# Challenges and opportunities for promoting physical activity in the workplace

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Although there would appear to be considerable potential for improving the health, productivity and quality of life of the Australian workforce through workplace physical activity (PA) promotion programs, the scientific evidence that such programs are effective is limited. This review appraises the quality of intervention studies conducted since 1997. Most studies included volunteer participants, who were either sufficiently motivated to change their behaviour or already active. Interventions that focused on corporate-fitness type programs and the provision of generic health education programs were not effective in terms of adequate participation rates and sustained behaviour change. The more successful individually-based programs were those which tailored materials to individual needs. The greatest potential for influencing the overall workforce appeared to be programs that included less 'organised' approaches and promoted incidental PA within and around the workplace. Future programs should: incorporate contemporary theories of behaviour and organisational change; emphasise linkages between the workplace and external settings; expand the profile of programs to address workplace culture; and encourage management support for behavioural adjustments to the organisation. There is a need for greater understanding and evaluation of desirable employer-related outcomes, such as reduced absenteeism, job stress and turnover and improved productivity and job satisfaction, coupled with the exploration of how these factors may relate to PA promotion and adoption. Finally, more in-depth evaluation strategies and complete descriptions of intervention programs are required, in order to identify the most effective strategies.

## Introduction

Workplace health promotion programs appear to have considerable potential in terms of improving the health, productivity and quality of life of the workforce[1]. A recent review of workplace physical activity (PA) programs reported some evidence of reduced absenteeism, inconclusive evidence of an effect on job satisfaction, job stress and employee turnover, and no evidence for a positive effect on productivity[2]. Previously, a comprehensive meta-analysis of the impact of worksite PA interventions on behaviour change also concluded that there was no strong evidence that these programs increase PA or fitness[3]. At the time of these reviews, however, there were few randomised controlled trials or methodologically rigorous trials on which to base more authoritative claims.

## Methods

Studies published since the meta-analysis published in 1998[3] were identified, using electronic databases Medline and Pubmed, using combinations of the following key words; worksite, workplace, corporate, employer, employee, PA,

exercise, health promotion, wellness, intervention and program. Personal journal libraries and the reference lists of the key articles identified were also perused for additional studies. Sixty-two papers were identified, of which 18 were cross sectional/descriptive studies, four did not have PA as one of the main outcomes, two were written in Japanese and six were review papers[2,4-8]. The remaining 32 papers were intervention studies that reported changes in PA as a key outcome variable. The quality of program implementation and evaluation procedures used in each study was appraised using a standardised approach using the following criteria: setting, activity target, research design, intervention type, sample, program compliance and retention, outcome measures and effects. No limitation was placed on programs included in this review in terms of study design, as some of the less well designed programs may include viable strategies which may be replicated and tested under more rigorous circumstances. Effect sizes were calculated for those studies that reported sufficient data and which used a randomised study design[14,24,27,28,30,33].

## Results

Of the 32 studies reviewed, five were randomised controlled trials (RCT)[18,26,28,29,33], six were randomised trials[14,17,23,24,27,30], seven were quasi-experimental trials with a reference or comparison condition[16,19,21,22,36,37,38], and the rest were non-experimental cohort studies with no control or comparison condition[8-13,15,20,25,31,32,34,35,39]. Of the 11 trials that used a randomised study design, most were conducted with multiple worksites and used either worksite[14,17,23,30-33] or individuals as the unit of randomisation[18,24,26-29].

Only nine studies were conducted in blue-collar organisations[14,16-19,21-23,36] with two of these being conducted in a rural area[14,16]. The most common workplace setting involved in the studies reviewed here were civil/public service agencies[8,9,15,19,20,30,31,32], hospitals[13,27,25], universities[11,24,34] and manufacturing sites[22,35,36].

Programs that targeted multiple risk factors were common[9,14,16,17,21,23,32,33,35,39]. Of the multiple risk factor interventions that used a randomised study design, all reported positive effects on some of the factors included in the program, but no significant effect on the PA outcome measure[14,17,33].

The most common strategies implemented in workplaces to promote PA involved either health checks[8,9,13,32,35,36,39], education programs[14,16-19,21,31,33], motivational prompts to be more active[11,14,17,20,23-27,30,33,34,36,37,39], workplace 'exercise programs'[9,13,18,19,22,28,29,31,32,35,36,39], incentive based programs[10,12,13,19,22,32,35,38] or some combination of these. Some programs offered individualised professional counselling[9,13,26,29,33,36,37], while others prompted self-directed behaviour change[8,14,15,20,23,24,26,27]. Overall some positive effects were reported, but mainly in samples of motivated volunteers. Studies that reported higher retention rates (>80%) in their final follow-up also appeared to have higher compliance rates in terms of recall or participation in the intervention program (>75%), and thus reported better PA outcomes[27,29]. Most studies, however, reported retention rates between 51% to 63%[14,17,18,23,26].

The programs that used annual health checks to identify 'at risk' individuals often had low overall participation rates (ranging from 28%[32] to 80%[36]), though it should be noted not all studies provided complete data. Those individuals who were screened and found to be 'at risk' were usually referred to their physician[39], the onsite fitness facility[9,13,36] or other educational type programs and seminars[32,

[39]. None of these strategies was particularly effective at changing behaviour. Even programs that offered financial incentives or health rebates[32,35] did not appear significantly to influence participation or behaviour change. Only one study evaluated the value of the incentive, and it reported that 39% of participants completed the program because of the incentive[13].

Onsite fitness facilities and short-term physical education programs are often only attended by those employees who are already active and healthy[13,19,31,32]. One controlled trial offered employees half time pay for the time they spent at any of the three, 30-minute exercise sessions offered per week[22]. The limited success of this program over the long-term led the authors to conclude that a much more comprehensive program, focused on working conditions and lifestyle factors, is required to produce permanent behavioural changes[22]. Other studies reported that supplementary programs of behavioural skills training[28] or individual counselling[36], coupled with access to a fitness facility, were more effective at changing and maintaining behaviour change than access alone.

Educational programs that were guided by theories of behaviour change and tailored to individual needs[14] were more effective than generic workshops on various health-related topics[16]. One RCT compared four 12-week programs (aerobic dance classes, stress management classes, health information seminars and combined health and stress management classes) and found that none of the programs had a significant impact on stress or sick leave[18].

Motivationally-tailored self-help print materials have been shown to be more effective at changing behaviour than standard self-help materials among volunteer employees[24,30]. However, an Australian-based RCT using similar motivationally-tailored self-help print materials failed to have any significant impact on PA among non-volunteer participants[24]. This highlights the importance of evaluating programs with employees who are not sufficiently motivated to volunteer to be part of a research study, in order to examine the overall potential of the program to activate the sedentary.

Policy and environmentally-focused interventions have the potential to reach a whole workforce, not just select volunteers. Five of the studies reviewed here attempted to promote incidental PA through choices made by employees. Four studies used decisional prompts to encourage employees to use stairs instead of the lift[11,25,24,39], and one promoted active commuting to and from work[26]. All these studies showed significant short-term effects whilst the decisional prompts were present, but the results suggest that even more effort and innovative thought is required to generate significant long-term behaviour change. Nonetheless, these types of interventions are more likely to impact on inactive people who would not usually 'volunteer' for corporate fitness 'programs' or attend onsite fitness facilities.

The average effect size, for four studies which promoted PA using 'motivational prompts', was 0.34[14,24,27,30]. Similar effect sizes were calculated for a single workplace 'exercise program'[28] (0.37), for a study which used 'individual counselling'[33] (0.4) and, for 'single risk factor' intervention programs[24,27,28,30], (0.4). The effect size calculated for 'multiple risk factor' intervention programs[14,33] was lower (0.24).

## Discussion

### Where to from here?

Despite the fact that the workplace can provide a captive audience,

the studies reviewed here offer little evidence to support the long-term effectiveness of workplace PA programs. Just over a third of studies reviewed used a randomised study design, and just under a third used multiple risk factor interventions. The effect sizes calculated in this paper are higher than those reported by Dishman et al (mean effect size 0.11)[3] but the effects sizes reported here must be interpreted with caution as only six studies provided sufficient data to calculate them.

The impact of any program is maximised when recruitment and compliance are high and attrition is low. The modest recruitment and retention rates of the studies reviewed here (ranging from 40% to 80%) highlight a challenge: researchers need to identify and evaluate creative recruitment strategies to maximise and sustain employee involvement.

In order to move forward, more innovative and proactive strategies that impact on a greater number of employees (especially those who are inactive and who would not typically join an 'organised' program) are required. The most promising strategies appear to be promotion of incidental activity (eg, stair use and inter-office communication), incorporation of social support for activity and increasing active transport to/from work[11,25,24,26,39]. Simple strategies such as decreasing prolonged periods of sitting at work, or encouraging alternatives to 'passive' workplace electronic communication may also prove to be effective ways of promoting 'incidental' walking (as well as improved social communication) in the workplace.

Programs that incorporate contemporary theories of behaviour change along with organisational change issues (such as issues relating to workplace culture and the need for adjustments at an organisational level) may be more successful. Future programs should also include measures which will be of interest to managers, such as valid and reliable measures of productivity, job stress and absenteeism.

The results of one recent study suggested that greater effect may come from combining socio-behavioural programs with structural-environmental strategies[40], and a recently published checklist (CHEW, 'Checklist of Health Promoting Environments in the Workplace') may prove to be a useful measurement tool for identifying workplace attributes that could potentially be modifiable to promote PA, particularly in blue-collar worksites[41].

At the time of this review, no studies had investigated the associations between workplace environment, community attributes and PA behaviour. Programs that explore, create or enhance links between the workplace and the community at large could therefore be considered in terms of their potential for providing an overall supportive framework for behaviour change.

The studies reviewed here support the view that changing behaviour in this setting is complex, due to the difficulties of changing workplace and organisational culture without affecting the corporate 'bottom line'. There is a need for greater understanding and evaluation of desirable employer-related outcomes (reduced absenteeism, job stress, turnover and improved productivity, job satisfaction) and exploration of how these relate to PA promotion and adoption.

Finally, the context of workplaces in the 21st Century warrants consideration. Workplace health promotion programs arose in an era of occupational health and safety concern for employee's overall health and welfare. Today's economic climate may mitigate the rationale for workplace programs unless future research is able to show, through better designed interventions and more complete evaluations,

that these programs can have positive impact on the corporate bottom line.

## Conclusions

The main conclusions from this review are very similar to those identified by Dishman and colleagues in 1998[3]. Researchers are encouraged to provide more detailed descriptions of the intervention strategies and more in-depth evaluation in terms of detailing levels of recruitment, implementation and reach of intervention strategies, compliance and retention. More complete data sets will help to identify the more successful components of multi-strategy interventions, so that they may be replicated.

Positively influencing behaviour in the workplace requires a shift in focus from individual/personal behaviour change to more strategic, comprehensive approaches. These might include multi-strategy interventions that incorporate individually-tailored behaviour-change techniques, mass reach approaches (electronic and print media), and social support strategies, but most importantly should include management support and integration with the organisational structure. This will require a shift in thinking, so that 'interventions' are not seen as short-term programs, but as part of the culture of the workplace.

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