

Major journals

LANCET

Fitness, statin treatment and all-cause mortality

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 Statin therapy is often prescribed to treat dyslipidaemia and cardiovascular disease. Increased physical fitness is also recommended to promote well-being and reduce all-cause mortality. Few studies, however, have investigated the combined effects of fitness and statin therapy on all-cause mortality.

2 The authors conducted a prospective cohort study to evaluate the combined effects of statin therapy and fitness on all-cause mortality in 10 043 dyslipidaemic veterans from the US.

3 Participants were divided into four fitness categories based on peak metabolic equivalents (METs) and a further eight categories depending on fitness status and statin treatment. Cox proportional hazard models were used to compare between groups.

4 Participants were followed up for a median of 10 years. During this time, the average yearly mortality rate was 22 deaths per 1000 person-years. Mortality risk was found to be lower in people receiving statins compared to those who did not (18.5% versus 27.7%, $P < 0.0001$).

5 In people receiving statins, reduced mortality risk was associated with increased fitness levels. Highly fit individuals (>9 METs; $n=694$) displayed a hazard ratio [HR] of 0.30 (95% CI, 0.21–0.41; $P < 0.0001$) compared with those less fit (≤ 5 METs; $n=1060$, HR 1).

6 The authors concluded that statin treatment combined with increased fitness was significantly associated with reduced mortality risk in dyslipidaemic individuals.

Kokkinos PF, Faselis C, Myers J et al (2013) Interactive effects of fitness and statin treatment on mortality risk in veterans with dyslipidaemia: a cohort study. *Lancet* **381**: 394–9

Running to the statin?



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The dilemma of whether a statin should be considered for patients with a cholesterol level above 5 mmol/L is commonly encountered clinically. The evidence from the Collaborative Atorvastatin Diabetes Study (CARDS) showed clear evidence that a broad group of patients with diabetes have

a stroke risk reduction of 48% and coronary heart disease (CHD) risk reduction of 36% if given atorvastatin 10 mg daily over 4 years (Colhoun et al, 2004). The potential additive beneficial effect of physical activity is unclear.

This cohort study (summarised alongside) conducted an analysis on 10 043 veterans (predominantly male) with dyslipidaemia (generally defined as a total cholesterol >5 mmol/L). The cohort was studied over 10 years with a median period on statins of around 6 years (if in the statin treated group). The subjects all had accurate assessment of their peak exercise capacity using the Bruce protocol on a treadmill test. The four categories of fitness (using peak Metabolic Equivalent Task [MET] units) consistent with commonly known activities were as follows:

- Least Fit, ≤ 5 METs: Slow pace walk to 1 mile per 17–20 minutes.
- Moderately Fit, 5.1–7 METs: Slow jog, 1 mile per 12–15 minutes.
- Fit, 7.1–9 METs: Jog, 1 mile <12 minutes.

- Highly Fit, >9 METs: Faster jog, 1 mile <10 minutes.

Data were analysed on 4997 people on statins versus 5046 not taking statins (overall 38% had diabetes). Overall the adjusted mortality was reduced by 35% in those taking statins (27.7% versus 18.5%). The least fit on statins were assigned a relative mortality risk of 1.0.

The other categories on fitness and statin use had mortality risks as follows (all highly significant except*):

- Least Fit: No statin 1.35, on statin 1.0.
- Moderately Fit: No statin 1.02*, on statin 0.65.
- Fit: No statin 0.81, on statin 0.41.

Highly Fit: No statin 0.53, on statin 0.30.

This study provides a sound evidence base for the synergistic effect of improved physical fitness and the use

of statins. Taking a statin reduces mortality risk by a level of fitness. It is clearly better to be highly fit and on statins. The importance of physical activity must be stressed with the aim of improving fitness to >9 METs for those capable of achieving this. Easy really, put a statin at the end of a 1 mile run, get to it in less than 10 minutes, take the statin. Repeat a few times a week.

“This study provides a sound evidence base for the synergistic effect of improved physical fitness and the use of statins. Taking a statin reduces mortality risk by a level of fitness. It is clearly better to be highly fit and on statins.”

Colhoun HM, Betteridge DJ, Durrington PN et al (2004) Primary prevention of cardiovascular disease with Atorvastatin in Type 2 Diabetes in Collaborative Atorvastatin Diabetes Study (CARDS): Multicentre randomised placebo-controlled trial. *Lancet* **364**: 685–96

“The authors concluded that a Mediterranean diet supplemented with extra-virgin olive oil or nuts decreased the onset of major cardiovascular events in a cohort of high-risk individuals”

N ENGL J MED

Mediterranean diet linked to reduced cardiovascular events

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 Previous research suggests that adherence to a Mediterranean diet involving high fruit, nut, olive oil, vegetable and cereal intake could be protective against cardiovascular disease.

2 In this multicentric randomised controlled trial, the authors investigated the value of a Mediterranean diet for cardiovascular disease prevention in a cohort of high-risk individuals.

3 Participants ($n=7447$) were randomised to receive a Mediterranean diet supplemented with either extra-virgin olive oil or mixed nuts, compared to a reduced-dietary fats control diet. Measured end points included cardiovascular mortality and the incidence of myocardial infarction or stroke. Median follow-up was 4.8 years.

4 Biomarker analyses and self-reported intake revealed good diet adherence in all groups. A primary end-point event was reported in 288 participants overall; 96 in those receiving extra-virgin olive oil, 83 in those consuming extra nuts and 109 in the control group.

5 Multivariable-adjusted hazard ratios were 0.70 (95% CI, 0.54–0.92) for the group receiving a Mediterranean diet with extra-virgin olive oil and 0.72 (95% CI, 0.54–0.96) for the group receiving a Mediterranean diet with nuts.

6 The authors concluded that a Mediterranean diet supplemented with extra-virgin olive oil or nuts decreased the onset of major cardiovascular events in a cohort of high-risk individuals.

Estruch R, Ros E, Salas-Salvadó J et al (2013) Primary prevention of cardiovascular disease with a mediterranean diet. *N Engl J Med* **368**: 1279–90

AM J MED

Statin therapy: Preventative effect on atrial fibrillation in older people

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 There is little research examining the clinical value of statin therapy for atrial fibrillation prevention in hypertensive people of an older age.

2 The authors primary aim was to determine the preventative value of statin therapy in this population. Secondly, the authors investigated if the incidence of comorbidity or CHADS₂ (Congestive heart failure, Hypertension, Age 75 years, Diabetes prior Stroke or transient ischemic attack) score was predictive of effective treatment.

3 Medical records of 27 002 participants from the National Health Insurance research database were retrospectively analysed. Of these, 2400 people (8.9%) were receiving statin treatment.

4 People receiving statin therapy were younger compared to nonusers (72.4 versus 73.4 years) and displayed an increased incidence of ischaemic heart disease, stroke, diabetes and renal disease.

5 The risk of atrial fibrillation was 19% lower in statin users (adjusted hazard ratio [HR] 0.81; 95% CI, 0.69–0.95; $P=0.009$) despite the presence or absence of a comorbidity. Statin therapy was significantly more effective in individuals with a CHADS₂ ≥ 2 (adjusted HR 0.69, 95% CI, 0.57–0.85; $P<0.001$), but was less beneficial in hypertensive patients with a CHADS₂ score of 1.

6 The authors concluded that statin therapy reduces the risk of atrial fibrillation in older people with hypertension, and that CHADS₂ can reliably predict the preventive effect of statins on atrial fibrillation.

Hung CY, Lin CH, Loh el-W et al (2013) CHADS(2) score, statin therapy, and risks of atrial fibrillation. *Am J Med* **126**: 133–140

BRITISH MEDICAL JOURNAL

High calcium intake associated with cardiovascular mortality

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 To date, few studies have analysed the relationship between calcium intake and death rates from all causes and cardiovascular disease in women.

2 The authors assessed long-term calcium intake and mortality in a cohort of 61 433 women for a median period of 19 years. All cause mortality ($n=11\ 944$), cardiovascular disease ($n=3862$), ischaemic heart disease ($n=1932$), and stroke ($n=1100$) were identified from the registry. Calcium intake was measured by food frequency questionnaires.

3 Non-linear risk patterns were identified, with higher calcium intakes (≥ 1400 mg/day) associated with increased rates of adverse events.

4 Calcium intakes greater than 1400 mg/day were associated with elevated death rates from all causes (hazard ratio [HR] 1.40, 95% CI, 1.17–1.67), cardiovascular disease (HR 1.49, 1.09–2.02) and ischaemic heart disease (HR 2.14, 1.48–3.09) when compared to calcium intakes of 600 to 1000 mg/day.

5 No relationship was found between stroke and calcium intake (HR 0.73, 0.33–1.65). Calcium supplementation (6% users; 500 mg per tablet) was not associated with all cause or cardiovascular mortality unless supplementation users had a dietary calcium intake above 1400 mg/day (HR 2.57, 95% CI, 1.19–5.55).

6 The authors concluded that elevated calcium intake is associated with an increased risk of death from all causes and cardiovascular disease besides stroke.

Michaëlsson K, Melhus H, Warensjö Lemming E et al (2013) Long term calcium intake and rates of all cause and cardiovascular mortality: community based prospective longitudinal cohort study. *BMJ* **346**: f228