Project Energise: Using participatory approaches and real time prompts to reduce occupational sitting and increase physical activity in office workers

Nicholas D Gilson\textsuperscript{a}, Norman Ng\textsuperscript{a}, Toby G Pavey\textsuperscript{a}, Gemma C Ryde\textsuperscript{b}, Leon Straker\textsuperscript{c} and Wendy J Brown\textsuperscript{a}

\textsuperscript{a}Centre for Research on Exercise, Physical Activity and Health, The University of Queensland, AUSTRALIA; \textsuperscript{b} School of Health Sciences, University of Stirling, SCOTLAND; \textsuperscript{c} School of Physiotherapy and Exercise Science, Curtin University, AUSTRALIA.

1. Introduction

Office workers are particularly exposed to chronic disease risks and spend around 6 hours/day seated at a desk completing work tasks (Ryde et al. 2015). Effective and practical interventions that encourage office workers to sit less and move more are urgently needed.

Increasing awareness of risks, and asking workers to identify occupational sitting reduction strategies may be an effective approach to encouraging a healthier, more movement orientated workplace (Gilson et al., 2011). The uptake of strategies may also be facilitated by real time prompts that enable office workers to regulate desk sitting (Ryde et al. 2012).

This pilot study tested the feasibility of an office-based intervention that targeted reductions in occupational sitting and increases in physical activity. Specifically, the study aimed to assess the extent to which positive changes occurred when workers a) engaged in an educational/participatory workshop and b) utilised real-time prompts to self-monitor desk sitting.

2. Methods

Following university ethics approval, 57 office workers (age 47±11 years; BMI 28±5 kg/m\^2; 46 men) were recruited to the study from a large Brisbane based company. At baseline (April 2014), and then again at end-intervention (November 2014), participants wore a wrist accelerometer (GeneActiv) for one working week, 24 hours/day. Office chairs were also fitted with a Sitting Pad (SP) for the duration of the study. The SP consists of a cushion and medical pressure sensor that records the total minutes spent sitting and the longest time spent sitting each day.

Following baseline measures, participants attended a one-hour workshop held at the worksite (June 2014), where researchers reviewed evidence on the benefits of reducing sitting and increasing physical activity, and participants identified and discussed occupational strategies to sit less and move more. These strategies were collated and thematically analysed, and distributed to participants for use across the intervention period (July-November 2014). For intervention, participants were allocated to one of two groups (IG1 or IG2). Both groups were asked to implement sit less and move strategies, but only IG2 were provided access to a software package that linked to the SP and gave real time prompts to break from desk sitting via a traffic light system displayed on computer screens.

Baseline and end-intervention GeneActiv data were classified into mean percentages of work time spent in sedentary behaviour, and light and moderate-to-vigorous physical activity, using validated cut-point thresholds. Participants used the time stamp function on the wristwatch to denote when they arrived and left work, which was cross-referenced with self-reported work times. SP data were isolated for baseline and intervention periods, and the mean total sitting time and the longest time spend sitting (minutes/day) calculated for these periods. Intention-to-treat principles were applied to missing data, and mixed method models used to statistically compare between and within group changes in desk sitting time, sedentary behaviour and physical activity.

3. Results

Mean monitored GeneActiv and SP work time ranged from 8.6 – 8.8 hours/day. GeneActiv data indicated that 71% of work time was spent sedentary, and 22% in light and 7% in moderate-to-vigorous intensity physical activity. SP data found that 6.1±1.4 hours/day were spent sitting at a desk, with the longest time spent desk sitting averaging 1.7±0.7 hours/day. There were no significant differences in baseline GeneActiv or SP data between IG1 and IG2.
Through workshops, participants identified 20 sit less and move more strategies. These were themed into the four occupational contexts of ‘desk tasks’ (x5 strategies; e.g. deliver some messages in person rather than always sending emails); ‘meetings’ (x4 strategies; e.g. use walk-talk rather than sit-talk meetings); work breaks (x7 strategies; e.g. take a standing and stretching break); travel (x4 strategies; e.g. walk to and/or from work).

Relative to baseline, end-intervention GeneActiv data indicated that IG1 reduced occupational sitting by an average of 2% (0.3 hours/day). Intervention effects were significant (p=0.01) and four times greater (1.2 hours/day) in IG2. Both groups displaced these respective sedentary percentages and times to light intensity physical activity.

SP change data are shown in Figure 1. Relative to baseline, mean total time spent sitting at desks across the intervention period increased for IG1 (11 minutes/day) and decreased for IG2 (-13 minutes/day; difference of 24 minutes/day). This pattern was also observed for the longest time spent sitting, with mean values increasing for IG1 (20 minutes/day), and decreasing for IG2 (-10 minutes/day; significant difference of 30 minutes/day; p=0.05).

4. Conclusions

The findings of this study are useful for researchers and practitioners in that they identify a wide range of sit less and move more strategies office workers can utilise within their working day. The data also indicate that using strategies in combination with real-time prompts may be the most effective way of facilitating positive changes in sitting and moving at work. This may be particularly true for reducing and breaking prolonged periods of desk sitting. Future studies now need to build on the promising findings of this pilot study and investigate the application of strategies and real-time prompts to larger, more diverse occupational contexts, across a longer intervention period.

Acknowledgements

This study was supported by an Australian Heart Foundation Vanguard Grant (2014; ID100214)

References