



The cost-effectiveness of physical activity interventions: A systematic review of reviews

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ABSTRACT

Background: Despite growing recognition of the need to promote physical activity, the existing evidence base on the cost-effectiveness of relevant interventions appears scant and scattered. This systematic review of reviews set out to take stock of the evidence on the cost-effectiveness of physical activity interventions.

Methods: Ten literature databases were systematically searched for available reviews on the cost-effectiveness of physical activity interventions, complemented by a hand search. Out of the 515 articles identified, 18 reviews met the inclusion criteria. A quality appraisal of the 18 reviews was undertaken.

Results: Of the 18 reviews, 4 contained information on the target group of children and adolescents, 12 on adults, 3 on older adults, and 6 on the general population. Across the reviews some intervention strategies were identified as being particularly cost-effective, including certain school-based interventions (children and adolescents), interventions using pedometers (adults), fall prevention programs (older people), mass media campaigns and environmental approaches (general population). However, for some of these approaches (e.g. mass media campaigns), the underlying evidence of being able to change physical activity behavior remains inconsistent.

Conclusion: Available evidence for the cost-effectiveness of physical activity interventions is scattered, but points towards the cost-effectiveness of certain interventions. Until this moment, cost-effectiveness has more often been studied for individual-level interventions. This is potentially due to some methodological challenges in assessing the cost-effectiveness of population-based interventions.

1. Introduction

Arguments for efforts to promote physical activity on the population level are increasingly based on calculations of the costs of inactivity. For example, a recent study estimated the costs for health care systems attributable to physical inactivity to be 54 billion (INT\$) worldwide in 2013 (Ding et al., 2016). In another study, it has been stated that a 20% reduction of inactivity rates on the population level would already yield important cost savings (ISCA/CEBR, 2015). Such figures might have contributed to international calls for increasing physical activity promotion efforts (European Union, 2008; World Health Organization, 2004; World Health Organization, 2013).

In order to make informed public health decisions on how to promote physical activity, information on the overall effectiveness of different intervention types to increase physical activity, and considerations of cost-effectiveness of different interventions types are highly

relevant. While an impressive number of reviews have been conducted on the topic of effectiveness of physical activity promotion (a recent scoping review yielded more than 350 reviews; Rütten et al., 2016), the interest in assessing the cost-effectiveness of physical activity interventions appears to have grown only recently, as evidenced by a series of relevant systematic reviews that have been published in the last 5 years (Campbell et al., 2015; GC et al., 2015; Laine et al., 2014; Foster et al., 2013; Balzer et al., 2012; Lehnert et al., 2012). Mainly, existing reviews on the cost-effectiveness of physical activity interventions have focused on particular target groups (e.g. older people; Balzer et al., 2012), specific intervention types (e.g. face-to-face interventions; Gordon et al., 2007), or specific settings where interventions were conducted (e.g. worksite; van Van Dongen et al., 2011). Only some reviews have presented findings across different target groups, intervention types, and settings (e.g. Laine et al., 2014; Wu et al., 2011).

By systematically identifying, assessing and synthesizing results of

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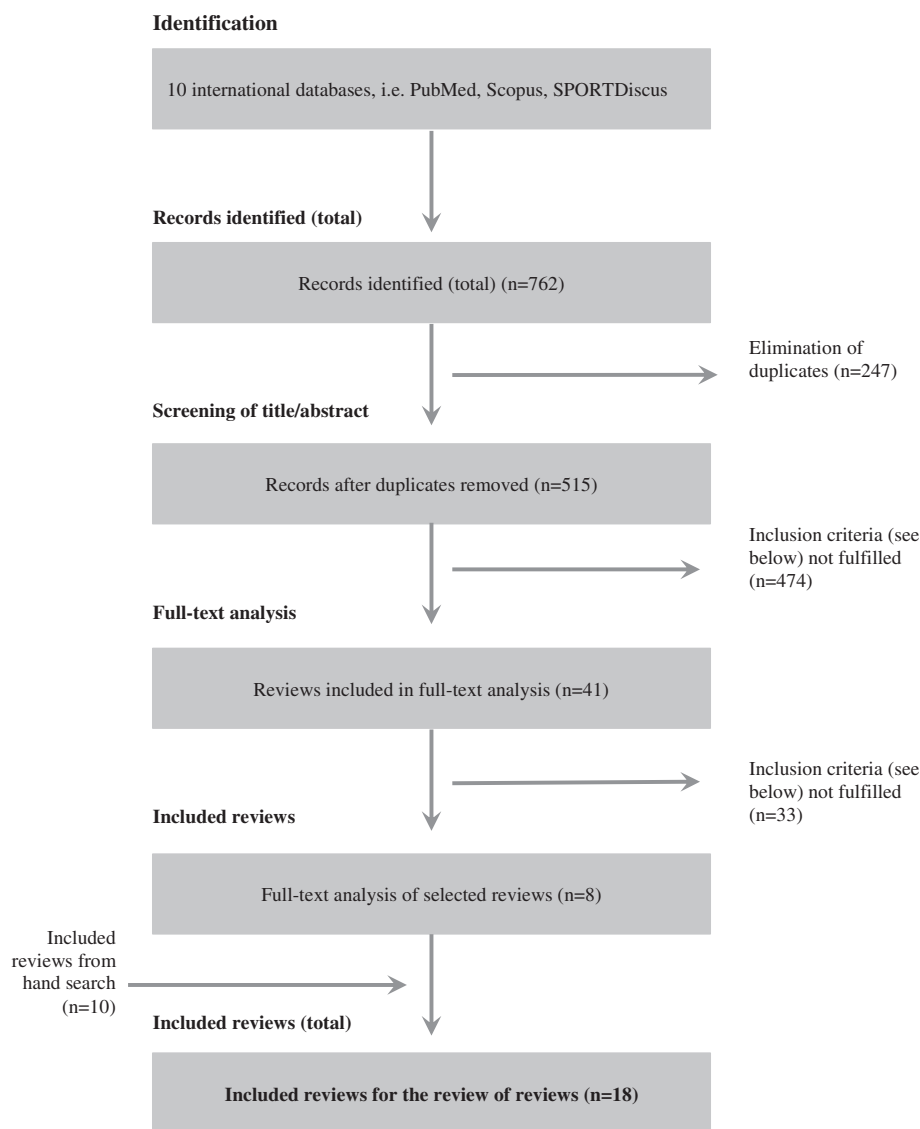


Fig. 1. Flowchart of the literature search for the review of reviews.

all relevant studies, bias can be minimized in well conducted systematic reviews. More recently, overviews of systematic reviews have been used to summarize research evidence relevant to a wide range of health interventions (Hartling et al., 2014; Thomson et al., 2010). In the present paper we took stock of the state of the evidence on the cost-effectiveness of physical activity interventions by critically reviewing and synthesizing published systematic reviews on the topic.

To the best of our knowledge, the present systematic review of reviews on the cost-effectiveness of physical activity interventions is the first such endeavor. We utilized rigorous methodology, systematically screened the international literature, and appraised and summarized the evidence. The intention of this endeavor was to provide a more comprehensive overview regarding the available evidence for the cost-effectiveness of physical activity promotion efforts. Such knowledge might be valuable to inform decisions regarding efforts to promote physical activity on the population level.

2. Methods

This systematic review of reviews was based on a literature search in each of the following 10 databases: PubMed, Scopus, EBSCOHost, PsychInfo, SPORTDiscus, EBSCON-ECON LIT, Pro-Quest, ERIC, IBSS

and NHSEED. A title and abstract search was conducted and restricted to reviews published between January 2000 and October 2015. Search terms linked with 'AND' were "physical activity", "cost", "intervention", "systematic review", and "health outcome". For each search term, related terms were added as alternatives using 'OR' (e.g. for "physical activity": physical fitness, active lifestyle, moving, move*, sport*, exercis*, biking, bike*, bicycl*, cycling, cycle, walk*, active transport*, active travel, active commut*, human powered transport). Additionally, a hand search was conducted, which included a systematic search of websites (e.g. WHO, NICE UK) that featured articles or reports that are not necessarily indexed in peer-reviewed journals. Additionally, the authors gathered reviews of which they were aware and that were not located by the systematic literature search.

Two reviewers firstly screened the titles and abstracts from all search results and later the full text. Reviews were included if they met the following criteria:

- Language of the article was English or German.
- The article was a review that either modeled or summarized health economic evaluations of physical activity interventions.
- The article included a description of how the literature was identified, and stated inclusion and exclusion criteria.

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