Exercise on prescription in general practice: a systematic review
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CRD summary
This review assessed the feasibility, effectiveness and cost-effectiveness of exercise on prescription (EoP) in general practice. The authors concluded that most studies reported favourable results for EoP when compared with controls, but that evidence was lacking in several areas. Given the concerns about poor review methodology and the inadequate reporting of data, these findings should be treated with caution.

Authors' objectives
To assess the feasibility, effectiveness and cost-effectiveness of exercise on prescription (EoP) in general practice. This abstract focuses on the feasibility and assessment of effectiveness.

Searching
MEDLINE (1980 to April 2005), WinSPIRS MEDLINE (1980 to June 2005, NLM Gateway and Locator Plus (dates not stated) were searched; the search terms were reported. The reference lists of retrieved articles were also checked for additional studies. Only studies published in English in peer-reviewed journals were eligible for inclusion in the review.

Study selection
Study designs of evaluations included in the review
Any study with a follow-up of at least 6 months was eligible for inclusion in the review.

Specific interventions included in the review
Studies that assessed any form of EoP given by a general practitioner (GP), or any other primary health care provider, were eligible for inclusion. Studies using interventions set outside general practice were excluded from the review. Eligible EoP interventions had to include more than just simple advice and could involve, for example, additional counselling, written advice, supervised training or follow-up telephone advice. Studies that assessed multiple interventions which involved other components besides purely physical activity were excluded from the review. The level and types of physical activities assessed varied (limited details reported in the review), but included low and high intensive exercise sessions and aerobic exercise programmes.

Participants included in the review
Studies that included sedentary adults who showed signs of developing 'lifestyle' diseases were eligible for inclusion. The authors did not report which diseases were considered to be 'lifestyle' diseases. Studies of participants living in institutionalised settings were excluded from the review.

Outcomes assessed in the review
To be included in the assessment of effectiveness, eligible studies had to assess the level of physical activity or the maximal oxygen uptake (VO2max) of the participants. Patient evaluations of the intervention and outcomes relating to the feasibility of implementing the intervention in general practice were also included. Costs were reported where available.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Studies included in the assessment of effectiveness were judged according to the following criteria: selection and representation of GPs and patients; methods of randomisation of GPs and patients; the risk of 'carry-over' effects; number of patients lost to follow-up; and the use of intention-to-treat analyses or analyses considering the effects of
baseline characteristics. The authors did not report how many reviewers assessed the studies. The studies were awarded a rating of high, medium or low quality. High-quality studies were rated as good for all of the criteria assessed. The authors did not report how medium- and low-quality studies were defined.

Studies that assessed cost-effectiveness or the feasibility of implementing the interventions were assessed separately using less strict criteria (details not reported).

**Data extraction**
The authors did not state how the data was extracted for the review, or how many reviewers performed the data extraction. Minimal study data was reported. Where reported, VO2max levels and levels of physical activity were reported as percentages.

**Methods of synthesis**
How were the studies combined?
The studies were grouped according to effectiveness, the feasibility of the intervention, cost-effectiveness and patient opinion. A limited narrative summary of the study data was reported.

How were differences between studies investigated?
Details of differences between the studies were limited.

**Results of the review**
Twenty-two studies were included in the review. It was unclear how many participants or what types of study designs were included.

Only three of the 12 studies assessing effectiveness were rated as high-quality studies.

**Effectiveness (12 studies).**

Approximately half of the studies assessing the effectiveness of EoP reported moderately positive effects on physical activity (in 10% of patients) and/or VO2max levels (improvements of 5 to 10% compared with controls) after 6 to 12 months. Two high-quality studies reported differences in favour of EoP, compared with no exercise controls, but the differences were not significant. Two medium-quality and two low-quality studies failed to report any statistically significant improvements in physical activity after EoP. None of the studies assessing VO2max levels compared EoP interventions with no treatment control groups. Three studies assessed the effects of aerobic fitness interventions. Two of these studies (both rated as high-quality studies) reported differences in VO2max levels in favour of EoP compared with more low intensive EoP interventions. However, one of these studies only found significant improvements in women and not in men.

Four studies compared high-intensity with low-intensity EoP interventions. One of these studies (rated as high quality) reported that participants receiving the more intensive intervention had an additional 11% improvement in VO2max levels compared with participants in the less intensive control group. Another high-quality study comparing high- and low-intensity EoP interventions reported inconclusive results.

There was little evidence about the long-term (greater than 1 year) effects of EoP.

**Intervention feasibility (6 studies).**

The majority of the studies assessed feasibility using questionnaires or interviews. Most of the studies reported that EoP interventions were acceptable tools for motivated GPs. One study measured GP compliance with the intervention and found the majority of the GPs gave the correct advice and filled out the relevant paperwork appropriately. Only one study used a large and representative population of GPs and found that two-thirds of GPs used the scheme; however, in the final month of the study, only 13% of GPs who had written EoP prescriptions had written at least 10 prescriptions. One other study reported that only 35% of GPs expected to implement the EoP scheme without the aid of research...
Patient evaluations (3 studies).

Studies assessed the views of motivated participants mainly through qualitative interviews. All three studies reported that participants seemed to enjoy the interventions and gained from them (e.g. improvements in their quality of life).

Cost information
One study reported that the cost of a sedentary patient attaining at least 2.5 hours of physical activity per week after receiving 12 months of telephone support and community-based leisure activities was 1,050 euros.

Authors' conclusions
Most studies included in the review presented favourable results for EoP but, overall, evidence was lacking in several areas.

CRD commentary
This review was based on a clear research question with wide inclusion criteria for the types of eligible study designs. The literature searches were limited to only MEDLINE and reference lists, which may have resulted in relevant studies being missed. In addition, unpublished material and non-English language studies were excluded, which may put the review at risk of language and publication bias. The reporting of the study methods was also poor and it was unclear whether appropriate steps were taken to reduce the risk of bias and error during the study selection, quality assessment and data extraction processes.

The reporting of the study data was very limited. It was unclear what types of studies, interventions, participants and study outcomes were included in the review. It is therefore difficult for the reader to make their own assessment of the study findings. However, the authors did state that the studies used different definitions of physically active, and had different control groups and different methods of measuring physical activity, which hampered the analysis. The quality of the studies included in the assessment of effectiveness also appeared to be quite poor. A summary table of the individual studies and a more detailed discussion of the findings, taking into account study heterogeneity, would have been helpful. Overall, given the concerns about the study methods and the poor reporting, the robustness of the review's findings is questionable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that good-quality studies evaluating EoP interventions that are feasible for everyday use in general practice are required. Also needed are studies that assess both the effectiveness and cost-effectiveness of EoP interventions.

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Record Status
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.