

**EVALUATION
OF**



AND



A TRAVELSMART WORKPLACES PROGRAM

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Introduction

TravelSmart is a travel behaviour change program that aims to reduce car dependence and increase walking, cycling and public transport use. TravelSmart Workplaces assists organisations (currently in the St. Kilda Road and central business districts) to develop and implement Green Transport Plans (GTPs) for their employees.

WalkSmart and CycleSmart is a program offered to workplaces with a GTP to encourage employees to walk or cycle part or all of the way to work. It includes the supply of pedometers and cycle computers, maps and access to a website where participants can get feedback and monitor their progress.

The WalkSmart and CycleSmart program has been developed over two years, and is in the evaluation stage of the policy cycle. The policy cycle consists of: identify issues, policy analysis, policy instruments, consultation, coordination, decision, implementation and evaluation (Brigman and Davis, 2004. p26)

Background

Over 40% of trips within the Melbourne metropolitan area are less than two kilometres long, and almost two-thirds are less than five kilometres long. Yet even for short trips, car is currently the dominant mode (Patton, 24/10/2006). As part of the GTP for a specific workplace, TravelSmart constructs a map to graphically demonstrate the number of employees living within a 2km and 5km radius of the workplace. These are considered reasonable distances to walk and cycle, respectively, approximately a 20 minute journey. Employees living outside this radius are encouraged to use public transport, combined with walking or cycling, or to car pool. WalkSmart and CycleSmart is a tool intended to promote walking or cycling (alone or combined with other modes) to and from the workplace, and throughout the day.

Aside from the environmental advantages, the health benefits of a modal change from car transport to walking and cycling are profound. Probably the most important contribution of transport on health is through physical activity, which protects against heart disease - the leading cause of death in Australia (Australian Institute of Health and Welfare, 2006).

Regular physical activity reduces the risk of developing cardiovascular disease, type 2 diabetes and obesity by 50% (WHO, 2000), protects against cancer, osteoporosis and hypertension and helps improve fitness, control weight, reduce cholesterol and abdominal fat, manage diabetes, reduce stress and depression, improve independence and prevent falls in older adults (Demers, 2006). Just 30 minutes a day of brisk walking or cycling on most days of the week, even if carried out in 10-15 minute episodes, is effective in providing these health benefits. The benefits of moderate physical activity tend to be greatest for sedentary individuals (Blair et al, 1995). Furthermore, walking and cycling for daily transport has greater potential than leisure activities for keeping people physically active for life (WHO, 2002).

Other health benefits of walking and cycling relate to reductions in noise, traffic and air pollution and increased opportunities for social interaction. These all contribute to improved mental health and reduced respiratory disease, accidents and injuries (McCarthy, 1999). The injury risk associated with cycling is likely to be far outweighed by reduced all-cause mortality (Andersen et al., 2000).

Modal shifts to active transport are likely to bring major benefits to public health, the environment and quality of life, and relieve congestion. Walking, cycling and public transport use offer opportunities for regular physical activity, integrated into daily life at minimal cost, for large segments of the population (WHO, 2000).

Reduced levels of physical activity appear to be the dominant factor causing the trend of increasing obesity. In 2005, 3.24 million Australians were estimated to be obese. 62% of adult males and 45% of females are classified as overweight or obese based on their Body Mass Index (BMI) (ABS, 2006). The "obesity epidemic" now costs Australians \$21 billion a year in direct spending, disability and premature death (Access Economics, 2006). Hence, there is an urgent need for effective public health programs to increase activity levels in the sedentary population.

While research into determinants of overweight and obesity have tended to focus on sedentariness during leisure time, occupational sitting time has been independently associated with increased BMI in men in full-time employment (Mummery et al, 2005). The proclivity of the modern workplace for labour-saving technology reduces incidental physical activity, and with it the caloric expenditure required to maintain healthy body weight. The

work environment, where the average sitting time may be more than 6 hours per day, may be implicated in the development of type 2 diabetes and other chronic diseases in the working population (Mummery et al, 2005; Hu et al, 2003).

The World Health Organisation (2006) has identified the workplace as one of the priority settings for health promotion. The workplace directly influences the physical, mental, economic and social well-being of workers and in turn the health of their families, communities and society. It offers established channels of communication, existing support networks and opportunities to change physical and social environment to support behaviour change (Corti et al, 1999).

It is recognised that there are 2 elements involved in promoting active transport: 'Hard' measures e.g. the physical infrastructure, facilities for cyclists and land-use planning, and through 'soft' measures, e.g. information provision, public relations and promotional campaigns (McClintock, 2002 cited by The European Network for Cycling Expertise). WalkSmart and CycleSmart is a program focussed on these 'soft' or non-infrastructural measures and endorses a culture where walking and cycling for transport are the norm.

Current recommendations suggest that population-based physical activity interventions should:

- 1) reach large numbers of individuals in a cost-effective manner, and
 - 2) be based on interventions that have been shown to be effective on a smaller scale.
- (Marcus et al., 1998)

The Theoretical Frameworks

The Trans-theoretical Model (TTM) and Social Cognitive Theory (SCT) are the two theories found to have predictive relationships with physical activities (Report of the Surgeon General, 1996). In addition, Social Marketing offers an awareness of the total environment in which people operate and how understanding this environment can shape health marketing activities.

The social-marketing framework applied to physical activity emphasizes the importance of tailoring the delivery of media-based forms of communication to the socio-demographic attributes and context of the target population (Marcus et al., 1998).

The TTM recognises the stages and processes involved in behaviour change. An individual adopting a new behaviour will progress (with varying speed) through the following stages: pre-contemplation, contemplation, preparation, action and maintenance. As applied to physical activity, *pre-contemplation* includes individuals who do no physical activity and do not intend to start in the next 6 months. *Contemplators* do not participate in physical activity but intend to do so in the next six months. Those in *preparation* participate in physical activity, but not at recommended levels. In the *action* stage, individuals currently participate in regular physical activity at recommended levels, but have done so for less than 6 months, whereas *maintenance* entails the participation in regular physical activity for 6 months or longer.

SCT incorporates personal influences, cognitions and environmental factors as components that influence behaviour. Interventions derived from SCT focus on the importance of the individual's ability to control his/her behaviour and on how changes in the individual, the environment, or in both can produce changes in behaviour. Techniques used to promote physical activity may include goal setting, decisional balance sheets ("pros and cons"), relapse prevention training, stimulus control strategies and social support.

Literature Review

A review of the current literature was conducted to determine the evidence base for WalkSmart and CycleSmart and future interventions. This included an appraisal of published studies and review papers of interventions promoting physical activity in the workplace, evidence on the use of mediated interventions, particularly those using print and information technologies and guidelines on best practice from various national and international sources.

Electronic databases (Informit and Proquest 5000) were searched using a combination of the keywords; walk, cycle, physical activity, active transport, promotion, intervention, strategy, initiative, best practice, evidence and evaluation. Some of the same keywords were also used on Google™ and Google™ Scholar search engines. Relevant books, articles and internet resources were also identified from examination of the reference lists of previous reviews and retrieved articles. Only articles published in the last 10 years have been reviewed, to ensure the most up-to-date evidence is presented.

Needs and preferences of physically inactive Australians

Booth et al. (1997) conducted a study into the needs and preferences of physically inactive Australians. A questionnaire was administered to a randomly selected sample of 2,298 adults and included questions on the preferred sources of assistance or support to become physically active, preferred activities, and barriers to regular participation. The responses of those identified as physically inactive were examined. The most-preferred activity was walking. The most frequently cited barriers to more-regular participation in the 18-39 age group were insufficient time, lack of motivation and child care responsibilities. The same group preferred the opportunity to exercise with a group. Advice from a health professional was more popular with increasing age, suggesting a desire for face-to-face contact for concerns regarding health and injury.

Marshall et al. (2005) conducted an online survey of 797 people through a community-based internet service provider. The purpose of the survey was to determine the preferred sources of physical activity advice, stage of motivational readiness for physical activity and explore the feasibility of using internet technology to promote physical activity in a defined community. More than one third of respondents were insufficiently physically active and

57% worked full-time. Similar to the study by Booth et al (1997), there was a strong preference (47%) for being active with a group and advice from a GP or health professional was also popular (42%). More than 70% of respondents were somewhat to extremely interested in a website that gave *community-specific* information about physical activity.

Physical activity promotion among young adults

Timperio, Salmon and Ball (2004) published a review of evidence-based strategies to promote physical activity among children, adolescents and young adults (aged 18-30 years). A total of 18 discrete studies were identified and reviewed. Two of four studies involving young adults reported modest short term results, including progression of physical activity stage of change, but none showed sustained increases in physical activity. Common life events during young adulthood include marriage and having children which have been shown to predict decreasing levels of physical activity. It is of critical importance to develop physical activity strategies which target this sub-group as many lifelong behaviour patterns are established during this life phase (King, 1994 cited by Timperio et al, 2004:21). Timperio et al (2004:26) highlight the need for further research and recommend future studies looking at strategies that focus on reducing sedentary behaviours, as well as increasing physical activity, especially among young women.

Physical activity promotion in the workplace

There have been numerous studies looking at workplace interventions to increase physical activity. The most common strategies implemented involved either health checks, education programs, motivational prompts to be more active, workplace 'exercise programs', incentive based programs or some combination of these (Marshall, 2004). Overall, some positive results were reported, but mostly in samples of motivated volunteers. Studies that reported high retention rates (> 80%) in their final follow-up also appeared to have higher participation in the intervention (>75%), and thus reported better physical activity outcomes. This review singles out 2 interventions aimed at increasing *active commuting* in one or more workplaces. Mutrie et al (2002) conducted a randomised controlled trial to determine if a self-help intervention, based on the trans-theoretical model of behaviour change, could increase active commuting in a workplace setting. 295 employees who had been identified as

thinking about, or doing some irregular, walking or cycling to work, were involved in the study. The intervention group received a pack with written interactive material based on the trans-theoretical model, information about distances and routes, and safety information. 25% of the intervention group were regularly actively commuting at the 12 month follow-up. The pack was useful at increasing walking but not cycling, for which the environment for cycling must be improved before it will become a popular option.

A second study, by Cleary and McClintock (2000), evaluated the aims and implementation and lessons arising from one of the major projects implemented under the UK Department of Transport's Cycle Challenge project in the late 1990's. The objective of the Nottingham Cycle-Friendly Employers project was to increase the extent to which people cycle to commute and for official work trips. Eight large employers in the Greater Nottingham area and groups were involved as the project partners and supported by three organisations representing public, private and voluntary sectors. Results from the project show that it has been successful in encouraging cycle commuting. 42% of cycling respondents indicated that their level of cycle-commuting had increased during the life of the project.

There were many useful lessons arising from this project and some of the key conditions identified for the smooth implementation and success of an initiative to encourage cycling in the workplace are summarised below.

- An enthusiastic and committed facilitator within the organisation.
- A forum for discussion and exchange of ideas, as well as feedback on the initiative and suggestions for improvement.
- Workplace Bicycle User Groups (BUGs) to provide a channel for communication between cyclists, would-be cyclists and senior management.
- Networking between BUGs from different organisations to facilitate exchange of valuable information, ideas and experience.
- Promotional events - such as 'ride to work days' and 'riders' breakfasts' - prove useful in attracting novice and occasional cyclists.
- Stress that it not essential for people to make a complete modal shift to cycling. Encouraging employees to make one or two round trips per week by bike or to commute by bike in the summer will reduce overall car dependence.
- A demonstration of commitment to the project from senior management - eg. Senior staff as role models for active transport; sacrificing car spaces for bike parking; or at

the very least, verbal or written expression of support communicated to all staff members.

- BUG meetings and newsletters
- Promote the accessibility, versatility and benefits of cycling, rather than focussing on what some may perceive as inconveniences of cycling.

Pedometers and walking activity

Despite their widespread use as a tool to both measure and encourage physical activity, there is little research evidence that feedback from pedometers has a positive effect on walking activity. A study by Butler and Dwyer (2004) sought to examine if feedback from a pedometer increased adherence to a walking program. It was concluded that pedometer feedback had no influence on the amount of walking completed by the intervention group. The results have limited validity due to the small sample size and the potential that participants' knowledge that their walking activity was being monitored may have masked any effect in the feedback group. Nonetheless, this study has implications for the WalkSmart program which utilises pedometer step counts to monitor participants walking activity and motivate them to achieve recommended daily steps for good health. The study looked at pedometer feedback as a discrete intervention, and highlights the importance of the multiple supports (skills, information, supportive environment, policy etc) necessary for behaviour change.

“10,000 Steps Rockhampton” is a multi-strategy community-based physical activity intervention project using pedometers in a population context. A population-based survey was used to explore issues relating to pedometer use and utility in the context of 10,000 Steps Rockhampton and a non-intervention comparison community. In Rockhampton, the odds of using a pedometer were higher in women and the 35-44 age group, compared to men and people in younger age groups. There were no differences in pedometer use across BMI categories. In both Rockhampton and the comparison community, those in the highest category of household income, were more than twice as likely to use a pedometer as those in the lowest income category. Also, in both locations, those who were not meeting the current physical activity guidelines were half as likely to report having used a pedometer, as those that were meeting the guidelines. In the context of 10,000 Steps Rockhampton, the majority of pedometer users felt that they were useful in helping physical activity levels.

How many steps for health?

A value of 10,000 steps/day is gaining popularity with the media and in practice and appears to be a reasonable estimate of daily activity for apparently healthy adults. Studies are emerging documenting the health benefits of walking 10,000 steps a day or more, including lowering blood pressure in hypertensive patients and increasing exercise capacity (Iwane et al, cited in Demer, 2006:161). Recent experiments have also shown that simply setting daily step goals, keeping a log of steps walked, and wearing the pedometer all the time improves level of awareness and amount of physical activity, as well as fitness improvements such as increased energy, weight loss and reduced illness (Rooney et al, cited in Demer, 2006:161).

However, there are some concerns about having a universal step goal of 10,000 steps/day, as it may not be sustainable for some groups and insufficient for others (including children). Other recommendations showing promise of health benefit and individual sustainability have been based on incremental improvements relative to baseline values. Based on currently available evidence, the following indices may be used to classify pedometer-determined physical activity in healthy adults: (i). Less than 5,000 steps/day may be used as a 'sedentary lifestyle index'; (ii). 5,000-7,499 steps/day is typical of daily activity excluding sports/exercise and might be considered 'low active'; (iii). 7,500-9,999 likely includes some volitional activities (and/or elevated occupational activity demands) and might be considered 'somewhat active'; and (iv). 10,000 or more steps/day indicates the point that should be used to classify individuals as 'active'. Individuals who take >12500 steps/day are likely to be classified as 'highly active' (Tudor-Locke and Bassett, 2004).

With high employment rates and long working hours, especially among professionals, it is likely that physical activity that occurs in the workplace can significantly contribute to current public health recommendations and population health benefits. Steele and Mummery (2003) studied the occupational physical activity levels of three occupational categories. Mean daily step counts were 2,835, 3,616 and 8,757 for professional, white-collar and blue-collar workers respectively. A 30-minute brisk walk, as recommended by the Australian National Physical Activity Guidelines, is around 3,000 steps, given that a 10-minute walk equals about 1,000 steps (Brown et al, 2003). If 3,000 steps are added to the occupational steps for the professional and white-collar workers, both would still fall short of the highly advocated

10,000 steps per day, thus providing evidence that this prescriptive goal is in conflict with current national physical activity recommendations.

As indicated by its name, the 10,000 Steps Rockhampton project has a central coordinating theme of '10,000 steps per day'. Its developers recognise, however, the lack of scientific evidence to support this universal prescription and concerns about the needs and abilities of some population groups. Hence, a secondary theme of "Every Step Counts" was included to encourage people to find ways of increasing daily steps, irrespective of the 10,000 step target.

Using internet technologies to promote physical activity

Only five reports of intervention studies using internet technology to promote physical activity were found.

McKay et al. (2001) evaluated the short term benefits of an internet-based intervention which supported sedentary patients with type 2 diabetes to increase their physical activity levels. Although no significant differences in physical activity levels were seen between intervention and control groups, internal analyses revealed significant relationships between extent of website use and level of improvement in physical activity. The results indicated that internet-based self-management programs can be effective in increasing physical activity if used with sufficient regularity. Researchers observed a steep decline in use of the website over time, a pattern not unique to this study (Marshall et al, 2003; Leslie et al, 2005). Future research is recommended to explore ways to enhance ongoing use; including approaches such as pledging to use the site a minimum number of times over a certain period and/or providing incentives for regular use.

A U.S.-based trial by Napolitano et al (2003) showed that a theoretically-based physical activity website plus weekly email tips could have a short-term impact on physical activity motivation and behaviour both at 1 and 3 months. It was also concluded that findings from print- and mail-based programs could be applied to interventions using internet and e-mail because these technologies can provide immediate feedback and make information available immediately, thus permitting individuals to self-tailor the information for their needs.

A larger-scale Australian study (Marshall et al, 2003) compared a stage-targeted print intervention with a program of similar content delivered via an intranet website and e-mail. While there was a trend for participants in both groups to engage in more physical activity at 10 weeks, no significant differences were observed within or between study groups. Lack of intervention effect was explained in part by the lack of engagement with program materials. Also highlighted were the challenges of engaging and retaining non-self-selected participants in the worksite setting.

Leslie et al. (2005) investigated engagement and retention of participants in a physical activity website. Despite the perceived usefulness of the materials, there was limited website engagement. It is likely that the pressures and demands of busy workplaces ('information overload') may mean that it is inherently difficult to engage participants in this environment.

A study by Vandelnotte and Bourdeaudhuij (2005) found that a computer-tailored intervention was effective for increasing physical activity and could be used successfully in combination with other health behaviour interventions.

There is growing evidence to support the effectiveness of internet-mediated physical activity interventions based on a theoretical framework. Interventions that match treatment to the individual's stage of change (as in the TTM) have been shown to be more effective than no treatment or generic treatment (Marcus et al, 1998).

Below is a summary of the advantages and challenges of Internet-based physical activity interventions.

ADVANTAGES

- Potential to deliver programs to large numbers of people at low cost (Marcus et al, 1998)
- Cost of administering and delivering an internet based program does not increase linearly with volume of access (Marshall et al, 2005)
- Novelty of design and appeal
- Flexibility and convenience of use

- Potential for interactive data collection that can provide immediate, personally relevant and stage-targeted feedback. (Marcus et al., 1998)
- Potential for proactive recruitment (contacting potential participants and offering them services)
- Offer to access to adults in full-time employment, who have the least discretionary time and are most at risk of being sedentary
- Makes use of existing IT infrastructure in workplaces.
- Overcome most prevalent barriers: lack of time and access to facilities
- Stimulates self-initiated change (Napolitano and Marcus, 2002)
- Potential for on-line support groups to be established

CHALLENGES

- Difficulties of engagement and retention of participants
- Lack of certainty regarding the use and impact of information
- Material may be inappropriate and/or not engaging for some individuals
- Lack of social support (McKay et al, 2001)
- Impersonal / lack of personal contact (McKay et al, 2001)
- Critical mass of participants needed to generate active and vibrant on-line support (McKay et al, 2001).
- Tailoring of advice is only as good as information disclosed by individual (McKay et al, 2001).

The literature reviewed raises various issues relating to the physical activity preferences of the target population, the workplace as a setting for health promotion, use of pedometers and theoretically-based internet mediated interventions. This provides a useful insight into the challenges already faced by WalkSmart and CycleSmart to this stage and forms an evidence base to guide future developments.

Research Outline

Objectives

- To evaluate the WalkSmart and CycleSmart program
- To gain feedback on the WalkSmart and CycleSmart program and associated materials from current and prospective users and leaders in the health promotion field.
- To determine if WalkSmart and CycleSmart could be integrated with other programs
- To identify if WalkSmart and CycleSmart is a program that could be widely utilised by workplaces
- To identify other avenues in which WalkSmart and CycleSmart could be promoted
- To explore the pros and cons of expansion

Methodology

Qualitative interviews were conducted with a total of twelve participants selected from a list provided of key stakeholders and agencies and additional subjects identified during preliminary research. Interview participants represented both government and non-government organisations, educational institutions and commercial businesses. Of the 12 interviewees, 6 had little or no prior knowledge of the WalkSmart and CycleSmart program, 6 had knowledge of, but little experience of the program and 3 were registered users.

In several cases, selected participants were contacted directly by telephone and either completed the interview at the time, or were contacted at an agreed time and day to complete the interview. Four participants were difficult to contact by telephone, thus initial contact was made via e-mail, which was followed up by telephone at an agreed time. The interviews lasted between 5 to 40 minutes, with telephone interviews being conducted in all but 3 cases. Telephone interviews were the preferred method as workload meant most participants faced time constraints.

Although an interview script was developed, the participants were extremely varied in their knowledge of the program in question, their roles and ability to answer detailed questions.

Therefore, the interviews followed a rather unstructured format, allowing the interviewer to ask questions consistent with participant responses.

On the 27th of October, 2006, the 559 active users who had agreed to receive newsletters or mailouts, were e-mailed and invited to participate in a 6-question WalkSmart/CycleSmart user survey. [See appendix] The on-line survey could be accessed via a link in the e-mail message for up to 7 days after posting and allowed for additional comments, feedback and suggestions.

An analysis of WalkSmart and CycleSmart data was conducted on 1st of November, 2006, via the WalkSmart site administrator login using the statistical analysis function.

Ethics

There were no risks to participants or researcher as the nature of the research was not personal or sensitive. Although no written consent form was used, all participants were informed about the purpose of the interview and gave verbal consent to take part in the research. Participants were aware that their responses may be used to make recommendations to TravelSmart on the future of the WalkSmart and CycleSmart program. Permission was granted to publish names where relevant.

Results

Interview Summaries

Heidi Marfurt - Bicycle Victoria

Heidi feels that CycleSmart lacks the “social context” that is vital for motivating new cyclists. She considers workplaces an ideal setting for team building and competition and bicycle user groups (BUGs) are vital in organising events to nurture team participation. Heidi believes that more incentives are required to ensure engagement and retention of users and suggests CycleSmart look at a mix of incentives (to promote use of site) and social events (to reward participation). To encourage regular data entry, Heidi highlighted the need to diversify prompts as e-mail prompts won’t work for everyone.

Rosemary Speidel - Cycling Promotion Fund

Rosemary felt that CycleSmart was a good motivational tool for new cyclists, but was less likely to be successful with 'old' cyclists. She stressed importance of a regular e-newsletter and up-to-date 'news' to keep site interesting and relevant. Rosemary highlighted the need to clarify the objective of the program and determine how to utilise site to achieve this objective. She suggested that CycleSmart target new or first time riders with the aim to achieve sustainable levels of cycling activity.

Manager - bicycle store Melbourne CBD

A face-to-face meeting was conducted with a city bicycle store whose clientele consists of professional and recreational cyclists, triathletes and city commuters. They currently stock TravelSmart maps in their store and would be open to work with TravelSmart to promote the CycleSmart website for commuter and recreational cyclists, in exchange for promotion of their store to TravelSmart workplaces.

Dr. Michael McCoy - Fitness 2 Live

Dr. Michael McCoy is the Managing Director and co-founder of Fitness 2 Live, a Melbourne-based company offering online and corporate health and fitness services. Fitness 2 Live is supported by a team of 20 staff and a scientific advisory panel. Membership to the online service is available to individuals or organisations for an annual fee. Some organisations (eg. Medibank Private, Bicycle Victoria) have purchased rights allowing them to offer their members full access to the online service. Members complete an online health assessment, are given a score out of 100, and then are e-mailed a recommended weekly program and reading list. Participants are encouraged to set their own goals and review them every 3 to 4 weeks. When the 8 to 12 week program finishes, the health assessment is repeated and a reviewed program is recommended.

The potential for a partnership between TravelSmart and Fitness 2 Live on the WalkSmart and CycleSmart program was briefly discussed. However, the exact nature and extent of the collaboration would require further discussion and depend on the future direction of the program.

Robyn Evans - City of Melbourne

Robyn gave very positive feedback about the WalkSmart and CycleSmart program although City of Melbourne is yet to roll out the program within their organisation. Some staff are already registered and have been issued with pedometers. There were initial complaints about the quality of the pedometers supplied by TravelSmart, although the later batch seems to be fine. Robyn would like a “smarter way” to find out which individuals within the organisation have registered to make issuing of pedometers easier. She plans to launch WalkSmart and CycleSmart at council in the near future.

Hayley McFadden - City of Darebin

Hayley recently replaced Kate Myers in the role of Sustainable Transport Officer. The City of Darebin had considered having the WalkSmart and CycleSmart site skinned, but are now planning to register as a provider for the 10,000 steps program. Hayley gave some feedback on the features and content of the WalkSmart website. She felt that it would be interesting to know exactly how many other users there are and comparing one's performance to the average should be optional, as it may be discouraging for new users. Hayley suggested that the “New features” segment appear more prominent, and that replacing the currently dull colour scheme with brighter colours and pictures may increase the visual appeal of the site. Like Rosemary Speidel, she thought that frequent news updates were needed to give people a reason to visit the site on a regular basis.

Rachel Overell - General Practice Divisions of Victoria

Rachel's role involves the promotion of Lifestyle Prescriptions or “LifeScripts”, an initiative of Commonwealth Government which focuses on five modifiable risk factor areas of smoking, physical activity, diet and nutrition, alcohol and weight management. Under the program, General Practitioners give advice, help to set achievable goals, refer to relevant agencies and set out timeframes for ongoing follow-up.

Rachel believes that there is a potential for WalkSmart and CycleSmart to be used with the LifeScripts program. This could include promotion of the site via their monthly e-newsletter and possibly links to WalkSmart and CycleSmart from the Divisions of General Practice websites.

Gina Perry - Better Health Channel

Better Health Channel is the leading provider of quality assured, online health and medical information for consumers. The site provides thousands of fact sheets from health conditions and healthy living to treatment and support which could be invaluable resources to WalkSmart and CycleSmart users in the absence of personal advice. Gina also mentioned the potential to develop a new fact sheet on active transport, its benefits and the support available through the WalkSmart and CycleSmart program.

Dr. Jo Salmon - Centre for Physical Activity and Nutrition Research, Deakin University

Dr. Jo Salmon is a Senior Research Fellow in the area of Physical Activity in the School of Exercise and Nutrition Sciences. Jo offered advice based in the latest research into physical activity interventions using pedometers and internet technology. There is a lack of evidence proving the usefulness of pedometers to increase physical activity. Studies done have shown that use will wane over time, and it is often a good idea to stop for one month then restart monitoring again. This could be a deliberately timed break or when use drops or stops for 1 month, e-mail user to prompt and re-inspire them to start again.

Evidence shows good success where internet-mediated PA interventions have identified “stage of change” in questionnaire at registration and then *matched* the intervention, goal setting, prompts, ongoing encouragement and tips, advice and information to this stage.

Dr. Chris Rissel - Sydney South West Area Health Service/ Health Promotion Journal of Australia

Associate Professor Dr. Chris Rissel is the Director of Health Promotion Unit, Sydney South West Area Health Service and Editor of the Health Promotion Journal of Australia.

As argued in the literature and by Heidi Marfurt, Chris agrees that social support is essential for individuals to be able to maintain changes in behaviour and that workplace BUGs are a good way to promote cycling and represent cyclists’ interests within an organisation. He reinforces the importance of ‘ride/walk to work days’ and social events in building participation.

Chris feels that it is probably not feasible or worthwhile to market WalkSmart and CycleSmart to the general public or through retailers for a few reasons. Firstly, this approach is likely to access only very motivated or already active people. Secondly, there is limited scope for maintenance of changes without a supportive social and physical environment. Finally, many other similar programs are offered to the general public (as we have seen with “10,000 Steps” and “Fitness2Live”) by both public and private interests.

It was recommended to keep WalkSmart and CycleSmart to workplaces where there is considerable potential to provide a supportive environment and establish a culture where walking and cycling can be the norm rather than the exception. Chris also highlighted the need to target car users (potentially through RACV membership) and suggested to start by encouraging drivers to park further away and walk part of the journey to work.

Finally, in regards to use of pedometers, like Jo Salmon, Chris recommended that WalkSmart not be based around ongoing pedometer use as compliance tends to drop off after 4-6 weeks. He reinforced Jo’s advice on developing a “pedometer/step challenge” over, say, 4 weeks. Experience demonstrates that pedometer users quickly learn to calibrate the number of steps with common journeys and time spent walking. Maintaining physical activity improvements post-pedometer use remains a challenge and depends heavily on support from within workplace and individual’s social network.

Kieran Morrissey - mgpenguin™ - Website developer

Kieran acknowledged the challenges of retaining users, but felt that the introduction of a user’s “forum” would provide more of a reason for people to return to the website. This idea is supported by the literature, as is the improvement in outcomes related to higher rates of retention (McKay et al, 2001). Kieran agrees with Rosemary Speidel and Hayley McFadden on the importance of regular updating of news items, highlighting the need to skin sites and train a person at each workplace to be a site administrator.

Simon Mikedis - Environmental Officer - RACV

Simon supports collaboration with TravelSmart as he believes the initiative is in line with RACV’s mobility and environmental objectives. RACV, although an automobile club, advocates for all road users including public transport. The pros and cons of offering the

WalkSmart and CycleSmart program to members were discussed. Obviously, this would be a great way to target car users and promote the benefits of walking and cycling. There are a few potential avenues for promoting the program: via the monthly “Royal Auto” print publication, on-line newsletter “In Roads”, the RACV website, or at their stores. Pedometers could be available on-line or in-store and offered at a discounted price to RACV members that register with WalkSmart. RACV has over 1.3 million members, an enormous potential audience, which although promising, offers many challenges. Unlike, in a workplace setting, there is limited potential to facilitate environmental and policy change to support behaviour change. Other challenges exist around the lack of social support and ability to provide incentives for users.

The feedback on the WalkSmart and CycleSmart program was generally very positive. Key points raised were related to issues of social support, updating and maintenance of the site and need for incentives to retain users. Both Jo Salmon and Chris Rissel propose that WalkSmart could be more successful if the design were modified to run over a fixed period of 4 weeks/1 month, with breaks in between. Furthermore, Jo points to evidence from studies using stage-matched interventions and computer expert systems to provide a program more tailored to individual users. Whilst there were some interesting developments relating to potential new partnerships and collaboration with other agencies, further examination will be needed to determine the feasibility.

Analysis of WalkSmart and CycleSmart data

Between February 2005 and October 2006, 733 users registered with WalkSmart and CycleSmart, including 387 walkers and 353 cyclists. Some users have registered as both pedometer users and cyclists, while a few others have failed to nominate cyclist or pedometer user. Melbourne Water and Transurban introduced WalkSmart and CycleSmart early in 2006, and remain the workplaces with the highest number of registered users at 95 and 102, respectively. Melbourne Water has 79 registered as pedometer users and 1 as a cyclist, whereas at Transurban, 66 are pedometer users and 35 cyclists.

A statistical analysis of response rate (percentage of registered users entering data) and returned data (number of steps or kilometres entered) was carried out across all users and among users at the two specific workplaces. Some of the patterns revealed have been summarised below.

In the past year, response rate from all pedometer users peaked at nearly 60% in February 2006. This remained above 40% for about one month before sharply declining to 20% then gradually declining and remaining on or below 10% for the last 5 months. The data entered by pedometer users during the last 6 months, indicates daily steps ranging from 6,000 to over 12,000, with the overall average remaining below 10,000 steps per day. In the last month, the decline in users has seen a decrease in variability, with pedometer users entering between 8,000 to 11,000 steps per day.

For pedometer users at Melbourne Water, the response rate was very high during the initial weeks of WalkSmart's implementation. The response rate remained greater than 80% for a period of 4 weeks, before dropping sharply to below 20% within one week. A residual response rate of less than 3% (1 to 2 users) has continued for the last 6 months. The data logged by these users has varied considerably between 7,000 and 14,000 steps per day, dropping much lower to an average of 4,000 to 5,000 during June and July.

Transurban had a much lower response rate initially (30 to 50%), but this was only maintained for a short period (6 weeks), and steadily declined over the next 6 months, to the current rate of 1.5% (1 user).

Overall, the response rate of cyclists has been better than that of pedometer users. This is likely due to the fact that cycling is an equipment-based activity (and the computer is installed on the bicycle), unlike walking where a conscious decision to wear the pedometer is made. In the last 12 months, there has been a gradual decline from around 25% in November 2005 to 10% in October 2006. The response rate varies considerably during the week, and indicates that many cyclists enter data for weekdays but not for weekends.

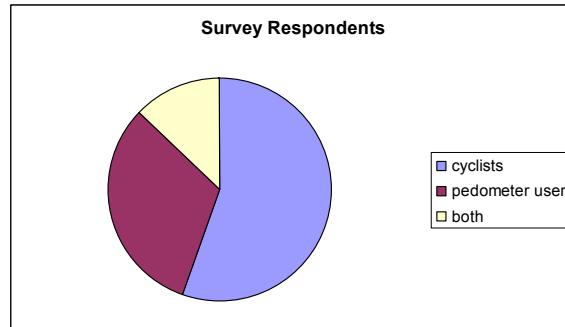
The data entered by cyclists from all sites in the last year has shown a steady increase in daily distance from around 10km per day to 18km per day, with an increasing number of days above 20km.

Results of user survey

94 users completed the WalkSmart/CycleSmart user survey, a response rate of approximately 17% (number of registered users has been growing daily, and is unlikely to accurately reflect the number of *active* users).

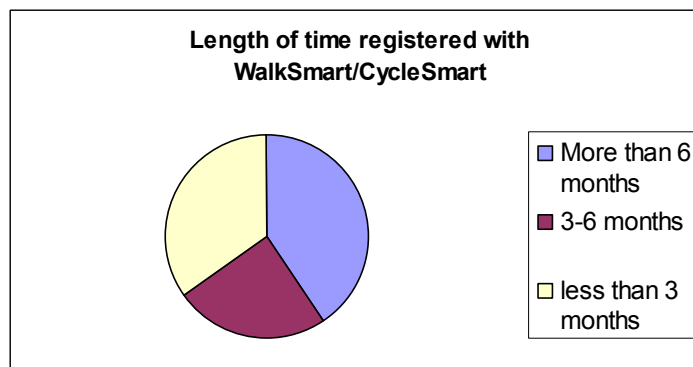
Compared to the actual proportion of users registered as cyclists ($\approx 44\%$) and pedometer users (48%), the survey response rate by cyclists (including those also registered as pedometer users) was more than double that of respondents who did not cycle.

Chart 1:



There was quite an even distribution of old, medium and new users who responded to the survey.

Chart 2:



The survey had a high proportion of respondents who reported, "in general", entering data daily or almost daily. There was quite an even share of other users with less frequent use of the site, including many who were registered (some for more than 6 months) but had not entered any data yet.

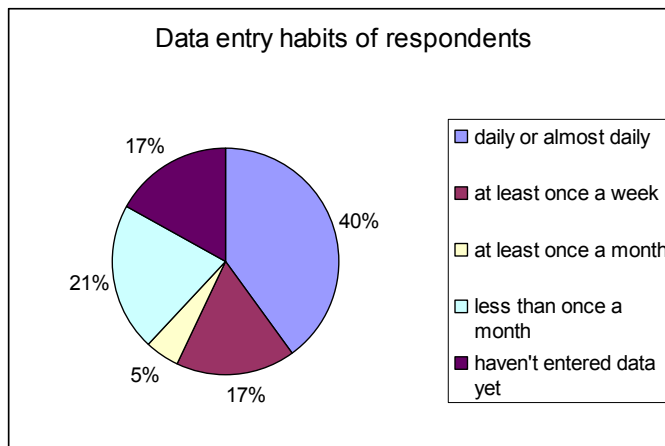
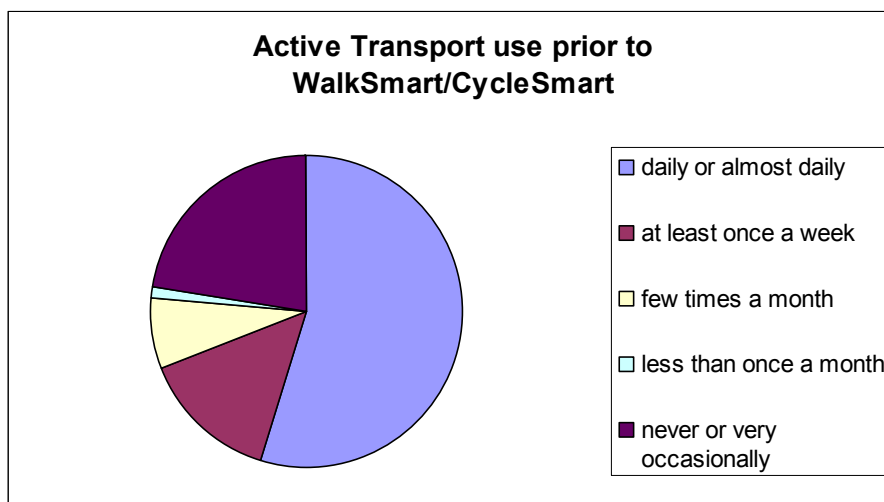


Chart 3:

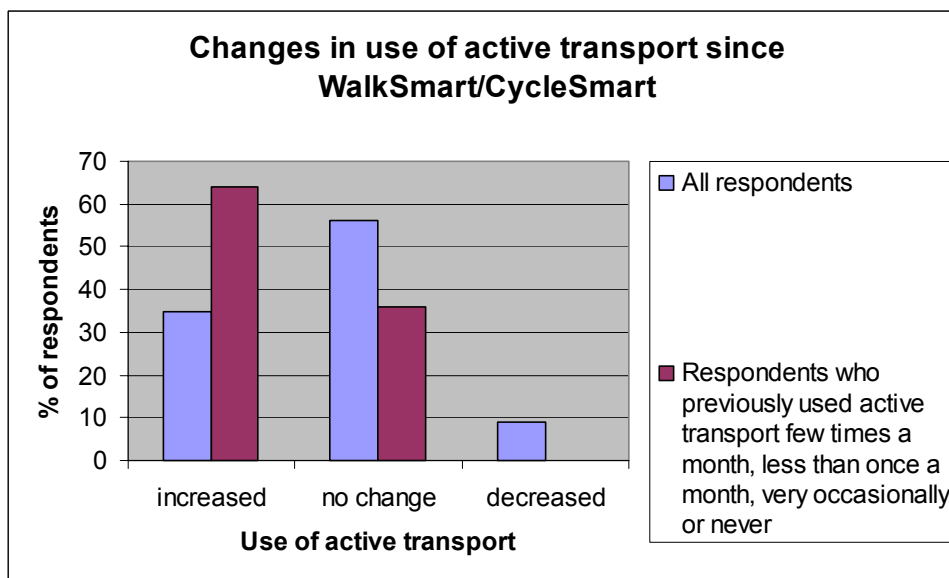
Chart 4 below shows the distribution of how often respondents reported walking or cycling all or part of the way to work, or for work, *before registering* with WalkSmart or CycleSmart. Almost one quarter (23%) reported “never or very occasionally” using active transport.

Chart 4:



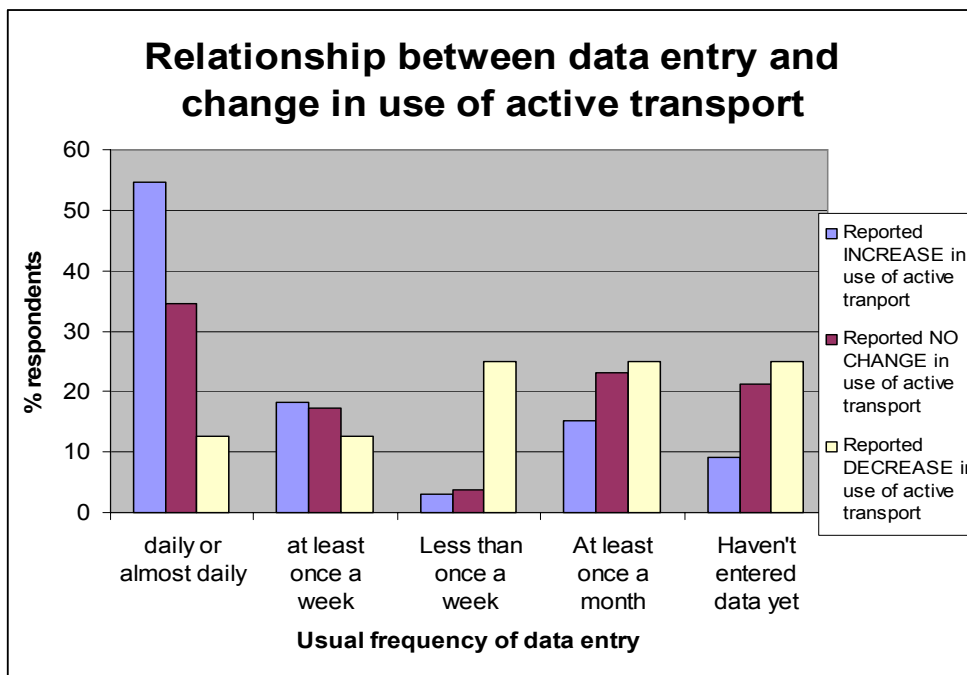
One of the key objectives of the survey was to explore how WalkSmart and CycleSmart may have facilitated change in travel behaviour, particularly modal shifts to walking and cycling. As demonstrated in the previous findings, a large proportion of respondents reported using active transport on one to all days of the week *prior to* the WalkSmart and CycleSmart program. It was essential, therefore, to examine the changes in active transport use among those who previously walked or cycled to work or for work much less frequently or not at all. Graph 5 below shows the changes in active transport use in this target audience as compared to all survey respondents.

Graph 5:



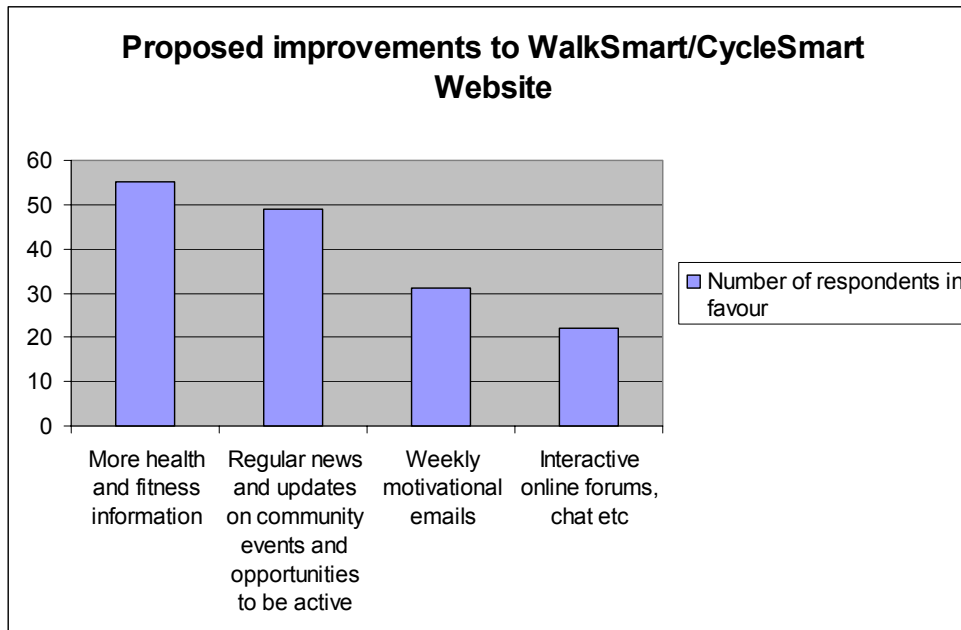
The next concept examined was the relationship between frequency of data entry and travel behaviour change. Previous studies have indicated that websites can be effective in increasing physical activity if used frequently (McKay et al, 2001). The need to increase website use, promote regular data entry and retain users was also highlighted in the interview phase of the current research. The results (illustrated in Graph 6 below) of the user survey seem to support these findings, indicating that those who entered data more frequently were more likely to report an increase in use of active transport.

Graph 6:



Question 6 of the survey included some ideas for improvements to the WalkSmart and CycleSmart program and website. The popularity of these improvements with survey respondents (see Graph 7) provides a good indication which changes are more likely to increase commitment of users.

Graph 7:



The comments, feedback and suggestions for improvements given by users were plentiful and varied. Many of the comments and suggestions made were consistent with issues raised during the interview and data analysis phases of the research. Some of the key points raised have been summarised below:

- *E-mail reminders:* At registration, users may elect to receive e-mail reminders on weekdays only or 7 days a week. While some found the e-mails useful as a reminder to enter data and as a link to the website, others found the e-mails “too intrusive” and requested more options to set “spacing of e-mails” and have “a pause function for holidays, illness etc”.
- *Graphs and statistical features:* The program does not seem to deal well with users who cycle once or twice a week, and one cyclist felt that it was “a dis-incentive to do smaller km’s [on some days]... as it made the graph dip sharply...whereas if I did not ride at all it didn’t affect my graph”. While there were several suggestions for ways to improve the graph and statistical features, one of the more interesting ones was: “a visual tool showing the km travelled” in relation to a real destination in Victoria or Australia.
- *Data entry:* It appears that some were not aware that data could be entered retrospectively - perhaps this needs to be more explicit. One user commented that

WalkSmart had been used in their organisation for a period of one month only with a competition to get staff to start walking and raise money for a charity.

- *Goal setting:* It is universally recognised that goal setting is an important part of exercise behaviour change. It also came out in the survey that users would like “having a weekly, editable target to enter and try and achieve”.
- *Safety issues related to cycling:* The risks associated with cycling, both real and perceived, are an important consideration in cycling promotion and have been raised by 2 users in the survey feedback. One user reported having fallen off, “breaking ribs and collarbones”, and another requested “some tips on how to not be fearful in traffic” which is “a huge deterrent, especially for women cyclists”. Perhaps CycleSmart needs to switch its focus to developing cycling skills and safety in traffic if it is to encourage more *new* riders.
- *Creating incentives and increasing motivation:* There were several suggestions for improving interest in the site including, “articles on cycling”; “links to other relevant sites”; “a more attractive look and feel to the website, incorporating photos and more colour”; “the occasional short story - funny or motivational”; “more info on weekend rides etc”; “basic bike maintenance” and “more responses for how I’m going”

Limitations of the research

Although interviews were conducted with people representing diverse organisations and interests, time constraints and knowledge level of both the researcher and participants limited the depth and number of interviews.

The low response rate to the survey indicates it may not have reached a good cross-section of users. For example, 40% of survey respondents reported entering data on a daily or almost daily basis, however, results from the statistical analysis suggest that the response rate is actually much lower than this across all users. The survey did reach however, 21% of respondents who reported entering data less than once a month.

The survey was deliberately kept short to be attractive to participants and also due to limited time available for analysis of results. While the survey asked about travel/physical activity behaviour prior to the intervention and change to this post intervention, it remains unknown the proportion of respondents currently meeting the national physical activity guidelines.

Use of the word “maintained” in question 5 could have been replaced with “not changed” to avoid potential ambiguity. For example, the term “maintained” could have been confused with the concept of an initial increase in use of active transport at the beginning of the intervention that was then maintained over the subsequent period. In addition, the survey failed to identify those who had stopped using the program after a certain period, why they had stopped and what their current walking or cycling habits were. A much more lengthy survey and detailed analysis could have answered more of these questions.

Discussion

The WalkSmart and CycleSmart program received largely very positive feedback from workplace users, stakeholders and experts in the field. One of the major difficulties in implementing worksite physical activity interventions is the generally low level of participation (Shephard cited by Corti et al, 1999, p.94). Policy and environmental interventions, designed to influence all employees, hold the most promise for increasing physical activities (Sallis et al cited by Corti et al, 1999, p.94). Incentives such as competitions, subsidies for non-motorised employee transport and rewards for participation in physical activity are among some of the recommendations made in the literature. The current research further emphasises the need for social support from within the workplace and more incentives to participate in the WalkSmart and CycleSmart program.

WalkSmart has been developed on the basis of ongoing pedometer use, yet an analysis of the response rate (percentage of total users over time) illustrates a steep decline after 4 weeks. With the current response rate at less than 10%, the realities of long-term pedometer use seem clear. While the pedometer is a useful tool to encourage physical activity and enable self-monitoring, these effects depend on it being worn on a daily basis. Its function to measure steps may lose importance as the wearer learns to calibrate daily activities and journeys with the number of steps registered. Health promotion experts, Jo Salmon and Chris Rissel, both recommend short-term pedometer interventions rather than ongoing use, and this model has been favoured by at least one TravelSmart workplace as revealed in the survey.

The need to provide regularly updated news on the WalkSmart and CycleSmart websites was a recurrent theme in the interviews and supported by survey responses. It may be necessary to make the website more dynamic and to update website material regularly to make it more appealing and useful to current and potential users. Both the “Go for your life” and “Better Health Channel” websites have an enormous number of quality fact sheets, community-specific physical activity information, an up-to-date event calendar and links to other useful resources. It would be prudent for WalkSmart and CycleSmart to take advantage of these available resources to enhance retention of users and the effectiveness of the program. The table below (Napolitano and Marcus, 2002) shows suggested tip sheet topics and content, many of which are available on the previously mentioned Victorian Government websites.

TABLE 4
Tip sheet topics

	Topic	Sample Content
1	Introduction	<ul style="list-style-type: none"> ● Welcome ● Overview of website topics ● Physical activity goals (i.e., accumulating 30 min or more of moderate intensity physical activity on most, preferably all days of the week) ● What to expect
2	Getting started	<ul style="list-style-type: none"> ● Be realistic when getting started ● Recommendations to start with 10-15 min, then increase slowly ● Review of physical activity goals
3	Monitoring your progress	<ul style="list-style-type: none"> ● Importance of monitoring physical activity ● Review of physical activity goals
4	Posting reminders	<ul style="list-style-type: none"> ● Importance of posting reminders for being physically active ● Rationale for posting reminders ● Review of physical activity goals
5	Setting goals	<ul style="list-style-type: none"> ● Rationale for goal setting ● Problem solving (e.g., where do you want to be, how are you going to get there, how will you know you have gotten there?) ● Review of physical activity goals
6	Reward yourself	<ul style="list-style-type: none"> ● Importance of rewards ● Sample ideas for rewards ● Review of physical activity goals
7	Preventing injury	<ul style="list-style-type: none"> ● Ways to avoid injury ● Review of physical activity goals
8	Time management	<ul style="list-style-type: none"> ● Ideas for incorporating activity into one's lifestyle (e.g., taking the stairs instead of elevator, going for a walk during lunch breaks) ● Making physical activity a priority ● Review of physical activity goals
9	Find a helper	<ul style="list-style-type: none"> ● Importance of obtaining social support ● Ways to use social support (e.g., talking with someone, going for a walk with a friend) ● Review of physical activity goals
10	Make it interesting	<ul style="list-style-type: none"> ● Ways of being creative with physical activity to make it more fun ● Creative ideas for being physically active (e.g., dancing, tennis, walking in the woods) ● Review of physical activity goals
11	Keep it going!	<ul style="list-style-type: none"> ● Review of "slips," how to handle a slip, how to avoid slips ● Using slips as a learning experience (e.g., think about what caused you to slip and try something new the next time rather than repeating the same mistakes) ● Overview of major causes of slips: injuries, illness, family responsibility, vacations, bad weather ● Review of physical activity goals
12	Exercise and weight	<ul style="list-style-type: none"> ● Use of physical activity to assist with weight loss ● Review of physical activity goals

The challenge is not only to design websites that attract and engage participants, but also to motivate and provide feedback and information relevant to an individual's stage of change according to the Trans-theoretical Model. This requires a computer expert system that identifies an individual's stage of change at registration and directly links to information relevant to this stage - See figure below (Napolitano et al, 2003).

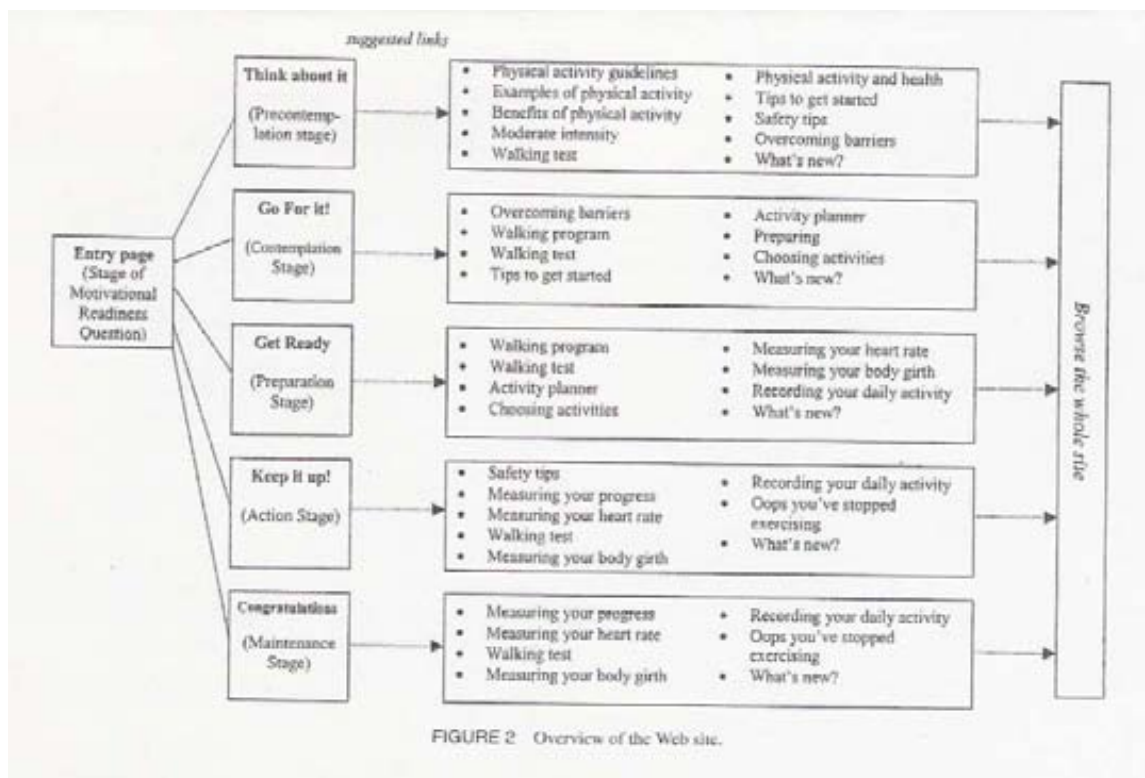


FIGURE 2 Overview of the Web site.

At registration, users would answer a question to determine stage of motivational readiness. Several algorithms have been used in previous studies to accurately stage exercise behaviour (Reed et al, 1997). Probably the most appropriate staging algorithm for WalkSmart and CycleSmart would include a detailed definition of lifestyle physical activity, followed by a 5-choice response format. For example;

“Physical activity or exercise means brisk walking, vacuuming, cycling, digging in the garden, climbing stairs or any other physical activity where exertion is similar to these. Regular exercise means accumulating 30 minutes or more in the above activities most days of the week. For example, you could take one 30 minute walk, jog or bike ride or three 10 minute walks or 15 minutes of vacuuming, 10 minutes of digging and 5 minutes of climbing stairs.”

- I currently do not exercise and do not intend to start exercising in the next 6 months
→ “Think about it” (Pre-contemplation stage)

- I currently do not exercise but I am thinking about starting in the next 6 months → *“Go for it!”* (Contemplation stage)
- I currently do some exercise, but not regularly → *“Get ready”* (Preparation stage)
- I currently exercise regularly, but have only begun doing so within the last 6 months → *“Keep it up”* (Action stage)
- I currently exercise regularly and have done so for longer than 6 months → *“Congratulations”* (Maintenance stage)

The importance of the program targeting car users and the sedentary population may have been somewhat overlooked thus far. The integration of WalkSmart and CycleSmart with the “LifeScripts” initiative via the General Practice Divisions of Victoria (GPDV) or offering the program to RACV members seems promising as a way to address this need. To expand the program to service such a large population would be an ambitious proposal, but not unfeasible. In this context, WalkSmart and CycleSmart would need a greater focus on pedestrian safety, injury prevention, cycling skills and confidence in traffic, in order to overcome barriers to active transportation and be consistent with the partner agencies’ health and safety objectives.

Several reasons have been argued for restricting the program to workplaces, rather than expanding to the general population. WalkSmart and CycleSmart has already has considerable success in this setting and there is support in the literature and current research both in terms of population need and setting suitability for promotion of physical activity. However, it is evident that for the program to be really effective, it is essential for the workplace to take ownership. By limiting the program to workplaces, and improving and tailoring it to better meet the needs of the employees, WalkSmart and CycleSmart may be able to enhance its effectiveness as a tool to motivate travel behaviour change.

Although there were initial suggestions that retailers of pedometers and cycle computers may be able to help promote WalkSmart and CycleSmart at the point of sale and even be involved in managing the program, the current research has found limited scope for collaboration with the commercial or retail sectors

Recommendations

1. Keep WalkSmart and CycleSmart to workplaces and examine the possibility to introduce to other discrete populations.
2. Ensure there is a “champion” - an enthusiastic and committed facilitator within the organisation. This role could be shared or rotated.
3. At registration, a five-choice staging algorithm should be used to assess the stage of exercise behaviour.
4. Individuals should set their own goals, or have realistic and achievable goals set for them based on level of physical activity (and stage of change) at registration.
5. Emphasize that it is not essential for people to make a complete modal shift to walking or cycling, and modify the program to support this. Employees could be encouraged to park further away and walk the rest of the way, or cycle 1-2 days per week.
6. Simplify the WalkSmart website in some respects (less graphs and analysis) but have more detailed, up-to-date and tailored health information, feedback based on personal goals, tips, and links to community-specific information and events etc.
7. Run a one month “step challenge” for pedometer users, incorporating a walk-to-work day and other social events throughout the period. Repeat the challenge 3-4 times throughout the year with breaks in between.
8. E-mail weekly, “stage-matched” fact sheets to participants in the challenge.
9. In larger workplaces, employees could be divided into teams, and compete against other teams for the highest step or kilometre average.
10. Use incentives such as ‘ride/walk to work days’ and ‘cyclist/walkers’ breakfasts’ and prizes to attract novice and occasional riders.
11. Address cycling skills and confidence riding in traffic to reduce the barriers for new, and especially female, cyclists.
12. Develop an online forum for discussion and exchange of ideas between users.
13. CycleSmart website could double as a homepage for Workplace BUGs.
14. Encourage networking between BUGs from different organisations.
15. Give users the option to be contacted on their home e-mail address where they have more time to enter data and browse site
16. Investigate the possibility of reminders and data entry via SMS.
17. Perhaps a brighter colour scheme, some photos and the odd quote, story or recipe.

Conclusion

This report provides a review of the current literature relating to physical activity, walking and cycling promotion, results of interviews with various stakeholders, an evaluation of the WalkSmart and CycleSmart program developed by TravelSmart Workplaces, and presents a series of recommendations.

The use of internet technology to deliver behaviour change programs provides many opportunities and challenges. The cost-effectiveness, accessibility and convenience of use make it an ideal medium to use in workplaces, identified as a priority setting for health promotion. However, the engagement and retention of users, provision of social support, tailoring of information and evaluation of impact remain ongoing challenges.

Strategies to increase population physical activity levels to meet national guidelines are hailed as one of the “best buys” in public health promotion. The additional health, environmental and societal benefits of reducing car dependence and increasing active transport make WalkSmart and CycleSmart a program of great integrity. Understanding and utilising the theoretical frameworks pertinent to physical activity promotion, tailoring the program better to meet the needs of users, and building social support networks will increase the effectiveness of the intervention. Furthermore, encouraging workplace ownership of WalkSmart and CycleSmart and linking in with available health and fitness resources will enhance its cost-effectiveness, sustainability and wider impact.

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Appendix

WALKSMART/CYCLESMART USER SURVEY

- (1) I am registered with: WalkSmart only
 CycleSmart only
 Both
- (2) I have been registered with WalkSmart/CycleSmart for:
 Less than 3 months
 3 - 6 months
 more than 6 months
- (3) In general, I enter data: daily or almost daily
 At least once a week
 At least once a month
 Less than once a month
 Haven't entered any data yet
- (4) **Before registering** with WalkSmart/CycleSmart, I used active transport (walked or cycled) all or part of the way to work, or for work
 Never or very occasionally
 Less than once a month
 Few time a month
 At least once a week
 Daily or almost daily
- (5) **Since registering** with WalkSmart/CycleSmart, I have:
 increased my use of active transport
 maintained my use of active transport
 decreased my use of active transport
- (6) I think the website could be improved by:
 More health/fitness/transport information
 Regular news and updates on community events and opportunities to be active
 Weekly motivational emails
 Interactive online forums etc
 Other, please comment

Any other comments, feedback or suggestions