Evidence Summary Title:
Exercise interventions for smoking cessation: Evidence and implications for public health

Review Quality Rating: 7 (moderate)

Review on which this evidence summary is based:

Note: The Cochrane review that this evidence summary is based on has been updated. This evidence summary summarizes the above-cited version of this review, not the updated version. An updated evidence summary will be provided as soon as possible.

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This is an evidence summary written to condense the work of the authors of this systematic review, referenced above. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Review content summary
This systematic review of 13 randomized controlled trials (RCTs) aimed to determine the effectiveness of exercise-based interventions alone or combined with a smoking cessation program compared to smoking cessation intervention alone. Participants studied were: smokers wishing to quit or recent quitters. To be included, studies were: RCTs where exercise was an independent variable and smoking cessation behaviour was a dependent variable. Interventions described in this review included: an exercise program alone, an exercise program as an adjunct to a cessation program, or a cessation program. Outcomes measured include: smoking cessation, greater than six months, at the longest follow up reported. Authors report that only one of these studies provided evidence that an exercise program is more effective than smoking cessation support alone in promoting smoking cessation in the long term.

Comments on this review’s methodology
This is a methodologically moderate systematic review. A focused clinical question was clearly identified. Appropriate inclusion criteria were used to guide the search. A comprehensive search was employed using health, and psychological databases; reviewing reference lists of primary studies; and contacting key informants. The search was not limited by language. Primary studies were assessed for methodological quality using research design, study sample, data collection, and follow-up/attrition rates. The methods were described in sufficient detail so as to allow replication and it is unclear if two reviewers were involved in quality appraisal. Any discrepancies in appraisal results were not indicated in the review. The results of this review were not transparent. Results were clearly presented in narrative form so as to allow for comparisons across studies. Heterogeneity was not assessed. Appropriate analytical methods (fixed effects, random effects) were not employed to enable the synthesis of study results. A meta-analysis was not conducted because the studies used different types of exercise programs, and varied in the duration of follow up. No weighting of evidence is noted.

Why this issue is of interest to public health
Reducing tobacco use is a public health priority in Canada. In 2005, an estimated 5.9 million Canadians, or 22% of the population over the age of 12, were smokers. Tobacco is the leading cause of preventable disease, disability, and mortality in Canada, accounting for more than 47,500 deaths per year. The Canadian Centre on Substance Abuse (CCSA) estimates that the direct and indirect costs of smoking in 2002 totaled 17 billion dollars nationally. Preventing exposure to, use of tobacco products, as well as the promotion of tobacco cessation are major priorities from the federal to local level, within multiple sectors and fields. Tobacco use is associated with causing multiple cancers, heart disease, stroke, chronic obstructive pulmonary disease, and complications of pregnancy. Effective strategies for all populations and circumstances must be identified and incorporated into current and future polices and programs.

Evidence and implications
Evidence points are in order of the strength of evidence

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<td>1. Exercise vs. control</td>
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exercise in promoting abstinence from tobacco use.

1.1.1. Three studies reported significantly higher abstinence rates in the physically active group compared to controls at the end of treatment. One of these studies also reported significantly higher abstinence rates at 3 and 12 months post treatment, with the physically active group being 2.36 times more likely to be abstinent than controls.

1.1.2. Another study however showed significantly higher abstinence rates for the exercise group versus controls at the 3-month follow up but not at 12 months.

1.1.3. Four of the studies showed a trend for higher rates of abstinence in the exercise condition compared with the controls, but these results were not statistically significant.

1.1.4. At the longest follow-up period none of the studies reported statistically significant effects on abstinence rates, although one was very close to being statistically significant.

2. Exercise + nicotine replacement therapy vs. exercise (3 studies)

2.1. Studies revealed mixed results regarding the effectiveness of exercise with NRT in promoting smoking cessation as compared with NRT alone.

2.1.1. One study reported at the end of treatment and at 12-month follow up that abstinence rates were significantly higher in the exercise-plus-patch group than in the exercise-only group.

2.1.2. The other 2 studies resulted in no significant difference between groups.

2. Exercise + nicotine replacement therapy vs. exercise

2.1. The evidence suggests that exercise in addition to NRT is no more effective than NRT alone, and therefore, likely should not be implemented in this way.

3. Methodological Issues with the Primary Studies in the Review

3.1. Most of the studies included in this analysis are likely underpowered to observe a statistically significant difference between groups.

3.2. It is also likely that the dose of the intervention (i.e., frequency, duration, and intensity) is inadequate to promote changes in health behaviours.

3. Implications for Future Research

3.1. Rigorous program evaluations and high quality research studies should be funded and conducted. These studies should

3.1.1. Be sufficiently powered (sample size) to be able to detect a significant difference between treatment and control groups

3.1.2. Determine and be of the sufficient dose (duration, intensity, and frequency) to impact outcomes

3.1.3. Use valid measures

3.1.4. Assess adherence across the sample

3.1.5. Determine the impact of

3.1.5.1. supervision

3.1.5.2. initiation of exercise in relation to the quit date

3.1.5.3. exercise as a coping strategy

4. Cost Benefit or Cost-effectiveness Information

4.1. No cost related information was included in the review

4. Cost Benefit or Cost-effectiveness Information

4.1. Future research should assess cost benefit or cost-effectiveness of the interventions

General Implications

• While the evidence is not conclusive, there is evidence that physical exercise interventions show promising results with respect to increased smoking cessation. In addition no harm was associated with this intervention. The majority of the trials included in this study were not sufficiently powered (i.e., sample sizes were too small) or of sufficient intensity to achieve statistical significance. Thus, the positive but non-significant results together with the significant results also support physical activity interventions to promote abstinence from tobacco.

Legend: CI – Confidence Interval; OR – Odds Ratio; RR – Relative Risk

**For definitions please see the healthevidence.org glossary [http://www.healthevidence.org/glossary.aspx](http://www.healthevidence.org/glossary.aspx)

References used to outline issue


**Other quality reviews on this topic**


**Related links**

- On the Road to Quitting - Guide to Becoming a Non-Smoker - Health Canada’s program suggesting exercise as a way to deal with stress while quitting smoking. [http://www.hc-sc.gc.ca/hl-vs/pubs/tobac-tabac/org-svr/roadblocks-obstacles05_e.html](http://www.hc-sc.gc.ca/hl-vs/pubs/tobac-tabac/org-svr/roadblocks-obstacles05_e.html)

**Suggested citation**


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