Lifestyle risk reduction interventions in atrial fibrillation: a systematic review
Lowres N, Neubeck L, Freedman SB, Briffa T, Bauman A, Redfern J

CRD summary
The authors concluded that the small evidence base was methodologically compromised, but suggested that risk reduction interventions largely target physical activity and could reduce heart rate and improve exercise capacity and Health Related Quality of Life in people with atrial fibrillation. Given the limitations of the evidence, the authors’ suggestion to interpret the results as hypothesis-generating seems appropriate.

Authors’ objectives
To determine whether lifestyle and biomedical risk reduction interventions improved outcomes in patients with atrial fibrillation.

Searching
Six databases, including MEDLINE and The Cochrane Library, were searched up to January 2011 for articles in English. Search terms were reported. Reference lists of trials, conference lists, grey literature were searched and keyword internet searching was performed to find additional articles.

Study selection
Eligible for inclusion were randomised controlled trials (RCTs) and quasi-experimental trials that evaluated secondary prevention programmes or lifestyle/biomedical risk reduction interventions in patients with atrial fibrillation. Eligible trials had to be provided by health professionals. Primary outcomes were all-cause mortality, heart rate, exercise capacity and health-related quality of life (HRQoL). Trials that reported solely on pharmacological interventions were excluded.

Included studies were conducted in Canada or Europe. All participants had been diagnosed with chronic atrial fibrillation of at least three months’ duration. The mean age of participants ranged from 59 to 68 years, and most were male. Interventions included some form of exercise (usually supervised), such as aerobic or strengthening exercises, and were performed for between 45 and 90 minutes, two to five times per week. Study durations ranged between two months and one year.

Two reviewers independently screened studies for inclusion.

Assessment of study quality
Trial methodology was assessed using the Downs and Black Quality Index Score (maximum score 32). RCTs were also assessed using the Jadad scale.

The authors did not state how many reviewers performed the quality assessments.

Data extraction
Two reviewers independently extracted outcome data. Where outcomes were reported at different time points, the longest follow-up data was used. Primary authors were contacted for further information where necessary.

Methods of synthesis
Data were presented in tables and as a narrative synthesis.

Results of the review
Two RCTs, one retrospective cohort study, and two pre-post studies (166 participants) were included in the review. Trials were reported to be of moderate quality overall; the two RCTs scored 2 or 3 out of 5, and other studies scored between 7 and 16 out of 32. Where reported, the proportion of withdrawals ranged from 0% to 26.3%.

Three trials that assessed heart rate reported reductions in resting heart rate of 7 to 13 beats per minute (bpm) (9 to 15%). All five trials reported an increase in exercise capacity, measured using cycle ergometry (three studies), the six
minute walking test (one trial) and a supine exercise treadmill (one study).

HRQoL was assessed in two trials using the Short Form (36) questionnaire; one reported improvements in four of eight subscales, the other reported improvements in seven of eight subscales.

No significant changes were reported for body mass index, blood pressure, total cholesterol or high density lipoproteins. There were no adverse events. Other findings were reported in the review.

**Authors’ conclusions**
Although small in number and methodologically compromised, the studies suggested that risk reduction interventions largely targeted physical activity and could reduce heart rate and improve both exercise capacity and HRQoL in people with atrial fibrillation.

**CRD commentary**
The review question and inclusion criteria were clearly stated. Various sources were searched for relevant data, but as the search was restricted by language, language bias may have been introduced. Study methodology was assessed and indicated some limitations in quality.

Given the variability in studies, a narrative synthesis was appropriate. However, the synthesis was somewhat limited, which the authors acknowledged. Only a small number of studies with small sample sizes were included in the review. The authors acknowledged these limitations and that the findings may not be generalisable.

Given the limitations of the evidence, the authors’ suggestion to interpret the results as hypothesis-generating seems appropriate.

**Implications of the review for practice and research**

**Practice:** The authors stated that it could be inferred that exercise conditioning was associated with clinically significant improvements in atrial fibrillation patients.

**Research:** The authors stated that large well-designed RCTs, that were sufficiently powered, were needed to assess multifactorial interventions in atrial fibrillation, particularly for the outcomes mortality, morbidity, changes in cardiovascular risk factors, HRQoL and economic benefit.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.