
Does moderate exercise prevent MI for patients with coronary heart disease?

**EVIDENCE-BASED ANSWER**

Moderate exercise reduces mortality for patients with known coronary heart disease but does not significantly decrease the risk of recurrent nonfatal myocardial infarction (MI) (strength of recommendation [SOR]: A, based on systematic review of randomized controlled trials). Exercise-based cardiac rehabilitation also reduces all-cause mortality (SOR: A, based on systematic review).

For patients with stable angina, a daily exercise program is more effective than percutaneous transluminal coronary angioplasty (PTCA) with stenting in preventing major cardiovascular events (number needed to treat [NNT]=5.5; SOR: A, based on a single randomized controlled trial).

**EVIDENCE SUMMARY**

A systematic review of cardiac rehabilitation programs evaluated 14 randomized controlled trials with exercise-based interventions. An updated review added 5 more for a total of 2984 patients with coronary heart disease. Patients with coronary heart disease comprised those with prior MI, prior coronary artery bypass graft surgery, or PTCA, and those with angioplasty and angiographically confirmed coronary heart disease.

Exercise-based cardiac rehabilitation significantly reduced all-cause mortality (relative risk [RR]=0.76; 95% confidence interval [CI], 0.59–0.98) compared with usual care (NNT=66; 95% CI, 35–273). Cardiac mortality also decreased significantly with exercise (RR=0.73; 95% CI, 0.56–0.96) compared with usual care (NNT=49; 95% CI, 26–120).

Six studies showed particularly significant improvement in total cardiac mortality. Exercise was variably defined. Training sessions lasted 30 minutes and occurred on 2 to 5 days per week. Intensity was typically 75% to 85% of a maximum work capacity determined on an exercise test before initiating the training sessions. The type of exercise ranged from cycling alone to circuit training with 6 stationary devices. Patients were trained with supervision 1 to 36 months and followed for a mean of 24 months (range, 6–60 months).

A trend was observed toward decreased recurrence of nonfatal MI with exercise-based cardiac rehabilitation, which did not reach significance (RR=0.78; 95% CI, 0.59–1.03). An inadequate number of subjects is the most likely reason; however, other possibilities include an increase in the frequency of nonfatal MI after rehabilitation, or an increased rate of survival after MI for patients undergoing exercise-based rehabilitation.

The studies included in these reviews had several limitations. The population appears skewed in age (mean=54 years, with patients aged >65 years excluded from most studies) and gender (4.9% female); ethnicity was rarely reported. The adequacy of randomization was poor or unclear in 71% of studies, and only 4 trials reported blind assessment of outcomes. Finally, in 34% of studies the loss of participants to follow-up was more than 20%.

A well-done study randomized 101 male patients (age <70 years) with stable angina to
either a daily exercise program or standard PTCA with stenting. After 12 months, event-free survival was significantly greater among patients randomized to exercise than in those randomized to PTCA with stenting (88% vs 70%; \( P = .023; \) NNT=5.5). Cardiovascular events were defined as percutaneous interventions, hospitalizations, acute MI, cerebrovascular accidents, coronary artery bypass graft operation, and death.

**RECOMMENDATION FROM OTHERS**

The American Heart Association (AHA) supports aggressive risk factor management for patients with coronary heart disease, and recommends a minimum of 30 minutes of exercise 3 to 4 days per week as well as an increase in daily lifestyle activities. The American College of Cardiology endorses the position of the AHA.

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**REFERENCES**


**CLINICAL COMMENTARY:**

**Add exercise to routine post-MI treatment**

We should add exercise to routine post-MI treatment checklists, along with aspirin, beta-blockers, statins, angiotensin-converting enzyme inhibitors, and so on. Precise exercise prescribing requires a stress test because, as the adage goes, “If we don’t do an exercise test with monitoring, the patient will eventually do one unmonitored at home.”

Medicare pays for cardiac rehabilitation for acute MI (within 6 months), coronary artery bypass (within a year), and stable angina. Other insurance reimbursement varies.

The evidence isn’t the quality I would like, and for women and minorities it is lacking. However, evidence sticklers like USPSTF state that exercise reduces morbidity and mortality for (almost) everyone. The question is how to make exercise happen; people with CHD can often be motivated.

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**DRUG BRAND NAMES**

- Amiodarone • Cordarone
- Atenolol • Tenormin
- Atorvastatin • Lipitor
- Diclofenac • Catalam, Voltaren
- Disopyramide • Norpace
- Dofetilide • Tikosyn
- Enoxaparin • Lovenox
- Flecainide • Tamolco
- Metoprolol • Lopresor
- Propafenone • Rythmol
- Simvastatin • Zocor
- Solatol • Betapace
- Warfarin • Coumadin

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