

10,000 Steps Rockhampton: Evaluation of a Whole Community Approach to Improving Population Levels of Physical Activity

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Objectives: To describe the effectiveness of a multi-strategy physical activity (PA) intervention. *Methods:* Self-report data from random samples were collected prior to and following intervention. Social marketing, healthcare provider, and environmental strategies were concurrently implemented with a central coordinating theme of “10,000 Steps Rockhampton.” *Results:* There was evidence of significant project reach and awareness. The downward trend in PA seen in the comparison community (48.3% to 41.9% “active”) was not evident in Rockhampton. Women were the “early adopters” in this project; with an increase of 5% (95% CI: -0.6, 10.6) in the percent categorized as “active” (compared with decreases among women in the comparison community and among men in both communities). *Conclusions:* High levels of project awareness, combined with modest increases in activity levels in women, demonstrate initial project effects. Longer term interventions, focusing on sustainable individual, social, and environmental change strategies are needed to maintain and improve this result.

Key Words: pedometers, intervention, exercise, health promotion, counseling

Although the health benefits of physical activity (PA) are widely accepted, levels of PA in Australia and throughout the world are declining.^{1,2} Interventions in specific settings (e.g., schools³ and workplaces⁴), advice from health professionals,⁵ and use of print and other media strategies⁶ have demonstrated small, short-term improvements in PA levels in largely volunteer samples.^{7,8} There have, however, been few attempts to translate the lessons learned from these controlled single-focus efficacy studies into multi-strategy whole-community interventions.

The 10,000 Steps Rockhampton project was essentially a “translational” project, which aimed to increase PA in the adult population of this regional Australian

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city. The background, development, and implementation of the project has been described previously.⁹ Briefly, this was a whole-community intervention project, guided by the social-ecological framework which emphasizes intervention at multiple levels to address the multi-level determinants of PA.¹⁰ The strategies were designed to intervene at the “downstream” or individual level (e.g., advice from health professionals), at the “midstream” or population level (e.g., media strategies), and at the “upstream” or policy/structural level (e.g., improved environmental supports for PA).¹¹

A central coordinating theme, “10,000 Steps Rockhampton” was used to synchronize the main intervention strategies, and to convey the specific recommended “dose” of PA. Although other projects (e.g., “Colorado on the Move” in the US¹²) have since reported on single setting attempts (e.g., in workplaces and among church groups) to increase daily steps, at the time of developing this project we were unaware of any other whole population intervention, or any multi-strategy attempts to increase PA, using the “10,000 steps” theme.

The main aim of this article is to describe the overall effectiveness of this community-based multi-strategy project, in terms of population level change in PA in the first 2 y of the project. We also report on factors relevant to external validity or the generalizability of findings, namely the “reach” of the intervention and selected implementation indicators.¹³ This is in contrast with evaluations of most contemporary PA interventions (involving motivated self-selected volunteers in education, health, or workplace settings), which have focused on individual level impacts such as efficacy and attrition.¹⁴

Methods

Intervention Site

Rockhampton was selected as the intervention site for this project because it is a typical Queensland regional community with its own radio, print, and media outlets to support the intervention. It is situated approximately 700 km north of the state capital, Brisbane, and straddles the Tropic of Capricorn. With a population of 60,000, it is the major trading center of a region of more than 125,000 people. A second Queensland regional community, Mackay (population 75,000), located 400 km to the north of Rockhampton, was the comparison site.

Summary of Intervention Strategies

The use of pedometers as individual self-monitoring and goal-setting instruments was largely promoted by the media campaign. In addition to the overarching theme of “10,000 steps a day,” a secondary theme, “Every Step Counts” was used to stress the “accumulation” aspect of current PA guidelines,¹⁵ and to encourage people to find ways of increasing daily steps, even if they did not reach the 10,000 steps target. Approximately 2500 pedometers and logbooks were made available for purchase through the local project office, the project web site and from local pharmacies. Limited numbers (about 500) were available for loan from local libraries

and in conjunction with the health professionals' strategy (see below). Five large workplaces also made about 2000 pedometers available to their employees, and residents were able to purchase pedometers from sports stores and the local office of the National Heart Foundation.

In addition, a series of intervention strategies was implemented concurrently over the 18 months from January 2002 to June 2003. These included strategies targeted at workplaces, community health services, and shopping malls. The greatest effort was, however, focused on the following strategies, which were implemented at various times during the intervention period.

Marketing Strategies. Based on the principles of social marketing,¹⁶ a dedicated print, radio, and TV media campaign was conducted in the first 3 months of the project, supported over the longer term by both paid and non-paid marketing efforts. Additional marketing, such as mailings by the local city council, newsletters, email, and other special events was used to maintain the 10,000 Steps message during the 2 y intervention period. The main focus of the media campaign was to raise individual awareness about the health benefits of PA and to build and maintain the brand presence of "10,000 Steps." The cost of paid advertising and event marketing was approximately AUD\$20,000, with a further AUD\$50,000 provided through "in-kind" marketing contributions from local media and other community organizations.

Promotion of PA by Health Professionals. This strategy centered around engaging general practitioners (GPs) to promote PA. Twenty-one of twenty-three general practices in Rockhampton were visited by project staff and provided with PA promotion materials (posters, brochures, and pedometers) and brief training in PA counseling. More details of the methods and results have been described elsewhere.¹⁷ In brief, 62% of practices displayed posters, 70% loaned pedometers, and 81% used the brochures. In addition, other health practitioners, including mental health workers, dieticians, pharmacists, and family planning counselors¹⁸ were encouraged to promote PA to their clients.

Environmental Supports for PA. This strategy focused on policy and environmental change at the local municipal government level. It involved working with the city council to improve the local environment, by creating or repairing key footpaths, erecting "10,000 Steps" signs, and distributing maps to encourage walking in local communities. In addition, project staff worked with the local council to promote responsible dog walking (and the "10,000 Steps" message) using the local newspaper and direct mail to registered dog owners. Further details of the dog-walking intervention have been reported elsewhere.¹⁹

At the outset of the project, a Local Physical Activity Task Force was formed to balance the "top-down" approach from the researchers with "bottom-up" input from the community, and to assist with "translating" the evidence from previously successful intervention strategies into approaches that would be relevant in the Rockhampton context. The group comprised key members of community organizations, some of whom had high-level expertise in PA promotion. They included local representatives from the National Heart Foundation, Rockhampton City Council, Division of General Practice, health services, and the regional public health unit, state government, sport and recreation, and business and media organizations.

Evaluation Design

The project was quasi-experimental, involving collection of baseline (August to September, 2001) and follow-up (August to September 2003) data from computer-assisted telephone interview surveys in Rockhampton and Mackay.

Samples

The samples were drawn at random from the regularly updated electronic database of telephone numbers in Rockhampton and Mackay, with replacement of duplicate, mobile, and business numbers, as well as of numbers for nursing homes and other collective dwellings. A minimum of five repeat calls were made before registering the number as a “no contact.” If contact with a selected household was made, a respondent was selected from that household using guidelines to encourage equal selection of male and female participants.*

Interviews and Survey Instruments

Each interview began with a standard introduction. Consenting participants were then asked to answer the “Active Australia” items (about time spent in walking, moderate and vigorous activity during the last week²⁰) to assess their PA level. Respondents were then asked a series of questions relating to awareness of the 10,000 steps project and receipt of PA advice from a GP or other health professional. In 2003, questions about pedometer use, and about recall of additional aspects of the project, were also included. At the end of the interview, respondents were asked to provide demographic details (age, sex, employment, etc.). The study protocol was approved by the Human Ethics Research Review Panel at Central Queensland University.

Data Management and Analyses

Basic descriptive statistics were used to describe the demographic characteristics of respondents to each survey and to compare the proportions of respondents identifying each “awareness” measure. Estimates of total time spent in PA were calculated by summing the reported time (min) spent in walking, in moderate-intensity activity, and in vigorous activity (in the last week), with the minutes spent in vigorous activity weighted by two to reflect its greater intensity.²⁰ Because of the skewed nature of this variable, respondents were categorized as “active” if they reported ≥ 150 min of activity in at least five separate sessions in the last week. This definition reflects the current Australian PA guidelines.¹⁵

PA data are presented as “percent active” with 95% confidence intervals (95% CIs) of the estimates for each community and year, and changes over time (with 95% CIs) for these estimates. Logistic regression was used to identify the demo-

*Past surveys have indicated that in 60% of cases the first household contact is with a woman. Hence, if a man answered the call he was invited to participate. If a woman answered the call she was asked if there was an adult man in the household who would be willing to be interviewed. If so, the man was invited to participate. If not, the woman was invited to participate. This strategy works best when calls are made in the evenings or during the weekend.

graphic characteristics which were significantly associated with PA in 2001 and 2003, and to explore changes in PA over time in each location, after adjusting for relevant sociodemographic characteristics. Because there were differences in the direction of the changes in PA in men and women, odds ratios for being active in 2003, compared with 2001, were calculated separately for men and women in the control and intervention communities using logistic regression models. All statistical analyses were conducted using SPSS version 12.0.1 (SPSS Inc., Chicago, IL).

Results

Respondents

After correction for non-contactable households, and for those in which no eligible adult was available or where no one spoke English, the response rates were 46.4% for the 2001 survey and 47.3% for the 2003 survey. The denominators included those who completed interviews, those who began but did not complete the interview, and refusals. The demographic characteristics of the respondents to each of the surveys in each community are shown in Table 1. More than half the respondents to each survey were women, more than one-third were in full time paid work, and fewer than 3% identified themselves as Indigenous Australians (see Table 1).

In the 2001 survey, there were age and education differences between the Mackay and Rockhampton respondents, with a greater proportion of 30 to 44 year olds in Mackay and a greater proportion with only primary school education in Rockhampton. In 2003 there was a greater proportion of young adults (age 18 to 29 y) among the Rockhampton respondents, and small differences between respondents from the two locations in the distribution of the education categories (see Table 1). There were also differences between the 2001 and 2003 samples in employment status, education, and living arrangements. In 2003, there was a lower proportion of retired people and higher proportions of the respondents were university educated, in full-time work, and living with a partner and children. Binary logistic regression analysis confirmed that all the demographic characteristics shown in Table 1 were significantly associated with “activity” in 2001 and 2003 (see Table 2). In 2001, women and respondents over age 45 were significantly less likely to be categorized as “active” (compared with those in the respective referent categories). In contrast, those who were in part-time work or retired, and those with a university education, were more likely to be categorized as “active.” In 2003, associations with gender and employment status were attenuated.

Changes in Physical Activity

In 2001, the proportion of respondents categorized as “active” was significantly higher in Mackay (48.3%) than in Rockhampton (41.9%; OR = 0.77, CI: 0.65, 0.93; see Table 2). In 2003, the percentage categorized as “active” in the comparison community of Mackay decreased by 6.4% (95% CI: -10.6, -2.2) to 41.9%, while there was no change in the intervention community of Rockhampton (from 41.9% to 42.8%; difference = 0.9%; 95% CI: -3.2, 5.0). After adjustment for relevant sociodemographic variables, there was no significant difference in activity levels

Table 1 Demographic Characteristics of the Respondents to Each Survey In Each Community

Survey	Intervention community (Rockhampton)		Comparison community (Mackay)	
	2001	2003	2001	2003
<i>N</i> ^a	1280	1242	1059	1236
	%	%	%	%
Age				
18 – 29	23.4	22.7	19.5	16.7
30 – 44	30.5	33.2	36.4	36.9
45 – 59	20.3	26.0	21.0	26.1
≥ 60	25.8	18.1	23.1	20.3
Sex				
Men	46.3	49.8	48.0	49.8
Women	53.9	50.2	53.0	50.2
Employment status				
Full time paid work	35.6	41.9	36.4	41.9
Part time/casual paid work	19.9	19.7	19.9	20.3
Home duties	8.4	8.9	8.3	8.3
Student/unemployed/no work	6.7	7.5	5.7	5.2
Retired	24.8	18.5	23.6	18.8
Other	4.7	3.5	6.0	5.5
Highest level of education				
Primary school	15.1	8.8	11.4	8.3
High school to year 10	20.9	26.6	22.0	23.4
High school to year 12	14.4	19.4	12.2	19.5
Technical diploma/certificate	37.6	26.5	42.5	30.7
University degree	12.0	17.6	11.9	17.4
Other ^b	--	1.2	--	0.7
Living arrangements				
Single and living alone	19.4	14.8	20.6	15.4
Single and living with others	15.7	15.1	14.7	10.3
Couple (married/defacto)	29.3	30.1	29.5	32.5
Single parent with children	5.8	5.8	6.2	5.9
Couple with children	29.8	34.2	29.0	35.9

Note. ^a *N*s vary slightly due to missing data for some items;

^b 'Other' category not included in the education question in 2001

Table 2 Odds Ratios for Being Categorized As “Active” (Versus “Inactive”) in 2001 (N = 2089) and 2003 (N = 2379), by Sociodemographic Characteristics of the Respondents

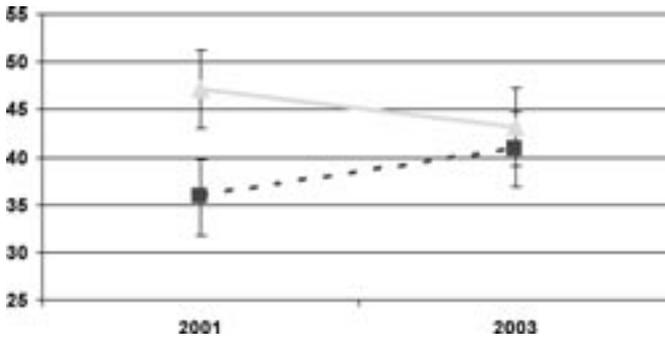
	2001			2003		
	% active	Odds ratio ^a	95% CI	% active	Odds ratio ^a	95% CI
Location						
Mackay	48.3	1.00	--	41.9	1.00	--
Rockhampton	41.9	0.77	0.65, 0.93	42.8	0.98	0.83, 1.16
Gender						
Men	49.2	1.00	--	42.7	1.00	--
Women	41.1	0.71	0.58, 0.86	40.8	0.95	0.78, 1.14
Age						
18 – 29	54.5	1.00	--	56.2	1.00	--
30 – 44	43.6	0.79	0.59, 1.04	40.5	0.67	0.51, 0.88
45 – 59	42.4	0.69	0.51, 0.94	38.1	0.54	0.41, 0.72
≥ 60	40.6	0.52	0.33, 0.81	37.5	0.45	0.30, 0.68
Employment status						
Full time paid work	45.7	1.00	--	41.6	1.00	--
Part time/casual paid work	48.2	1.32	1.02, 1.71	45.9	1.20	0.94, 1.53
Home duties	40.0	1.22	0.84, 1.78	37.4	0.96	0.67, 1.36
Student/unemployed/no work	53.8	1.33	0.89, 1.98	52.4	1.26	0.86, 1.84
Retired	42.6	1.51	1.02, 2.26	40.4	1.38	0.97, 1.96
Other	38.7	0.92	0.60, 1.42	39.0	1.02	0.67, 1.56
Highest level of education						
Primary school only	37.6	1.00	--	31.3	1.00	--
High school to year 10	42.4	1.20	0.86–1.69	41.1	1.51	1.05–2.15
High school to year 12	49.3	1.26	0.86–1.86	50.4	1.79	1.22–2.62
Technical diploma/certificate	45.2	1.25	0.92–1.71	39.3	1.34	0.93–1.92
University degree	53.3	1.87	1.27–2.76	45.5	1.81	1.23–2.66
Living arrangements						
Single and living alone	44.2	1.00	--	42.1	1.00	--
Single and living with others	55.3	1.17	0.84–1.64	55.3	1.06	0.74–1.52
Couple (married/defacto)	45.6	1.03	0.79–1.34	42.4	0.98	0.75–1.28
Single parent with children	41.1	0.82	0.53–1.27	41.7	0.85	0.55–1.30
Couple with children	40.8	0.78	0.57–1.05	38.1	0.74	0.55–0.99

Note. ^aadjusted for all other variables in the model

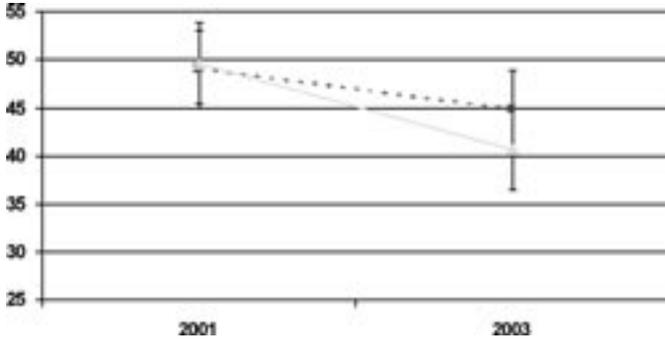
between Rockhampton and Mackay in 2003 (see Table 2), hence the significant difference which had existed in 2001 was no longer apparent.

When the data were displayed graphically, it was apparent that the pattern of change in PA over this 2 y period was different for men and women (see Figure 1). There was an increase of 5% (95% CI for difference: -0.6, 10.6) in the percentage of women who were categorized as “active” in Rockhampton (from 35.8% to 40.8%) compared with a decrease of 4.1% (from 47.1% to 43.1%) in Mackay (95% CI: -10.0, 1.8) (see Figure 1, panel a).

(a) Women



(b) Men



(c) 2003

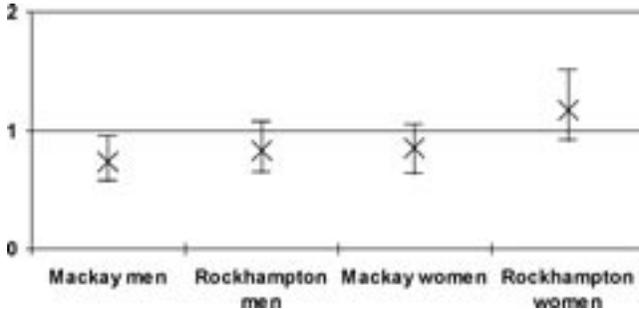


Figure 1 — Proportion of (a) women and (b) men categorized as “active” in 2001 and 2003 in Mackay (solid lines) and Rockhampton (dashed lines); (c) adjusted odds ratios for being “active” in 2003, compared with 2001, in Mackay and Rockhampton men and women. Bars indicate 95% confidence intervals.

While these changes over time did not quite reach statistical significance, logistic regression analysis found the odds ratio for being “active” for Rockhampton women in 2003 compared with 2001 was 1.24 (CI: 0.98, 1.58). After adjustment for differences in the sociodemographic characteristics, these odds ratios were attenuated [OR for being active in Rockhampton in 2003 (compared with 2001) = 1.17; CI: 0.91 to 1.50] but still indicated an upward trend in PA among Rockhampton women. In contrast, the adjusted odds ratio for Mackay women being “active” in 2003 compared with 2001 was 0.81 (CI: 0.63, 1.04) (see Figure 1, panel c).

Among men, there was a significant decrease of 8.9% (95% CI: -14.9, -2.9) in the percentage of men who were categorized as active in Mackay (from 49.6% to 40.7%), compared with a change of -4.2% (95% CI: -10.1, 1.7) in the Rockhampton men (from 49.0% to 44.8%) (see Figure 1, panel b). For the Mackay men, the adjusted odds ratio for being “active” in 2003 compared with 2001 was 0.73 (CI: 0.57, 0.95), while for the Rockhampton men it was 0.83 (CI: 0.64, 1.06) (see Figure 1c).

Awareness of the 10,000 Steps Project

The proportion of men and women who reported recalling PA “messages” in the media in the last month are shown in Table 3. The data suggest an increase in the recall of “general” PA messages among men and women in Rockhampton, but not in Mackay. In 2003, almost 95% of the Rockhampton respondents said they had heard of the 10,000 steps campaign, while in Mackay, around one-third said they knew about the project (see Table 3). Almost one-quarter of the respondents reported that they had received advice about PA from a health practitioner (usually their doctor) in 2001. In 2003, this proportion was seven percentage points higher among men in Rockhampton, but there was no change in the proportion of Rockhampton women reporting this advice received. In Mackay, there was a slight decrease for both men and women (see Table 3).

In response to questions asked only in the 2003 survey, 18% of the Rockhampton respondents reported that they had used a pedometer to count their steps in the last 18 months, compared with only 5.6% in Mackay. After adjustment for relevant differences in demographic variables, the OR for reporting using a pedometer was significantly higher in women [1.52 (CI: 1.10, 2.12)] than in men (referent). Responses to questions asked only of the Rockhampton respondents found that 57.6% of the Rockhampton women said they recalled seeing the 10,000 steps street signs and trails, compared with 42.4% of the men. Similarly, 54.6% of the women said they knew about the library pedometer loan scheme, compared with 45.4% of the men.

Discussion

The aim of this project was to translate key evidence-based single strategy approaches to PA promotion into a community-based, multi-strategy approach to increase adult PA levels in a regional Australian community. Social marketing, health care provider, and environmental strategies were concurrently implemented with a central coordinating theme of “10,000 Steps Rockhampton.” Based on self-reported PA data from randomly selected community samples, the downward trend which was seen in the comparison community from 2001 to 2003 (from 48.3% to

Table 3 Proportion of Men and Women In Each Community Who Recalled Community Prompts for Physical Activity

Survey	Intervention community (Rockhampton)		Comparison community (Mackay)	
	2001	2003	2001	2003
<i>N</i>	1266 %	1229 %	1065 %	1230 %
Have you heard or seen any messages about exercise or physical activity in the past month?				
All	55.3	69.2	60.4	56.2
Men	52.5	63.8	54.7	53.7
Women	57.7	74.6	65.6	58.7
Have you heard of the 10,000 Steps per Day campaign?				
All	10.9	94.9	8.2	34.0
Men	10.6	93.3	7.3	31.3
Women	11.2	96.4	8.9	36.7
In the last year, did you receive any advice from the doctor or other health care professional about exercise or physical activity? ^a				
All	23.2	27.1	23.4	20.6
Men	23.1	30.8	23.2	21.1
Women	23.3	23.9	23.6	20.1
Have you used a pedometer to count your steps in the last 18 months?				
All	N/A	18.0	N/A	5.6
Men		16.4		5.4
Women		19.8		5.8

Note. ^a% calculated as a percentage of those who saw a health care professional in the last year

41.9% “active”) and which also occurred across Queensland from 1997 to 2001 (from 49.4% “active” in 1997 to 45.1% “active” in 2001)²¹ was not evident in Rockhampton in this 2 y period.

The data are strongly suggestive that women were the “early adopters” in this project, as evidenced by their awareness of the project strategies (i.e., media messages, street signs, etc.), their use of pedometers, and the change in the proportion of women who were classified as “active” in the follow-up survey. While it is possible that the increase in PA among Rockhampton women might reflect a “regression to the mean” from the initially low level of PA in 2001,²² the additional process data appear to support the conclusion that uptake of pedometers and PA was more marked among the Rockhampton women than the men. It remains to be seen whether the men will become “later adopters”—or whether they will remain resistant to PA behavior change.

Given that this was a “translational” project, which aimed to evaluate a whole-community intervention, rather than an “efficacy” trial with motivated “volunteers,” the results are significant. Dzewaltowski and colleagues have recently suggested that fewer than half of 1% of a targeted population is likely to benefit in a meaningful way from a moderately effective “evidence based” primary care intervention.¹⁴ This is because there is a “dilution” effect when indicators such as “reach” among participants and “adoption” and “implementation” by physicians are considered. The finding in Rockhampton of an almost statistically significant 5% increase in the proportion of women who were categorized as “sufficiently active” *at the population level* is therefore noteworthy, given that, in terms of promoting health and preventing disease, significant gains can be achieved when small changes are made across an entire population group.²³

In recent years, there has been a great deal of interest in “multi-level” whole community approaches to changing health behaviors.²⁴ The Stanford Five-City community-wide cardiovascular risk reduction project was a pioneer of this approach, combining media advertising with community-based face-to-face instruction groups, walking groups, and worksite and school initiatives.²⁵ While there was an increase in the number of self-reported “usual activities” the Stanford researchers did not find any significant change in PA scores for men or women. Similarly, the Minnesota Heart Health program, which integrated media campaigns with community education and training programs, found only small increases in light leisure time activity.²⁶ In contrast, more recent approaches have targeted multiple levels of influences, most importantly the more “upstream” social, environmental, and policy supports, along with greater involvement of communities in program planning and implementation,²⁴ as was the case with 10,000 Steps Rockhampton. For example, the “Wheeling Walks” intervention combined an intensive media campaign with environmental changes and community participatory planning in the West Virginia town of Wheeling.²⁷ This project reported significant increases in PA among the most sedentary members of a cohort who were telephoned at 3, 6, and 12 months following the intervention.²⁷

To our knowledge, the 10,000 Steps Rockhampton project is the first to report on a whole community intervention that targeted more “upstream” social, environmental, and policy supports, as well as involvement of the community in program planning and implementation. Given the difficulty of modifying physical activity at the population level, the results, while modest, are not unimpressive. We are

not, however, able to say which of the intervention strategies was responsible for contributing most to the overall results. While awareness of the project was very high, and points to the success of the media campaign, awareness does not always translate to behavior change. This was confirmed by the results of the dog walking intervention, which found that while about one-fifth of dog owners recalled receiving the promotional materials, very few indicated that they actually increased their dog walking.¹⁹ The GP intervention certainly achieved a reasonable level of implementation by GPs, and an impressive increase of 31% in the likelihood of recalling GP advice on physical activity in Rockhampton, compared with a 16% decrease in the comparison community.¹⁷ The ability to independently assess the contribution made by each intervention component to overall behavior change would require much greater evaluation resources than were available for this project.

Our estimates of PA levels in these two regional Queensland cities were very similar to those published for the State of Queensland in 2001 for men (Mackay 49.6%, Rockhampton 49.0%, Queensland, 49.1%).²¹ It would appear, however, that in 2001, Mackay women were more likely to be active (47.1% were “active”) and Rockhampton women were less likely to be active (35.8%) than women in Queensland as a whole (for whom the estimate of “percent active” was 41.1%).²¹ Over the 2-y project the activity levels of the Rockhampton women moved very close to the state average. The precision of these prevalence estimates, as well as the statistical power to detect changes over time, was however limited by the size of the sample, which must be seen as the major limitation of this evaluation.

In planning our survey, we had not anticipated that there would be such marked differences between men and women in response to our interventions, or that there would be significant differences in the sociodemographic characteristics of the two samples. In the future, sample sizes will have to be at least double those used here, if data are to be disaggregated by gender and adjusted for multiple confounders. In addition to increasing the sample size, another recommendation for future studies would be that a cohort of community residents be recruited for follow-up evaluation, so that “within-person” changes can be assessed. The potential impact on behavior change of inclusion in such a cohort could be assessed by using a “Solomon square” design, which includes the cohort *and* an additional independent sample at follow-up.²⁸ Once again, this type of evaluation would require much greater evaluation resources than were available for this project.

It is difficult to quantify the cost of this intervention, because there were so many “in-kind” contributions to the project by the community. The project received A\$800,000 as a grant from the state government. A significant proportion of this was allocated to salaries for project staff who worked on both implementation and evaluation aspects of the project. We estimate that the direct intervention costs were approximately 70% of the project funds, or about AUD\$14 per adult resident. A recent Australian report has indicated that, for every 1% increase in physical activity in Australia, 122 deaths from coronary heart disease, non-insulin dependent diabetes, and colon cancer would be avoided each year.²⁹ As this is equivalent to savings of 1764 years of life and A\$3.6 million per annum in direct health care costs,²⁹ it would appear that this level of investment in the promotion of physical activity is merited.

Although we were not able to demonstrate any significant changes in PA, the “10,000 Steps Rockhampton” project is important, because it is the first time that

a whole community pedometer-based intervention has been shown to prevent the fall in PA levels which appears to be endemic in the Western world. In this project, we were able to translate the literature on PA interventions to a “real-world” community setting, with modestly successful results. Given the relatively short 2-y funding period, and the 18-month intervention, the initial “top-down” approach reflected a need to quickly raise awareness about current levels of *inactivity* in the community, and to establish a “project presence” in the community. The importance of community consultation and engagement during the development stages of the project cannot be overstated. The local PA taskforce provided valuable insights into existing organizational structures and community resources and gave the project the local ownership necessary to support its ongoing implementation. This group continues to meet regularly, and their role will now be essential if there is to be enduring “culture change” around PA in Rockhampton.³⁰

Although environmental and policy supports for PA are likely to be essential in ensuring sustainability of change, there is a need to sustain efforts at the individual and social levels as well, to redress declining population levels of PA. In view of the finding that this intervention appears to have been more effective in women than in men, we will now focus on improving our understanding of the individual and social determinants of PA in men, and increasing our efforts to reach and engage men with strategies which are specifically designed for this more “resistant to change” population group.

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