PANORG
Physical Activity Nutrition Obesity Research Group

Evidence module: Workplace physical activity and nutrition interventions

The University of Sydney

NSW HEALTH

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PANORG
Physical Activity Nutrition Obesity Research Group

The Physical Activity Nutrition Obesity Research Group (PANORG) at Sydney University undertakes policy relevant research to promote physical activity, nutrition and obesity prevention. It is funded by the Centre for Health Advancement, NSW Department of Health.

FOREWORD: INTRODUCING A SERIES OF EVIDENCE MODULES

As part of PANORG's role in supporting evidence-based policy and practice, we are preparing a series of 'Evidence Modules' that collate recent and new research on selected nutrition, physical activity and obesity prevention topics. The aim is to synthesise and summarise new information into an accessible and concise format.

The Evidence Modules will primarily focus on evidence relating to the effectiveness of interventions, although may also include formative research (i.e., research that does not evaluate interventions but may inform them). Building on previous reviews conducted by the Prevention Research Collaboration and Centre for Public Health Nutrition, these PANORG Evidence Modules will take a solution-oriented approach to identifying and describing 'best available' evidence.

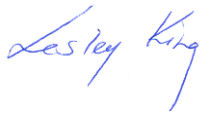
Topics
Topics for the Evidence Modules will be determined on the basis of policy-relevance, as well as newly emerging research. Further, given that evidence that guides chronic disease and obesity prevention and promotes nutrition and physical activity may be examined from a variety of perspectives, the Evidence Modules will cover a variety of settings (e.g., workplaces), target groups, strategies and topics related to nutrition, physical activity and obesity prevention. .

Audience
The principal audiences for these Evidence Modules are policymakers and health promotion professionals in NSW and Australia. This includes professionals working in government agencies, Area Health Services and non-government and community organizations who have an interest in overweight and obesity prevention and promotion of healthy nutrition and physical activity.

Formats
A wide range of evidence summary formats are currently used by different international agencies, such as NICE in the UK, CDC in the US and Effective Public Health Practice Project, Summary Statements prepared by the Public Health Research, Education and Development Program in Canada. The different formats reflect the differing aims and emphases of the summaries. For example, a number of formats focus on a single systematic review and highlight the quality and levels of evidence; others have synthesised multiple studies, or interpreted current knowledge in order to guide implementation.

Drawing on these different approaches, the PANORG Evidence Modules will:

- Synthesise information from multiple reviews and studies (rather than based on a single review or study), and adopt an inclusive approach that considers research of mixed methodological quality.
- Consider the applicability of findings to the Australian and NSW population and organizational contexts.
- Interpret the findings and provide guidance on implications for practice, note considerations for implementation and identify research gaps.



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Evidence module: workplace physical activity and nutrition interventions
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Summary

This evidence module provides an overview of the best evidence currently available about workplace health promotion programs to promote physical activity, healthy diet or both and prevent overweight and obesity. It synthesises findings and recommendations from multiple systematic reviews and recent reports.

The main findings are:

There is strong evidence that multi-component workplace interventions that address physical activity, nutrition or both are effective for increasing physical activity, promoting healthy eating and preventing non-communicable illnesses like obesity.

Effective types of physical activity strategies to implement include

- providing prompts to encourage stair use;
- providing access to places or opportunities for physical activity; and
- providing education or peer support.

Effective types of strategies to address nutrition are those that modify the food environment. This includes

- food labeling;
- point-of-purchase promotions; and
- providing access and improving availability of healthy food choices such as in canteens and vending machines.

There is also evidence that the following approaches are important elements of effective multi-component interventions that target physical activity, nutrition, or both,

- providing counselling or individual behavioural skills training; and
- involving workers in program development and implementation,

Further research is needed to increase the generalisability of programs to all workers and different population groups, including those most at risk, as well as to examine the degree to which strategies may be translated and sustained across different working contexts, such as part-time, casual, blue collar and rural workforce groups. More evidence of the long term sustainability of interventions, as well as data on their economic efficiency (e.g. cost-effectiveness), is needed.

1 Introduction

This evidence module presents an overview of the best evidence currently available about workplace health promotion programs to promote physical activity and healthy eating and prevent overweight and obesity. Synthesising findings and recommendations from several systematic reviews and overview documents, it describes workplace interventions where there is good evidence of effectiveness, as well as the range of possible interventions points. Where possible, the economic efficiency, such as cost-effectiveness and return-on-investment, of workplace interventions are described.

1.1 Healthy workers, a part of Australia's preventive health strategy

The importance of worker health and of the workplace as a setting for health promotion is recognised in the National Partnership Agreement on Preventive Health between the Commonwealth, State and Territory governments, which stresses healthy workers as a key objective.(1) The States and Territories have been funded to facilitate the delivery of healthy living programs in the workplace. Furthermore, workplace health promotion complements key action areas of the National Preventative Health Taskforce Strategy for addressing obesity.(2) The relevant key action areas include promoting environmental changes in the community that increase physical activity and reduce sedentary behaviours; changing food supply to increase the availability and demand for healthier foods and decrease the availability and demand for unhealthy foods; and to embed physical activity and healthy eating in everyday life.

1.2 The NSW working population

In NSW, 60.0% of the total population is engaged in employment (full-time or part-time).(3) Those employed full-time work an average of 39.2 hours per week, while part-time workers work 16.1 hours per week on average. Among NSW workers, who work at one location only for their main job, 4.8% work from own home, 1.1% work from another or employer's or clients home, 91.7% work in a workplace and 2.4% work while travelling or from another location.(4)

In NSW there are 679,620 businesses; among these 294,363 (43.3%) are employing businesses and 385,257 (56.7%) are non-employing businesses. Most employing businesses are small businesses, employing less than 20 employees (90.9%), and approximately 8% of other employing businesses are medium or large businesses (<1%), employing 20 to 200 people and over 200 people respectively.(5)

1.3 Health benefits of workplace physical activity and healthy eating programs

The World Health Organisation and Work Economic Forum highlight the workplace as an important setting for health promotion action and have produced a report on preventing non-communicable diseases in the workplace through diet and physical activity.(6) This joint-report concluded that workplace health promotion programs targeting physical activity and diet are effective in promoting lifestyle behaviours

(e.g., increasing physical activity participation and improving nutritional choices); improving risk factors for non-communicable diseases (e.g., reducing BMI, reducing blood pressure); and facilitating organisational-level changes (e.g., reducing absenteeism). Benefits of workplace health promotion programs that target physical activity include increased physical activity levels, reduced relative body fat percentage, decrease musculoskeletal disorders and improvements in cardiorespiratory fitness. For those programs that target healthy diet, beneficial outcomes include increased fruit and vegetable intake, decreased intake of unhealthy dietary fat, significant reduction in weight and BMI (see Table 1).

Table 1. Possible benefits of workplace health promotion programs that target physical activity, diet or both.(6)

Intervention	**Physical activity**	**Diet**	**Physical activity and diet**
Benefits	- increased physical activity levels - reduced relative body fat percentage - decreased musculoskeletal disorders - improved cardiorespiratory fitness	- increased fruit and vegetable intake - decreased unhealthy dietary fat intake - reduction in weight and BMI	- promote lifestyle behaviours - improved risk factors for non-communicable diseases - facilitate organisational-level changes

The US Task Force on Community Preventive Services recommends the use of workplace health promotion programs that target nutrition or physical activity or both to improve the weight status of employees.(7) The Task Force conducted a systematic review involving 47 studies and found strong evidence that worksite health promotion programs aimed at improving nutrition or physical activity or both are effective in reducing body weight and BMI.(8) They found intervention effects that consistently favoured the intervention group compared to controls for two outcomes-body weight and BMI. Their findings indicate that employees in the intervention groups lost 2.8 pounds (95% CI: -4.6,-1.0) or reduced their BMI by 0.5 units (95% CI: -0.8, -0.2) when compared to controls at the 12-month follow-up. Granted the intervention effects on body weight and BMI may only be modest at the individual level; however at the population level, these modest effects may potentially prevent overweight and obesity when applied to a substantial proportion of the working population in concert with other clinical and community interventions.(8)

In addition, Conn and colleagues carried out a meta-analysis of the health and physical activity outcomes from workplace health promotion programs.(9) They synthesised standardised mean difference effect size data from approximately 38,231 subjects and found significant positive effects for a range of health outcomes, including physical activity behaviour, fitness, lipids, anthropometric measures, work attendance and job stress. Although significant heterogeneity means that these findings should be interpreted carefully, the evidence, nevertheless, suggests that workplace physical activity interventions can improve health and work-related outcomes.

1.4 Economic benefits of workplace physical activity and healthy eating programs

Economic reasons for investing in workplace health promotion (physical activity and/or nutrition) include enhanced worker productivity, improved workplace morale and workplace culture, reduced absenteeism, improved corporate image, improved staff retention, reduced work-related injuries, and reduced medical costs.(10-12) The evidence of economic efficiency in the literature is mixed but it is accepted broadly that workplace health promotion programs have the potential to increase economic returns for employers and governments.(8, 11)

A recent review of published studies on worksite wellness conducted in the US found a return-on-investment of $3.48 per dollar invested in workplace health promotion due to reduced medical costs and $5.82 per dollar invested due to reduced absenteeism.(13) Another review found strong evidence for an average of slightly over 25% in reduction in sick leave, health plan costs, workers' compensation and disability costs.(14) Based on three studies, the US Task Force for Community Preventive Services found that cost-effectiveness of workplace obesity prevention programs range from $1.44 to $4.16 per pound lost; a difficult finding to interpret in terms of how weight loss may be translated into a health outcome like reduced disease incidence, improved quality of life or increase in years of life.(8) The Task Force concluded that workplace obesity prevention programs generally have potential to increase profits by increasing productivity and reducing medical and disability costs, but more research is needed regarding the economic efficiency of such programs; particularly because worksite health promotion programs rarely focus on obesity as a single strategy, rather focusing on comprehensive strategies that target a range of risk factors.

2 Effective strategies for increasing physical activity and promoting healthy eating in the workplace

Based on the findings from several reviews of the literature, there is strong evidence that multi-component workplace interventions that address physical activity, nutrition or both are effective for increasing physical activity, promoting healthy eating and preventing non-communicable illnesses like obesity. (see Tables 2 and 3 on the following pages)

Effective types of physical activity strategies to implement include

- providing prompts to encourage stair use;
- providing access to places or opportunities for physical activity; and
- providing education or peer support.

Effective types of strategies to address nutrition are those that modify the food environment. This includes

- food labeling;
- point-of-purchase promotions; and
- providing access and improving availability of healthy food choices such as in canteens and vending machines.

There is also evidence that the following approaches are important elements of effective multi-component interventions that target physical activity, nutrition, or both,

- providing counselling or individual behavioural skills training; and
- involving workers in program development and implementation,

Nonetheless there are some limitations to these reviews. The main limitation is that they have examined research predominantly conducted in North America or Europe and so may be less applicable in the Australian context.(8, 11, 15-17) It is also possible, that many of the effects found in the literature may be due to sampling bias; that is many of the workplace trials involved self-selected volunteers who may have been motivated to change their behaviour already.(18) More research is needed to increase the generalisability of programs to all workers and different population groups, including those most at risk, as well as to examine the degree to which strategies may be translated and sustained across different working contexts, such as part-time, casual, blue collar and rural workforce groups. More evidence of the long term sustainability of interventions, as well as data on their economic efficiency (e.g. cost-effectiveness), is needed.

Table 2. Main findings from reviews of workplace interventions to promote physical activity and healthy eating and to prevent obesity

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Dishman 1998 (19)	Meta-analytic review	Searched multiple databases and reference lists, consulted with experts	1972 to August 1, 1997	Studies which were in workplaces and measured physical activity in a way that permitted change to be calculated post-intervention	26 studies (almost 9000 subjects yielding 45 effects)	No clear effect that workplace interventions increase physical activity or fitness.
Kahn 2002 (20) US Task Force on Community Preventive Services	Systematic review	Searched 7 databases for papers published in English, reference lists or review papers, and consulted with experts	1980 to 2000	Physical activity interventions which used informational, behavioural, social, environmental and policy approaches	6 studies (point-of-decision prompts to encourage stair use) 18 studies (behavioural skills training) 10 studies (enhanced or created environments for physical activity)	Point-of-decision prompts to encourage stair use are likely to be effective across diverse settings and population groups, provided attention is given to adapting messages as appropriate. Individually-tailored behavioural skills training is effective for increasing physical activity overall and appear to be applicable to a range of settings provided attention is given to adapting interventions to the target group. Enhancing or creating places for physical activity appear to be effective in increasing physical activity and the evidence suggests that this may be applicable to diverse settings and populations with appropriate adaptations for target groups.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Proper 2003 (21)	Systematic review	Searched multiple databases for papers published in English	1980 to 2000	RCT and non-RCTs of workplace physical activity or fitness interventions involving working populations, and had physical activity or fitness or health-related outcomes	15 studies	Strong evidence that workplace physical activity interventions positively affect physical activity participation. Inconclusive evidence that workplace physical activity interventions affect body weight, body composition, cardiorespiratory fitness, blood serum lipids, blood pressure and general health.
Marshall 2004 (18)	Narrative review	Searched 2 databases for paper published since Dishman 1998 meta-analysis	1997 to 2004	Workplace interventions that reported physical activity changes as key outcome	32 studies	No clear evidence that workplace intervention increase physical activity. Some evidence that individually-tailored programs had an effect.
Engbers 2005 (22)	Systematic review	Searched multiple databases	Up to Jan 2004	Studies on worksite health promotion programs with environmental modifications and physical activity, dietary intake and health indicators as outcomes.	13 studies, mostly multi-centre trials	Strong evidence from multi-centre trials that environmental modifications have positive effect on dietary intake. Modifications included food labelling, provision of healthy choices in canteen and vending machines. Inconclusive evidence for an intervention effect on physical activity. No evidence for an intervention effect on health risk indicators.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Katz 2005 (23) US Task Force on Community Preventive Services	Systematic review	Searched multiple databases and reference lists for papers published in English; consulted with experts	1966 to 2001	Studies which aimed to prevent and control overweight and obesity in workplace settings	20 studies (initially identified 31 studies, 11 of which were excluded due to low-quality)	Recommends multi-component interventions that include nutrition and PA to control overweight and obesity among adults in workplace settings. Interventions include strategies such as providing nutrition education or dietary prescription, physical activity prescription or group activity, and behavioural skills training and development. Insufficient evidence to determine effectiveness of single component interventions targeting nutrition, physical activity, or cognitive change alone.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Matson-Koffman 2005 (24)	Literature review	Searched for papers on policy or environmental interventions to promote physical activity and/or good nutrition	1970 to Oct 2003	Experimental and quasi-experimental designs and reported behavioural, physiological or organisational change outcomes	5 studies (prompts to increase stair use) 6 studies (access to places and opportunities for physical activity) 5 studies (comprehensive work-site approaches, including education, employee and peer support for physical activity, incentives, and access to exercise facilities) 33 studies (availability of nutritious foods) 29 studies (point-of-purchase strategies) 4 studies (systematic officer reminders and training of health care providers to provide nutritional counseling)	Policy and environmental strategies may promote physical activity and good nutrition. Strongest evidence for influencing physical activity and nutrition behaviors for interventions that involved prompts to increase stair use; access to places and opportunities for physical activity; comprehensive work-site approaches, including education, employee and peer support for physical activity, incentives, and access to exercise facilities; the availability of nutritious foods; and point-of-purchase strategies.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Bellew 2008 (11)	Review	Searched 2 databases for papers published on health promotion, health education, worksite wellness, chronic disease prevention Secondary searches of reference lists. Searched for relevant reviews from Cochrane library, Centre for Reviews and Dissemination, and CDC Community Guide Preventive Services Task Force	Jan 1996 to Jun 2008	Systematic reviews, meta-analytic reviews, non-systematic reviews and single studies (emphasis on RCTS and Cohort studies)/ and other relevant reports with information about study details, aim, population(s) involved, and main conclusions	16 systematic reviews 100 additional studies; 29% were about nutrition, 31% were about physical activity, 6% dealt with chronic disease or >1 risk factor Majority of papers from North America and Europe	Found strong to definitive evidence for effectiveness physical activity interventions with the following strategies: prompts to increase stair use; access to places and opportunities for physical activity; education, employee and peer support; multicomponent interventions combing nutrition and PA. Found strong to definitive evidence for effectiveness of nutrition interventions using the following strategies: multi-component interventions that include PA and nutrition (e.g. nutrition education, dietary prescription, behavioural skills development and training to control adult overweight, obesity); improved access to and availability of nutritious foods; promotional strategies at point-of-purchase Found strong to definitive evidence that comprehensive or multi-component programs were effective for reducing individual risk for high risk employees.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Dugdill 2008 (15)	Systematic review	Searched multiple databases and grey literature for English-language papers	1996 to 2007	Workplace physical activity interventions aimed at adults and had employer support Only reviewed studies from Australia, UK, US, Canada and Europe	38 studies	Strong evidence that workplace counselling can influence physical activity behaviour. Limited evidence that stair use interventions (prompts, messages) are effective for increasing stair use. Some evidence that workplace interventions to promote walking using pedometers are effective for increasing daily steps. Limited evidence for small and medium-sized companies.
Robroek 2009 (25)	Systematic review	Searched 2 databases for papers on worksite health promotion programs targeting physical activity and/or nutrition	1988 to 2007	Studies that reported quantitative information on determinants of participation	10 studies (education or counselling) 6 studies (fitness centre intervention) 7 studies (multi-component programs)	Women are more likely than men to participate in educational and multi-component workplace programs. Programs that provide incentives and multi-component interventions are most likely to attract participants. Interventions that target multiple behaviours attract more participants than interventions that only target physical activity.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
Anderson 2009 (8) US Task Force on Community Preventive Services	Systematic review	Searched multiple databases for worksite nutrition or physical activity interventions for controlling weight of employees published in English; searched reference lists and consulted with experts	Up to Dec 2005	Studies that evaluated a worksite health promotion program that included strategies involving diet, physical activity or both; and involved working adults; and provided data on at least one weight-related outcome measured at least 6 months from baseline.	47 studies (Half from US)	Strong evidence that workplace interventions aimed at improving nutrition, physical activity or both have a modest effect on weight, and that this is applicable to men and women in a range of workplace settings. Limited evidence to suggest differential program effects by program focus (nutrition, physical activity or both) or program components (information, behavioural skills, environmental, policy), but more or more intensive intervention components appeared to increase program effects. Insufficient evidence on different population groups; limited generalisability. More research needed on economic efficiency of such programs.
Conn 2009 (9)	Meta-analysis	Searched 11 databases for published and unpublished interventions reported in English	1969 to 2007	Workplace health promotion programs with health and physical activity outcomes reporting adequate data to calculate effect size for at least three subjects	Synthesised the standardised mean difference effect sizes for about 38,231 subjects involving 138 studies and 206 comparisons	Workplace physical activity interventions can improve health and work-related outcomes. Significant positive effects found for physical activity behaviour, fitness, lipids, anthropometric measures, work attendance and job stress. Significant heterogeneity for most outcomes due to the diversity of studies included.

Review	Type	Search strategy	Years	Inclusion criteria	No. studies included	Main findings
WHO 2009 (16, 17, 26)	Systematic review	Searched multiple databases for studies restricted to diet and/or physical activity published in English; grey literature also included	Jan 1995 to Jun 2006	Interventions addressing diet and/or physical activity at group, community or population levels; focused on disadvantaged communities and low- to middle-income countries.	38 workplace interventions; 5 targeted disadvantaged communities; majority from North America, some from Europe.	Effective components of multi-component interventions included providing healthy food and beverages at workplace facilities; providing space for fitness; using signs to encourage stair use; involving employees in program planning and implementation; involving families in interventions via self-learn programs, newsletters, festivals, etc; providing individual behaviour change strategies and self-monitoring.

Table 3. Types of intervention approaches and their strengths and limitations.

Intervention approach	Strengths	Limitations
Prompts to use stairs	Effective for increasing the proportion of people choosing to use the stairs rather than an elevator or escalator. Likely to be effective in a range of settings and population groups, provided messages are adapted to suit different groups.	Evidence indicates changes in behaviour in the short term, limited evidence of sustained change. Not clear whether people change their stair use behaviour for trips up or downstairs. Barriers to implementation include difficulties locating or accessing stairs, poorly maintained, lit or secured stairways.
Providing or enhancing access to places or opportunities for physical activity	Effective for encouraging people to increase physical activity. Evidence suggests beneficial effects on weight, percentage body fat, strength, flexibility and confidence to exercise regularly. Could be applicable to diverse settings and populations if appropriate attention given to adapting to population group.	Evidence of long-term effectiveness lacking.
Education or peer support	Education approach is more effective in combination with behavioural counselling than alone. Could be applicable to diverse settings and populations if appropriate attention given to adapting to population group.	Evidence that there are no differences in effects when a program is delivered by a professional versus a lay group leader. Evidence that providing generic health education programs are not effective. Evidence of long-term effectiveness lacking. Possible selection bias and limited reach.

Individual counselling, behavioural skills training	Evidence that individually-tailored programs are effective for increasing physical activity. Structured program has greater benefits than unstructured or self-directed programs. Behavioural counselling plus informational approaches more effective than informational alone. May be applicable to diverse population groups and settings, provided interventions are adapted to suit different groups.	Possible sampling or self-selection biases (e.g., volunteers, middle-aged participants) limit generalisability to population. Evidence of long-term effectiveness lacking.
Providing pedometers	Some evidence that workplace walking interventions using pedometers in combination with goal-setting and self-monitoring diaries can increase daily step counts.	Evidence of effectiveness in increasing daily step counts derived from three studies involving public sector workplaces. I.e., limited generalisability to population. Evidence of long-term effectiveness lacking.
Individually-tailored physical activity program	Evidence that structured program has greater benefits than unstructured or self-directed programs. Evidence that less organised strategies such as promoting incidental walking within and around the workplace are promising.	Evidence that providing generic health education and corporate fitness program not effective. Possible sampling or self-selection biases (e.g., volunteers, middle-aged participants) limit generalisability to population. Evidence of long-term effectiveness lacking.
Modifications to food environment (e.g., labeling, point-of-purchase prompts, access and availability of healthy choices in canteens and vending machines)	Evidence found for a positive effect on dietary intake, fruit and vegetable consumption, dietary fat intake (decreased fat consumption).	Not applicable to workplaces without food services. Evidence of long-term effectiveness lacking.

Multi-component interventions that target physical activity and nutrition (may include a combination of the above approaches)	Evidence typically indicates greater weight loss than single-component programs. Program with multiple components and more intensive intervention modes appear to have greater impact. Programs more likely to attract participants when they involve multiple components and target multiple behaviours. Likely to be effective in a range of settings and population groups, provided components and messages are adapted to suit different groups.	Evidence does not consistently indicate greater weight loss than single-component programs. Difficult to attribute effects on physical activity, diet or weight to any particular component. Evidence of long-term effectiveness needed.

3 Key elements for implementing workplace health promotion strategies

Several factors have been identified has essential elements to consider when implementing physical activity and healthy diet strategies in the workplace.(4, 9, 10, 14, 27) Table 4 presents these key elements, extending along the continuum from organisational to environmental to individual employee levels.

Table 4. Key elements for implementing workplace health promotion strategies

Level	Key elements
Organisational level	Linking programs and policies to organisational objectives and values. Integrating with business practices. Organisational policies that support healthy lifestyle to ensure long-term commitment, resources and sustainability.
Management level	Management support and involvement, from senior through to middle management, to ensure equal access and support to all workers. Optimise use of resources; ensure adequate provision of staff, time and resources for program development and implementation. Set goals and indicators of success within realistic timeframes. Ensure long-term commitment to the program.
Environmental level	Supportive organisational environment. Provide access to resources and assistance. Give targeted employees time to learn how to deliver and use the program components. Making program accessible or easy to use and redesigning work processes to increase opportunities and facilitate healthy physical activity and diet choices.
Cultural level	Communication, marketing and promotion of programs to employees. Clear and frequent messages via multiple communication channels.
Individual/ employee level	Participatory planning; involve, engage and consult employees. Conduct needs assessments as part of project planning to identify employee needs, likes, dislikes; help tailor programs to their needs
Program level	Building effective programs across the individual to environment continuum, to address factors that affect health and productivity at individual, environmental, policy and cultural levels at the same time. Develop and implement multi-component programs that target several health issues. Attain high participation rates. Tailoring programs to focus on employees' needs. Evaluate program and policies to provide indication of whether programs are achieving their goals; demonstrate value of program and provide accountability to management to influence support and funding for future implementation and sustainability. Dissemination of outcomes and findings to stakeholders.

4 The role of stakeholders

The WHO and WEF report(6) identifies stakeholders and the roles that they may play in promoting physical activity and healthy diet in the workplace to reduce chronic diseases. Stakeholders who are relevant to the Australian context are presented in Table 5 along with the rationale for why they should take action and how they may take action.

Table 5. Stakeholders for workplace health promotion, rationale and potential action. (adapted from WHO/WEF)(6)

Stakeholder	Why?	How?
National, state and local government	Governments of all levels have responsibility for disease prevention and health promotion at societal and community levels. Employers are accountable to government for the health and safety of their employees. A healthy workforce contributes to the finances of the country.	Include workplace health promotion in policies to create health-promoting workplace environments. Create national, state and local opportunities for employers to participate in health promotion initiatives; e.g. campaigns, accreditation and award schemes, capacity building programs, tax benefits.
Non-government organisations	May be concerned with operational or advocacy roles. Operational – involved with development and implementation or health-related projects. Advocacy – raise awareness, lobbying, encourage acceptance of workplace health promotion	Engage in advocacy in promoting diet and PA as key health goals and the workplace as a setting for health promotion by stakeholders. Develop programs and establish and disseminate good practice.
Employers	A fit and productive workforce is important for the organisation to be competitive and be able to deliver products and services to clients. Employer of choice	Be involved in national or local workplace health promotion campaigns and programs. Raise awareness of the benefits of healthy nutrition and physical activity to workers. Create supportive workplaces for adopting healthy diet and participating in physical activity.
Employees	It is important to engage employees to participate in workplace health promotion programs in order to affect health outcomes at the organisational and population level. Employee champions can assist with program implementation, uptake and sustainability. Improve employee health and wellbeing.	They are the participants in workplace programs. They are the messengers for information about healthy diet and physical activity amongst their colleagues and also to the wider community.

Trade unions	Provide members with support regarding workplace conditions, health and safety.	Raise awareness among members of the benefits of healthy eating and PA. They may also advocate to help employees negotiate and bring about health promoting-changes in the workplace.
Health insurance funds	Having a healthy client base reduces treatment costs and benefits fund members.	Advocate for health-promoting workplaces. Provide funding to workplaces to help develop, implement and evaluate programs.
Other organisations (e.g., agriculture, food production, food distribution, catering industry, fitness providers, built environment, transport)	They are an integral part of the supply chain and influence food and exercise behaviours through pricing, access and availability.	Ensure foods prepared with ingredients that meet nutritional standards. Help make healthy foods and physical activity opportunities and resources affordable and accessible.

5 Conclusions

Several reviews of the literature indicate that workplace health promotion programs that address physical activity, healthy diet or both can reduce the risk for chronic conditions like obesity. Other benefits comprise enhanced worker productivity, reduced absenteeism, improved corporate image, improved staff retention, reduced work-related injuries, and reduced medical costs.

Multi-component interventions are most effective and strategies may be aimed at several levels including the organisational, environmental and individual levels. It is important to consult and engage stakeholders in the development and implementation of programs to ensure program feasibility, commitment and sustainability.

The physical activity strategies with strong evidence of effectiveness include providing prompts to encourage stair use, providing access to places or opportunities for physical activity and providing education or peer support. The strategies to address nutrition with strong evidence of effectiveness are those that modify the food environment, including food labeling, point-of-purchase promotions, and providing access and improving availability of healthy food choices such as in canteens and vending machines. Providing individual behavioural skills training has also been found to be effective for improving physical activity, nutrition or both.

This evidence snapshot has identified the following research gaps:

- More Australian studies are needed to help design, test and implement effective workplace health promotion interventions relevant to the Australian population.

- Further research is required involving more representative participant samples. This would help increase the generalisability of programs to workers across different population and industry groups.

- Translational research should be conducted to examine the degree to which trialed programs may by implemented and sustained across different working contexts and roles, such as part-time, casual, blue collar and rural workforce groups.

- There is little evidence on the sustainability of interventions over longer periods of time, and little is known about the cost-effectiveness of interventions that address physical activity and nutrition.

6 Implications

The program elements outlined above indicate that any large-scale, comprehensive workplace health promotion program requires considerable infrastructure, if they are to achieve reductions in chronic disease risk amongst adults and attain high reach across different industry groups, as well as high degrees of engagement and participation at workplace level. This program infrastructure might be expected to involve:

- The development of partnerships to underpin the necessary program.
- Support for employers to assist and encourage them to implement WHP programs (resources and tools, grants and/or funding of specific interventions, awards/best practice standards, training, consultancy and support, advice about providers).
- Systems to encourage high quality and best practice from private providers.
- Training and development opportunities to ensure there is a delivery workforce.
- A marketing strategy to promote the workplace as a setting for health improvement.
- Development of an evaluation and monitoring system.

There are many existing international examples of resources, guides and toolkits which address these various elements and which could be used as the basis for implementation in NSW and Australia. A summary of these may be found in Appendix 1.

As the National Preventative Health Strategy unfolds, several states (e.g., Tasmania, Victoria, South Australia, Western Australia) are developing and implementing workplace health and wellness programs. More evidence of what works and what does not work in different Australian workplace contexts will accumulate and inform the further refinement and development of workplace healthy eating and physical activity programs.

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Appendix. Summary of existing international examples of resources, guides and toolkits to aid development and implementation of workplace health promotion programs

(Sourced from an unpublished report to NSW Health, *Options for a Workplace Health Promotion System in NSW* prepared by Robyn Newson)(27)

It is important that employers are provided with a variety of resources and tools to help them implement workplace health promotion programs.

Resources should address the following topics:

- Obtaining management support/commitment to the program
- Establishing a workplace health committee
- Conducting situational assessments (e.g. employee needs assessments, environmental assessments)
- Developing an action plan
- Writing workplace health policies
- Changing organisational culture
- Choosing appropriate interventions and developing an implementation plan
- Managing a workplace health promotion program
- Marketing the program and maintaining motivation
- Evaluating the program
- Reviewing and consolidating the approach.

Tools may take the form of:

- Business case templates and presentations
- Cost/benefit calculators
- Workplace self-assessments
- Employee needs assessment surveys
- Environmental audit tools
- Action and implementation plan templates
- Policy templates
- Examples of possible interventions
- Intervention classification systems to aid in selection of interventions
- Checklists for selecting suitable interventions
- Advice about selecting suitable providers
- Case studies
- Marketing and promotional materials
- Health education materials
- Checklists related to the key steps in the implementation process.

Table A1 presents examples of good workplace health promotion resources that cover the key topics necessary for developing and implementing programs in the workplace.

Table A2 shows examples of other tools that may be useful in the NSW context.

Table A1. Examples of good workplace health promotion resources that cover the key topics necessary for developing and implementing programs in the workplace.

Place of Origin	Name /URL, source	Description	Comments
Tasmania Australia	*Get Moving at Work* http://www.getmoving.tas.gov.au/article.php?article_id=138 Source: Premier's Physical Activity Council	Covers most of the listed topics and is well presented. Provides links to an online employee survey tool and workplace audit tool.	Could be easily adapted to the NSW context
North Carolina USA	*NC HealthSmart – Worksite Wellness Toolkit* http://www.eatsmartmovemorenc.com/Resources/wwtoolkit/index.html Source: North Carolina Division of Public Health	5 comprehensive workbooks: Committee Workbook; Eat Smart; Move More; Quit Now; and Manage Stress. The Committee Workbook contains step-by-step instructions for setting up a worksite wellness committee, including sample meeting agendas, employee and worksite surveys, and informational posters and letters. The other workbooks provide information on how to set up activities for the corresponding issues and also offer guidelines for creating supportive policies and environments.	Excellent ready to use tools, templates, education and marketing materials.
Wisconsin USA	*Worksite Wellness Toolkit* http://dhs.wisconsin.gov/health/physicalactivity/Sites/Worksite%20pdfs/Toolkit2ndeditionAugust2007final.pdf Source: Wisconsin Department of Health Services	Comprehensive resource that covers most of the listed topics. Provides information on Health Risk Appraisal; Physical Activity; Nutrition; Mental Health; Tobacco Cessation interventions categorised by their resource intensity. Good selection of checklists and assessment tools.	Appeals to employers 'bottom line'. Well presented and innovative approach.
Singapore	*Essential Guide to Workplace Health Promotion: the ABCs of managing your organisations program* http://www.hpb.gov.sg/hpb/default.asp?pg_id=2158 Source: Singapore Government Health Promotion Board	10 downloadable workbooks covering pre-planning, planning and implementation. Each book contains easy to use checklists and other tools/templates. The workbook on selecting interventions that work is particularly innovative.	The resource is part of a comprehensive approach which also includes grants, co-funding, training and other resources.

Table A2. Other examples of tools to facilitate workplace health promotion that may be useful in the NSW context.

Source	Link/URL
Business case templates and presentations	
Public Health Agency of Canada and Canadian Council for Health and Active Living at Work	http://www.phac-aspc.gc.ca/pau-uap/fitness/work/case_template_e.html
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/pdf/thinkfit.ppt
Comprehensive Workplace Health Promotion Project (CWHP) Health Communication Unit (THCU), University of Toronto, Canada	http://www.thcu.ca/Workplace/documents/Business%20Case%20v101.1%20rev%20june%2024.ppt
Healthy Active Workplaces, WA Department of Sport and Recreation	http://www.dsr.wa.gov.au//assets/files/Healthy_Active%20Workplaces/making%20the%20business%20case%20to%20management.ppt
	http://www.ccohs.ca/healthyworkplaces/employers/why.html
Cost/benefit calculators	
UK Working for Health initiative, *Business HealthCheck Tool*	http://www.workingforhealth.gov.uk/Employers/Tool/
UK National Institute for Health and Excellence (NICE)	http://www.nice.org.uk/nicemedia/pdf/PH13WorkplaceBusinessCase.xls
Workplace self-assessments (often online)	
WorkHealth Victoria (online)	http://www.workhealth.vic.gov.au/wps/wcm/connect/WorkHealth/Home/How/Information+and+resources/Healthy+workplace+check/WorkHealth+workplace+quiz
European Network for Workplace Health Promotion – Self-assessment Tool	http://www.enwhp.org/fileadmin/downloads/questionnaire.pdf
Texas Department of Health Services – *Worksite Wellness Index*	http://www.dshs.state.tx.us/wellness/resource/wwibody.pdf
Wellness Council of America – Well Workplace Checklist (online)	http://welcoa.org/wwpchecklist/
Employee needs assessment surveys	
Get Moving at Work, Tasmania	http://www.getmoving.tas.gov.au/article.php?article_id=151 http://www.getmoving.tas.gov.au/RelatedFiles/PPAC_Employee%20Survey.pdf
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/wdocs/employee_needs_assessment.doc http://www.bhf.org.uk/thinkfit/pdf/eat%20well%20employee%20sample%20survey.pdf http://www.bhf.org.uk/thinkfit/uploaded/think%20well%20employee%20survey%20bhf_think_fit_42-48.pdf
Wellness Council of America – *Needs and Interest Survey*	http://welcoa.org/freeresources/pdf/dc_allegheny_needs.pdf http://welcoa.org/freeresources/index.php?category=11
Singapore Health Promotion Board – WHP Toolbox	http://www.hpb.gov.sg/hpb/default.asp?pg_id=2144
Environmental audit tools	
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/pdf/eat%20well%20workplace%20assessment%20sample%20questionnaire.pdf

Source	Link/URL
	http://www.bhf.org.uk/thinkfit/wdocs/workplace_assessment.doc
The Checklist of Health Promotion Environments at Worksites (CHEW), Australian National Workplace Health Project.	Oldenburg, Sallis, Harris & Owen. "Checklist of Health Promotion Environments at Worksites (CHEW): Development and Measurement Characteristics." American Journal of Health Promotion, 16(5):188-199, 2002.
Action and implementation plan templates	
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/pdf/be%20active%20action%20plan%20template.pdf http://www.bhf.org.uk/thinkfit/pdf/developing%20and%20delivering%20your%20eat%20well!%20actions%20template.pdf
Texas Department of Health Services - *Sample Outline for Developing an Organisational Employee Wellness Plan*	http://www.dshs.state.tx.us/wellness/PDF/SampleOutline.pdf
Policy templates	
Healthy Active Workplaces, WA Department of Sport and Recreation	http://dsr.wa.gov.au//assets/files/Healthy_Active%20Workplaces/Corporate_Health_and_Wellbeing_Policy.pdf http://www.bhf.org.uk/thinkfit/wdocs/policy.doc
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/pdf/eat%20well%20workplace%20healthy%20eating%20sample%20policy.pdf
Singapore Health Promotion Board – WHP Toolbox	http://www.hpb.gov.sg/hpb/default.asp?pg_id=2144
Examples of possible interventions and intervention selection tools	
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/pdf/ready-to-use%20eat%20well%20challenges.pdf http://www.bhf.org.uk/thinkfit/pdf/ready-to-use%20eat%20well%20actions.pdf http://www.bhf.org.uk/thinkfit/pdf/sports_activity_calendar.pdf
Alaska USA – *TakeHeart Alaska*	http://www.partners.hss.state.ak.us/takeheart/pdf_files/Resource%20Guide%203-21-03.pdf
Wellness Council of America – *101 Ways to Wellness*	http://www.welcoa.org/wwp/pdf/101_Ways_To_Wellness.pdf
University of Toronto, Comprehensive Workplace Health Promotion Project - *Catalogue of 'Well-regarded' Interventions*	http://www.thcu.ca/Workplace/wri/index.cfm
European Network for Workplace Health promotion (ENWHP) – *European Toolbox*	http://www.enwhp.org/index.php?id=4
Checklists for selecting suitable interventions	
Singapore Health Promotion Board – *Choosing Interventions that Work*	http://www.hpb.gov.sg/data/hpb.home/files/whp/health_fac/resources/EG/05b.pdf
Advice about selecting suitable providers	
Wellness Council of America – *Checklist for Selecting Health Promotion Vendors*	http://www.welcoa.org/freeresources/pdf/vendor_checklist.pdf
Case studies	
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/pdf/bhf_case_studies.pdf
(USA) Centre for Disease Control and Prevention CDC – intervention toolkits	http://www.cdc.gov/nccdphp/dnpa/hwi/index.htm

Source	Link/URL
Marketing and promotional materials	
British Heart Foundation – ThinkFit program	http://www.bhf.org.uk/thinkfit/article.asp?secID=1590&secondlevel=1592&thirdlevel=1617
Checklists related to the key steps in the implementation process	
Healthy Active Workplaces, WA Department of Sport and Recreation	http://www.dsr.wa.gov.au/assets/files/Healthy_Active%20Workplaces/Create_Checklist.pdf http://www.dsr.wa.gov.au//assets/files/Healthy_Active%20Workplaces/Activate_Checklist.pdf
British Heart Foundation – *ThinkFit* program	http://www.bhf.org.uk/thinkfit/wdocs/programme_checklist.doc