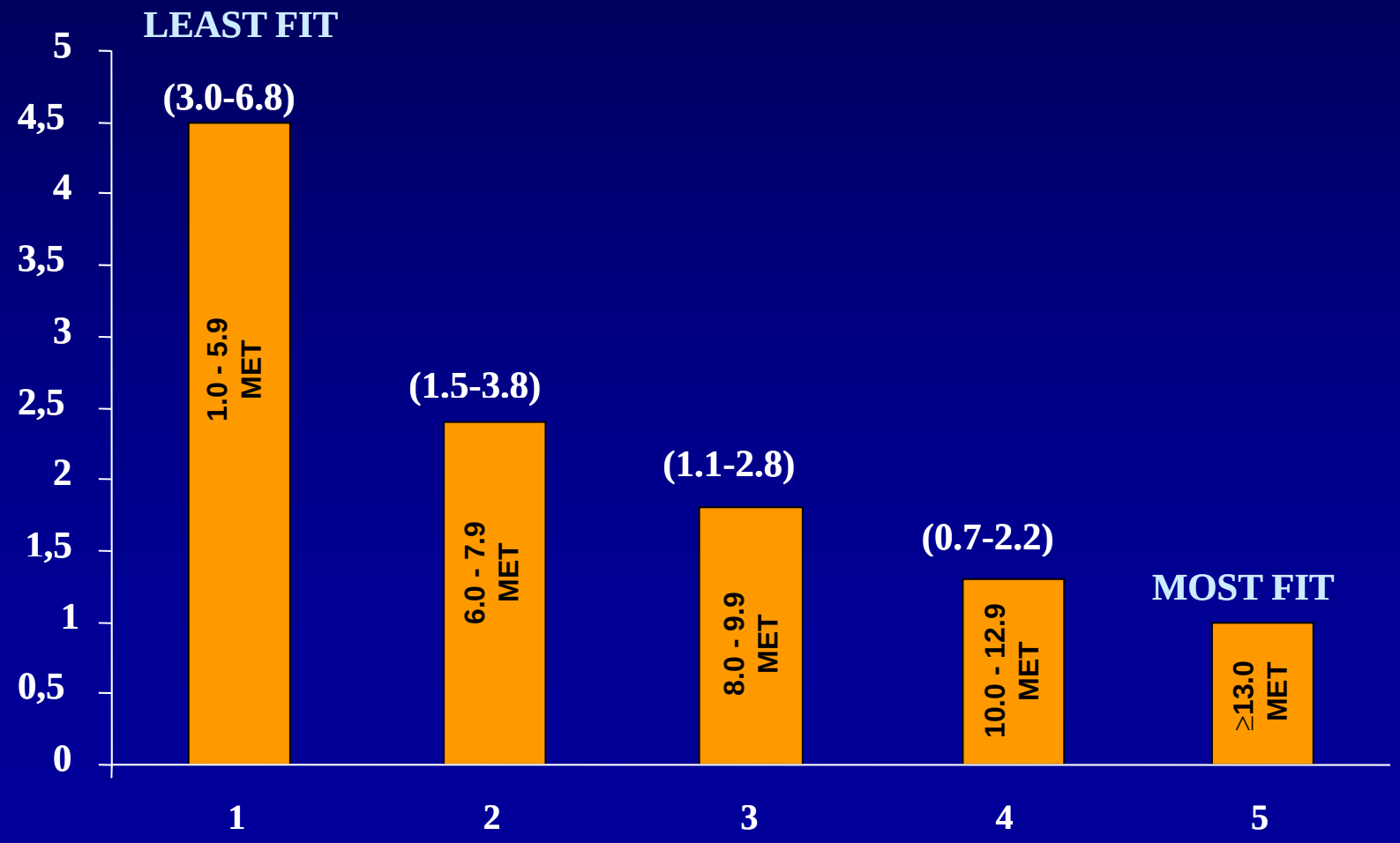
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Age Adjusted Mortality Rates in Normal Subject categorised by level of fitness

Myers J et al. N Engl J Med. 2002;346:793-801



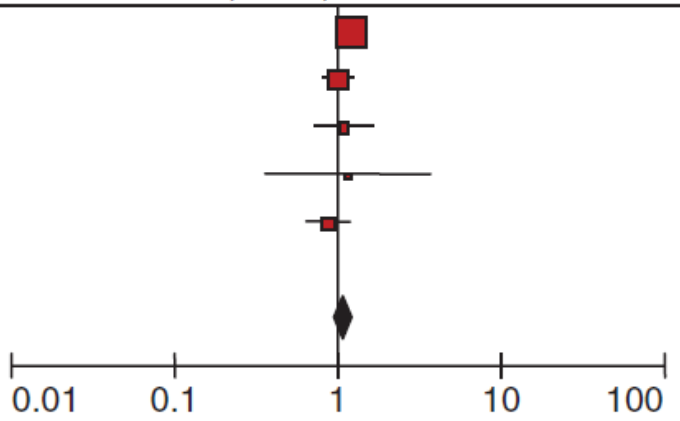
Regular Physical Activity and Risk of AF
A Systematic Review and Meta-analysis

Circ Arrhythm Electrophysiol. 2013;6:252-256

Study or Subgroup	log[OR]	SE	Weight	IV, Fixed, 95% CI
Aizer et al.	0.182	0.083	49.7%	1.20 [1.02, 1.41]
Everett et al.	0	0.111	27.8%	1.00 [0.80, 1.24]
Frost et al. (men)	0.086	0.21	7.8%	1.09 [0.72, 1.64]
Frost et al. (women)	0.14	0.594	1.0%	1.15 [0.36, 3.68]
Mozaffarian et al.	-0.139	0.158	13.7%	0.87 [0.64, 1.19]
Total (95% CI)			100.0%	1.08 [0.97, 1.21]

Heterogeneity: $Chi^2 = 3.96$, $df = 4$ ($P = 0.41$); $I^2 = 0\%$

Test for overall effect: $Z = 1.36$ ($P = 0.17$)



Conclusions—*Our data do not support a statistically significant association between regular physical activity and increased incidence of atrial fibrillation*

REVIEW

MAYO CLINIC

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Blood pressure control

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Close supervision and management of patients with OSA
Limit alcohol consumption to 2-3 drinks per day

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Tight glucose control (hemoglobin A_{1c} $\leq$7.0% of total hemoglobin)
Blood pressure control
Maintain normal HDL-C levels
Close supervision and management of patients with OSA
Limit alcohol consumption to 2-3 drinks per day
Avoid strenuous exercise routines

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MAYO CLINIC

Atrial Fibrillation in the 21st Century: A Current Understanding of Risk Factors and Primary Prevention Strategies

Mayo Clin Proc. ■ April 2013;88(4):394-409

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Consume omega-3 fatty acids or a diet rich in these polyunsaturated fatty acids

Simple Risk Model Predicts Incidence of Atrial Fibrillation in a Racially and Geographically Diverse Population: the CHARGE-AF Consortium

(*J Am Heart Assoc.* 2013;2:e000102 doi: 10.1161/JAHA.112.000102)

Variable	Simple Model	
	Estimated β (SE)	HR (95% CI)
Age (5 years)	0.508 (0.022)	1.66 (1.59, 1.74)
Race (white)	0.465 (0.093)	1.59 (1.33, 1.91)
Height (10 cm)	0.248 (0.036)	1.28 (1.19, 1.38)
Weight (15 kg)	0.115 (0.033)	1.12 (1.05, 1.20)
Systolic BP (20 mm Hg)	0.197 (0.033)	1.22 (1.14, 1.30)
Diastolic BP (10 mm Hg)	−0.101 (0.032)	0.90 (0.85, 0.96)
Smoking (current)	0.359 (0.091)	1.43 (1.20, 1.71)
Antihypertensive medication use (Yes)	0.349 (0.063)	1.42 (1.25, 1.60)
Diabetes (Yes)	0.237 (0.073)	1.27 (1.10, 1.46)
Heart failure (Yes)	0.701 (0.106)	2.02 (1.64, 2.48)
Myocardial infarction (Yes)	0.496 (0.089)	1.64 (1.38, 1.96)