

Interventions to reduce sedentary behaviour and increase physical activity during productive work - Preliminary results of a systematic review

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1. Introduction

Physical inactivity and sedentary behavior (SB) both entail health risks (e.g. Garber et al. 2011; Matthews et al. 2012; Van der Ploeg et al. 2011). For workers a considerable part of their total sedentary time is spent during working hours (Jans et al. 2007; Parry et al. 2013). Thus, several authors have indicated that too much sitting and too little physical activity (PA) during working hours is an emerging public health concern (Straker et al. 2009; Van Uffelen et al. 2010).

Interventions at the workplace have been suggested to be an effective approach to decrease SB and/or increase PA (WHO 2008). Interventions that are meant to be compatible with maintained productive work might be particularly attractive to companies and employees, and they may also have the advantage of tackling sedentariness at the major occupational source, i.e. performing work while seated.

Therefore, we performed a systematic review on the effectiveness of interventions with the purpose of reducing SB and/or increasing PA that can be implemented at the workplace during productive work *and* that are intended to change workers' behavior while doing productive work.

2. Methods

Scopus was searched for articles published from 1992 until October 4, 2013. We included studies (1) that addressed interventions aiming at decreasing SB and/or increasing PA; (2) at the workplace, during productive work; (3) using a design including a control group or control condition; (4) being published as a full-length paper in a peer-reviewed journal in English; (5) reporting on the outcomes SB and PA. Relevant studies were evaluated using the Quality Assessment Tool for Quantitative Studies and summarized in a best-evidence synthesis.

3. Results

Thirty studies describing 31 interventions were included and organized into three categories:

- Alternative workstation interventions (N=12): interventions aiming at reducing SB and/or increasing PA by changing the traditional workstation to a sit-stand workstation or an "active" workstation.
- Interventions promoting stair use (N=10): interventions with the main aim to promote stair use, and thus PA, by encouraging workers to choose the stairs rather than the elevator at work.
- Personalized behavioral interventions (N=9): interventions aiming at reducing SB and/or increasing PA by motivating workers to change behavior, as encouraged by personalized goals and/or by feedback on behavior using prompts or messages.

Seven studies were considered of strong methodological quality. Strong evidence was found for a positive effect of alternative workstations on overall SB and PA, while conflicting evidence was established for effects on SB and PA at work. Stair use promotion interventions were found to increase PA at work (moderate evidence). While personalized behavioral interventions increased overall PA (moderate evidence), they did not affect PA at work (strong evidence) or SB at work (moderate evidence). For an effect of stair use promotion interventions on overall PA, overall SB and SB at work, and of personalized behavioral interventions on overall SB, insufficient evidence was found.

4. Conclusions and recommendations for future research

The present review showed that some types of interventions practiced at the workplace during productive work with the intention to reduce SB and/or increase PA may, indeed, have the intended effect. Especially the use of alternative workstations seemed promising both in reducing SB and in increasing PA, but before large-scale implementation of alternative workstations is considered, the sustainability of the health effects should be established as well as the usability of the available devices.

Only 7 out of 30 studies were considered to be of strong quality. There is a need for high quality studies on sufficiently large populations, presenting adequate control conditions, and addressing longer duration of the interventions per se, and of follow-up periods allowing investigations into sustainability. In addition, we recommend investigating behavioral change processes associated with implementing the intervention, both at the individual and at the organizational level. Finally, we encourage exploring the effects on SB and PA of additional types of worksite interventions, which lie outside the three categories found in the present review; such as job rotation, job enrichment and environmental changes at the worksite.

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