

Be More Active – Moranbah: An innovative local partnership linking community health promotion strategies with the mining workplace to ‘step’ towards better health outcomes.

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1. Introduction

Be More Active – Moranbah (BMA-M) is a three year program designed to promote health and well-being in BHP Billiton Mitsubishi Alliance (BMA) mine employees as well as the broader Moranbah community. The project aims to reduce the burden of preventable ill health and injury in the Moranbah community by building an innovative and sustainable approach to promoting physical activity. Increasing levels of regular physical activity brings about substantial physical and mental health benefits not only to individuals, but also results in significant social, economic and environmental benefits to the whole community.

The BMA-M project is the result of a trial partnership between the Moranbah based BHP Billiton Mitsubishi Alliance (BMA) mines, BMA Peak Downs Mine, BMA Goonyella Riverside Mine and BMA Broadmeadow Mine and Queensland Health. All parties recognised the value in collaborating to achieve mutually beneficial outcomes. Through the partnership BMA is able to align workplace based health promotion and health education activities with those based in the community setting. Queensland Health has gained increased access to one of their main target groups for health promotion and protection in this community through the project. Contemporary health promotion research has suggested that there may be improved outcomes of health promotion programs that are able to link the workplace strategies to the greater community which is the aim of the BMA-M project.

2. Why promote physical activity?

Physical inactivity is a behavioural risk factor that is currently considered causally associated with the majority of Commonwealth government National Health Priority Areas. The Australian Institute of Health and Welfare (AIHW) reported that risk factors such as physical inactivity ‘affect the onset, maintenance and progress of a variety of chronic diseases and their complications’ (AIHW, 2002, p. 96). Physical inactivity is a known risk factor for Coronary Heart Disease (CHD), stroke, Non-Insulin Dependant Diabetes Mellitus (NIDDM), certain cancers including colorectal and breast cancer and depression (AIHW, 2002; Stephenson et al., 2000; Mathers et al., 1999; Bauman et al., 2000; Commonwealth Department of Health and Ageing, 1998; Bauman et al., 2002, Bauman and Merom, 2002, Armstrong et al., 1999; MacDougall et al., 2002). Physical inactivity is also strongly associated with conditions such as osteoporosis, osteoarthritis, and other biomedical risk factors such as excess weight, hypertension and high cholesterol. The causal association between physical inactivity and a number of other risk factors for chronic disease is a public health predicament given that risk factors tend to interact as contributory causes of a variety of chronic diseases (AIHW, 2002).

Other developed countries have shown similar declines in population physical activity patterns. However, the decline in physical activity patterns of the Australian population has been greater than that reported in the United States, United Kingdom and New Zealand (Bauman et al., 2003). The rising prevalence of physical inactivity amongst the Australian population is a major cause for concern. The public health impact of which is severe. The AIHW stated that there is a large potential for health gain through early intervention or appropriate management of avoidable or modifiable risk factors such as physical inactivity as the public health impact of the risk factors ranks in size with the top ten diseases (AIHW, 2002). At

least one third of all morbidity and mortality can be attributed to the interaction of the risk factors together (Mathers et al. 1999).

Back in 1999, the Burden of Disease and Injury in Australia study calculated that eight per cent of the total burden of disease in Australia can be attributed to physical inactivity (Mathers et al., 1999). The conservatively estimated direct health care costs of physical inactivity are \$377 million per annum and including indirect costs such as the social and employment cost would more than double the estimated figure (Mathers et al, 1999). The study attributed 6.7% of the total Disability Adjusted Life Years (DALYs) of chronic diseases to physical inactivity in the population (Mathers et al., 1999). In men, physical inactivity was ranked second to tobacco as the most important risk factor contributing to chronic diseases and it was ranked the highest risk factor contributing to chronic disease in women, highlighting its population health significance.

The AIHW defined *sufficient physical activity* as '150 minutes of activity per week, using the sum of walking, moderate activity and vigorous activity (weighted by two)' and *insufficient activity* as the combined construct of 'no participation in physical activity and physical activity that is less than the amount required to meet the 'sufficient' category' (AIHW, 2002, p. 104). The BMA-M has also used this definition for calculating the proportion of community members and BMA employees who are sufficiently and insufficiently active.

A number of studies have reported that clear scientific evidence has emerged from mostly cohort population studies indicating that regular moderate and vigorous physical activity has many health benefits (Bauman et al., 2000; Bauman, 1997). However, there remains little evidence of effective interventions that have increased physical activity on a population level. Of the Australian studies that have shown a statistically significant increase in activity levels, the effect has been very modest.⁶ This implies an inherent need for increased evaluation of current strategies to facilitate optimal outcomes. As with all health promotion interventions, a combination of strategies is necessary to increase physical activity at the population level (Bauman et al., 2000).

The strongest evidence of effective interventions has come from the non-federal Task Force on Community Preventive Services in the US. Their recommendations for physical activity interventions were based on a systematic literature review process that assessed the quality and strength of the body of evidence of 94 physical activity interventions in a number of settings (Taskforce on Community Preventive Services, 2002). The study quality of each intervention was determined by subtracting points for each limitation of the study from a perfect score of 100. The review of the studies indicated strong evidence of effective outcomes in community physical activity interventions, school-based interventions, social support within community interventions, individually adapted behaviour change programs and environmental programs that increased access of public open spaces for physical activity. There was inconclusive evidence of the effectiveness of mass media campaigns, classroom and college based interventions and family support based models (Kahn et al., 2002).

3. Barriers to physical activity interventions

There are a number of social, economic, environmental, psychological and political barriers to physical activity interventions in a variety of settings. One of the major barriers to physical activity is the urban environment in which people reside (National Public Health Partnership, 2001). It has been consistently shown that people who reside in environments with footpaths, public open space and recreational facilities, and in close proximity to shops achieve higher levels of daily activity than those without such amenities. Modifying the urban environment to be more conducive to activity has been a commitment of a number of local councils and State government departments.

The social environment has also been shown to influence an individual's tendency towards physical activity. People with a strong social network are more likely to participate in physical activity (Bauman et al., 2002). Bauman and colleagues (2002) noted that the least affluent and less educated groups of the populations are more likely to report physical inability to exercise and that they do not want to be physically active.⁶ Therefore current strategies will need to recognise the social and environmental determinants of physical inactivity and address resultant differentials when implementing interventions.

The most commonly cited barrier to physical activity which is particularly pertinent to the BMA-M project is insufficient time for exercise (Bauman et al., 2002). This tends to be reported by the more affluent, rural dwellers, families with several children and the middle-aged more, educated sectors of the population. This is particularly the case in the target group of the BMA-M project who tend to work very long hours on shift rotations. The frequency of citation of the 'lack of time to be active' barrier and the increasing proportion of sedentary occupations has possibly facilitated the current drive towards worksite based health promotion initiatives.

4. The workplace as a setting for health promotion

The virtue of the workplace as a health promotion setting rests in the accessibility to a large community of people within an organization who often have similar health needs (Noblet and Murphy, 1995; Sorenson et al., 1996b; Dishman et al., 1998). According to the 2001 census, approximately 8.3 million Australians are employed in some capacity (Australian Bureau of Statistics, 2001). Veitch and colleagues (1999) acknowledged the established communication and peer networks within the workplace as a beneficial factor of the setting, and Noblet and Murphy (1995) described the workplace as 'a cohesive environment where complex social and organizational structures can be used to enhance the effectiveness of health promotion activity' (p18). It has been further noted that workplace interventions foster a 'culture of peer support conducive to behaviour change' (Richmond et al., 1998, p 324).

Workplace health promotion programs have been reported to have the potential to improve cardiovascular health, employee well being and morale, improve productivity and job satisfaction, and improve work-related self-esteem and ability to cope with work-related stress (Veitch et al., 1999; Richmond et al., 1998b; Bishop, 1990). There also appears to be encouraging health and cost-effective outcomes resulting from workplace health promotion programs (Veitch et al., 1997, US Department of Health and Human Services, 1992). Reduced health costs and work-related injury and accident costs, as well as reduced absenteeism and hospital stays are further evidence of the benefits of workplace health promotion programs (Veitch et al., 1999; Bishop, 1990; Chu et al., 2000).

5. The most likely participants in workplace health promotion initiatives

Program and organisational factors, as well as individual characteristic factors have been associated with participation in workplace health promotion programs (Dobbins et al., 1998). The individual factors that have been connected with participation in workplace health promotion programs include sociodemographic factors, health-related factors and health behaviours (Dobbins et al., 1998). Dobbins and colleagues (1998) reported that perceptions of organisational support, general health and perceived risk have previously been associated as determinants of worksite participation. It has also been widely documented that shift work is considered an impedance on participation in workplace health promotion initiatives.

Numerous studies have reported that blue-collar workers to be less likely than white-collar workers to participate in workplace health promotion initiatives, particularly those relating to physical activity (Veitch et al., 1997; Veitch et al., 1999; Richmond et al., 1998; Glasgow et al., 1993; Sorenson et al., 1996; Dobbins et al., 1998). Richmond and colleagues (1998) further specified that young, male, blue-collar workers are at higher risk of unhealthy behaviours and they also present to their general practitioner less frequently than the general population. Males employed in male-dominated workplaces were reported as more likely to consume excessive alcohol than those employed in industries that are female-dominated or have equivalent employee gender ratios (Richmond et al., 1998).

Individuals with higher occupational prestige or education level were also reported more likely to participate in workplace health risk appraisals (Dobbins et al., 1998). Whilst, consistent with the general population, lower socio-economic employees and blue-collar workers are reported as having poorer behavioural risk factor profiles (Richmond et al., 1998; Sorenson et al., 1996). Furthermore, Richmond and associates (1998) suggested that the employees with the highest risk factor prevalence are least likely to participate in health promotion interventions. Dobbins and colleagues (1998) reported that individuals who are more committed to a healthy lifestyle are more likely to participate.

Sorenson and associates (1996) suggested that employees with a higher risk of occupational hazards, such as mining, are more likely to be concerned about the job-related risks than the behaviours targeted by traditional health promotion programs.

6. Linking community based strategies to workplace based physical activity strategies

According to Marshall (2004) the programs such as the BMA-M project that seek to create or enhance the links between the workplace and the community could provide a thorough framework for enhancing sustained behaviour change. Marshall's (2004) meta-analysis of workplace based physical activity promotion programs revealed that there were no published studies that had investigated the associations between the workplace, the community and physical activity behaviours. This highlights the innovative approach of the partnership underlying the BMA-M project and its significance to the knowledgebase of physical activity promotion.

The BMA-M project has particularly drawn links between the workplace and community setting with cross advertising of programs and associated activities within both settings. Many of the traditional site based health screening programs typically offered by the Health and Safety departments have also been extended to the whole community as opposed to employees only. The largest combined strategy implemented to date is the 10,000 Steps Moranbah Community Challenge which took the established 10,000 Steps Workplace Challenge a step further by opening the program to community teams who were able to participate with the workplace teams. This appeared to be successful in gaining strong support with over 450 people and 63 teams participating in the challenge.

7. Goals, objectives and strategies of the BMA-M project

The two goals of the BMA-M project are to increase the proportion of the Moranbah community who are achieving sufficient physical activity by five percent by October 2008 and to increase the proportion of BMA Broadmeadow, Peak Downs and Goonyella Riverside Mine employees who are achieving sufficient physical activity by ten percent by October 2008. Table 1 and Table 2 (Appendix) outline the BMA-M project framework including the main objectives, strategies to achieve the objectives, a brief rationale for choosing the objectives and strategies and the evaluation measure used to determine the project outcomes.

One of the main components of the BMA-M project is the implementation of the 10,000 Step program based upon the 10,000 Steps Rockhampton project which was the largest community-based physical activity intervention in Australia (Mummery, 2003). The 10,000 Steps program focuses on creating sustainable strategies for promoting moderate physical activity in sedentary adults, specifically older people and the unemployed, using pedometers to measure the amount of steps taken per day (Mummery, 2003). The original 10,000 Steps Rockhampton project aimed to determine whether the combined effect of several strategies to increase physical activity was better than the effects gained previously using a single strategy which was the case (Brown, 2002).

To date the 10,000 Steps Moranbah strategies that have been implemented include the 10,000 Steps Library Pedometer Loan Scheme, the Primary and Allied Health Care Physical Activity Brief Intervention, the 10,000 Steps Media Strategy, the 10,000 Steps Environmental Change Strategy, and the 10,000 Steps Workplace and Community Challenge. Other physical activity related programs such as the Strollers Walk and Talk, Just Walk It and Lighten Up to a Healthy Lifestyle have also been implemented to date.

Other recognised structured physical activity programs that have been implemented by the BMA-M project thus far include the Lighten Up to a Healthy Lifestyle program, Just Walk It and the Strollers Walk and Talk program. Each of these programs rely upon building group based social structures that are known to support regular physical activity.

At the environmental change level of action recommended by the Ottawa Charter for Health Promotion, the BMA-M project has been collaborating with the local government to increase more supportive environments for physical activity such as more walkways and better lighting of existing walkways. This

has been linked to the workplace with the development and 10,000 Steps Moranbah signage of site walkways at BMA Peak Downs Mine.

At the strengthening community action level espoused by the Ottawa Charter, the BMA-M project has been working with local stakeholder groups to determine the barriers to membership of and participation in local sporting and recreational groups. This will assist the group to design and implement strategies aimed at reducing these barriers in an effort to increase participation in local groups, another factor positively associated with achieving sufficient physical activity.

8. Evaluation of the BMA-M project

The project is being evaluated at the process, impact and outcome levels. The process evaluation involves regular completion of the Process Evaluation Tool designed specifically for the project and it captures relevant stakeholder and target group interaction with the Senior Health Promotion Officer. The impact and outcome evaluation of the project is based upon and pre- and post- measurement of a variety of health indicators and behaviours. The baseline survey of the community was completed via Computer Assisted Telephone Interview conducted by an external research company in October 2005. The baseline survey of the BMA employees were conducted by the Senior Health Promotion Officer at pre-start shift meetings on the respective sites between March and June in 2006. Both the community and employee surveys will be conducted again at the completion of the project to determine the whether the project achieved its goals and objectives.

9. Conclusion

Physical activity promotion is undoubtedly a health promotion priority for the health system. A physically active workforce also appears to yield many benefits for workplaces particularly in the current climate of an aging workforce. Current workplace health promotion research is advocating for broader programs that go beyond the traditional occupational health and safety focus of risk factor screening to include many of the factors that cause poor health behaviours. The BMA-M project is a pioneering partnership attempting to apply contemporary health promotion theory to link community and workplace based strategies to enhance the overall outcome.

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Appendix

Table 1 Be More Active – Moranbah project goals, objectives and strategies in the community setting.

Community settings: including schools, workplaces, community groups, health care settings.			
Project Goal: To increase the proportion of the Moranbah community who are achieving sufficient* Physical Activity by 5% by October 2008.			
Objectives – what we have to change in the short term in order to achieve the long term goal	Strategies – methods we will use to achieve our objectives and therefore ultimately achieve our project goals	Rationale – why we have set these objectives and chosen these strategies	Evaluation measures – how we will measure whether we have achieved our objectives
Objective 1.1: To increase the proportion of Moranbah workplaces providing opportunities for PA in the workplace by 20% by the end of December 2007.	10,000 Steps Workplace Challenge	<ul style="list-style-type: none"> ▪ People are spending more time at work which limits time to be active after work ▪ Jobs are becoming more sedentary (eg operators sitting for 11 hours) 	Percentage of workplaces who participate in the workplace challenge. Percentage of workplaces with a PA policy. Percentage of workplaces promoting PA at work.
Objective 1.2: To increase the proportion of the Moranbah community who use Active Transport as a method of commuting at least 3 times a week by 20% by the end of October 2008.	Active Transport, Walk to School	<ul style="list-style-type: none"> ▪ Small changes are seen as more achievable ▪ Easy and accessible form of activity ▪ Reduced costs of running cars ▪ Reduced green house gas emissions 	Percentage change in community members self-reporting Active Transport as a method of commuting at least 3 times a week.
Objective 1.3: To increase incidental activity in 50% of the Moranbah community by the end of October 2008.	Every Step Counts, PA Media strategy, Point of Decision prompts	<ul style="list-style-type: none"> ▪ Lifestyles have become more sedentary, therefore need to encourage more incidental activity ▪ Activity such as playing with the kids encourages family cohesion and better relationships ▪ Small increases in PA may lead to bigger changes ▪ Best health improvements are gained by getting the inactive people just a little more active 	Percentage change in self-reported incidental activity in community members.

<p>Objective 1.4: To increase the amount of family and group based PA related activities available to the community by 20% by the end of October 2008.</p>	<p>10,000 Steps Community Challenge, Council 'Come and Try' Workshops, Community gardens, Community working bees, Just Walk It, Pramwalkers, Walk to School, Family activity days, PA media strategy</p>	<ul style="list-style-type: none"> ▪ People are more likely to get and stay active if they have someone to be active with ▪ People are more likely to be active if they have had positive experiences with PA before ▪ Families that are active together are more likely to achieve enough PA for good health ▪ Children with active parents are more likely to be active themselves ▪ Group and family based activities are likely to be more 'fun' focussed, therefore people more likely to enjoy them 	<p>Percentage change in family and group based activities available to the community.</p>
<p>Objective 1.5: To increase the priority of the Belyando Shire Council to develop and maintain PA conducive environments by November 2008.</p>	<p>10,000 Steps Community Micro-Grant Scheme, 10,000 Steps Environmental Change strategy, Physical Activity Taskforce</p>	<ul style="list-style-type: none"> ▪ People who live near a park, footpath, walking trail etc are more likely to get enough activity to benefit health ▪ People are more likely to be active if they feel safe to do so 	<p>Percentage change priority of the council to develop and maintain PA conducive environments. Percentage change in funding allocated to PA conducive environments.</p>
<p>Objective 1.6: To increase the knowledge about the long term health benefits of achieving sufficient physical activity in 70% of Moranbah community members by the end of October 2008.</p>	<p>Every Step Counts, 10,000 Steps and PA media strategy, health education sessions</p>	<ul style="list-style-type: none"> ▪ People are not aware of the long term benefits of PA ▪ Increased knowledge of the benefits of PA, along with many other broader strategies, may encourage people to be more active ▪ Most people visit a GP at least once per year and people view GPs as the leading source of health information 	<p>Percentage change in knowledge about health benefits of PA of community members.</p>

Table 2 Be More Active – Moranbah project goals, objectives and strategies in the workplace setting.

Workplace Settings: Including, but not limited to, BMA Broadmeadow, Peak Downs and Goonyella Riverside Mines and associated accommodation centres.			
Project Goal: To increase the proportion of Broadmeadow, Peak Downs and Goonyella Riverside mine employees who are achieving sufficient* physical activity by 10% by October 2008.			
Objectives – what we have to change in the short term in order to achieve the long term goal	Strategies – methods we will use to achieve our objectives and therefore ultimately achieve our project goals	Rationale – why we have set these objectives and chosen these strategies	Evaluation measures – how we will measure whether we have achieved our objectives
Objective 2.1: To increase the proportion of BMA employees doing at least 10 10-minute sessions of moderate PA a week by October 2008.	10,000 Steps Workplace challenge, development and implementation of PA promoting workplace policies	<ul style="list-style-type: none"> ▪ People are spending more time at work which limits time to be active after work, particularly with shift work ▪ Jobs are becoming more sedentary (eg operators sitting for 11 hours) 	Percentage change from baseline in PA levels in the workplace setting.
Objective 2.2: To increase the knowledge about workplace health promotion principles and practice in BMA Health Safety Environment and Community staff by 90% by the end of October 2008.	FLIP/HP training Healthy workplaces toolkit Establish workplace health committees	<ul style="list-style-type: none"> ▪ To ensure that programs being implemented address as many of the factors causing the problems initially as possible ▪ To provide consistency between programs implemented in all of the three mine sites and programs in the community ▪ To establish links between current HSEC policies and programs and evidence based programs 	Percentage change in knowledge about workplace health promotion.
Objective 2.3: To increase the proportion of BMA employees who believe that sufficient PA is important for health by 20% by the end of October 2008.	Link PA promotion into existing HSEC education and practices	<ul style="list-style-type: none"> ▪ Increased knowledge of the benefits of PA, if implemented with broader strategies, may encourage people to be more active 	Percentage change in PA related beliefs.

<p>Objective 2.4: To increase the amount of family and group based PA related activities available to BMA employees and family members by 50% by the end of June 2007.</p>	<p>As per objective 1.4</p>	<ul style="list-style-type: none"> ▪ People are more likely to get and stay active if they have someone to be active with ▪ People are more likely to be active if they have had positive experiences with PA before ▪ Families that are active together are more likely to achieve enough PA for good health ▪ Children with active parents are more likely to be active themselves ▪ Group and family based activities are likely to be more 'fun' focussed, therefore people more likely to enjoy them 	<p>Percentage change in family and group based activities available to the community.</p>
<p>Objective 2.5: To increase the proportion of BMA employees who are aware of their average daily step count/PA level by 50% by the end of December 2007.</p>	<p>10,000 Steps Workplace Challenge, 10,000 Steps Environmental Change strategy (community and workplace)</p>	<ul style="list-style-type: none"> ▪ Increased knowledge and awareness of inadequate levels of PA may lead to an increase in PA 	<p>Percentage change in awareness of PA levels/average daily step count.</p>
<p>Objective 2.6: To increase the knowledge about the long term health benefits of achieving sufficient physical activity in 70% of BMA employees by the end of October 2008.</p>	<p>PA media strategy, Miner's Overhaul</p>	<ul style="list-style-type: none"> ▪ People are not aware of the long term benefits of PA ▪ Increased knowledge of the benefits of PA, along with many other broader strategies, may encourage people to be more active 	<p>Percentage change in knowledge.</p>
<p>Objective 2.7: To increase the awareness of physical activity messages in 70% of BMA employees by the end of October 2008.</p>	<p>PA media strategy, Miner's Overhaul, inclusion of National Physical Activity Guidelines in existing programs</p>	<ul style="list-style-type: none"> ▪ Health education strategy 	<p>Percentage change in rate recall of key PA messages in BMA employees.</p>

* Sufficient physical activity is defined as the accumulation of at least 150 minutes of activity and at least 5 sessions of activity over 1 week.

